A NOP/IS, SCOPING MEETING MATERIALS, AND COMMENT LETTERS RECEIVED

NOTICE OF PREPARATION (NOP)
OF AN ENVIRONMENTAL IMPACT REPORT AND
NOTICE OF PUBLIC SCOPING MEETING
NEW HIGH SCHOOL NO. 8 PROJECT

Notice Is Hereby Given that Oxnard Union High School District (OUHSD) will be the lead agency and will prepare an environmental impact report (EIR) for the proposed New High School No. 8 Project. We need any applicable response of your agency as to the scope and content of the EIR, which is germane to your agency's statutory responsibilities as related to the proposed project. Your agency will need to use the EIR prepared by OUHSD when considering your permit or other approval for the project.

The scoping process is intended to provide OUHSD with the information the public feels is necessary to establish the appropriate scope for preparing the EIR. Please submit your comments, input, suggestions for project alternatives, and any other pertinent information that may enable us to prepare a comprehensive EIR for the proposed project. The Notice of Preparation (NOP) comment period begins on **February 19, 2019 and ends on March 20, 2019**. Due to the time limits mandated by State Law, your response must be sent at the earliest possible date but not later than 30 days after receipt of the notice.

Please submit written comments to:
Mr. Jeffrey Weinstein
Assistant Superintendent, Business Services
Oxnard Union High School District
309 South K Street,
Oxnard, CA 93030

Project Title: New OUHSD High School No. 8 Project

Project Location: The project site includes approximately 46.8-acres of the Maulhardt Ranch, a 107.25-acre property (APN 214-002-059) located in the City of Oxnard, California. The geographic coordinates of the site are approximately Latitude 34° 12' 29.47" North, Longitude 119° 09' 19.07" West.

The project site is currently used for agriculture. Surface elevations are approximately 54-60 feet above mean sea level (msl). The site is adjacent to agricultural land to the north; single family residential land and Rio Rosales Elementary School to the east; single and multi-family residential and commercial land to the south; and single-family residential land to the west. Access to the project site is provided from Camino Del Sol and Rose Avenue.

Project Description: The OUHSD proposes to construct and operate a new state of the art neighborhood High School to accommodate existing and anticipated future enrollment in the District. The project site includes approximately 46.8-acres of the Maulhardt Ranch, a 107.25-acre property (APN 214-002-059) located in the City of Oxnard, California. Access to the project site is provided from Camino Del Sol and Rose Avenue. The geographic coordinates of the site are approximately Latitude 34 degrees 12' 29.47" North, Longitude 119 degrees 09' 19.07" West. The new school facilities are designed to meet the educational and recreational needs of up 2,500 students in grades 9-12 onsite. The proposed project would comprise approximately 211,115 square feet (sq. ft.) of building and structures and provide 806 parking spaces on the project site. In addition, the proposed project includes a variety of recreational areas to accommodate the recreational needs of the students and community. This proposed project includes a

variety of play fields, hard courts, and a pool. Of these, approximately 14.2 – 17 acres of play fields are proposed for joint-use with the City to provide additional recreation opportunities to the community as well as consideration for civic center use of other school facilities on site. The District would process a General Plan Amendment (GPA) and Specific Plan Amendment (SPA) through the City of Oxnard. OUHSD proposes to change the NECSP designations for the project site to Public Education and Civic Center Use.

Topics Identified for Study in an EIR. OUHSD prepared an Initial Study (IS). Based on the environmental review contained in the IS, OUHSD determined that implementation of the proposed project may have a significant effect on the environment and an EIR is required. The EIR will be prepared to evaluate potentially significant impacts related to the following issues:

- Aesthetics
- Biological Resources
- Geology/Soils
- Hydrology/Water Quality
- Noise
- Recreation
- Utilities/Service Systems
- Agriculture and Forestry Resources
- Cultural Resources
- Greenhouse Gas Emissions
- Land Use/Planning
- Transportation
- Air Quality
- Energy
- Hazards and Hazardous Materials
- Public Services
- Tribal Cultural Resources

Based on the analysis contained within the IS, impacts related to Population/Housing, Wildfire, and Mineral Resources are anticipated to be less than significant. Therefore, these topics will not be studied in detail in the EIR.

Scoping Meeting: OUHSD will conduct a public scoping meeting for the proposed project. The purpose of the scoping meeting is to solicit and receive public comment and input regarding the appropriate scope and content in the preparation of the EIR. Participation in the public meeting by agencies, organizations, and persons is encouraged. The Scoping Meeting for the EIR for the New High School No. 8 Project is scheduled for **March 6, 2019, at 6 p.m.** at the District Office Board Room, 220 South K Street, Oxnard, CA 93030.

In addition to the public scoping meeting, comments can also be submitted in writing, attention: Mr. Jeffrey Weinstein, at the address provided above.

Document Availability: The NOP and IS are available for public review at the Oxnard Union High School District, 309 South K Street, Oxnard, CA 93030 and at the Downtown Main Library, 251 South A Street, Oxnard, CA 93030 during normal business hours. They are also posted online on the District's website at: https://www.oxnardunion.org.

Initial Study
New High School No. 8
Oxnard, California

February 19, 2019

PREPARED FOR:

Oxnard Union High School District
309 South K Street
Oxnard, CA 93030

PREPARED BY:

Tetra Tech
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

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1.0 PROJECT INFORMATION

Project title:	New High School No. 8
Lead agency name and address:	Oxnard Union High School District 309 South K Street Oxnard, CA 93030
Contact person and phone number:	Jeffrey Weinstein, Asst. Sup. Business Services (805) 834-1461
Project location:	Northeast of Camino Del Sol and Rose Avenue
Assessor Parcel Number (APN):	APN 214-002-059
Project sponsor's name and address:	Oxnard Union High School District 309 South K Street Oxnard, CA 93030
General Plan Designation:	Residential Low Medium (RLD) and Open Space (OS) - Urban Village
Specific Plan	Northeast Community Specific Plan (NECSP)
Zoning Designation:	Single Family Residential Planned Development (R1PD) and Community Reserve (C-R)
Surrounding land uses:	North: Agricultural land East: Single family residential land and Rio Rosales Elementary School to the east South: Single and multi-family residential and commercial land West: Single family residential

1.1 PROJECT LOCATION

The project site includes approximately 46.8-acres of the Maulhardt Ranch, a 107.25-acre property (APN 214-002-059) located in the City of Oxnard, California. Access to the project site is provided from Camino Del Sol and Rose Avenue. The geographic coordinates of the site are approximately Latitude 34° 12' 29.47" North, Longitude 119° 09' 19.07" West. A Project Location and Vicinity Map is provided as Figure 1-1.

Surface elevations at the site are approximately 54-60 feet above mean sea level (msl) (Google Earth 2018). The project site is located in the southern area of the Santa Clara River flood plain. As of March 2017, the Santa Clara River Levee in Oxnard was in the process of rehabilitation construction and undergoing design/engineering/CEQA work (City of Oxnard 2017). The Santa Clara River is located approximately 2.8 miles northwest of the project site. The site topography is relatively flat with surface elevations ranging from approximately 54 feet above msl in the south to 60 feet above msl in the north (Google Earth 2018).

The project site has a General Plan Land Use designation of Residential Low Medium (RLD), Urban Village. The project site is located in the Northeast Community Specific Plan (NECSP) area of Oxnard, Ventura County,

California. The zoning designations are Single Family Residential Planned Development (R1PD) and Community Reserve (C-R).

The project site is currently used for agriculture and the cultivation of strawberries was observed during our January 29, 2019 field visit. Historical aerial photographs, Google Earth images, and information from the project Site owners indicate that the site has been used for cultivation of row crops from as early as 1869 to the present. The site is adjacent to agricultural land to the north; single family residential land and Rio Rosales Elementary School to the east; single and multi-family residential and commercial land to the south; and single-family residential land to the west. There are three public parks within 0.5-mile of the site: Del Sol Park to the southwest, Thompson Park to the south, and West Village Park to the northwest.

1.2 PROJECT OBJECTIVES

The objectives of the proposed project include the following:

- Accommodate existing and projected future student enrollment within the District;
- Provide new facilities that meet the District's educational specifications;
- Provide a new neighborhood High School to accommodate 2,500 students in permanent classroom facilities;
- Build and maintain school facilities that reflect the wise and efficient use of limited land resources; and
- Provide for new community appropriate recreational facilities.

1.3 PROJECT DESCRIPTION

The OUHSD proposes to construct and operate a new state of the art neighborhood High School to accommodate existing and anticipated future enrollment in the District. The new school facilities are designed to meet the educational and recreational needs of up 2,500 students in grades 9-12 onsite.

General Plan and Specific Plan Amendments

The District would process a General Plan Amendment (GPA) and Specific Plan Amendment (SPA) through the City of Oxnard. OUHSD proposes to change the General Plan designation for the project site to School (SCH), the zoning designation to Community Reserve (C-R), and the NECSP designation to School.

School Facilities

The proposed project would comprise approximately 211,115 square feet (sq. ft.) of building and structures and provide approximately 806 parking spaces on the project site. In addition, the proposed project includes a variety of recreational areas to accommodate the recreational needs of the student's onsite. These facilities include a variety of play fields, hard courts, and a pool. The proposed buildings would be of wood or metal frame construction or cast in place concrete tilt up construction with concrete slab-on-grade foundations. Access to the school would be provided from Camino Del Sol and half width of a proposed new "Central Road" to the north of the project site that would connect to the existing Camino De La Luna and Jacinto Drive. The proposed circulation is being planned in cooperation with City Planning, Public Works, and Traffic staff. A conceptual site plan is included as Figure 1-2 and a summary of anticipated development is provided in Table 1-1.

Table 1-1
Conceptual Site Plan Summary

Building	Building Footprint ft^2	Notes
Lockers/Gymnasium	45,730	Two-Story
Performing Arts	26,500	Two-Story
Media/Administration	14,575	One-Story
Academic/Classroom 1	5,380	Two-Story
Academic/Classroom 2	5,960	Two-Story
Academic/Classroom 3	14,470	Two-Story
Academic/Labs	17,400	Two-Story
Shops 1	14,025	Two-Story
Shops 2	11,160	One-Story
Kitchen/Multipurpose Room	17,770	One-Story
Daycare	2,900	One-Story
Home Bleachers	15,175	Two-Story
Visitor Bleachers	7,500	Two-Story
Stadium Restroom 1	1,600	One-Story
Stadium Restroom 2	1,600	One-Story
Pool Building	2,270	One-Story
Maintenance & Ops.	7,100	One-Story
Total	**211,115**	
Parking Lot	**Parking Lot ft^2**	**No. Parking Spaces**
Staff	180,088	318
Student	123,300	305
Visitor	3,230	18
Northeast Joint Use	33,115	89
Northwest Joint Use	46,810	76
Total	**386,543**	**806**
Sport Facility	**Facility ft^2**	**Ground Surface**
Track/Football Field	159,031	Turf
Varsity Baseball Field	135,347	Turf
JV Baseball Field	113,034	Turf
Varsity Softball Field	55,259	Turf
JV Softball Field	53,695	Turf
Soccer Field	182,831	Turf
Basketball Courts	52,960	Paved
Tennis Courts	43,590	Paved
Pool	7,240	Paved
Total	**802,987**	

Notes: ft^2 = Square Foot. All square footage estimates are approximate

Recreational/ Community Use/ Civic Center

This proposed project includes a variety of play fields, hard courts, and a pool. Of these, approximately 14.2 – 17 acres of playfields are proposed for joint-use with the City to provide additional recreation opportunities to the community as well as consideration for civic center use of other school facilities on site.

Project Design Features

Landscaping

The landscape concept for the proposed project includes the surfacing and planting of the soft-top sports facilities, site irrigation, and ornamental plantings of trees, shrubs, and groundcover. The proposed irrigation system includes drip, smart clock, flow sensor, rotor, bubbler, and pop up spray components that would result in the system meeting California Assembly Bill (AB) 1881, Cal Green, and Title 23 (Chapter 2) requirements. Plant species selected would add to the aesthetic appeal of the campus.

Lighting

The proposed project will include necessary lighting for adequate nighttime safety and security. Campus lights will be shielded and directed downward to the extent feasible. Lighted playfields are proposed for the stadium and varsity baseball and softball fields.

Energy

The proposed project is designed to include energy saving features such as ultra-high efficiency rooftop packaged units, demand control ventilation, solar panels, and an energy management system that will provide scheduled times of operation as well as temperature-setback when the classroom is unoccupied. The electrical systems will include energy-efficient light-emitting diode (LED) lighting fixtures in the interior and exterior of the buildings with low voltage controls to include dimming, daylight sensors and automatic occupancy sensing devices. The site parking lot and pathway pole-mounted lighting and sports field lighting will have energy-efficient LED lamps and drivers with low voltage controls. The electrical power transformer specified for the project will be an energy-efficient type complying with the most recent energy code.

Water Saving Features

The proposed project will incorporate a state-of-the-art drip irrigation system and a smart clock which automatically adjusts daily based on evapotranspiration (ET). All trees will have a separate valve allowing for water to be provided only as needed. Large turf areas will be irrigated by rotors and small turf areas will be irrigated by spray heads. The irrigation system will incorporate a master valve and flow sensor to shut down the system in case of line breakage.

Offsite Infrastructure Improvements and Connections

Stormwater Drainage

A high-density polyethylene (HPDE) storm drain system will be provided throughout the project site. Two points of pre-treatment (CDS Unit), infiltration, and detention (underground corrugated metal pipe (CMP)). Infiltration is proposed as above ground basins: one behind the tennis courts and one in the landscape frontage along Camino del Sol. Underground detention will be 66" CMP's under the outdoor basketball courts and 36" CMP's under the SW parking area. The proposed site will join the existing storm drain (SD) in Camino del Sol at an existing lateral. A public SD line is proposed from the connection point, through the campus and up to Central Street. This public SD line will carry flow from the residential development and the High School. A second public SD line will run along the east property line in

the currently designated public street. This line will serve only the undeveloped land to the north and not benefit the High School. This line will have to be constructed with the easterly street. This is the current design concept that would require review and approval by the City.

Transportation/Circulation

While the educational facilities would be contained within the project site; the City may require additional street and sidewalk improvements required to service the proposed project. Anticipated roadway improvements include the widening of Rose Avenue that would require removal of the existing windrow trees. A new half width access road is proposed to the north of the project site as shown on the conceptual site plan (Figure 2-2.) The City will dictate the final route for the access road. Anticipated sidewalk improvements and other circulation improvements required to adequately accommodate the project site will be identified based on coordination with the City's Planning and Public Works Departments.

Utility Connections

The project site is currently undeveloped and used for agriculture. Utility connections will need to connect to the project site including water, sewer, gas, electric, data/telecommunications, and storm water connection.

Project Construction

Phased construction is anticipated to begin in 2019 and would take approximately 31 months to construct. The number of construction workers at the proposed site during the construction phases would range from 20 to 100.

Operation and Staffing

Operation of the new school is anticipated for the 2022-2023 school year. The approximate number of employees for the high school opening was estimated to be 150 based on the educational specifications approved by the Board. This includes administrative staff, teachers, aides, librarians, technology teachers, cafeteria workers, janitors and groundskeeping staff.

1.4 OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

The EIR will be used by OUHSD and responsible and trustee agencies with jurisdiction over portions of the project prior to deciding whether to approve or permit project components. A public agency, other than the lead agency, that has discretionary approval power over a project is known as a "responsible agency" as defined by CEQA Guidelines Section 15381. Anticipated permits and approvals for the proposed project are identified in **Error! R eference source not found.**.

Table 1-2
Anticipated Permits and Approvals

Agency	Permit/Approval
Oxnard Union High School District	Approve Project (Educational Specifications, Design/Construction Funding and Associated Contract Approvals)/ EIR/ Parks Designation
City of Oxnard	General Plan Amendment, Specific Plan Amendment, and Building Permits

California Department of General Services, Division of State Architect.	Approval of construction plans
California Department of Toxic Substance Control	Approval of Preliminary Environmental Assessment (PEA) and Supplemental Site Investigation (SSI)
Los Angeles Regional Water Quality Control Board	Storm Water Pollution Prevention Plan.

1.5 CALIFORNIA NATIVE AMERICAN TRIBE CONSULTATION

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

OUHSD has not received written notification from California Native American tribes traditionally and culturally affiliated with the project area.

2.0 ENVIRONMENTAL CHECKLIST

2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics	☒ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology/Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology/Water Quality	☒ Land Use/Planning	☐ Mineral Resources
☒ Noise	☐ Population/Housing	☒ Public Services
☒ Recreation	☒ Transportation	☒ Tribal Cultural Resources
☒ Utilities/Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

2.2 DETERMINATION: (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date	Signature	Date
Print Name		Print Name	

2.3 EVALUATION OF ENVIRONMENTAL IMPACTS

(1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

(2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

(3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

(4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

(5) Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063[c][3][D]). In this case, a brief discussion should identify the following:

a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.

b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c. Mitigation Measures. For effects that are "Less Than Significant with Mitigation Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

(6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.

(7) Supporting Information Sources. A source list should be attached and other sources used or individuals contacted should be cited in the discussion.

(8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

(9) The explanation of each issue should identify:

a. The significance criteria or threshold, if any, used to evaluate each question; and

b. The mitigation measure identified, if any, to reduce the impact to less than significant.

2.4 ENVIRONMENTAL IMPACT ANALYSIS

2.4.1 AESTHETICS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:					
a.	Have a substantial adverse effect on a scenic vista?	X			
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?				X
c.	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	X			
d.	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	X			

Discussion:

a. Would the project have a substantial adverse effect on a scenic vista?

Potentially Significant Impact. In the City of Oxnard, key view corridors include local waterways, agricultural open space, beaches, mountains, and a variety of urban landscapes (Oxnard 2011). According to the East Village Phase III Annexation EIR, Rose Avenue is a designated City-image corridor characterized by expansive northerly views of distant mountain ranges. The proposed project includes roadway improvements to Rose Avenue that would require removing mature windrow trees. Therefore, this topic will be discussed further in the EIR.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The project site is relatively flat and currently used for agriculture. The project site is not located adjacent to a designated State scenic highway or eligible State scenic highway, as identified on the California Scenic Highway Mapping System (Caltrans 2018). Therefore, the proposed project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway and this issue will not be discussed further in the EIR.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Potentially Significant Impact. The project site is relatively flat and currently used for agriculture. Development of the proposed project will result in a visual change from construction and operation of the new educational facilities in comparison to existing conditions. Therefore, potential impacts to the visual character or quality of the site and its surroundings will be analyzed further in the EIR.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Potentially Significant Impact. The project site is currently used for agriculture within a developed urban environment. The proposed project would include exterior lighting around buildings, walkways, and parking lots as needed for adequate safety and security at night. The proposed new stadium would include lighted playfields and the varsity baseball and softball fields would also be lighted. In addition, it is anticipated that the school would be used in the evening for community meetings and periodic school activities. As such, the proposed project could represent a new source of light or glare which could potentially impact nighttime views in the area. Therefore, this topic will be discussed further in the EIR.

2.4.2 AGRICULTURE AND FOREST RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:					
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	X			
b.	Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?			X	
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d.	Result in the loss of forest land or conversion of forest land to non-forest use?				X
e.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?			X	

Discussion:

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Potentially Significant Impact. The City of Oxnard 2030 General Plan Program EIR (Oxnard 2009) accounted for the conversion of up to 2,215 acres of important farmland (defined as Prime Farmland and Farmland of Statewide Importance) including the project site to non-agricultural use and determined the impact to be significant and unavoidable. The entire Maulhardt Ranch site was identified as either Prime Farmland or Farmland of Statewide Importance in PEIR Figure 5-1, Important farmland Impacts. No feasible mitigation measures were available to reduce the impact to a less than significant level (Oxnard 2009).

The City certified the 2030 General Plan Program EIR on October 11, 2011 that considered the possible environmental impacts of buildout to 2030: adding approximately 40,000 people to the City's population, development of all remaining vacant land within the Oxnard CURB Line including the project site. The conversion of the project site to a developed use was addressed by the 2030 General Plan Final EIR and found to be a significant citywide adverse impact for which an overriding consideration was made. (Oxnard 2012). According to the East Village Phase III Annexation EIR, the City has also determined that conversion of agricultural land is a project-level impact and required a mitigation measure (AG1) to offer the topsoil for removal to another farm operation, if feasible, as a partial mitigation for the loss of prime farmland impact (Oxnard 2012).

As part of the proposed project, the OUHSD would process a General Plan Amendment (GPA) and Specific Plan Amendment (SPA) through the City of Oxnard. OUHSD proposes to change the NECSP designations for the project site to School use. The buildout of the site with a non-agricultural use was previously accounted for in the 2030 General Plan and identified in the East Village Phase III Annexation EIR. While the proposed project would be a different development scenario than previously evaluated it would nonetheless also convert the site to non-agricultural use. No new or increased impact related to conversion of important farmland would result given the location of the project site within a developed urban environment. A review of mitigation measure AG1 should be conducted to determine if this measure is still feasible for the project site and/or if there are other partial mitigation measures available for the loss of important farmland. Nonetheless, conversion of agricultural land at the project level would remain a significant and unavoidable impact.

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

Less Than Significant Impact. While the project site is currently used for agriculture, it is located within the NECSP and is not designated for agricultural use. According to the East Village Phase III EIR, a Declaration of Notice of Nonrenewal was filed for the Maulhardt Ranch property (a portion of which includes the project site) on December 13, 2002 and the termination date was identified as February 29, 2012.Therefore, the proposed project would not conflict with zoning for agricultural use or a Williamson Act contract. Project impact would be less than significant and this issue will not be further analyzed in the EIR

c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. There is no forest timberland located on the project site. Nor, is the project site zoned for timberland use as identified above. Therefore, the proposed project would not conflict with zoning for, or cause rezoning of, forest land or timberland and this issue will not be further analyzed in the EIR.

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There is no forest land located on the project site. Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to a non-forest use and this issue will not be further analyzed in the EIR.

e. Would the project involve other changes in the existing environment that, due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Less Than Significant Impact. There is no forest land located on or adjust to the project site. Therefore, the proposed project would not individually or cumulatively result in the loss of forestland to non-forest use and this issue will not be further analyzed in the EIR. The project site is currently used for agriculture and implementation of the proposed project would convert the site to a non-agricultural use. However, the project site and the adjacent agricultural land to the north, are located within a developed urban environment and the conversion of the project site and the adjacent land to the north was previously accounted for in the 2030 General Plan EIR. No new or increased impacts related to the conversion of farmland are anticipated as a result of implementation of the proposed project given the location of the project site within a developed urban environment. Therefore, project impact would be less than significant and this issue will not be further analyzed in the EIR.

2.4.3 AIR QUALITY

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:					
a.	Conflict with or obstruct implementation of the applicable air quality plan?	X			
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area for an applicable federal or state ambient air quality standard?	X			
c.	Expose sensitive receptors to substantial pollutant concentrations?	X			
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	X			

Discussion:

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant Impact. The project site is located within the City of Oxnard. To pursue improvement of air quality in Ventura County, the Ventura County Air Pollution Control Board has adopted the 2016 Ventura County Air Quality Management Plan (AQMP), which presents a comprehensive list of pollution control strategies aimed at attaining Ventura County's federal 8-hour ozone standard by 2020 as required by the Clean Air Act Amendments of 1990. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by the Southern California Association of Governments and reflected in local general plans. An air quality study will be conducted for the proposed project and this issue will be analyzed in the EIR.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area for an applicable federal or state ambient air quality standard?

Potentially Significant Impact. The proposed project would result in significant cumulative impacts if it exceeds daily thresholds of significance established by VCAPCD or if it incurs an increase of emissions beyond what is planned in the General Plan. An air quality study will be prepared for the proposed project and this issue will be analyzed further in the EIR.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. The proposed project includes a new high school to help meet the educational needs of District students. The proposed project is anticipated to have a less than significant impact on sensitive receptors. Nonetheless, an air quality study will be prepared for the proposed project and this issue will be analyzed further in the EIR.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Potentially Significant Impact. The proposed project includes a new high school to help meet the educational needs of District students. The proposed project is currently adjacent to agricultural fields. Should those fields remain active, the cultivation process could create objectionable odors. An air quality study will be prepared for the proposed project and this issue will be analyzed further in the EIR.

2.4.4 BIOLOGICAL RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	X			
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X			
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Discussion:

a. Would the project have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Potentially Significant Impact. The project site is located within an urban area of the City of Oxnard. Accordingly, the potential for candidate, sensitive, or special-status species or habitats is low within City limits. The project site is currently used for the cultivation of strawberries.

A query of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) was conducted to determine the known locations of any special-status species or habitats (sensitive, threatened, endangered, rare, or candidate species) within and surrounding the project site. The special-status species presented in Table 2-1 are those with any chance of potentially occurring within or adjacent to the project site based on regional occurrence and habitat present on the project site (CDFW 2019).

Table 2-1
Special-Status Wildlife Species with Potential to Occur

Common Name	Scientific Name	Federal Status / State Status	Other Status
Birds			
burrowing owl	*Athene cunicularia*	- / -	S, SSC
ferruginous hawk	*Buteo regalis*	- / -	WL
white-tailed kite	*Elanus leucurus*	- / -	S, FP
California horned lark	*Eremophila alpestris actia*	- / -	WL
American peregrine falcon	*Falco peregrinus anatum*	FD / SD	FP
Mammals			
pallid bat	*Antrozous pallidus*	- / -	S, SSC
western mastiff bat	*Eumops perotis californicus*	- / -	S, SSC

Notes: Results based on CNDDB query for six regional quadrangles (Oxnard, Ventura, Saticoy, Santa Paula, Camarillo, Point Mugu).
FD = Federally Delisted
FP = CDFW Fully Protected
S = BLM Sensitive Species
SD = State Delisted
SSC = CDFW Species of Special Concern
WL = CDFW Watch List

A general biological survey conducted on January 29, 2019 verified that no native vegetation communities occur within the site boundary. Due to the active agricultural use of the site and plant list established during the general biological survey, there is no potential for special-status plants to occur on the project site.

Due to the active agricultural use of the project site, it is unlikely that any special-status species would occur. However, the proposed project includes roadway improvements that would likely require removal of the existing windrow trees along Rose Avenue. Eucalyptus trees have the highest potential to support nesting activity; additionally, other vegetation and structures within and adjacent to the site have the potential to serve as habitat. Therefore, direct removal of trees, use of heavy machinery, and/or significant ground disturbance during construction activities has the potential to disturb nesting birds if present and this issue will be further evaluated in the EIR.

b. Would the project have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

No Impact. The CNDDB query identified nine sensitive habitat types within a six quadrangle search around the project site including:

- Southern California Coastal Lagoon
- Southern California Steelhead Stream
- Valley Needlegrass Grassland
- Southern Coastal Salt Marsh

- Coastal and Valley Freshwater Marsh
- Southern Coast Live Oak Riparian Forest
- Southern Sycamore Alder Riparian Woodland
- Southern Riparian Scrub
- California Walnut Woodland

None of the sensitive habitats listed above occur on or within the vicinity of the project site. The project site is located within an urban environment and is currently used for agriculture. No native vegetation communities were documented on the project site during the general biological survey conducted on January 29, 2019. Cultivated strawberries (*Fragaria* sp.) were the dominant plant on the project site along with other plant species that were primarily non-native and occurred mostly on the fringe of the cultivated rows. Therefore, the proposed project would have no impact on any riparian habitat or other sensitive natural community and this issue will not be discussed further in the EIR.

c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. During the general biological survey conducted on January 29, 2019, no jurisdictional wetlands or potential wetlands were identified on, or directly adjacent to the project site. The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory identifies the nearest wetland waters occurring approximately 1.0 mile to the east of the project site. These wetland waters include a small area characterized as a freshwater pond. The proposed project would not impact any areas outside of the defined impact area; as such, no impacts to protected wetlands would occur and this issue will not be discussed further in the EIR.

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?

Potentially Significant Impact. The project site is located within a developed urban environment. The project site is not located within, or directly adjacent to, any known or mapped wildlife corridors or nursery sites. Vegetation currently on site, particularly the Eucalyptus windrow trees at the western site border may serve as potential nesting areas. The proposed project includes roadway improvements that would likely require removal of the existing windrow trees along Rose Avenue. Therefore, this issue will be further evaluated in the EIR.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Potentially Significant Impact. Eucalyptus windrow trees are located at the western project site border, adjacent to Rose Avenue. The infrastructure improvements proposed for Rose Avenue would require the removal of these windrow trees. As such, this issue will be further evaluated in the EIR.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The project site is not included in any state, regional, or local habitat conservation plans (CDFW 2017), nor are any Habitat Conservation Plans or Natural Communities Conservation Plans directly referenced within the Planning Area of the 2030 General Plan (City of Oxnard 2011). Therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

2.4.5 CULTURAL RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	X			
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	X			
c.	Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Discussion:

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Potentially Significant Impact. CEQA defines a "historical resource" as any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register of Historical Resources (CRHR). A historical resource must be significant at the local, state, or national level under one or more of four criteria defined in the California CCR Title 14, Chapter 11.5, §4850. In addition, buildings, sites, structures, objects, and districts representative of California and United States history, architecture, archaeology, engineering, and culture convey significance when they also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A resource has integrity if it retains the characteristics that were present during the resource's period of significance. Enough of these characteristics must remain to convey the reasons for its significance.

The proposed project includes a portion of Maulhardt Ranch, a 107-acre parcel in the City of Oxnard, California. Maulhardt Ranch has been owned and operated by the Maulhardt family since 1869 and is still being used as a residence by the Maulhardts (the existing residential area is not included in the proposed project) and for strawberry cultivation. A Phase I Archaeological Survey will be conducted for the project site to determine if prehistoric or historic archaeological deposits are present. Therefore, this issue will be evaluated further in the EIR.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Potentially Significant Impact. As noted above, a Phase I Archaeological Survey will be conducted to determine if prehistoric or historic archaeological deposits are present. Therefore, this issue will be evaluated further in the EIR.

c. Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. The project site is currently used for agriculture. Existing regulations require that if human remains and/or cultural items defined by the Health and Safety Code, Section 7050.5, are inadvertently discovered, all work in the vicinity of the find would cease and the Ventura County Coroner would be contacted immediately. If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5,

the coroner will contact the NAHC by telephone within 24 hours. The NAHC shall immediately notify the person it believes to be the Most Likely Descendant (MLD) as stipulated by California PRC, Section 5097.98. The MLD(s), with the permission of the landowner and/or authorized representative, shall inspect the site of the discovered remains and recommend treatment regarding the remains and any associated grave goods. The MLD shall complete their inspection and make their recommendations within 48 hours of notification by the NAHC. Any discovery of human remains would be treated in accordance with Section 5097.98 of the Public Resources Code (PRC) and Section 7050.5 of the Health and Safety Code. SCCIC record search results and Tribal consultation. Therefore, with compliance with existing regulations, project impact would be less than significant.

2.4.6 ENERGY

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	X			
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	X			

Discussion:

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Potentially Significant Impact. The proposed project would be designed and constructed to required green building code standards and thereby the inefficient or unnecessary consumption of energy is not anticipated. According to CEQA Guidelines Appendix F, the goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include: 1) decreasing overall per capita energy consumption; 2) decreasing reliance on natural gas and oil; and 3) increasing reliance on renewable energy resources. While significant adverse impacts related to energy consumption are not anticipated, a clear determination cannot be made at this time. Therefore, this issue will be evaluated further in the EIR.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Potentially Significant Impact. The proposed project would be designed and constructed to required green building code standards and thereby the inefficient or unnecessary consumption of energy is not anticipated. While significant adverse impacts related to energy consumption that could conflict or obstruct a state or local plan for renewable energy or energy efficiency are not anticipated, a clear determination cannot be made at this time. Therefore, this issue will be evaluated further in the EIR.

2.4.7 GEOLOGY AND SOILS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i.) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
	ii.) Strong seismic ground shaking?	X			
	iii.) Seismic-related ground failure, including liquefaction?			X	
	iv.) Landslides?			X	
b.	Result in substantial soil erosion or the loss of topsoil?	X			
c.	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of waste water?				X
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X			

Discussion:

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

I. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other

substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. The project site is not located within a designated Alquist-Priolo Earthquake Hazard Zone (CGS 2018). There are no known active faults beneath or trending toward the site, the probability of surface rupture due to faulting at the site is considered low. Therefore, this issue will not be discussed further in the EIR.

II. Strong seismic ground shaking?

Potentially Significant Impact. The *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that even though the historic record indicates that no strong earthquakes or surface displacement have occurred along the faults in southern Ventura County in the site area, the likelihood of the occurrence of one or more of such events within the next 50 to 100 years is not remote. Therefore, this issue will be discussed further in the EIR.

III. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Generally, there is a potential for liquefaction when the following three conditions are met: (1) a site is located on Holocene age, unconsolidated, coarse-grained sediments; (2) the site is in area of potentially strong ground motion; and (3) groundwater is less than 50 below ground surface (bgs). The *Seismic Hazards* Zone *Report for the Oxnard 7.5-Minute Quadrangle, Ventura County California* (CGS 2002), *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map* (CGS 2002), and Figure 6-1 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the site is located in a recognized geological hazard zone for earthquake induced liquefaction. This findings in these data are based on the assumptions that the site area is underlain by coarse grained Holocene age sediments, which are generally considered have a significant liquefaction potential, and because the depth to groundwater for the site area is estimated to be less than 50 feet bgs. Groundwater was encountered at the site at depths ranging from approximately 20 to 25 feet bgs in the geotechnical borings completed during April and July 2018 (ESP 2018), which is much shallower than the 50 feet bgs depth used as the maximum depth criterion for potentially liquefiable conditions.

ESP evaluated the liquefaction potential at the site in accordance with the 2016 CBC (ICC 2017) and the methods in the *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A* (Special Publication 117A) (CGS 2008). ESP has analyzed the boring data for this project and utilized methods suggested in Special Publication 117A (CGS 2008), and based on this analysis, concluded that due to the presence of groundwater in the upper 50 feet of soil (measured at 20 to 25 feet bgs) and the density of sand and silt soils, there appears to be a potential for both liquefaction and seismically induced settlement of dry sand to occur at the site (ESP 2018).

ESP evaluated the potential effects of liquefaction by performing analysis of the cone penetrometer (CPT) data using the site-specific peak ground acceleration (PGA) of 0.969 g from the site specific ground motion analysis, an earthquake modal magnitude of 7.01g (USGS 2018c), an assumed historical high groundwater depth of 8 feet bgs (CGS 2002a), and the approximate existing groundwater depth of approximately 20 feet bgs. ESP concluded that it appears liquefaction occurs in relatively thin discontinuous soil layers. Total liquefaction induced dynamic settlement assuming a groundwater depth of 8 feet ranged between 0.2 to 1.2 inches, and 0.1 to 0.6 inches for a groundwater depth of 20 feet (ESP 2018b).

Seismically induced settlement of dry sand is also caused by a significant seismic event, and may occur in lower density and sand and silt soils that are not saturated by groundwater. During a major earthquake, the void spaces between the unsaturated soil particles that are filled with air tend to compress which translates to a decrease in volume or settlement (ESP 2018).

ESP evaluated seismically induced settlement of dry sand as part of the liquefaction evaluation using a reduced or modified PGA value of 2/3 (0.969 g) = 0.646 g. Additionally, the upper 30 inches of soil were neglected in the

analyses because the upper 2 to 3 feet of the surface soils had been recently ripped and plowed as part of the on-going agriculture operations at the site, and these soils will ultimately be removed and replaced as moisture conditioned compacted fill as part of future site development as recommended later in the "Grading" section ESP's 2018 report. Total seismically induced settlement of dry sand assuming a groundwater depth of 8 feet ranged between 0 to 0.2 inches, and 0.1 to 0.2 inches for a groundwater depth of 20 feet (ESP 2018).

Based on the information presented above, ESP concluded that no special measures will be needed to protect the structures and improvements from either liquefaction or seismically induced settlement of dry sand (ESP 2018). Therefore, project impact would be less than significant and this issue will not be discussed further in the EIR.

IV. Landslides?

Less Than Significant Impact. On the basis of the July 2, 2018 Site reconnaissance performed for the Geohazard Assessment/Geotechnical Investigation (Tetra Tech 2018b), a review of the CGS Seismic Hazards Map for the 7.5 Minute Series Oxnard Quadrangle (CGS 2002b) and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the project site is not in an area prone to landslides and slope instability. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Potentially Significant Impact. The project site is currently used for agriculture. Soil erosion would potentially occur during construction activities, including site grading, structure assembly, and utility extension. Therefore, this issue will be addressed in the EIR.

c. Is the project located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse?

Less Than Significant Impact. As documented above in response 3.4.7 a IV), the project site is not in an area prone to landslides or slope instability. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

Based on the results of the liquefaction analysis performed by ESP for their Geotechnical Report, the potential for loss of soil bearing strength and lateral spreading at the site was determined to be very low. The assessment for loss of soil bearing strength was developed by comparing the thickness of the overlying non-liquefiable soils with respect to the depth, the relatively thin thickness, and the discontinuous nature of the underlying liquefiable soils. Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on sloping ground. Since a free slope face does not exist within or near the site, we focused on the sloping ground aspect of lateral spreading. Based on the Google Earth website (Google, 2018), the site slopes at approximately 0.35 percent from the north to the south. The assessment for lateral spreading was developed by considering the relatively flat to very gently sloping ground surface with respect to the discontinuous nature of the underlying liquefiable soils. The conditions needed for lateral spreading to occur do not appear to exist at the Site (ESP 2018; Tetra Tech 2018b). Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the Site is located in an area susceptible to subsidence. The subsidence has been caused by overdraft of the groundwater aquifers that underlie the Oxnard Plain. Although it could occur, it is considered to be an insignificant risk due to the absence of reported problems. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

As documented above in response 3.4.7 a III), the project site is not in an area prone to liquefaction, or collapse. Therefore, impact is less than significant, and this issue will not be discussed further in the EIR.

d. Is the project located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. The ESP Geotechnical Engineering Report concluded that the upper Site soils were judged to be generally non-expansive. Therefore, no special measures with respect to expansive soils are considered necessary (ESP 2018; Tetra Tech 2018b). Project impact would be less than significant, and this issue will not be discussed further in the EIR.

e. Would the project have soils that are incapable of supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

No Impact. The proposed project would not use septic tanks or alternative wastewater disposal systems and no project impact would result. Therefore, this issue will not be discussed further in the EIR.

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Potentially Significant Impact. Based on the geotechnical studies prepared for the project site (Tetra Tech 2018b), the project site is underlain at the ground surface by Holocene deltaic alluvium and wash fan deposits to approximately 70 feet bgs. These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non-marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs. Older alluvial deposits, upper Pleistocene and older deposits would have the potential to contain paleontological resources. Therefore, this issue will be discussed further in the EIR.

2.4.8 GREENHOUSE GAS EMISSIONS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	X			
b.	Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	X			

Discussion:

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Potentially Significant Impact. The proposed project would generate GHGs during construction and operation activities. Pursuant to state law (CEQA Guidelines 15064.7), VCAPCD is authorized to adopt thresholds of significance for GHG emissions. To date, VCAPCD has evaluated multiple options, but has not made a decision to adopt any of these options. VCAPCD is leaning toward the adoption of thresholds of significance for land use development consistent with those adopted by the South Coast Air Quality Management District (SCAQMD). On December 5, 2008, SCAQMD Governing Board adopted a proposal for an interim GHG threshold of significance for projects where the SCAQMD is lead agency. The threshold of significance is applicable for stationary sources and can be used for determining significant impacts for proposed projects (SCAQMD 2008). Under the interim thresholds of significance, projects can emit up to 10,000 MT per year of CO_2e before being deemed as having significant impacts. Therefore, GHGs resulting from the Proposed Project will be calculated using CalEEMod and this issue will be further analyzed in the EIR.

b. Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Potentially Significant Impact. As noted above, GHGs resulting from the proposed project will be calculated using CalEEMod and included in the EIR. Based on these results, the proposed project will be evaluated further in the EIR for potential conflict(s) with applicable plans, policies or regulations of an agency adopted for the purpose of reducing the emissions of GHGs.

2.4.9 HAZARDS AND HAZARDOUS MATERIALS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?			X	
d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	X			
e.	For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?			X	
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

Discussion:

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. The proposed project would not handle or generate large quantities of hazards materials. Potential hazardous materials used onsite include those needed during short term temporary construction activities such as architectural coatings and sealants. During long term operations, potential hazardous materials stored at the school would include cleaners (e.g., disinfectants, bleach) and office supplies (e.g., toner). As is standard for schools, these materials would be kept in cabinets or supply rooms and therefore, would not be

considered a hazard to students, staff, or the public. Therefore, project impact would be less than significant, and this issue will not be discussed further in the EIR.

b. Would the project create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?

Less Than Significant Impact. The proposed project would not create a significant hazard to the public or the environment involving the likely release of hazardous materials. As noted in response 3.4.9 a) above; the proposed project would be a public school that would not handle or generate large quantities of hazardous materials. Common hazardous materials needed for routine maintenance and operations would be stored in small quantities in cabinets and supply rooms. Hazardous materials on campus would be limited and stored away from students and the public. Therefore, project impact would be less than significant, and this issue will not be discussed further in the EIR.

c. Would the project emit hazardous emissions or handle hazardous materials or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Less Than Significant Impact. The proposed project is a public school that would not generate hazardous emissions or use materials in hazardous quantities. Therefore, project impact would be less than significant.

Radon is a naturally occurring, odorless, colorless gas produced by certain geologic materials. It is known to be a human carcinogen and can pose a cancer risk greater than one in one million in humans at concentrations equal to or greater than 4 picoCuries per liter (pCi/L).

The EDR environmental database search indicated that Ventura County is in a Radon Zone 1 area. Zone 1 areas have a predicted average indoor screening level greater than 4 pCi/L. The EDR database search reported that of 38 sites listed in the California Radon database that have been tested for the zip code of 93030, one had radon at levels greater than 4 pCi/L. The Federal Area Radon Information database reported 9 sites tested for radon in the 93454 zip code. The average concentration of tested sites was 0.478 pCi/L in first floor living areas (EDR 2017).

The EDR report gives a passing result for the project site with no further action required. These findings suggest there are no health concerns related to radon at the site. Therefore, project impact would be less than significant, and this issue will not be discussed further in the EIR.

d. Is the project located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Potentially Significant Impact. Based on information provided in the 2018 Phase I ESA (Tetra Tech 2019a) and Draft PEA (Tetra Tech 2018c), the proposed school project would not be located on a site included on a list of hazardous material sites. However, the PEA field investigation results indicated that approximately 28 acres of the site surface soils are impacted by OCPs at concentrations exceeding the PEA Screening Levels (Tetra Tech 2018c). Based on the results of the PEA, including the human health screening evaluation and the ecological screening evaluation, OCPs detected at the site (primarily toxaphene) appear to be present at significant concentrations that pose a threat to likely human receptors, including residential/unrestricted land use. Assumed exposures at the project ste result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors (Tetra Tech 2018c). The Draft PEA concluded that the surface soil sampling performed for PEA has adequately defined the lateral extent of OCP-impacted soil at the project site at concentrations exceeding DTSC Screening Levels. Tetra Tech is currently conducting a SSI of the under DTSC oversight to assess the depth of OCP-impacted soil at the site at concentrations exceeding PEA Screening Levels. A remedy for the OCP-impacted soil at the site will be developed following completion of the SSI. Therefore, this issue will be evaluated further in the EIR.

e. For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Less Than Significant Impact. California Code of Regulations Title 21 requires the State Department of Transportation to review any proposed school site that is located within 2 nautical miles of a runway. There are no airports within two nautical miles of the Site. Based on review of a Google Earth Image date January 5, 2015, and AirNav.com (AirNav.com 2017) (Appendix E), no airports are located within two nautical miles of the site. The closest airport to the Site is the Oxnard Airport, which is approximately 2.4 nautical miles west of the site. In addition, the Camarillo Airport is located approximately 3.2 nautical miles east of the site. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

Based on review of data from AirNav.com, the site is located within two nautical miles of a heliport. The St John's Regional Medical Center Heliport is located approximately 0.6 nautical miles north of the site (AirNav.com 2017). This heliport is not identified as a primary noise source in the City of Oxnard's Noise Element. Therefore, this heliport would not result in a safety hazard or excessive noise for people residing or working in the project area. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The project site is not located in or near a state responsibility area, nor is it within lands classified as very high fire hazard severity zones. Therefore, project impact is less than significant, and this issue will not be discussed further in the EIR.

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. The *Ventura County Community Wildfire Protection Plan* (Ojai Valley Fire Safe Council 2010) (VCCWFPP) was created in accordance with Healthy Forest Restoration Act (HFRA) (enacted by the U.S. Congress in 2003) to serve as a Community Wildfire Protection Plan (CWPP) to protect communities at risk from wildland fires in Ventura County. The VCCWFPP defines an "at risk community" for wildland fires as:

- One that is listed in the notice entitled "Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire";
- A community in which conditions are conducive to a large-scale wildland fire disturbance event; and
- A community for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

The VCCWFPP does not identify the City of Oxnard as a "at risk community" for wildland fires. Therefore, project impact would be less than significant and this issue will not be discussed further in the EIR.

2.4.10 HYDROLOGY AND WATER QUALITY

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	X			
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	X			
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	X			
	i.) result in substantial erosion or siltation on- or off-site;	X			
	ii.) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	X			
	(iii.) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	X			
	(iv.) impede or redirect flood flows?	X			
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	X			
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	X			

Discussion:

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Potentially Significant Impact. The project would need to connect to a sanitary sewer main which conveys domestic wastewater to the Oxnard Wastewater Treatment Plant (OWTP). The OWTP, owned and operated by the City of Oxnard, is a secondary treatment facility located at 6001 South Perkins Road, Oxnard, California (Oxnard Public Works 2015). The OWTP treats and discharges wastewater pursuant to National Pollutant Discharge Elimination System Order No. R4-2013-0094, adopted by the Los Angeles Regional Water Quality Board on June 6, 2013. The project would generate domestic wastewater from restroom facilities, which would be treated by the OWTP. The construction and operational impacts of the project will be in accordance with a Construction General

Permit Storm Water Pollution Prevention Plan (SWPPP). Studies including sewer calculations, a Preliminary Drainage Report, and a Preliminary Water Demand Analysis are being prepared. Therefore, this issue will be discussed further in the EIR.

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Potentially Significant Impact. The proposed project is designed to meet the educational and recreational needs of students onsite. Stormwater improvements are proposed as part of the project, such as a High Density Polyethylene (HPDE) storm drain system and two points of stormwater pre-treatment, infiltration, and detention. Studies including sewer calculations, a Preliminary Drainage Report, and a Preliminary Water Demand Analysis are being prepared. Therefore, this issue will be discussed further in the EIR.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner that would:

(i) result in substantial erosion or siltation on- or off-site;

Potentially Significant Impact. The project site is not located near the Santa Clara River or perennial surface streams. Therefore, the proposed project would not alter the course of a stream or river. However, the project would result in a change in the runoff patterns in the local area because the site would be converted from agricultural uses to educational uses, thereby increasing the amount of hardscape on the site and potentially increasing runoff in the area. Therefore, the projects long-term effects on erosion or siltation will be discussed further in the EIR.

(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Potentially Significant Impact. The project is not located near the Santa Clara River or perennial surface streams. Therefore, the proposed project would not alter the course of a stream or river. However, the project would result in a change in the runoff patterns in the local area because the site would be converted from agricultural uses to educational facilities, thereby increasing the amount of hardscape on the site and potentially increasing runoff in the area. The proposed project includes stormwater improvements such as a High Density Polyethylene (HPDE) storm drain system and two points of stormwater pre-treatment, infiltration, and detention. A Preliminary Drainage Report is being prepared and this issue will be discussed further in the EIR.

(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

Potentially Significant Impact. The project site is not located near the Santa Clara River or perennial surface streams. Therefore, the proposed project would not alter the course of a stream or river. However, the project would result in a change in the runoff patterns in the local area because the site would be converted from agricultural uses to educational facilities, thereby increasing the amount of hardscape on the site and potentially increasing runoff in the area. While multiple stormwater improvements are proposed as part of the project, analysis of potential impacts on downstream drainage system capacity is necessary. A Preliminary Drainage Report is being prepared and this issue will be discussed further in the EIR.

(iv) impede or redirect flood flows?

Potentially Significant Impact. The project site is located in the southern area of the Santa Clara River flood plain. According to the FEMA Flood Insurance Rate Map No. 06111C0910E the Western half of the project site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain, while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than

one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA 2010). The drainage path of the site post-construction, including potential flood flows, requires further analysis. A Preliminary Drainage Report is being prepared and this issue will be discussed further in the EIR.

d. Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Potentially Significant Impact. The project site is located in the southern area of the Santa Clara River flood plain. According to the FEMA Flood Insurance Rate Map No. 06111C0910E the Western half of the project site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain, while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA 2010). Figure 2.6 of the *Ventura County General Plan Hazards Appendix* indicates the project site is not located in an area subject to inundation by tsunami or seiche (Ventura County 2013). Figure 2.11.2 of the *Ventura County General Plan Hazards Appendix* indicates there are four major reservoirs in the Santa Clara River watershed upstream of the project site that are FEMA high hazard dams that would inundate the project area in the event of a reservoir failure (Ventura County 2013). During an inundation event, all pollutants stored at the project site are at risk of release to all areas downstream of the project site. Further analysis of potential pollutants on site and potential flood flows is necessary. Therefore, this issue will be discussed further in the EIR.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Potentially Significant Impact. The water supply needed for the long-term function of the project requires further evaluation. Therefore, the projects effect on the current water quality control plan or sustainable groundwater management plan will be discussed further in the EIR.

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2.4.11 LAND USE AND PLANNING

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Physically divide an established community?			X	
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	X			

Discussion:

a. Would the project physically divide an established community?

Less Than Significant Impact. With implementation of the proposed project, access to the surrounding community would still be available via the existing roadway network including Camino Del Sol and Rose Avenue. In addition, the proposed new Central Road would improve community roadway circulation by providing a new road to the north of the school campus that would connect the existing Camino De La Luna to Jacinto Drive. Therefore, the proposed project would not physically divide an established community and project impact would be less than significant. This issue will not be discussed further in the EIR.

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Potentially Significant Impact. OUHSD proposes to change the NECSP designations for the project site to Public Education and as needed Civic Center Use. The District would process a General Plan Amendment and Specific Plan Amendment through the City of Oxnard. Therefore, this issue will be evaluated further in the EIR.

2.4.12 MINERAL RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				X

Discussion:

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. Minerals are defined as any naturally occurring chemical elements or compounds formed from inorganic processes and organic substances. The California Surface Mining and Reclamation Act of 1975 (SMARA) requires that all cities address significant mineral resources, classified by the State Geologist and designated by the State Mining and Geology Board, in their General Plans.

According to the Oxnard 2030 General Plan, the project site is not within a known mineral resource area; important mineral / sand / gravel deposits are primarily located along the Santa Clara River channel, along Route 101 (Ventura Freeway) corridor, and along the eastern edge of the City extending as far west as Oxnard Boulevard in several areas (City of Oxnard 2011).

According to the California Department of Conservation, the project site is in a Mineral Resource Zone (MRZ) MRZ-3 and MRZ-4. MRZ-3 zones are defined as areas containing known or inferred aggregate resources of undetermined significance and MRZ-4 zones are defined as areas were available information is inadequate for assignment to any other MRZ zone (California Department of Conservation 2011).The State Mining and Geology Board designates Mineral Resource Zones (MRZ) and areas in which minerals have been found in substantial quantities. MRZ-2 areas are defined as areas where there are, or there is likely to be, mineral deposits. The project site is within an MRZ-3 and MRZ-4 area. There are no MRZ-2 areas within the project boundary; additionally, mining operations are generally not considered a compatible use with residential and school land uses. Therefore, no project impacts to mineral resources would occur, and this issue will not be discussed further in the EIR.

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The Mineral Resources land use designation previously included in the Oxnard 2020 General Plan has been discontinued in the Oxnard 2030 General Plan; there are no mineral resource recovery sites delineated within the Oxnard 2030 General Plan or the Northeast Community Specific Plan (City of Oxnard 2011, City of Oxnard 1993). Therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

2.4.13 NOISE

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:					
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	X			
b.	Generation of excessive groundborne vibration or groundborne noise levels?	X			
c.	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	

Discussion:

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact. The existing noise environment consists of vehicle noise from local street traffic on Camino Del Sol, Rose Avenue, and Cesar Chavez Drive, nature sounds, and community sounds. Other noise sources include the Union Pacific Railroad line that is located 0.6 miles south of the project site. Agriculture land use is located north of the project site and residential land use is located to the east, south, and west of the project site. Rio Rosales Elementary School is also located to the east. No ambient noise monitoring data have been identified for the Project vicinity, but existing land use patterns and street patterns as well as the existing noise contours published in the City of Oxnard's Noise Element indicate that the existing ambient noise levels at the proposed project site should be at or below 60 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL).

A technical noise analysis will be prepared to evaluate the potential impacts from the construction and operation of the proposed project related to applicable noise standards. The results will be documented in the noise section of the EIR. The analysis will also evaluate the potential construction noise impacts to Rio Rosales Elementary School since construction of the proposed project could occur during school hours. Therefore, this issue will be discussed further in the EIR.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Potentially Significant Impact. Operation of the school would not generate perceivable vibration levels; however, construction of the classroom buildings and site grading would require the use of equipment that could generate significate vibration levels. Possible sources of vibration may include bulldozers, dump trucks, backhoes, rollers, and other construction equipment that produces vibration. Therefore, this issue will be discussed further in the EIR.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less Than Significant Impact. California Code of Regulations Title 21 requires the State Department of Transportation to review any proposed school site that is located within 2 nautical miles of a runway. There are no airports within two nautical miles of the site. Based on review of a Google Earth Image date January 5, 2015, and AirNav.com (AirNav.com 2017) (Appendix E), no airports are located within two nautical miles of the site. The closest airport to the site is the Oxnard Airport, which is approximately 2.4 nautical miles west of the site. In addition, the Camarillo Airport is located approximately 3.2 nautical miles east of the site. This issue will not be discussed further in the EIR.

Based on review of data from AirNav.com, the site is located within two nautical miles of a heliport. The St John's Regional Medical Center Heliport is located approximately 0.6 nautical miles north of the Site (AirNav.com 2017). This heliport is not identified as a primary noise source in the City of Oxnard's Noise Element. Therefore, this heliport would not result in a safety hazard or excessive noise for people residing or working in the project area. This issue will not be discussed further in the EIR.

2.4.14 POPULATION AND HOUSING

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?			X	
b.	Displace a substantial number of existing people or housing units, necessitating the construction of replacement housing elsewhere?				X

Discussion:

a. Would the project induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

Less Than Significant Impact. The proposed project is needed to accommodate existing and anticipated future enrollment in OUHSD. The project site is located within a developed urban environment. Access to the school would be provided from Rose Avenue, Camino Del Sol, and a proposed new "Central Road" to the north of the project site that would connect to the existing Camino De La Luna and Jacinto Drive. While the educational facilities would be contained within the project site; the City may require additional street and sidewalk improvements to service the proposed project. As noted below in section 3.4.17, a traffic study is being prepared for the proposed project and potential impacts related to traffic evaluated in the EIR. However, given the location of the project site within an existing developed urban environment these roadway improvements are not anticipated to be growth inducing.

Increased demand for school services is generally linked to changes in local land use patterns such as the construction of new dwelling units and the generation of new jobs that encourages new people to move into the area. No housing is proposed as a part of the project. The proposed project would generate some new jobs. Additional staff would include teachers, administrative, and support staff. Most or all of the additional staff could be hired from the existing qualified applicant pool already residing within or near the District. However, if teachers or other staff are hired outside the District area to fill a specific role(s), it may result in a few new people and their families moving into surrounding neighborhoods, thus creating a slight increase in the local population. Therefore, project impact would be less than significant and this issue will not be discussed further in the EIR.

b. Would the project displace a substantial number of existing people or housing units, necessitating the construction of replacement housing elsewhere?

No Impact. The project site is vacant undeveloped land that does not contain any housing. No people would be displaced requiring replacement housing. Therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

2.4.15 PUBLIC SERVICES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
	i.) Fire protection?	X			
	ii.) Police protection?	X			
	iii.) Schools?				X
	iv.) Parks?	X			
	v.) Other public facilities?			X	

Discussion:

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

I. Fire Protection

Potentially Significant Impact. The proposed project would be designed and constructed to meet required fire protection standards including adequate emergency access. As a public school, the proposed project would be anticipated to generate similar types of calls as the residential uses located nearby. Nonetheless, the EIR will evaluate the potential physical impacts on the environment for fire protection services and this issue will be analyzed further in the EIR.

II. Police Protection

Potentially Significant Impact. The proposed project would be designed and constructed to meet required fire protection standards including adequate emergency access. As a public school, the proposed project would be anticipated to generate similar types of calls as the residential uses located nearby. Nonetheless, the EIR will evaluate the potential physical impacts on the environment for police protection services and this issue will be analyzed further in the EIR.

III. Schools

No Impact. The proposed project includes educational facilities for a new High School that is needed to accommodate existing and anticipated future enrollment in the OUHSD. The increased school capacity with the proposed project would have a beneficial impact on public school facilities. Therefore, no adverse project impact on public school facilities would result and this issue will not be further analyzed in the EIR.

IV. Parks

Potentially Significant Impact. The proposed project includes educational facilities designed to meet the educational and recreational needs of grades 9-12 students' onsite. Recreational facilities to be provided on campus include a stadium, a variety of play fields, hard courts, and a pool. Of these, approximately 14.2-17 acres of playfields are proposed for joint-use with the City to provide additional recreation opportunities to the community as well as consideration for civic center use of other facilities on site. This issue will be evaluated further in the EIR.

V. Other Public Facilities

Less Than Significant Impact. The proposed project would not result in substantial increased demand for other public facilities such as libraries. The proposed project is designed to meet the educational and recreational needs of grades 9-12 students' onsite. Therefore, project impact is less than significant, and this issue will not be further analyzed in the EIR.

2.4.16 RECREATION

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	X			

Discussion:

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less Than Significant Impact. The City of Oxnard Recreation & Community Services Department provides park and recreation services in the City. The proposed project is not dependent upon City parks for student recreational needs. The proposed project is designed to meet the educational and recreational needs of grades 9-12 students' onsite. Recreational facilities to be provided on campus include a stadium, a variety of play fields, hard courts, and a pool. Therefore, project impact would be less than significant, and this issue will not be further analyzed in the EIR.

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Potentially Significant Impact. The proposed project includes educational facilities designed to meet the educational and recreational needs of grades 9-12 students' onsite. Recreational facilities to be provided on campus include a stadium, a variety of play fields, hard courts, and a pool. Of these, approximately 14.2 – 17 acres of playfields are proposed for joint-use with the City to provide additional recreation opportunities to the community as well as consideration for civic center use of other facilities on site. Potential environmental impacts associated with the proposed project, including recreational areas, are discussed by environmental resources topic throughout this Initial Study (IS). Per CEQA Guidelines Section 15378, a "project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. Therefore, issues identified for further analysis in the EIR will include analysis for the whole project including potential impacts related to new recreational facilities.

2.4.17 TRANSPORTATION

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	X			
b.	Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	X			
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
d.	Result in inadequate emergency access?	X			

Discussion:

a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Potentially Significant Impact. A traffic study will be conducted for the proposed project. As part of this study, traffic counts at study area intersections will be collected for AM and PM peak hours. Trip generation estimates will be determined for the project site based on anticipated enrollment and standard trip generation rates and other sources. The trip generation will be coordinated with City staff. Trips will be distributed based on school routes and student zip code information. The traffic study will calculate intersection levels of service for existing conditions, cumulative conditions and 2030 General Plan conditions with and without the proposed project. The traffic study will identify feasible mitigation measures where applicable. The potential for the proposed project to conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system will be evaluated further in the EIR based on the results of the traffic study.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Potentially Significant Impact. As noted above, a traffic study is being conducted for the proposed project. Therefore, this issue will be evaluated further in the EIR based on the results of the traffic study.

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Potentially Significant Impact. The proposed project would be designed and constructed to meet required standards including adequate emergency access. A review of project site access and circulation plan, including bicyclist and pedestrian access and safety will be conducted as part of the traffic study. Therefore, this issue will be evaluated further in the EIR.

d. Would the project result in inadequate emergency access?

Potentially Significant Impact. The proposed project would be designed and constructed to meet required standards including adequate emergency access. While no impacts to emergency access are anticipated, a review of project site access will be conducted as part of the traffic study and the results documented in the EIR.

2.4.18 TRIBAL AND CULTURAL RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
	i.) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	X			
	ii.) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	X			

Discussion:

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

I. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

Potentially Significant Impact. The project site is currently used for agriculture. A Phase I Archaeological Survey will be conducted for the project site to determine if prehistoric or historic archaeological deposits are present. Therefore, this issue will be evaluated further in the EIR.

II. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Potentially Significant Impact. A Phase I Archaeological Survey will be conducted for the project site to determine if prehistoric or historic archaeological deposits are present. Therefore, this issue will be evaluated further in the EIR.

2.4.19 UTILITIES AND SERVICE SYSTEMS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	X			
b.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	X			
c.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	X			
d.	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e.	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

Discussion:

a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Potentially Significant Impact. Implementation of the proposed project would require water and wastewater treatment services and other public utility connections. A preliminary water demand memo, hydrology report and sewer report are being prepared for the Maulhardt Ranch property. Therefore, this issue will be evaluated further in the EIR.

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Potentially Significant Impact. Implementation of the proposed project would require water service. A preliminary water demand memo is being prepared for the Maulhardt Ranch property. Therefore, potential impacts to water supply will be evaluated further in the EIR.

c. Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Potentially Significant Impact. Implementation of the proposed project would require wastewater treatment services. A sewer report is being prepared for the Maulhardt Ranch property. Therefore, potential impacts to wastewater treatment capacity will be evaluated further in the EIR.

d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. The proposed project would submit the City of Oxnard Construction and Demolition (C and D) Management Worksheets in compliance with AB 939 for diverting solid wastes during the Construction, Demolition, and Occupancy phases of the project (City of Oxnard 2015). The City of Oxnard is in the process of developing a Zero Waste strategic plan and is currently meeting or exceeding state diversion goals for solid waste. The City operates the Del Norte Regional Recycling and Transfer Station, which serves as the central hub of the City's overall solid waste management system and as a regional resource. Waste that is not recycled is disposed of at local landfills, most commonly Toland Road Landfill (City of Oxnard 2017). The Ventura Regional Sanitation District expanded Toland Road Landfill from 135-tons per day to 1,500-tons per day in 1997 to provide Ventura County with approximately 30 years of landfill capacity as of that date (Ventura Regional Sanitation District 2016). Therefore, the proposed project would not generate solid waste in excess of State or local standards, in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and project impact would be less than significant. This topic will not be discussed further in the EIR.

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. The proposed project would not generate substantial amounts of solid waste and the project would comply with applicable federal, state, and local statutes and regulations related to solid waste. The proposed project would submit the City of Oxnard Construction and Demolition (C and D) Management Worksheets in compliance with AB 939 for diverting solid wastes during the Construction, Demolition, and Occupancy phases (City of Oxnard 2015). Therefore, project impact would be less than significant, and this issue will not be discussed further in the EIR.

2.4.20 WILDFIRE

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b.	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

Discussion:

a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The project site is not located in or near a state responsibility area; the site is within the incorporated Oxnard local responsibility area (CalFire 2007). The project site is within a Moderate Fire Hazard Severity Zone and is not within a determined "Community at Risk." Within Ventura County, a "Community at Risk" is defined as a community within close proximity to chaparral vegetation, that if ignited, would present a high or very high hazard to nearby homes, infrastructure, and/or assets (Ojai Valley Fire Safe Council 2010). The project site is not located in or near a state responsibility area, nor is it within lands classified as very high fire hazard severity zones; therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

b. Would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. The project site is not located in or near a state responsibility area, nor is it within lands classified as very high fire hazard severity zones. There are no factors that would exacerbate wildfire risks, therefore no project impacts would occur, and this issue will not be discussed further in the EIR.

c. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The project site is not located in or near a state responsibility area, nor is it within lands classified as very high fire hazard severity zones. The urban infrastructure installation/expansion associated with the proposed project would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. Therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

d. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The project site is not located in or near a state responsibility area, nor is it within lands classified as very high fire hazard severity zones. Surface elevations at the project site are approximately 54-60 feet above MSL, and the proposed project would not expose people or structures to significant risks such as downstream flooding or landslides. Therefore, no project impacts would occur, and this issue will not be discussed further in the EIR.

2.4.21 MANDATORY FINDINGS OF SIGNIFICANCE

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X			
b.	Have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	X			
c.	Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	X			

Discussion:

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant Impact. As noted in this Initial Study analysis, several resource issues will be analyzed further in the EIR. While it is unlikely that the proposed project would substantially degrade the environment for biological or cultural resources, a clear determination cannot be made at this time and this issue will be analyzed further in the EIR.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).

Potentially Significant Impact. As noted in this Initial Study analysis, several resource issues will be analyzed further in the EIR. The potential for the proposed project, when combined with other foreseeable projects in the area, to result in cumulative impacts will be evaluated further in the EIR.

c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact. The proposed project would be designed and constructed to meet required safety standards. As identified in this Initial Study, several resource issues will be analyzed further in the EIR. Therefore, a clear determination cannot be made at this time and this issue will be analyzed further in the EIR.

3.0 LIST OF PREPARERS

LEAD AGENCY

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309 South K Street
Oxnard, CA 93030

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4.0 REFERENCES

AirNav.com

2017 https://www.airnav.com/cgi-bin/airport-search, September 15.

California Department of Conservation, California Geological Survey (CGS)

2002a *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

2002b *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map.* December 20.

2008 *Special Publication 117A Guidelines for Evaluating and Mitigating Seismic Hazards in California.*

2011 Interactive Map. Accessed February 1, 2019. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/SR_145/SR_145_Plate1-15.pdf.

2018 *Special Publication 42, Revised 2018. Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*.

California Department of Conservation, Division of Mines and Geology (CDMG)

1978 *State of California, Special Study Zones, Saticoy Quadrangle Official Map*. July 1.

1998a *Earthquake Fault Zones, Camarillo Quadrangle Official Map, Ventura County, California*. May 1.

1998b *Earthquake Fault Zones, Santa Paula Quadrangle, Official Map Ventura County, California*. May 1.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2001 Map 214. February 14.

2017 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.

California Department of Education (CDE)

2007 *Guidance Protocol for School Site Pipeline Risk Analysis.*

California Department of Fish and Wildlife (CDFW)

2017 *California Regional Conservation Plans.* October 2017. Accessed January 28, 2019: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline.

2019 *California Natural Diversity Database. Oxnard, Ventura, Saticoy, Santa Paula, Camarillo, Point Mugu Quadrangles*. Accessed January 25, 2019: http://www.wildlife.ca.gov/Data/BIOS/.

California Department of Forestry and Fire Protection (CalFire)

2007 Fire and Resource Assessment Program (FRAP). *Fire Hazard Severity Zones in State Responsibility Area (SRA), Ventura County*. Accesses February 1, 2019: http://frap.fire.ca.gov/webdata/maps/ventura/fhszs_map.56.pdf.

California Department of Transportation (Caltrans)

2018 Officially Designated State Scenic Highways and Historic Parkways. Accessed October 2018, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

California Department of Water Resources (CDWR)

1975a *Inundation Map for Castaic Dam.* February 28.

1975b *Inundation Map for Pyramid Dam.*

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2018a *Approval of Phase I Environmental Assessment Report, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard, Ventura County (Site Code 304669)*. April 24.

2018b *Human Health Risk Assessment Note, HERO Note Number 3, DTSC-modified Screening Levels (DTSC-SLs)*. June.

2018c *Adequacy of Draft Preliminary Environmental Assessment Report for Public Comment, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669)*. December 27.

2019 HS # 8 (60002371). Accessed February 2019, https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60002683.

City of Oxnard

1993 Planning Division of the City of Oxnard Community Development Department. *Northeast Community Specific Plan, City of Oxnard.* December 1993. Accessed January 28, 2019: https://www.oxnard.org/wp-content/uploads/2016/08/NECSP3.pdf.

2006 City of Oxnard General Plan Draft Background Report. April.

2009 City of Oxnard 2030 General Plan Program Environmental Report (SCH 2007041024), recirculated Draft November 2009.

2011 *2030 General Plan Goals and Policies* (2030 General Plan). October
Accessed January 28, 2019: https://www.oxnard.org/wp-content/uploads/2017/06/Oxnard-2030-General-Plan-Amend-06.2017-SM.pdf.

2012 East Village Phase III Annexation Final Environmental Impact Report. August.

2014 General Plan 2030 Land Use Map, Revised 04/05/2016.

2015 *Environmental Resources – C and D Worksheets*. Accessed February 4, 2019: https://www.oxnard.org/city-department/public-works/environmental-resources/c-d-worksheets/.

2015 Public Works Division. City Water Supply. Accessed November and December 2015: http://publicworks.cityofoxnard.org/14/99/478/.

2017 City of Oxnard CEQA Guidelines, May 2017. Accessed February 4, 2019: https://www.oxnard.org/wp-content/uploads/2017/06/CEQA-Guidelines-Color.pdf.

2017 Current FEMA Levee Certification Status – March 2017. Ventura County Watershed Protection District Provisionally-Accredited Levees (PAL). Accessed January 24, 2019. https://www.oxnard.org/wp-content/uploads/2017/03/VCWPD-3.5-Million-LLAP-Grant-Acceptance-BL-InfoGraphic-3-14-17.pdf.

County of Ventura
2005 *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California*. March.

2013 *Ventura County General Plan Hazards Appendix.* 2008, Amended October 22, 2013.

Earth Systems Pacific (ESP)
2018 *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California.* August 31.

Environmental Data Resources, Inc. (EDR)
2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9.

Federal Emergency Management Agency (FEMA)
2010 Flood Insurance Rate Map No. 06111C0910E. January 20.

Google Earth Pro
2018 Accessed January 24, 2019. Version 7.3.2.5491.

Gutierrez, Carlos I., Siang, Tan S. and Clahan, Kevin B.
2008 *Geologic Map of the East Half of the Santa Barbara 30' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

International Code Council (ICC)
2017 2016 California Building Code (CBC). January 1.

Jennings, Charles W.
1994 *Fault Activity Map of California and Adjacent Areas,* California Department of Conservation, Division of Mines and Geology California Geologic Data Map Series Map No. 06.

Jennings, Charles W, William A Bryant, and George Saucedo.
2010 *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California.*

Los Angeles Department of Water and Power (LADWP)
2015 *Inundation Map of Boquet Dam.*

Norris, Robert M., and Robert W. Webb
1976 *Geology of California*, Second Edition, John Wiley & Sons, Inc., New York.

Ojai Valley Fire Safe Council
2010 *Ventura County Community Wildfire Protection Plan*. March 9. Accessed February 1, 2019: http://vcfd.org/images/ready-set-go/VCCommunityWildfireProtectionPlan.pdf.

Placeworks
2019 *Technical Memorandum, Maulhardt Ranch High School No. 8 Water Pipeline Safety Hazard Assessment TETR-02.0.* January 14.

Tetra Tech
2018a *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California*. March 29.

2018b *Geohazard Assessment/Geotechnical Investigation, High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard, California*. October 11.

2018c *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California 93030*. January 31.

2019 *Technical Memorandum. Supplemental Site Investigation, Proposed High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California*. November 9.

Turner, John, and Mike Mukae

1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

United Water Conservation District

1974 *Inundation Map of Santa Felicia Dam*. January.

U.S. Fish and Wildlife Service (USFWS)

2019 *National Wetlands Inventory. Surface Waters and Wetlands.* Accessed January 28, 2019: https://www.fws.gov/wetlands/data/mapper.html

U.S. Geological Survey (USGS)

2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program

2018a U.S. Seismic Design Maps. https://earthquake.usgs.gov/hazards/designmaps/. July.

Ventura County Resource Management Agency (VCRMA)

2019 *Proposed Wildlife Corridors Map.* Accessed January 28, 2019: https://rma.maps.arcgis.com/apps/webappviewer/index.html?id=92c5352af22a44a3a99dd41aa1b8d567.

Ventura Regional Sanitation District

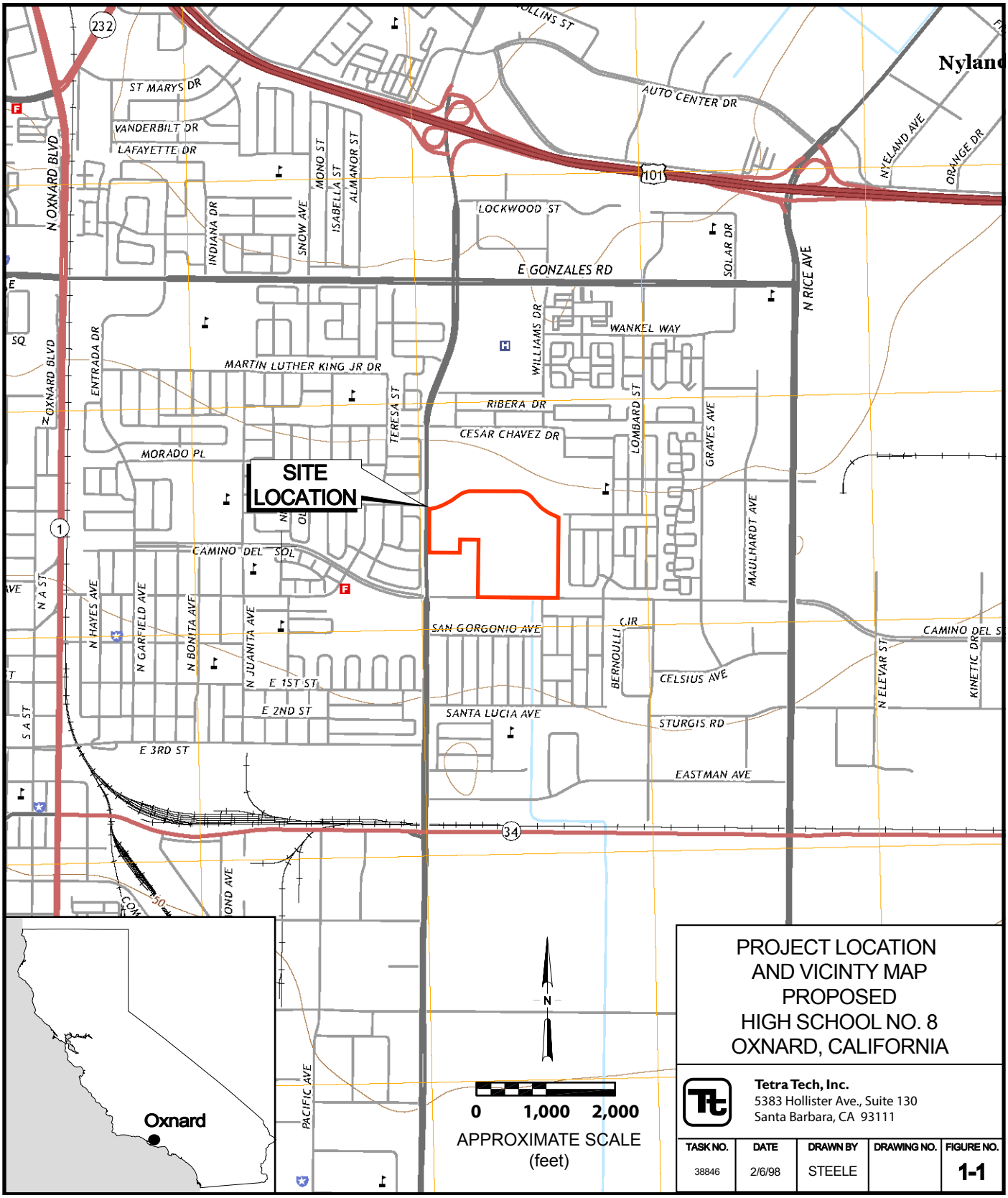
2016 *Comprehensive Annual Financial Report*. Ventura County, California. Accessed February 4, 2019: https://www.vrsd.com/wp-content/uploads/2018/05/VRSD_2016_CAFR.pdf.

Wall, Steve

2017 Personal communication for Southern California Edison (SCE). November 20.

FIGURES

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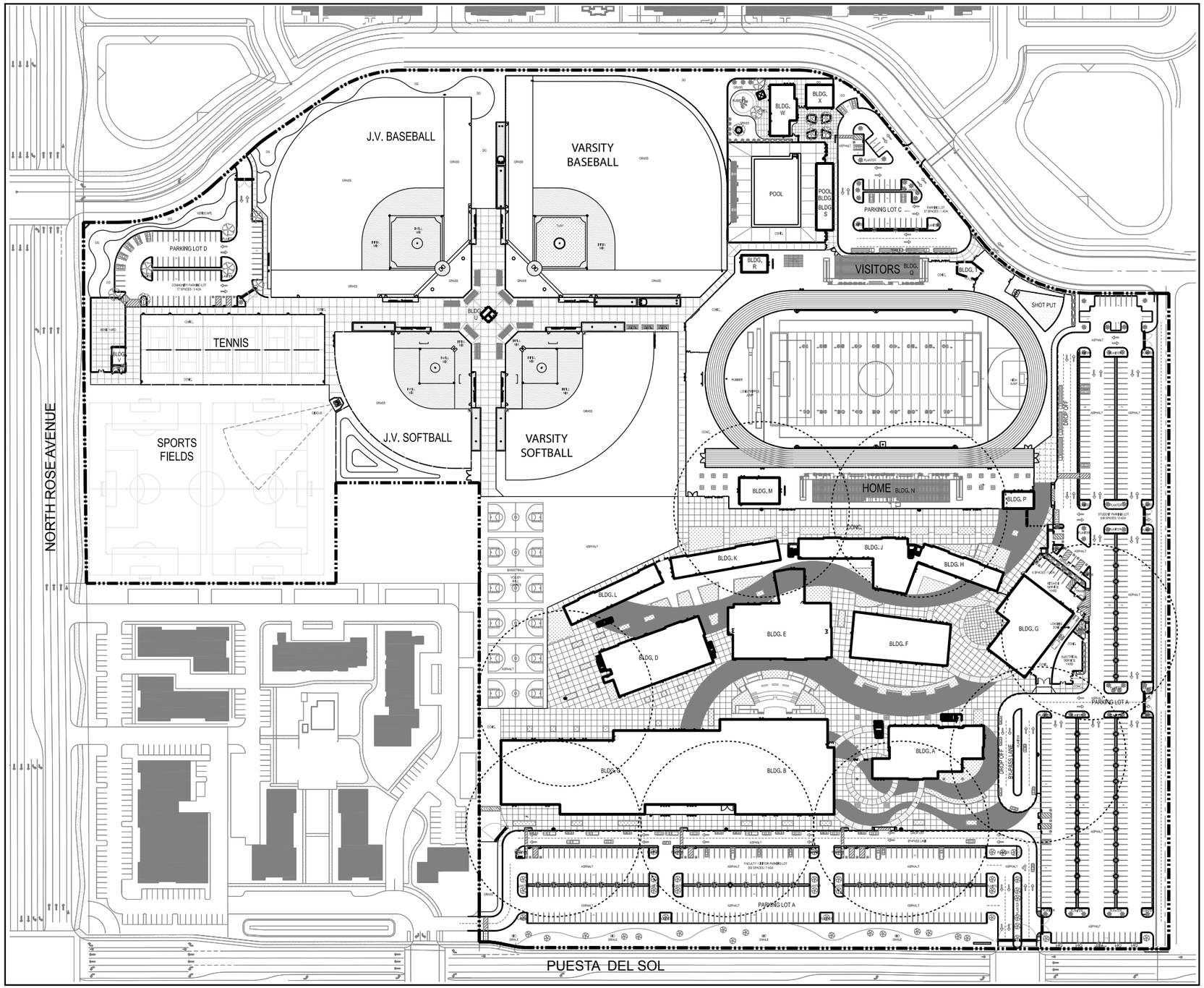
PROJECT LOCATION
AND VICINTY MAP
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
38846	2/6/98	STEELE		1-1

Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)

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Source: WLC Architects February 11, 2019

LEGEND

SITE BOUNDARY

N

0 50 100

APPROXIMATE SCALE
(feet)

CONCEPTUAL SITE MAP
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
38846	2/11/19	STEELE		1-2

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OXNARD UNION HIGH SCHOOL DISTRICT

Public Scoping Meeting for the New OUHSD High School No. 8 Project Environmental Impact Report

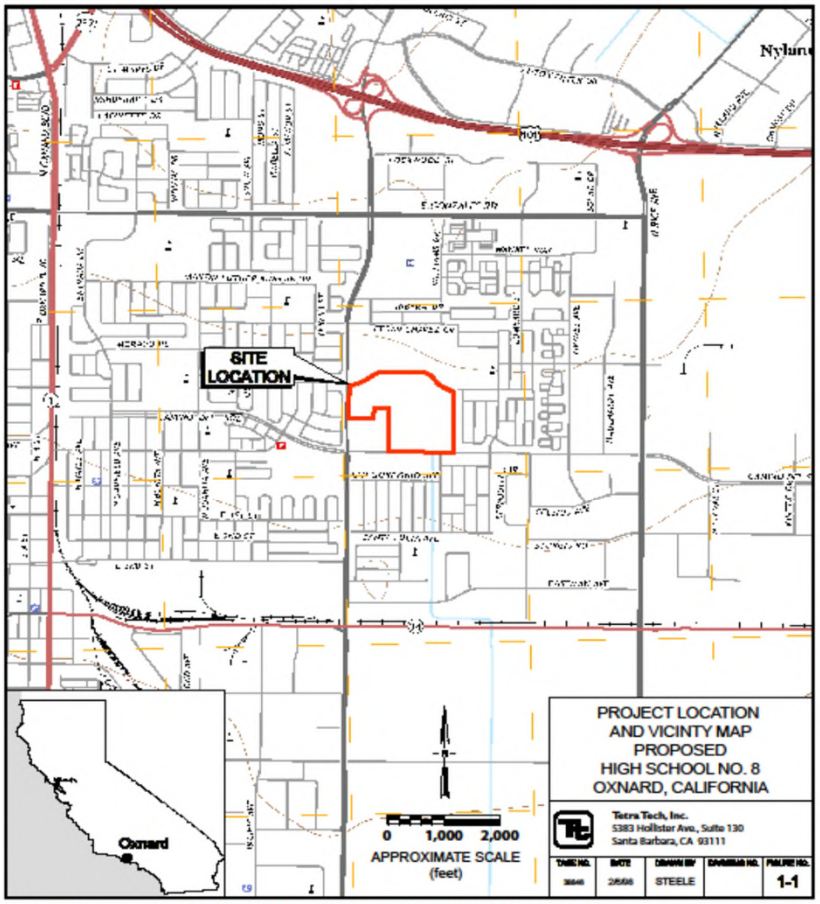
MARCH 6, 2019 6:00 PM

Scoping Meeting Agenda:

- Introductions
- Description of Proposed Project
- Summary of the Environmental Review Process
- Public comments

Project Location

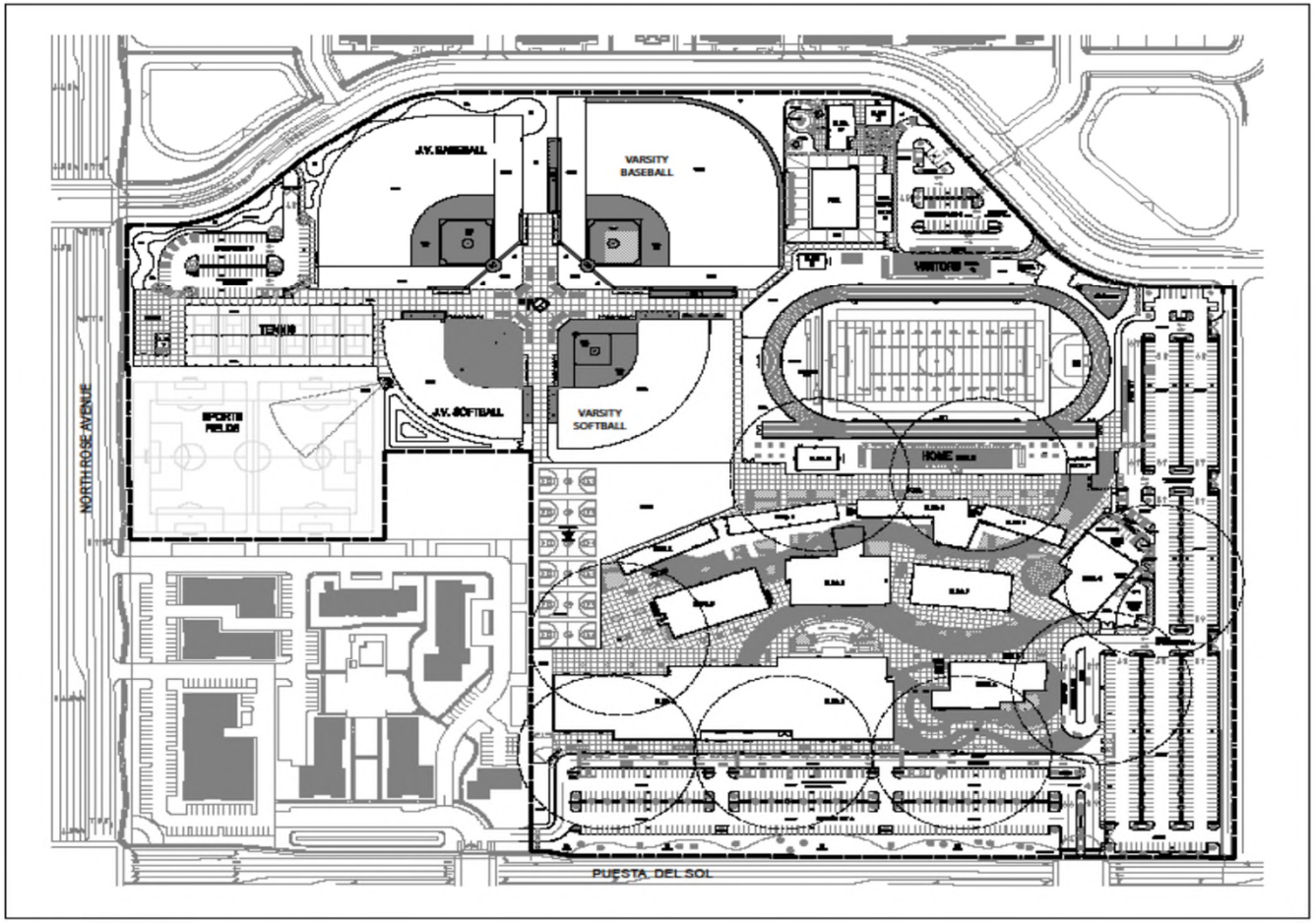
- Located northeast of Camino Del Sol and Rose Avenue, Oxnard, CA.
- The project site includes approximately 46.8-acres of the Maulhardt Ranch which is a 107.25-acre property.
- The project site has been used for cultivation of row crops from as early as 1869 to the present. Currently used for cultivation of strawberries.



Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)

Proposed Project

- OUHSD proposes to construct and operate a new state of the art High School to accommodate 2,500 school students in grades 9-12.
- The school facilities are designed to meet the educational and recreational needs of students in grades 9-12 onsite.
- In total, the proposed project would comprise approximately 211,115 square feet (sq. ft.) of building and structures and provide 806 parking spaces onsite.
- The proposed project includes utility connections including water, sewer, gas, electric, data/telecommunications, and storm water collection.



Source: WLC Architects February 11, 2019

LEGEND

SITE BOUNDARY

0 100 200

APPROXIMATE SCALE
(feet)

CONCEPTUAL SITE MAP
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

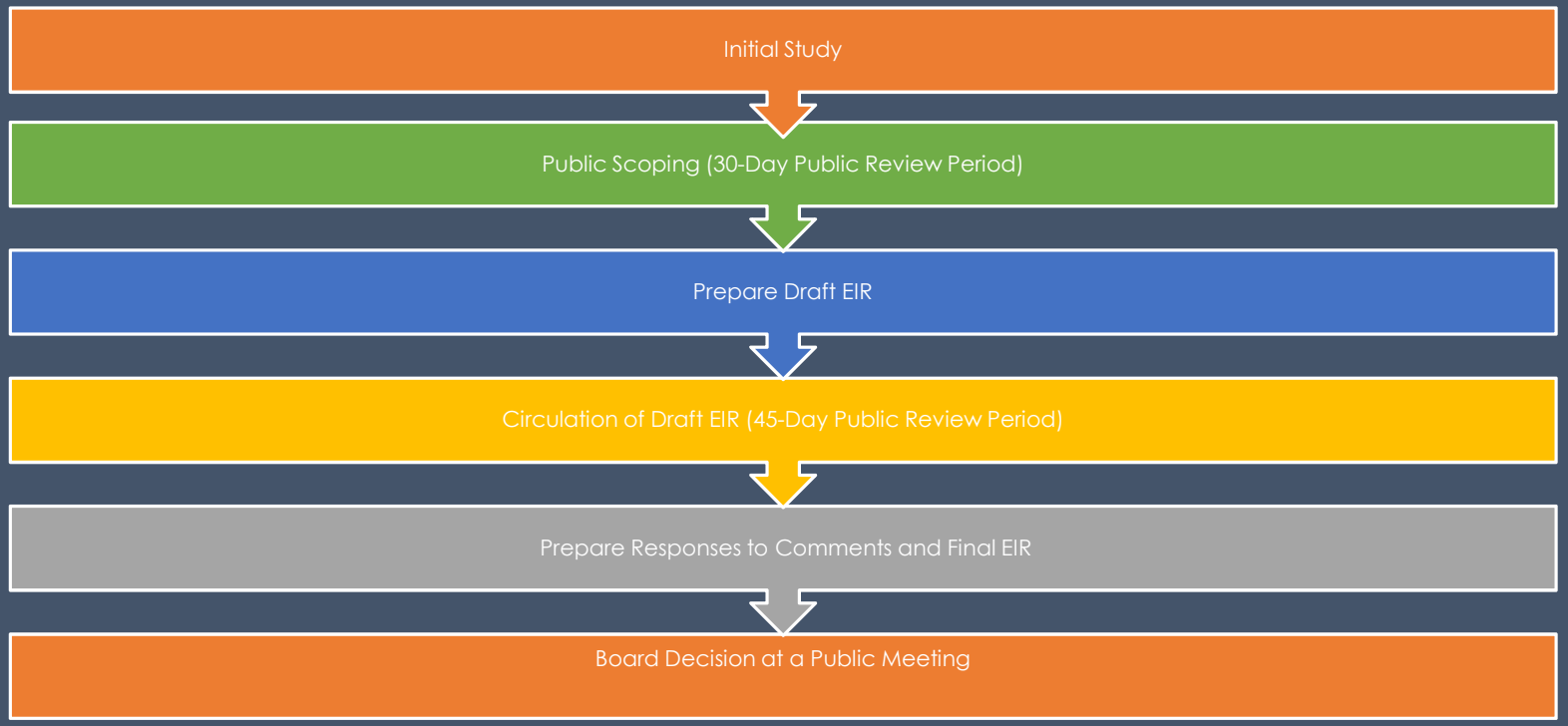
Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
38846	2/20/19	STEELE		1-2

Proposed Project

- The project includes a variety of play fields, hard courts, and a pool. Approximately 14.2 -17 acres of play fields are proposed for joint-use with the City to provide additional recreational opportunities as well as consideration for civic center use of other school facilities on site.
- OUHSD would process a General Plan Amendment (GPA) and Specific Plan Amendment (SPA) through the City of Oxnard.
- OUHSD proposes to change the Northeast Community Specific Plan (NECSP) designations for the project site to Public Education and Civic Center Use.

Environmental Review Process



Initial Study

- OUHSD has prepared an Initial Study and determined that an Environmental Impact Report (EIR) is required.
- The EIR will be prepared to evaluate potentially significant impacts related to the following issues:
  - Aesthetics
  - Agriculture and Forestry Resources
  - Air Quality
  - Biological Resources
  - Cultural Resources
  - Energy
  - Geology/Soils
  - Greenhouse Gas Emissions
  - Hazards/Hazardous Materials
  - Hydrology/Water Quality
  - Land Use Planning
  - Noise
  - Public Services
  - Recreation
  - Transportation/Traffic
  - Tribal Cultural Resources
  - Utilities/Service Systems

Public Scoping

- The Notice of Preparation (NOP) comment period began on February 19, 2019 and ends on March 20, 2019.
- The public scoping process is intended to provide OUHSD (as the Lead Agency for CEQA) with the information the public feels is necessary to establish the appropriate scope for preparing the Environmental Impact Report (EIR).
- Please provide your comments, input, suggestions for project alternatives, and any other pertinent information that may enable us to prepare a comprehensive EIR for the proposed project.

Public Comments

- In addition to speaking at today's meeting; comments can also be submitted in writing:

Mr. Jeffrey Weinstein
Assistant Superintendent, Business Services
Oxnard Union High School District
309 South K Street,
Oxnard, CA 93030

Copy to: Mr. Joel Kirschenstein
President
Sage Realty Group, Inc.
2945 Townsgate Road, Suite 200
Westlake Village, CA 91361

- Please submit written comments by **March 20, 2019**. Due to the time limits mandated by State Law, your response must be sent at the earliest possible date but not later than 30 days after receipt of the Notice of Preparation (NOP).
- Please call Randy Westhaus, Tetra Tech at (805) 681-3101 or (805) 455-0603 (cell) if you have any questions.

DEPARTMENT OF TRANSPORTATION
DISTRICT 7 – Office of Regional Planning
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 897-9140
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TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

March 20, 2019

Jeffrey Weinstein
Assistant Superintendent, Business Services
Oxnard Union High School District
309 South K Street,
Oxnard, CA 93030

RE: New High School No. 8 – Notice of Preparation (NOP)
SCH# 2019029101
GTS # 07-VEN-2019-00241
Vic. VEN-101/PM:20.734

Dear Mr. Jeffrey Weinstein:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project's NOP. The Oxnard Union High School District (OUHSD) proposes to construct and operate a new state of the art neighborhood High School to accommodate existing and anticipated future enrollment in the District. The new school facilities are designed to meet the educational and recreational needs of up to 2,500 students in grades 9-12. The proposed project would comprise approximately 211, 115 sq. ft of building and structures and provide 806 parking spaces. In addition, the proposed project includes a variety of recreational areas to accommodate the recreational needs of the students and community. This proposed project includes a variety of play fields, hard courts, and a pool. Of these, approximately 14.2-17 acres of play fields are proposed for joint-use with the City to provide additional recreation opportunities to the community, as well as consideration of civic center used of other facilities onsite.

Caltrans has reviewed the NOP and we are looking forward to reviewing this project's Environmental Impact Report and Traffic Study in the future.

Caltrans is moving towards replacing Level of Service (LOS) with Vehicle Miles Traveled (VMT) when evaluating traffic impact. For any future project, like the proposed EIR, we encourage the Lead Agency to integrate transportation and land use in a way that reduces VMT and Greenhouse Gas (GHG) emissions by facilitating the provision of more proximate goods and services to shorten trip lengths and achieve a high level of non-motorized travel and transit use.

Caltrans seeks to promote safe, accessible multimodal transportation. Methods to reduce pedestrian and bicyclist exposure to vehicles improve safety by lessening the time that the user is in the likely path of a motor vehicle. These methods include the construction of physically separated facilities such as sidewalks, raised medians, refuge islands, and off-road paths and trails, or a reduction in crossing distances through roadway narrowing.

Caltrans recommends the project to consider the use of methods such as, but not limited to, pedestrian and bicyclist warning signage, flashing beacons, crosswalks, signage and striping, be used to indicate to motorists that they should expect to see and yield to pedestrians and bicyclists. Visual indication from

signage can be reinforced by road design features such as lane widths, landscaping, street furniture, and other design elements.

Storm water run-off is a sensitive issue for Los Angeles County. Please be mindful that projects should be designed to discharge clean run-off water. Discharge of storm water run-off is not permitted onto State Highway facilities without a storm water management plan.

As a reminder, any transportation of heavy construction equipment and/or materials which requires use of oversized-transport vehicles on State highways will need a Caltrans transportation permit. We recommend large size truck trips be limited to off-peak commute periods.

If you have any questions regarding these comments, please contact project coordinator Reece Allen, at reece.allen@dot.ca.gov and refer to GTS# 07-VEN-2019-00241.

Sincerely,

MIYA EDMONSON
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

Development Services
Planning Division
214 South C Street
Oxnard, California 93030
(805) 385-7858
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CITY OF OXNARD CALIFORNIA

March 20, 2019

BY E-MAIL AND FIRST-CLASS MAIL

Oxnard Union High School District
Mr. Jeffrey Weinstein
Assistant Superintendent, Business Services
309 South K Street
Oxnard, CA 93030

RE: New Oxnard Union High School District High School Number 8 Project

The City of Oxnard (City) has received and reviewed the Notice of Preparation (NOP) and Initial Study (IS) of an Environmental Impact Report (EIR) for the proposed new Oxnard Unified High School District (OUHSD) High School No. 8 Project (OUHSD project). This letter provides the City's comments on the NOP and IS.

City of Oxnard NOP Comments

According to the NOP, the OUHSD proposes to construct and operate a new state of the art neighborhood high school to accommodate existing and anticipated future enrollment in the OUHSD. The project site includes approximately 46.8-acres of the Maulhardt Ranch, a 107.25-acre property (APN 214-002-059) located in the City. Access to the project site is provided from Camino Del Sol and Rose Avenue. The new school facilities are designed to meet the educational and recreational needs of up 2,500 students in grades 9-12 onsite. The proposed project would comprise approximately 211,115 square feet (sq.ft.) of building and structures and provide 806 parking spaces on the project site. In addition, the proposed project includes a variety of recreational areas to accommodate the recreational needs of the students and community. This proposed project includes a variety of play fields, hard courts, and a pool. Of these, approximately 14.2 to 17 acres of play fields are proposed for joint-use with the City to provide additional recreation opportunities to the community as well as consideration for civic center use of other school facilities on site. The OUHSD would process a General Plan Amendment (GPA) and Specific Plan Amendment (SPA) through the City of Oxnard. OUHSD proposes to change the Northeast Community Specific Plan (NECSP) designations for the project site to Public Education and Civic Center Use.

The City is currently processing a Pre-Application that includes the following development:

PLANNING AREA	ACREAGE	PROPOSED DEVELOPMENT
A: Urban	43.7	750 to 900 multifamily residential units (apartments, condominiums,

Village		townhomes, and/or tri/quad-plex), a 2-acre neighborhood commercial center, 5.4-acre expansion of East Village Park and 3.1 acres of expanded street frontage paseos and interior paseos, roadways and associated improvements
B: High School	49.75	A 2,300 student high school campus and associated sports and recreation facilities (20.3 acres proposed for scheduled use by community groups and athletic organizations outside of regular school hours pursuant to the Civic Center Act Agreement), retention and/or adaptive reuse of the Maulhardt Barn, and .4 acres of expanded street frontage designed as a paseo, roadways and associated site improvements.
C: Urban Village	10.65	150 to 200 affordable multifamily residential units (apartments and townhomes), a 1-acre park designed around the Maulhardt Farmhouse (cultural resource), 2.1 acres of expanded street frontage designed as paseos and interior paseos.
Total	107 (gross)	900 to 1,100 multifamily residential units, 6.4 acres of public parks, 6.3 acres of paseos, 20.3 acres of recreational facilities and parking areas for scheduled use by community groups and athletic organizations outside of regular school hours pursuant to the Civic Center Act Agreement, a 2,300 student high school, a 2-acre neighborhood commercial shopping center, plus associated streets, sidewalks, etc.

The Pre-Application project will require filing of a General Plan Amendment, Specific Plan Amendment, Zone Change, Tentative Subdivision Map, and respective development entitlement permit(s). Additionally, the Pre-Application project is located within a designated Urban Village identified in the City's 2030 General Plan as 'East Village Phase III' and the project shall be designed to meet the requirements of an Urban Village.

As indicated in the project description submitted to the City, the high school component of the proposed Pre-Application development of the 107.25-acre Maulhardt Ranch property is identified as totaling 49.75 acres; however, the NOP's project description identifies the project site to include 46.8 acres of the Maulhardt Ranch property. Please clarify what the exact size of the proposed high school component is in relation to the Maulhardt Ranch property.

California Environmental Quality Act (CEQA) Statute & Guidelines/California Public Resources Code

CEQA Guidelines Section 15130(a) requires that an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065 (a)(3). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. CEQA Guidelines Section 15065 (a)(3) provides that a project has possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and

the effects of probable future projects.

The OUHSD project lies within the previously mentioned Pre-Application project site. The OUHSD's NOP and Initial Study do not disclose the relationship between the OUSHD project and the Pre-Application project. In order for an accurate assessment of the potential cumulative impacts, it would be necessary to disclose the relationship between the proposed OUSHD project and the Pre-Application project. Based on the analysis made by the City through the Pre-application process, the cumulative impact of the proposed OUSHD project is significant. Therefore, the DEIR is required to analyze the entire development of the 107.25-acre Maulhardt Ranch property.

Pursuant to Public Resources Code Section 21166, when an environmental impact report has been prepared for a project pursuant to this division, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs:
(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report.
(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.
(c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, or becomes available.

As previously mentioned, the IS fails to identify the relationship between the OUHSD project and the Pre-Application project, inclusive of the Urban Village component. The IS makes assumptions pertaining to the OUHSD project based on the City's 2030 General Plan PEIR, East Village Phase III Annexation EIR and the NECSP EIR. However, the OUHSD project was not contemplated in all of the environmental reviews adopted by the City and referenced in the IS. As such, pursuant to Public Resources Code Section 21166 (Subsequent or Supplemental Impact Report; Conditions) the impacts of the entire Pre-Application project shall be analyzed in the DEIR for the OUHSD project in order to accurately assess the cumulative impacts.

City of Oxnard Initial Study Comments
City comments follow Initial Study Sections as follows:

1.3 Project Description
General Plan and Specific Plan Amendments
General Plan and Specific Plan Amendments
The OUHSD project site is located within the project area included in the Pre-Application submitted to the City for the development of the 107.25-acre Maulhardt Ranch property. The IS fails to identify the relationship between the OUHSD project and the Pre-Application project. In order for an accurate assessment of the potential impacts, it would necessary to disclose the relationship between the proposed OUHSD Project and the Pre-Application project.

Additionally, the project description fails to mention that the project will require approval of a Tentative Subdivision Map.

1.5 California Native American Tribe Consultation

Please identify the Tribal groups that the OUHSD contacted for Tribal Consultation pursuant to Public Resources Code Section 21080.1.1. Additionally, please disclose the date and method of contact.

2.4.1 Aesthetics

Would the project have a substantial adverse effect on a scenic vista? Potentially Significant Impact.

The IS correctly identifies Rose Avenue as a designated City-image corridor characterized by expansive northerly views of distant mountain ranges as described in the East Village Phase III Annexation EIR. Additionally, the City's 2030 General Plan designates Rose Avenue between U.S. Route 101 and State Route 1 as a Scenic Route as well. The draft Environmental Impact Report (DEIR) should include an analysis of potential Aesthetic impacts from Rose Avenue. Please visit the City of Oxnard Planning website to review the designated Scenic Highways and Roadway Map in its entirety: https://www.oxnard.org/wp-content/uploads/2017/05/Scenic-Routes-11x17-4.17.pdf. Additionally, the DEIR should include photo simulations of the proposed OUHSD project from all the vantage points of all surrounding scenic resource roadways in order to assist in determining the potential impact the project might have on visual resources and the project should be designed pursuant to the Scenic Highway Landscape Requirements.

The DEIR should include discussion of the effect of the proposed project on scenic resources, and evaluation to determine whether the effect would be significant. The DEIR should include, but not limit discussion to the following:

1. **The nature and quality of the visual resource**
   Any of the significant visual resources, as identified in the 2030 General Plan Goals and Policies or in the General Plan Background Report, that may be affected by the proposed project should be noted and described. This would include local waterways, agricultural greenbelts, beaches and coast lines, scenic roadways, and well preserved urban landscapes associated with historic neighborhoods and parks and open plazas.
2. **The viewpoint and the identity of the viewers and their sensitivity to changes in the view**
   Viewers who would be the most sensitive to alterations in the landscape or existing views would be residents or visitors enjoying the recreational uses in open spaces, beaches, coastal areas, or scenic roadways viewing these areas. People using smaller parks, open spaces, or plazas within urban areas would also be sensitive to the views of urban landscapes in the area.

3. **The effect of the proposed project in altering the nature of the view**
   A project component that introduces a manmade feature that contrasts strongly with the existing natural or cultural landscape affecting sensitive viewers would normally have a significant impact. The impact may be project-specific if the project is inharmonious or discordant with the existing landscape, or if it would introduce a feature that blocks views of important resources, even if the view is already partially blocked. The effect may also be part of a cumulative impact if it occurs in combination with similar projects or man-made features that adversely affect the same visual resource.

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? Potentially Significant Impact.
A glare analysis and lighting plan should be included in the DEIR in order to make an assessment if the project might adversely affect daytime or nighttime views in the area. Additional concern is warranted based on the IS stating that the OUHSD proposed new stadium would include lighted playfields and the varsity baseball and softball fields would also be lighted. In addition, it is anticipated that the school would be used in the evening for community meetings and periodic school activities. As such, the proposed project could represent a new source of light or glare which could potentially impact nighttime views in the area.

Section 2.4.2 – Agriculture
The IS identifies the OUHSD project as having a potentially significant impact on Agriculture. However, the IS does not include the Urban Village component of the Pre-Application project, which includes up to 1,100 residential units and commercial opportunities. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a significant impact to mitigation measures required under the NECSP and the City's 2030 General Plan concerning Agriculture. The IS references mitigation measure AG1 of the East Village Phase III Annexation EIR, which requires to offer the topsoil for removal to another farm operation, if feasible, as a partial mitigation for the loss of prime farmland impact (Oxnard 2012). Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Agriculture impact of the entire 107.25-acre Maulhardt Ranch development.

Section 2.4.3 Air Quality
The IS identifies the OUHSD project as having a potentially significant impact on Air Quality. However, the analysis is based solely on the OUHSD project. As previously stated, the Project does not clarify the relationship between the OUHSD project and Pre-Application project. In order for an accurate assessment of the potential impacts, it would necessary to disclose the relationship between the proposed OUHSD Project and the Pre-Application project. Additionally, in accordance with CEQA Guidelines Section 15130(a) and Public Resources Code Section 21166, the air quality project impact analysis should include the entire development of the 107.25-acre Maulhardt Ranch property, inclusive of the Urban Village development.

2.4.4 Biological Resources

As previously stated, the Project does not clarify the relationship between the OUSHD project and Pre-Application project. In order for an accurate assessment of the potential impacts, it would necessary to disclose the relationship between the proposed OUHSD Project and the Pre-Application project. In accordance to CEQA Guidelines Section 15130(a) and Public Resources Code Section 21166, all biological studies and surveys included in the DEIR should be inclusive of the entire development of the 107.25-acre Maulhardt Ranch property, inclusive of the Urban Village and commercial development.

2.4.5- Cultural resources

The recent Pre-Application project site plan identifies the Maulhardt family residence as being preserved and sited within a one-acre park at the southwest corner of the 107-acre Maulhardt property. The DEIR should analyze the potential future use/reuse of the Maulhardt family residence and all other historic structures. The IS states that a Phase 1 Archaeological Survey will be conducted to determine if prehistoric or historic archaeological deposits are present on the OUHSD project site. The 107.25-acre Maulhardt Ranch property has an important historical value to the City and County of Ventura. The barn was found to be historically significant there is a presence of mature vegetation and wind row. The NECSP EIR and the East Village Phase III Annexation EIR did not contemplate the impact of the development of the OUHSD project on the 107.25-acre Maulhardt Ranch property. In accordance to Public Resources Code Section 21166, the DEIR should conduct a Phase 1 Archaeological Survey on the entire 107.25-acre Maulhardt Ranch property.

2.4.6 Energy

The IS identifies the OUHSD project as having a potential significant impact on the environment. The IS analysis only accounted for the OUHSD project and failed to account for the Urban Village component of the previously mentioned Pre-Application of the 107.25-acre Maulhardt Ranch property. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the energy impact of the entire development of the 107.25-acre Maulhardt Ranch property.

2.4.7 Geology and Soils

As previously stated, the NOP does not clarify the relationship between the OUHSD project and Pre-Application project. In order for an accurate assessment of the potential impacts, it would be necessary to disclose the relationship between the proposed OUHSD project and the Pre-Application project. All geological and soils studies analyzed in the DEIR shall be inclusive of the Pre-Application development of the 107.25-acre Maulhardt Ranch property.

2.4.8 Greenhouse Gas Emissions

The IS identifies the OUHSD project as having a potentially significant impact on Green Gas Emissions. However, the IS does not include the Urban Village component of the Pre-Application project. Based on CEQA Guidelines Section 15130(a) and Public Resource Code

Section 21166, the DEIR shall analyze the greenhouse gas emissions impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.9 Hazards and Hazardous Materials

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Less Than Significant Impact.

As previously stated, the OUHSD project does not clarify the relationship between the OUHSD project and Pre-Application project. However, the Pre-Application project identifies residential and commercial opportunities as part of the Urban Village land use component. Pursuant to CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the potential impact of the Pre-Application build out proposal creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials to the entire 107.25-acre Maulhardt Ranch development.

Would the project create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment? Less Than Significant Impact.

As stated above, the IS does not clarify the relationship between the OUSHD project and Pre-Application project. However, the Pre-Application project identifies residential and commercial opportunities as part of the Urban Village land use component. Pursuant to CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the potential impact of the Pre-Application build out proposal to creating a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

Would the project emit hazardous emissions or handle hazardous materials or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Less Than Significant Impact.

The IS does not clarify the relationship between the OUHSD project and Pre-Application project. However, the Pre-Application project identifies residential and commercial opportunities as part of the Urban Village land use component. Pursuant to CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the potential impact of the commercial opportunities included within the Pre-Application project that have the potential to emit hazardous emissions or handle hazardous materials or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school- in this case the OUHSD project itself.

2.4.10 Hydrology and Water Quality

The IS identifies the OUHSD project as having a potentially significant impact on Hydrology and Water Quality. However, the IS does not include the Urban Village component of the Pre-Application project. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a

significant impact to infrastructure required under the NECSP concerning Hydrology and Water Quality. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Hydrology and Water Quality impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.11 Land Use and Planning

The City reaffirms that the current 2030 General Plan land use designation for the site does not permit the development of a school and that a General Plan Amendment, Pre-zone, Specific Plan Amendment, Tentative Subdivision Map and respective development entitlement permit(s) will be required. Additionally, the OUHSD project lies within the project site of a Pre-Application for the development of the 107.25-acre Maulhardt Ranch property the City is currently processing, which includes an Urban Village component. The Initial Study is not clear as to how both of these proposals relate to each other. Please clarify the relationship between the OUHSD project and the Pre-Application project so that the general public and decision makers have a clear understanding of the future development and impacts of the project area.

The Pre-Application project has been reviewed by the Development Advisory Committee (DAC). To assist the OUHSD in understanding comments which may be applicable, relevant DAC comments are provided below. Comments generated by DAC were made based on the previously adopted environmental project and are provided as a baseline to determine the deficiencies and requirements which should be addressed as part of the OUHSD environmental document and studies:

1. Consistency with General Plan policies related to Urban Village and School Siting
2. Windrow tree removal mitigation
3. Siting consideration related to roadway noise, visibility, etc.
4. Continue existing landscaped treatment for Caesar Chavez features west of the project site across the property and south to the existing park
5. Large drainage basins/open space at either end of Central Street should be designed to function as parks and not so deep as to require fencing
6. The "drainage basin/open space" areas should be designed to a depth that will not require fencing so that they can be used by the community when dry
7. Provide improved pedestrian connections within the project

As previously mentioned, the City's 2030 General Plan PEIR, NECSP EIR and East Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a significant impact to land use and planning requirements and goals adopted under the NECSP. Additionally, the development of the OUHSD project could potentially have a significant impact to infrastructure required to address land use and planning issues identified under the NECSP. Based on CEQA Guidelines Section 15130(a) and Public Resource Code

Section 21166, the DEIR shall analyze the Land Use and Planning impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.12 Mineral Resources

The IS identifies the OUHSD project as having no impact on mineral resources. However, the IS does not include the Urban Village component of the Pre-Application project. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the potential impact of the entire 107.25-acre Maulhardt Ranch development on mineral resources.

2.4.13 Noise

The IS identifies the OUHSD project as having a potentially significant impact on Noise. However, the IS does not include the Urban Village component of the Pre-Application project. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a significant impact to the residential component of the NECSP. Additionally, the OUHSD project will host school games, school functions and community events which were not contemplated or addressed in the NECSP EIR. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Noise impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.14 Population and Housing

Would the project induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)? Less Than Significant Impact.

The IS only examines the development of the OUHSD project and it fails to include an analysis of the proposed Urban Village component of the Pre-Application project, which proposes up to 1,100 residential units. Pursuant to CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Population and Housing impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.15 Public Services

The IS identifies the OUHSD project as having a potentially significant impact on Public Services. However, the IS does not include the Urban Village component of the Pre-Application project in any future environmental analysis. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project and the Urban Village component could potentially have a greater impact to public services than previously analyzed and/or under the OUHSD scenario by itself. Additionally, the OUHSD project will host school games, school functions and community events which were not contemplated or addressed in the NECSP EIR. Based on CEQA Guidelines Section 15130(a) and

Public Resource Code Section 21166, the DEIR shall analyze the Public Services impact of the entire 107.25-acre Maulhardt Ranch development.

To assist the OUHSD in understanding comments which may be applicable, relevant DAC comments are provided below. Comments generated by DAC were made based on the previously adopted environmental project and are provided as a baseline to determine the deficiencies and requirements which should be addressed as part of the OUHSD environmental document and studies:

1. Police and Fire
    a. Environmental review will need to identify and mitigate the impacts proposed to Fire and Police services by the project.
    b. Plan includes numerous dead-end driveways. Revise circulation plan to provide hammerhead turnouts where required.

2.4.16 Recreation

Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? Less Than Significant Impact.

The IS only examines the development of the OUSHD project and it fails to include an analysis of the proposed Urban Village component of the Pre-Application project which proposes up to 1,100 residential units. Pursuant to CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Recreation impact of the entire 107.25-acre Maulhardt Ranch development.

2.4.17 Transportation

The IS identifies the OUHSD project as having a potentially significant impact on Transportation. However, the IS does not include the Urban Village component of the Pre-Application project, which proposes up to 1,100 residential units and commercial opportunities. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a significant impact to infrastructure required under the NECSP concerning transportation and circulation. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall analyze the Transportation impact of the entire 107.25-acre Maulhardt Ranch development.

The Pre-Application project has been reviewed by the Development Advisory Committee (DAC). To assist the OUHSD in understanding comments which may be applicable, relevant DAC comments are provided below. Comments generated by DAC were made based on the previously adopted environmental project and are provided as a baseline to determine the deficiencies and requirements which should be addressed as part of the OUHSD environmental document and studies:

1. A traffic study will be required.

2. Street designs are not consistent with the approved street sections in the Northeast Community Specific Plan.
3. Project will be required to comply with the City's Bicycle and Pedestrian Master Plan, including provision of a Class III "Bicycle Boulevard" along Cesar Chavez that connects to the existing park site. See Map 5-1, A-30, and page 95 of the BPFMP
4. Provide a north/south connecting road along the easterly property line of the school for improved internal circulation and to reduce the school queueing anticipated along Camino Del Sol.

GOLD COAST Transit- consult and work with Gold Coast Transit to address questions, comments, and concerns:

1. Identify direct pedestrian travel path from residential units to high school
2. Identify Pedestrian lighting throughout development site
3. Identify existing bus stops on Rose Ave at Socorro Way & Camino Del Sol in both directions
4. Clarify bike rack placement
5. Identify quantity of bike racks
6. Consider incorporating wayfinding signage to historically significant site

2.4.18 Tribal and Cultural resources

The IS identifies the OUHSD project as having a potentially significant impact on Tribal and Cultural Resources. However, the IS does not include the Urban Village component of the Pre-Application project, which proposes up to 1,100 residential units and commercial opportunities. The IS states that a Phase 1 Archaeological Survey will be conducted to determine if prehistoric or historic archaeological deposits are present on the OUHSD project site. The 107.25-acre Maulhardt Ranch property has an important historical value to the City and County of Ventura. The barn was found to be historically significant and there is a presence of mature vegetation/wind row. The NECSP EIR and the East Village Phase III Annexation EIR did not contemplate the impact of the development of the OUHSD project on the 107.25-acre Maulhardt Ranch property. In accordance to Public Resources Code Section 21166, the DEIR should conduct a Phase 1 Archaeological Survey on the entire 107.25-acre Maulhardt Ranch property.

2.4.19 Utilities and Service Systems

The IS identifies the OUHSD project as having a potentially significant impact on Utilities and Service Systems. However, the IS does not include the Urban Village component of the Pre-Application project, which proposes up to 1,100 residential units and commercial opportunities. The City's 2030 General Plan PEIR, NECSP EIR and Village Phase III Annexation EIR did not include an analysis of a high school or any other school as part of the environmental impact analysis. The development of the OUHSD project could potentially have a significant impact to infrastructure required under the NECSP concerning utilities and service systems. Based on CEQA Guidelines Section 15130(a) and Public Resource Code Section 21166, the DEIR shall

analyze the Utilities and Service Systems impact of the entire 107.25-acre Maulhardt Ranch development.

The Pre-Application project has been reviewed by the Development Advisory Committee (DAC). To assist the OUHSD in understanding comments which may be applicable, relevant DAC comments are provided below. Comments generated by DAC were made based on the previously adopted environmental project and are provided as a baseline to determine the deficiencies and requirements which should be addressed as part of the OUHSD environmental document and studies:

1. Public Works:
    a. Water demand estimates versus transferred allocation rates
    b. Utility capacity and connections required
    c. Potential use of recycled irrigation
    d. Capping of on-site wells and septic
    e. Proposed reduction of the 30 acres of park space anticipated.
    f. Parks provide on private development portion include small corners, detention areas, and residential common space
    g. Location of proposed stadium presents conflicts with adjacent residential uses. Recommend relocate and mitigate noise, parking and lighting impacts.
    h. Drainage report needs to provide an evaluation of a mid-level (Q10) storm and the depths that the water will reach. Report should address how long it takes the detention facility to empty
    i. Why are detention/infiltration facilities only proposed for the Shared Use fields.

Thank you for the opportunity to comment on the NOP and IS. Please feel free to contact Doug Spondello at (805) 385-3919 if you have questions or you can e-mail at doug.spondello@oxnard.org.

Sincerely,

Jeffrey Lambert, AICP
Community Development Director

c. Alexander Nguyen, City Manager
Ashley Golden, Assistant City Manager
Kathleen Mallory, Planning and Environmental Services Manager
Kenneth Rozell, Assistant City Attorney
Doug Spondello, Principal Planner

March 13, 2019

MAR 2019
Oxnard Union
High School District
Business Division

VIA EMAIL: JEFF.WEINSTEIN@OUHSD.K12.CA.US
Mr. Jeffery Weinstein
Oxnard Union HS District
309 South K Street
Oxnard, CA 93030

Dear Mr. Weinstein:

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE NEW HIGH SCHOOL NO. 8 PROJECT, SCH# 2019029101

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation for the New High School No. 8 project. The Division monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act and other agricultural land conservation programs. We offer the following comments and recommendations with respect to the proposed project's potential impacts on agricultural land and resources.

Project Description

The Oxnard Union High School District proposes to construct and operate a new state of the art neighborhood High School to accommodate existing and anticipated future enrollment in the District. The new school facilities are designed to meet the educational and recreational needs of up 2,500 students in grades 9-12. The proposed project would comprise approximately 211,115 square feet (sq. ft.) of building and structures and provide approximately 806 parking spaces on the project site. In addition, the proposed project includes a variety of recreational areas including a variety of play fields, hard courts, and a pool. The project site is currently classified as Prime Farmland and/or Farmland of Statewide Importance by the Department of Conservation's Farmland Mapping and Monitoring Program.[1]

Department Comments

Although direct conversion of agricultural land is often an unavoidable impact under CEQA analysis, mitigation measures must be considered. In some cases, the argument is made that mitigation cannot reduce impacts to below the level of significance because agricultural land will still be converted by the project, and therefore,

[1] California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, https://maps.conservation.ca.gov/DLRP/CIFF/

mitigation is not required. However, reduction to a level below significance is not a criterion for mitigation under CEQA. Rather, the criterion is feasible mitigation that lessens a project's impacts.

All mitigation measures that are potentially feasible should be considered. A measure brought to the attention of the Lead Agency should not be left out unless it is infeasible based on its elements. The Department suggests that the County consider any and all mitigation measures that will effectively mitigate the conversion of agricultural land.

Agricultural conservation easements are an available mitigation tool that the City should consider. The Department highlights easements as a mitigation tool because of their acceptance and use by lead agencies as an appropriate mitigation measure under CEQA and because they follow an established rationale similar to that of wildlife habitat mitigation.

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands should not be limited strictly to lands within the project's surrounding area.

Conclusion

Thank you for giving us the opportunity to comment on the Notice of Preparation for the New High School No. 8 project. Please provide this Department with notices of any future hearing dates as well as any staff reports pertaining to this project. If you have any questions regarding our comments, please contact Farl Grundy, Environmental Planner at (916) 324-7347 or via email at Farl.Grundy@conservation.ca.gov.

Sincerely,

Monique Wilber
Conservation Program Support Supervisor

SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
T: (213) 236-1800
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March 20, 2019

Mr. Jeffrey Weinstein, Assistant Superintendent
Oxnard Union High School District, Business Services
309 South K Street
Oxnard, California 93030
Phone: (805) 834-1461
E-mail: jeff.weinstein@oxnardunion.org

RE: SCAG Comments on the Notice of Preparation of a Draft Environmental Impact Report for the New OUHSD High School No. 8 Project [SCAG NO. IGR9833]

Dear Mr. Weinstein,

Thank you for submitting the Notice of Preparation of a Draft Environmental Impact Report for the New OUHSD High School No. 8 Project ("proposed project") to the Southern California Association of Governments (SCAG) for review and comment. SCAG is the authorized regional agency for Inter-Governmental Review (IGR) of programs proposed for Federal financial assistance and direct Federal development activities, pursuant to Presidential Executive Order 12372. Additionally, SCAG reviews the Environmental Impact Reports of projects of regional significance for consistency with regional plans pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

SCAG is also the designated Regional Transportation Planning Agency under state law, and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS) pursuant to Senate Bill (SB) 375. As the clearinghouse for regionally significant projects per Executive Order 12372, SCAG reviews the consistency of local plans, projects, and programs with regional plans.[1] SCAG's feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Community Strategies (RTP/SCS) goals and align with RTP/SCS policies.

SCAG staff has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the New OUHSD High School No. 8 Project in Ventura County. The proposed project includes the construction of a new 211,115 square foot high school on a 46.8 acre site.

When available, please send environmental documentation to *SCAG's Los Angeles office in Los Angeles (900 Wilshire Boulevard, Ste. 1700, Los Angeles, California 90017) or by email to au@scag.ca.gov* providing, at a minimum, the full public comment period for review.

If you have any questions regarding the attached comments, please contact the Inter-Governmental Review (IGR) Program, attn.: Anita Au, Associate Regional Planner, at (213) 236-1874 or au@scag.ca.gov. Thank you.

Sincerely,

Ping Chang
Manager, Compliance and Performance Monitoring

[1] Lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the 2016 RTP/SCS for the purpose of determining consistency for CEQA. Any "consistency" finding by SCAG pursuant to the IGR process should not be construed as a determination of consistency with the 2016 RTP/SCS for CEQA.

COMMENTS ON THE NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE NEW OUHSD HIGH SCHOOL NO. 8 PROJECT [SCAG NO. IGR9833]

CONSISTENCY WITH RTP/SCS

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS. For the purpose of determining consistency with CEQA, lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the RTP/SCS.

2016 RTP/SCS GOALS

The SCAG Regional Council adopted the 2016 RTP/SCS in April 2016. The 2016 RTP/SCS seeks to improve mobility, promote sustainability, facilitate economic development and preserve the quality of life for the residents in the region. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health (see http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx). The goals included in the 2016 RTP/SCS may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project within the context of regional goals and policies. Among the relevant goals of the 2016 RTP/SCS are the following:

SCAG 2016 RTP/SCS GOALS	
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*
RTP/SCS G3:	*Ensure travel safety and reliability for all people and goods in the region*
RTP/SCS G4:	*Preserve and ensure a sustainable regional transportation system*
RTP/SCS G5:	*Maximize the productivity of our transportation system*
RTP/SCS G6:	*Protect the environment and health for our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking)*
RTP/SCS G7:	*Actively encourage and create incentives for energy efficiency, where possible*
RTP/SCS G8:	*Encourage land use and growth patterns that facilitate transit and active transportation*
RTP/SCS G9:	*Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies**
	**SCAG does not yet have an agreed-upon security performance measure.*

For ease of review, we encourage the use of a side-by-side comparison of SCAG goals with discussions of the consistency, non-consistency or non-applicability of the goals and supportive analysis in a table format. Suggested format is as follows:

SCAG 2016 RTP/SCS GOALS		
	Goal	Analysis
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
etc.		etc.

2016 RTP/SCS STRATEGIES

To achieve the goals of the 2016 RTP/SCS, a wide range of land use and transportation strategies are included in the 2016 RTP/SCS. Technical appendances of the 2016 RTP/SCS provide additional supporting information in detail. To view the 2016 RTP/SCS, please visit: http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx. The 2016 RTP/SCS builds upon the progress from the 2012 RTP/SCS and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that the SCAG region strives toward a more sustainable region, while the region meets and exceeds in meeting all of applicable statutory requirements pertinent to the 2016 RTP/SCS. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

The 2016 RTP/SCS also identifies open space resources in the SCAG region and develops strategies to address open space, biodiversity habitat and agriculture conservation in the SCAG region. For further information on open space strategies, please review the Natural and Farmlands Appendix of the 2016 RTP/SCS (http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_NaturalFarmLands.pdf).

DEMOGRAPHICS AND GROWTH FORECASTS

Local input plays an important role in developing a reasonable growth forecast for the 2016 RTP/SCS. SCAG used a bottom-up local review and input process and engaged local jurisdictions in establishing the base geographic and socioeconomic projections including population, household and employment. At the time of this letter, the most recently adopted SCAG jurisdictional-level growth forecasts that were developed in accordance with the bottom-up local review and input process consist of the 2020, 2035, and 2040 population, households and employment forecasts. To view them, please visit http://www.scag.ca.gov/Documents/2016GrowthForecastByJurisdiction.pdf. The growth forecasts for the region and applicable jurisdictions are below.

	Adopted SCAG Region Wide Forecasts			Adopted City of Oxnard Forecasts		
	Year 2020	Year 2035	Year 2040	Year 2020	Year 2035	Year 2040
Population	19,663,000	22,091,000	22,138,800	220,200	236,300	237,300
Households	6,458,000	7,325,000	7,412,300	55,100	59,800	60,100
Employment	8,414,000	9,441,000	9,871,500	68,000	78,200	79,200

MITIGATION MEASURES

SCAG staff recommends that you review the Final Program Environmental Impact Report (Final PEIR) for the 2016 RTP/SCS for guidance, as appropriate. SCAG's Regional Council certified the Final PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on April 7, 2016 (please see: http://scagrtpscs.net/Pages/FINAL2016PEIR.aspx). The Final PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and

implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

SCAG staff recommends that you review the agriculture and bio habitat-related example mitigation measures listed below:

Mitigation Measure-AF-1(b): Consistent with the provisions of Section 15091 of the State CEQA Guidelines, SCAG has identified mitigation measures capable of avoiding or reducing the significant effects from the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses that are within the jurisdiction and responsibility of the Natural Resources Conservation Service, the California Resources Agency, other public agencies, and/or Lead Agencies. Where the Lead Agency has identified that a project has the potential for significant effects, the Lead Agency can and should consider mitigation measures to ensure compliance with the Farmland Protection Act and implementing regulations, and the goals and policies established within the applicable adopted county and city general plans to protect agricultural resources consistent with the Farmland Mapping and Monitoring Program of the California Resources Agency. Such measures may include the following, or other comparable measures identified by the Lead Agency taking into account project and site-specific considerations as applicable and feasible:

- For projects that require approval or funding by the USDOT, comply with Section 4(f) U.S. Department of Transportation Act of 1966 (USDOT Act).
- Project relocation or corridor realignment to avoid Prime Farmland, Unique Farmland, or Farmland of Local or Statewide Importance.
- Maintain and expand agricultural land protections such as urban growth boundaries.

Support the acquisition or voluntary dedication of agriculture conservation easements and other programs that preserve agricultural lands, including the creation of farmland mitigation banks. Local governments would be responsible for encouraging the development of agriculture conservation easements or farmland mitigation banks, purchasing conservation agreements or farmland for mitigation, and ensuring that the terms of the conservation easement agreements are upheld. The California Department of Fish and Wildlife provides a definition for conservation or mitigation banks on their website (please see https://www.wildlife.ca.gov/Conservation/Planning/Banking)

"A conservation or mitigation bank is privately or publicly owned land managed for its natural resource values. In exchange for permanently protecting, managing, and monitoring the land, the bank sponsor is allowed to sell or transfer habitat credits to permitees who need to satisfy legal requirements and compensate for the environmental impacts of developmental projects.

A privately owned conservation or mitigation bank is a free-market enterprise that:

- Offers landowners economic incentives to protect natural resources;
- Saves permitees time and money by providing them with the certainty of pre-approved compensation lands;
- Consolidates small, fragmented wetland mitigation projects into large contiguous sites that have much higher wildlife habitat values;
- Provides for long-term protection and management of habitat.

A publicly owned conservation or mitigation bank:

- Offers the sponsoring public agency advance mitigation for large projects or multiple years of operations and maintenance."

In 2013, the University of California published an article entitled "Reforms could boost conservation banking by landowners" that speaks specifically to the use of agricultural lands for in conjunction with conservation banking programs.

- Provide for mitigation fees to support a mitigation bank that invests in farmer education, agricultural infrastructure, water supply, marketing, etc. that enhance the commercial viability of retained agricultural lands.
- Include underpasses and overpasses at reasonable intervals to maintain property access.
- Use berms, buffer zones, setbacks, and fencing to reduce conflicts between new development and farming uses and protect the functions of farmland.
- Ensure individual projects are consistent with federal, state, and local policies that preserve agricultural lands and support the economic viability of agricultural activities, as well as policies that provide compensation for property owners if preservation is not feasible.
- Contact the California Department of Conservation and each county's Agricultural Commissioner's office to identify the location of prime farmlands and lands that support crops considered valuable to the local or regional economy and evaluate potential impacts to such lands using the land evaluation and site assessment (LESA) analysis method (CEQA Guidelines §21095), as appropriate. Use conservation easements or the payment of in-lieu fees to offset impacts.

Mitigation Measure-AF-2(b): Consistent with the provisions of Section 15091 of the State CEQA Guidelines, SCAG has identified mitigation measures capable of avoiding or reducing the significant effects from conflict with existing zoning for agricultural use or a Williamson Act contract that are within the jurisdiction and responsibility of the California Department of Conservation, other public agencies, and Lead Agencies. Where the Lead Agency has identified that a project has potential for significant effects, the Lead Agency can and should consider mitigation measures to mitigate the significant effects of agriculture and forestry resources to ensure compliance with the goals and policies established within the applicable adopted county and city general plans to protect agricultural resources consistent with the California Land Conservation Act of 1965, the Farmland Security Zone Act, and county and city zoning codes, as applicable and feasible. Such measures may include the following, or other comparable measures identified by the Lead Agency, taking into account project and site-specific considerations as applicable and feasible:

- Project relocation or corridor realignment to avoid lands in Williamson Act contracts.
- Establish conservation easements consistent with the recommendations of the Department of Conservation, or 20-year Farmland Security Zone contracts (Government Code Section 51296 et seq.), 10-year Williamson Act contracts (Government Code Section 51200 et seq.), or use of other conservation tools available from the California Department of Conservation Division of Land Resource Protection.
- Prior to final approval of each project, encourage enrollments of agricultural lands for counties that have Williamson Act programs, where applicable.

Ventura County Transportation Commission

MAR 2019
Oxnard Union
High School Dist.
Business Services

March 15, 2019

Mr. Jeffrey Weinstein
Assistant Superintendent, Business Services
Oxnard Union High School District
309 South K Street,
Oxnard, CA 93030

Subject: Oxnard Union High School District (OUHSD) New High School No. 8 Project Comments

Dear Mr. Weinstein,

The Ventura County Transportation Commission (VCTC) has reviewed the Notice of Preparation and Initial Study for the proposed New High School No. 8 Project. After a review of the subject documents, VCTC recommends that OUHSD consider the following areas as the Environmental Impact Report is prepared:

1. Ensure that transit operations are included/evaluated as part of the proposed traffic study analysis.
2. Ensure that the traffic study area incorporates AM peak hour traffic counts for all major intersections within the proposed Project's commute shed/student shed.
3. Consult with Gold Coast Transit to ensure adequate service can be provided to meet forecasted transit trip generation needs, thereby reducing individual trips and greenhouse gas emissions.
4. As part of the construction impacts discussion, identify all local/municipal transportation agencies that will be impacted by roadway improvements and include adequate notification as part of the Project's mitigation measures.
5. Consider including a VMT (Vehicle Miles Traveled) analysis in addition to the proposed Level of Service (LOS) analysis as part of the proposed traffic study.
6. The EIR should include a discussion of a full range of Transportation Demand Management (TDM) strategies to reduce the number of individual trips by students and faculty alike.

Thank you for the opportunity to provide comments on this Project. Please feel free to contact me if you have questions or would like clarification on the comments above.

Respectfully,

Steve DeGeorge
Planning Director

B LIGHTING PLAN

Oxnard High School #8

Oxnard, CA

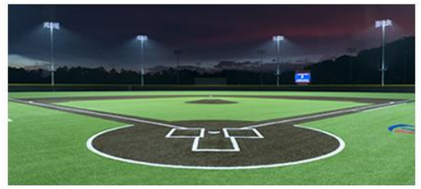
Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1	70'	70'	4	TLC-LED-1200	4.74 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
		70'	4	TLC-LED-1200	4.80 kW	D
		16'	1	TLC-BT-575	0.58 kW	D
A2	70'	70'	4	TLC-LED-1200	4.74 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
		70'	3	TLC-LED-1200	3.51 kW	E
		16'	1	TLC-BT-575	0.58 kW	E
		50'	1	TLC-LED-600	0.58 kW	E
A3	70'	70'	3	TLC-LED-1200	3.51 kW	E
		16'	1	TLC-BT-575	0.58 kW	E
		70'	3	TLC-LED-1200	3.51 kW	F
		16'	1	TLC-BT-575	0.58 kW	F
		50'	1	TLC-LED-600	0.58 kW	F
		50'	1	TLC-LED-600	0.58 kW	E
A4	70'	70'	4	TLC-LED-1200	4.74 kW	D
		16'	1	TLC-BT-575	0.58 kW	D
		70'	3	TLC-LED-1200	3.51 kW	F
		16'	1	TLC-BT-575	0.58 kW	F
		50'	1	TLC-LED-600	0.58 kW	F
B1	90'	90'	1	TLC-LED-1200	1.17 kW	C
		90'	6	TLC-LED-1500	8.58 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
		90'	1	TLC-LED-1200	1.17 kW	D
		90'	5	TLC-LED-1500	7.22 kW	D
		16'	1	TLC-BT-575	0.58 kW	D
		50'	2	TLC-LED-600	1.16 kW	C
B2	90'	90'	1	TLC-LED-1200	1.17 kW	C
		90'	6	TLC-LED-1500	8.58 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
		50'	2	TLC-LED-600	1.16 kW	C
		50'	1	TLC-LED-600	0.58 kW	E
B3	80'	80'	5	TLC-LED-1200	6.03 kW	E
		16'	1	TLC-BT-575	0.58 kW	E
B4	80'	80'	6	TLC-LED-1200	7.26 kW	E
		16'	1	TLC-BT-575	0.58 kW	E
B5-B6	70'	70'	5	TLC-LED-1200	5.97 kW	F
		16'	1	TLC-BT-575	0.58 kW	F
B7	80'	80'	1	TLC-LED-1200	1.17 kW	D
		80'	5	TLC-LED-1500	7.22 kW	D
		16'	1	TLC-BT-575	0.58 kW	D
C1	70'	70'	3	TLC-LED-1200	3.57 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
C2	70'	70'	4	TLC-LED-900	3.56 kW	I
		16'	1	TLC-BT-575	0.58 kW	C
		70'	3	TLC-LED-1200	3.57 kW	C
C3-C4	70'	70'	4	TLC-LED-1500	5.79 kW	D
		16'	2	TLC-BT-575	1.15 kW	D
D1	70'	70'	4	TLC-LED-1200	4.74 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
D2	70'	70'	4	TLC-LED-1200	4.74 kW	C
		16'	1	TLC-BT-575	0.58 kW	C
		70'	4	TLC-LED-900	3.56 kW	I
F1-F3	100'	100'	12	TLC-LED-1500	17.16 kW	A
		16'	2	TLC-BT-575	1.15 kW	A

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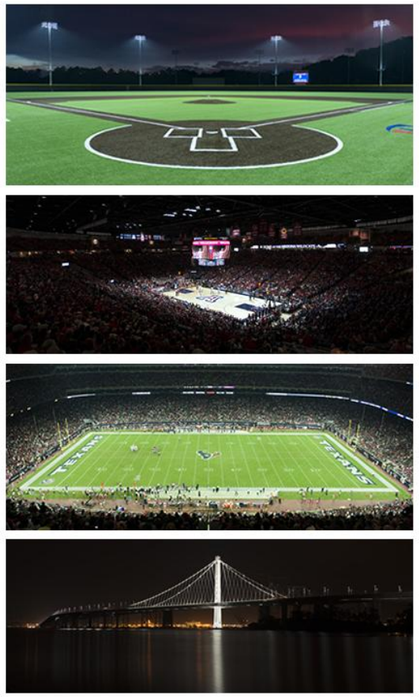
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Oxnard High School #8

Oxnard, CA

Pole / Fixture Summary						
Pole ID	**Pole Height**	**Mtg Height**	**Fixture Qty**	**Luminaire Type**	**Load**	**Circuit**
		60'	2	TLC-LED-600	1.16 kW	B
F4	100'	100'	12	TLC-LED-1500	17.23 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
		60'	2	TLC-LED-600	1.16 kW	B
P1-P2	50'	50'	3	TLC-LED-900	2.67 kW	I
S1, S6	70'	70'	4	TLC-LED-1500	5.72 kW	G
S2	70'	70'	4	TLC-LED-1500	5.72 kW	G
		70'	4	TLC-LED-1500	5.72 kW	H
S3-S4	70'	70'	4	TLC-LED-1500	5.72 kW	H
S5	70'	70'	4	TLC-LED-1500	5.72 kW	H
		70'	4	TLC-LED-1500	5.72 kW	G
29			***240***		***277.96 kW***	

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Oxnard High School #8

Oxnard, CA

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Stadium	73.31 kW	56
B	Stadium Bleachers	4.64 kW	8
C	Baseball	52.52 kW	48
D	JV Baseball	42.5 kW	36
E	Softball	24.35 kW	24
F	JV Softball	22.42 kW	22
G	Soccer 2/ Soccer 4	22.88 kW	16
H	Soccer 3/Soccer 4	22.88 kW	16
I	Pool	12.46 kW	14

Fixture Type Summary

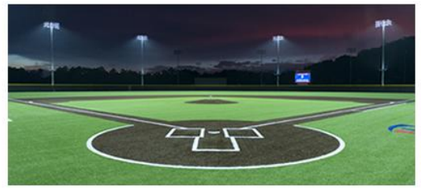
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>81,000	>81,000	>81,000	105
TLC-LED-1200	LED 5700K - 75 CRI	1230W	132,300	>81,000	>81,000	>81,000	20
TLC-LED-1200	LED 5700K - 75 CRI	1170W	136,000	>81,000	>81,000	>81,000	47
TLC-LED-1500	LED 5700K - 75 CRI	1500W	156,100	>81,000	>81,000	>81,000	5
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>81,000	>81,000	>81,000	32
TLC-LED-600	LED 5700K - 75 CRI	580W	65,600	>81,000	>81,000	>81,000	17
TLC-LED-900	LED 5700K - 75 CRI	890W	89,600	>81,000	>81,000	>81,000	14

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Baseball LF Bullpen	Horizontal	31.7	18	44	2.40	1.76	C	48
Baseball RF Bullpen	Horizontal	31.2	18	44	2.42	1.73	C	48
Baseball (Infield)	Horizontal Illuminance	50.7	35	62	1.75	1.45	C	48
Baseball (Outfield)	Horizontal Illuminance	30.9	19	40	2.04	1.62	C	48
Football	Horizontal Illuminance	50.5	44	59	1.34	1.15	A	56
Home Bleachers	Horizontal	12.6	7	20	2.87	1.80	B	8
JV Baseball (Infield)	Horizontal Illuminance	50.3	33	62	1.89	1.52	D	36
JV Baseball (Outfield)	Horizontal Illuminance	30.5	20	43	2.14	1.53	D	36
JV Softball LF Bullpen	Horizontal	30.7	24	39	1.64	1.28	F	22
JV Softball RF Bullpen	Horizontal	35.4	31	39	1.26	1.14	F	22
JV Softball (Infield)	Horizontal Illuminance	50.9	36	62	1.72	1.41	F	22
JV Softball (Outfield)	Horizontal Illuminance	33.2	22	49	2.27	1.51	F	22
Pool Deck Bleachers	Horizontal	34.7	28	46	1.66	1.24	I	14
Pool Deck	Horizontal	40.3	21	62	2.99	1.92	I	14
Pool	Horizontal Illuminance	50.3	38	64	1.70	1.32	I	14
Property Line	Horizontal	0.02	0	0.16	299035.30		A,B,C,D,E, F,G,H,I	240
Property Line	Max Candela (by Fixture)	1770	3.81	7090	1860.33	464.66	A,B,C,D,E, F,G,H,I	240
Property Line	Max Vertical Illuminance Metric	0.04	0	0.30	15048.40		A,B,C,D,E, F,G,H,I	240
Soccer 1	Horizontal Illuminance	50.2	44	59	1.33	1.14	A	56
Soccer 2	Horizontal Illuminance	30.4	19	42	2.29	1.60	G	16
Soccer 3	Horizontal Illuminance	30.9	18	41	2.29	1.72	H	16
Soccer 4	Horizontal Illuminance	33	20	46	2.35	1.65	G,H	32
Softball LF Bullpen	Horizontal	29	27	32	1.17	1.07	E	24
Softball (Infield)	Horizontal Illuminance	50.7	34	64	1.89	1.49	E	24
Softball (Outfield)	Horizontal Illuminance	31.8	20	42	2.06	1.59	E	24
Sotball RF Bullpen	Horizontal	26.1	23	30	1.28	1.14	E	24
Spill	Horizontal	5.99	0	15.5	144649.60		A,B,C,D,E, F,G,H,I	240
Spill	Max Candela (by Fixture)	103635	295	237974	806.21	351.09	A,B,C,D,E, F,G,H,I	240
Spill	Max Vertical Illuminance Metric	5.95	0	14.9	15130.95		A,B,C,D,E, F,G,H,I	240
Track Infield	Horizontal	33.4	24	43	1.77	1.39	A	56
Track	Horizontal Illuminance	30.1	19	46	2.41	1.58	A	56
Visitor Bleachers	Horizontal	18.3	12	28	2.35	1.52	B	8

From Hometown to Professional







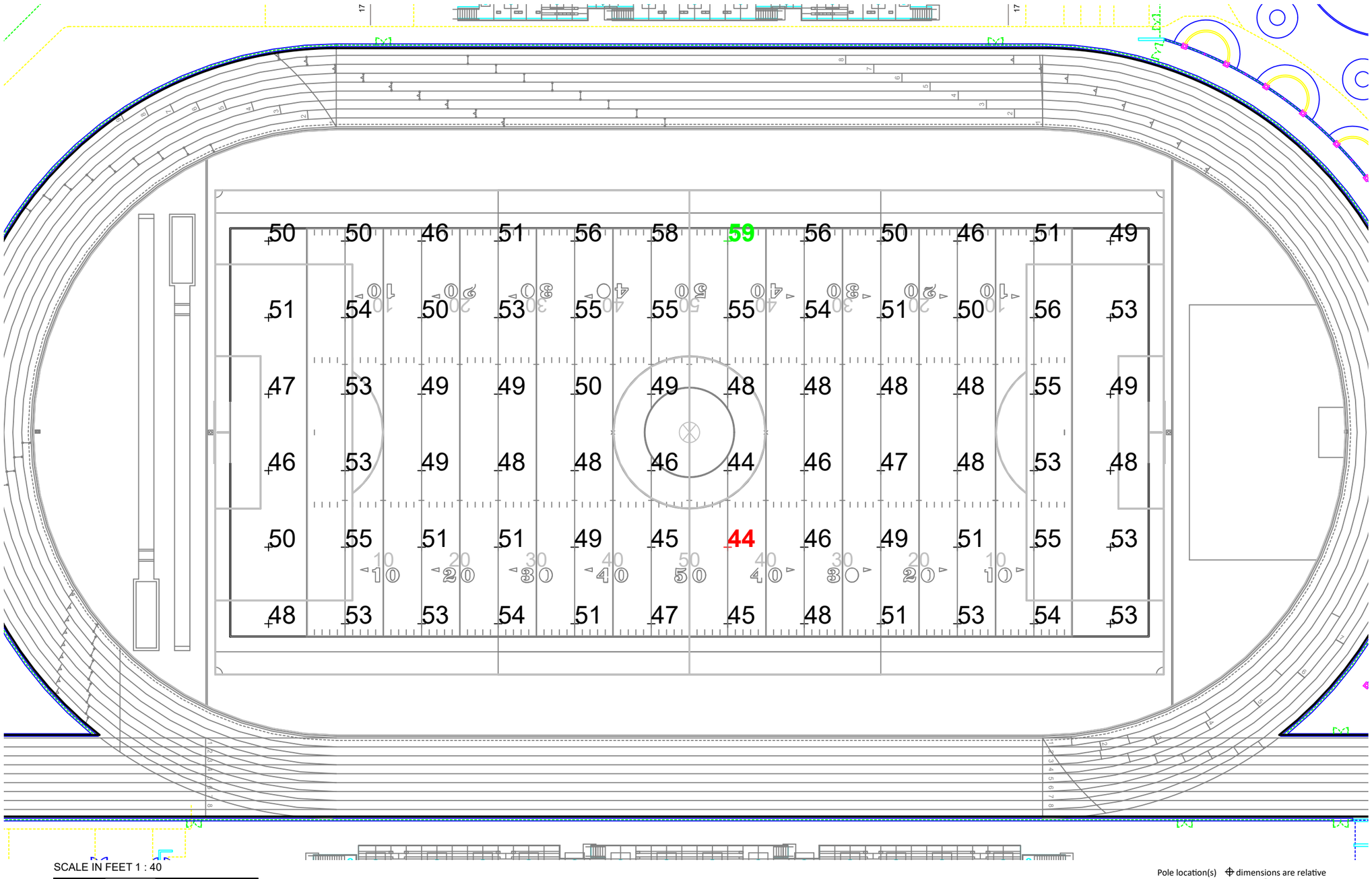


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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	0	2
				100'	TLC-LED-1500	12	12	0
4	TOTALS					64	56	8



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**50**
Scan Average:	50.52
Maximum:	59
Minimum:	44
Avg / Min:	1.14
Guaranteed Max / Min:	**2**
Max / Min:	1.34
UG (adjacent pts):	1.14
CU:	0.41
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 lum
No. of Luminaires:	**56**
Total Load:	73.31 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

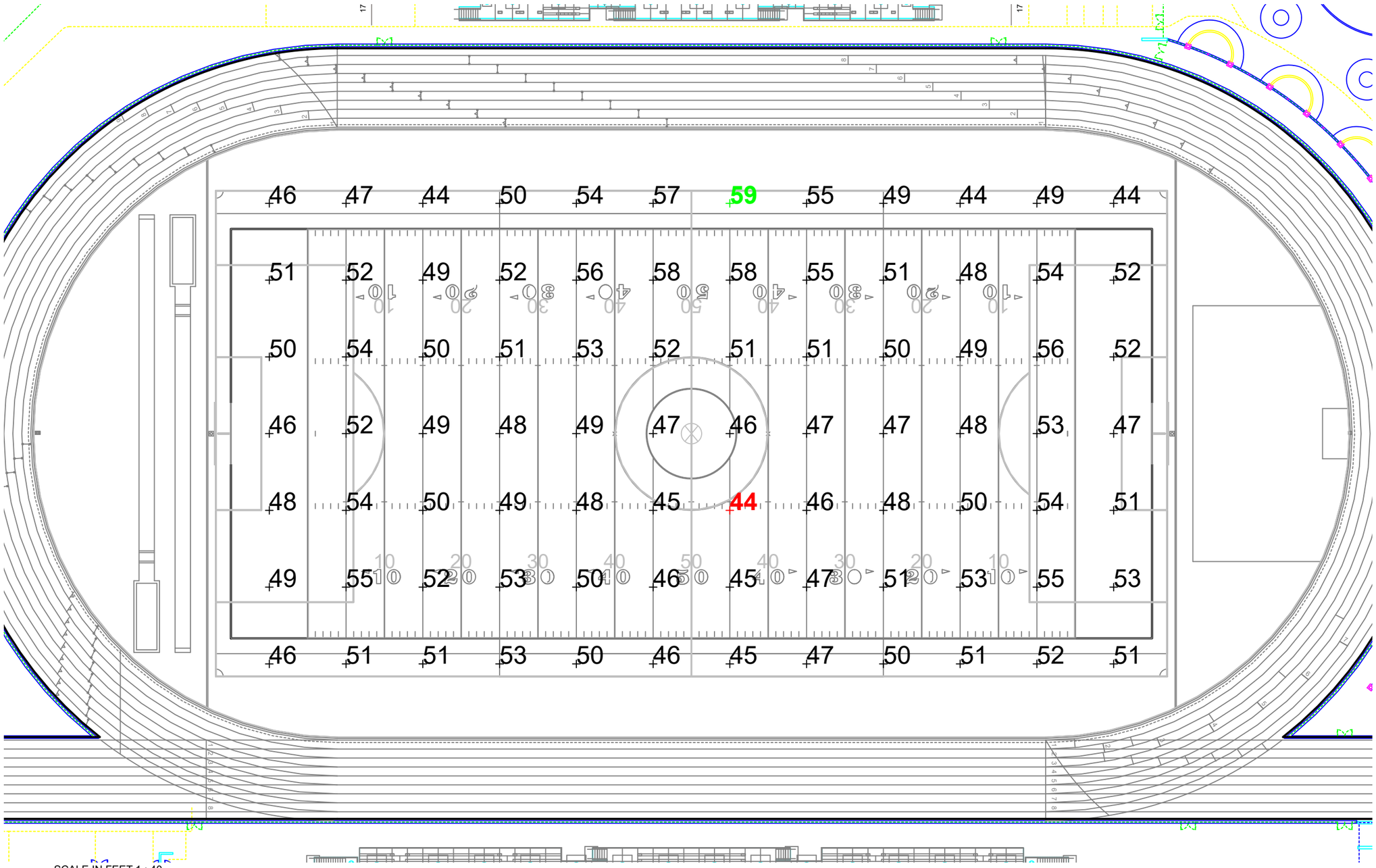
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	0	2
				100'	TLC-LED-1500	12	12	0
4	TOTALS					64	56	8



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Soccer 1**
Size:	372' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**50.21**
Maximum:	59
Minimum:	44
Avg / Min:	1.14
Max / Min:	**1.33**
UG (adjacent pts):	1.17
CU:	0.47
No. of Points:	84

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 lum
No. of Luminaires:	**56**
Total Load:	73.31 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

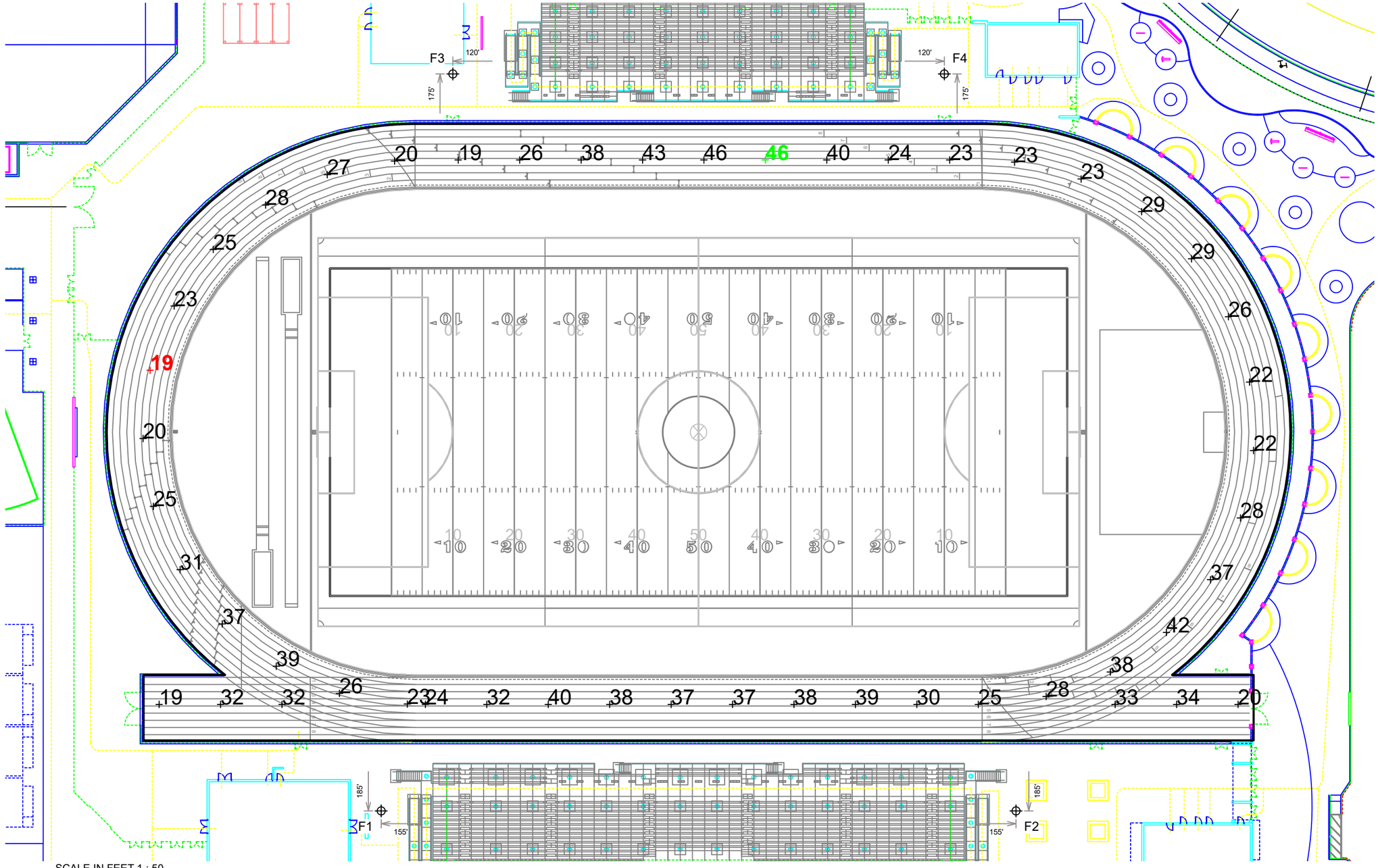
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	0	2
				100'	TLC-LED-1500	12	12	0
4	TOTALS					64	56	8



Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Track**
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**30.08**
Maximum:	46
Minimum:	19
Avg / Min:	1.58
Max / Min:	**2.41**
UG (adjacent pts):	0.00
CU:	0.17
No. of Points:	50

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 lum
No. of Luminaires:	**56**
Total Load:	73.31 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

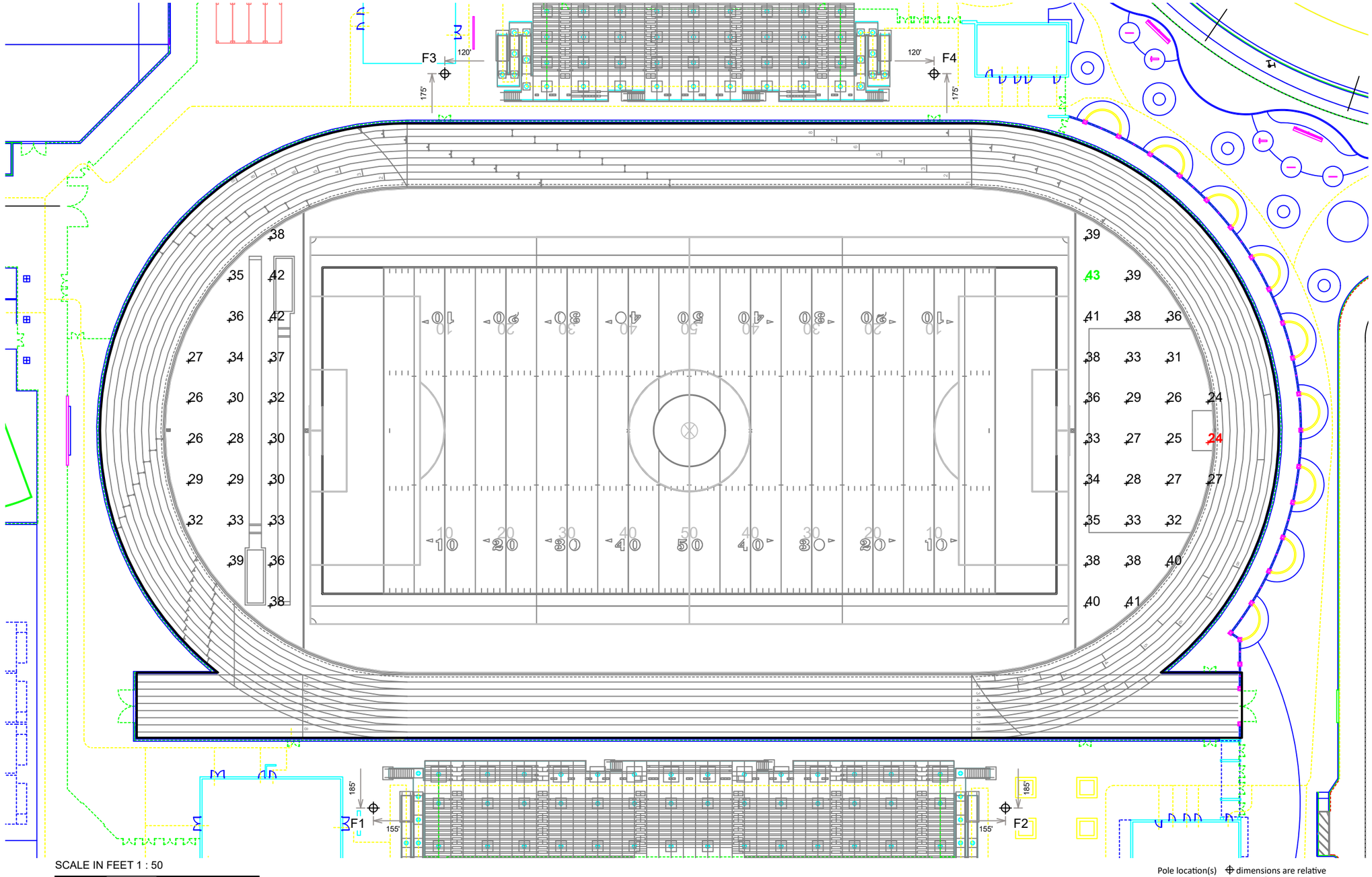
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	0	2
				100'	TLC-LED-1500	12	12	0
4	TOTALS					64	56	8



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Track Infield**
Size:	372' x 190'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**33.38**
Maximum:	43
Minimum:	24
Avg / Min:	1.39
Max / Min:	**1.77**
UG (adjacent pts):	1.26
CU:	0.09
No. of Points:	52

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 lum
No. of Luminaires:	**56**
Total Load:	73.31 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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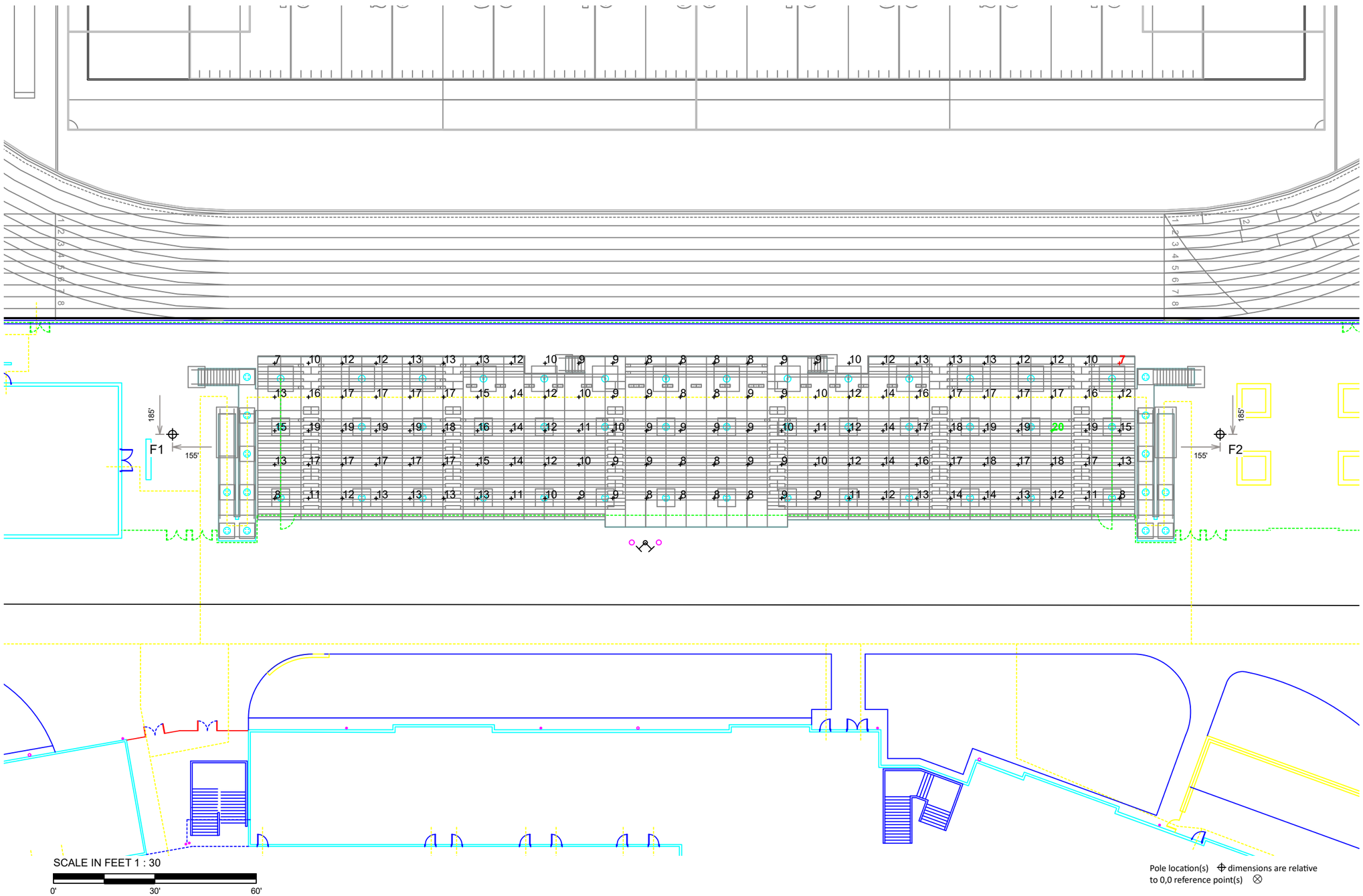
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-600	2	2	0
				100'	TLC-LED-1500	12	0	12
4	TOTALS					64	8	56



Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Home Bleachers**
Size:	0' x 0'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**12.60**
Maximum:	20
Minimum:	7
Avg / Min:	1.85
Max / Min:	**2.87**
UG (adjacent pts):	1.80
CU:	0.29
No. of Points:	130

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	65,600 lumens
No. of Luminaires:	**8**
Total Load:	4.64 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

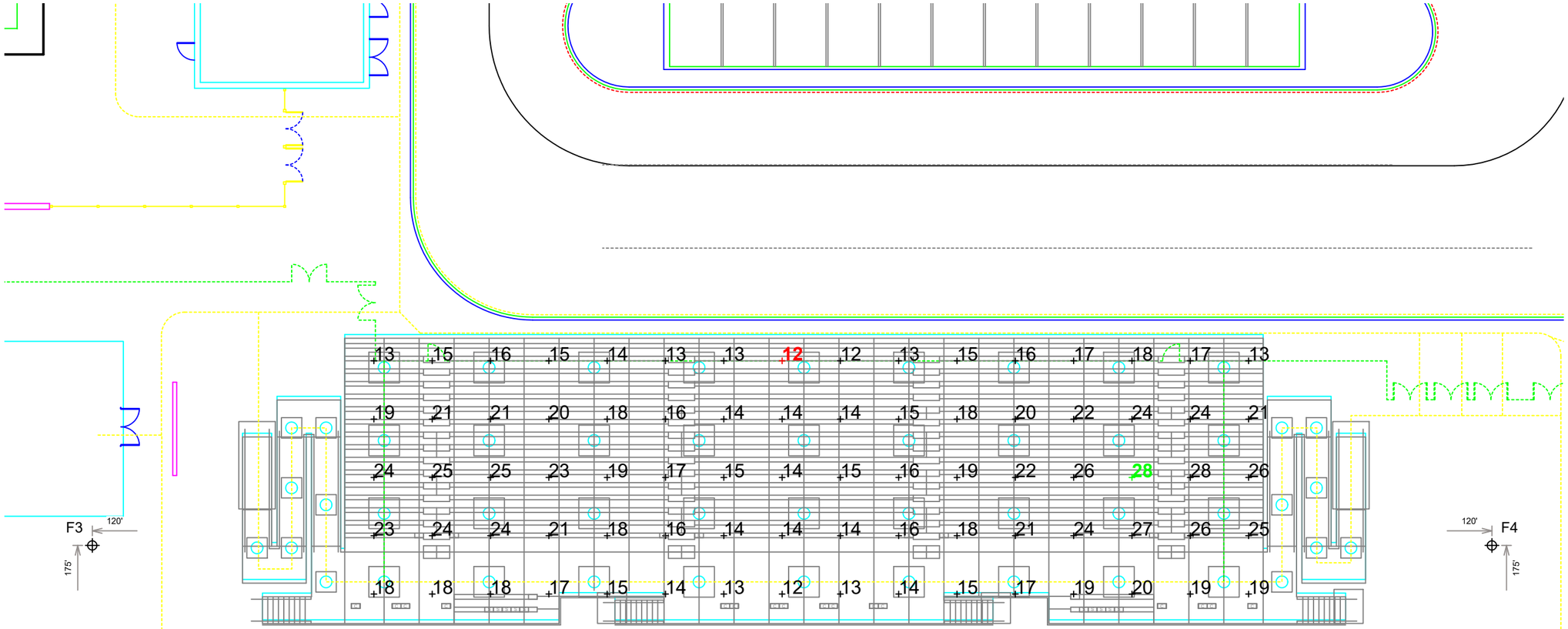
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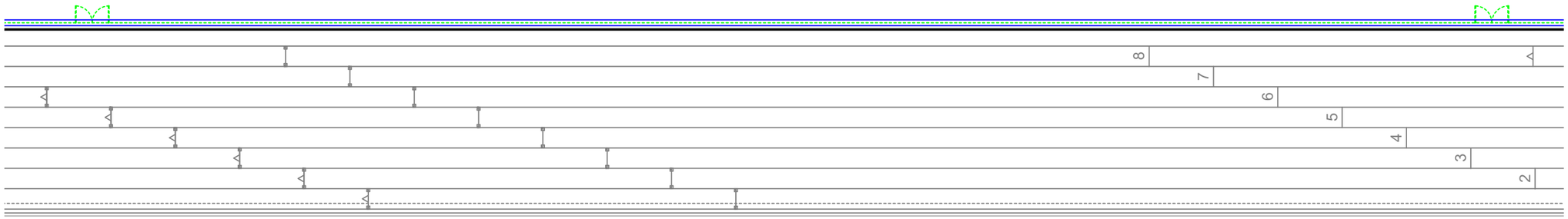
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-600	2	2	0
				100'	TLC-LED-1500	12	0	12
4	TOTALS					64	8	56





SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Visitor Bleachers**
Size:	0' x 0'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**18.25**
Maximum:	28
Minimum:	12
Avg / Min:	1.52
Max / Min:	**2.35**
UG (adjacent pts):	1.55
CU:	0.26
No. of Points:	80

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	65,600 lumens
No. of Luminaires:	**8**
Total Load:	4.64 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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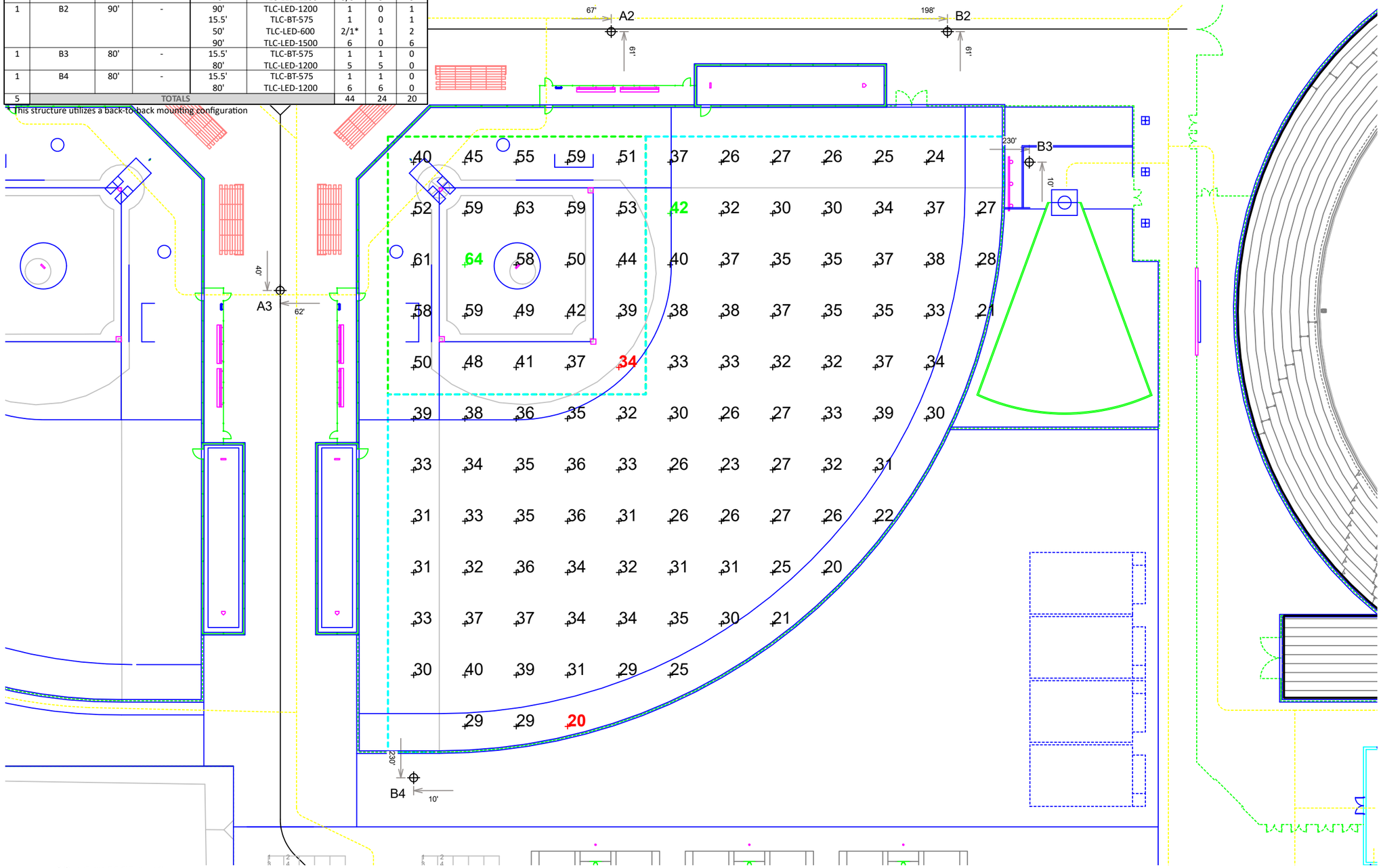
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A2	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	B2	90'	-	90'	TLC-LED-1200	1	0	1
				15.5'	TLC-BT-575	1	0	1
				50'	TLC-LED-600	2/1*	1	2
				90'	TLC-LED-1500	6	0	6
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
5	TOTALS					44	24	20

*This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Softball**
Size:	220'/220'/220' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.72	31.77
Maximum:	64	42
Minimum:	34	20
Avg / Min:	1.50	1.57
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.89	2.06
UG (adjacent pts):	1.31	1.58
CU:	0.62	
No. of Points:	25	90

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**24**
Total Load:	24.35 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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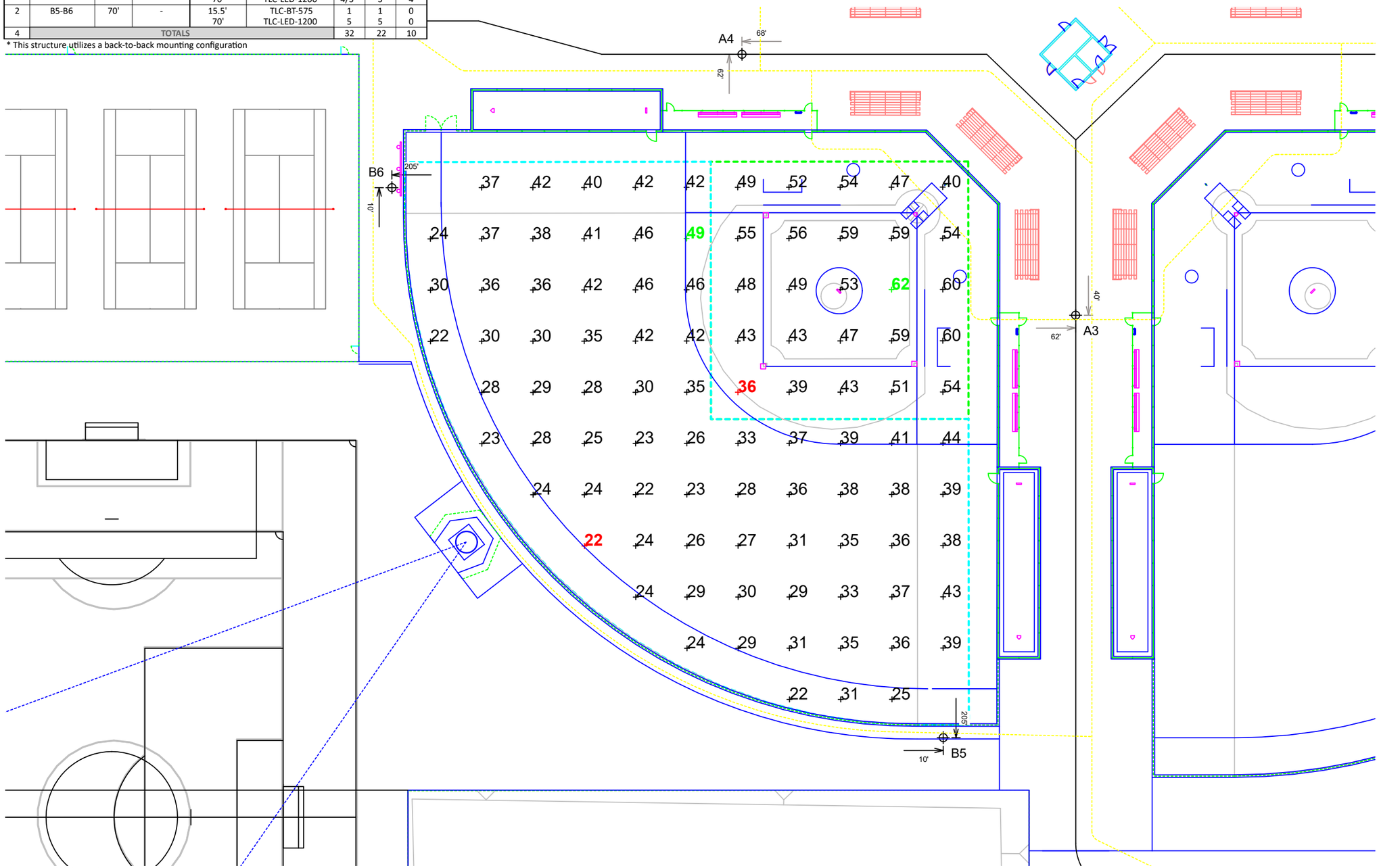
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	A4	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
4	TOTALS					32	22	10

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**JV Softball**
Size:	200'/200'/200' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.89	33.15
Maximum:	62	49
Minimum:	36	22
Avg / Min:	1.40	1.54
Guaranteed Max / Min:	**2**	**2**
Max / Min:	1.72	2.27
UG (adjacent pts):	1.34	1.53
CU:	0.59	
No. of Points:	25	71

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**22**
Total Load:	22.42 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Baseball**
Size:	Irregular 328' / 385' / 328'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.65	30.86
Maximum:	62	40
Minimum:	35	19
Avg / Min:	1.44	1.58
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.75	2.04
UG (adjacent pts):	1.38	1.94
CU:	0.73	
No. of Points:	25	109

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 136,000 / 132,300 / 52,000 / 65,600 lume
No. of Luminaires:	**48**
Total Load:	52.52 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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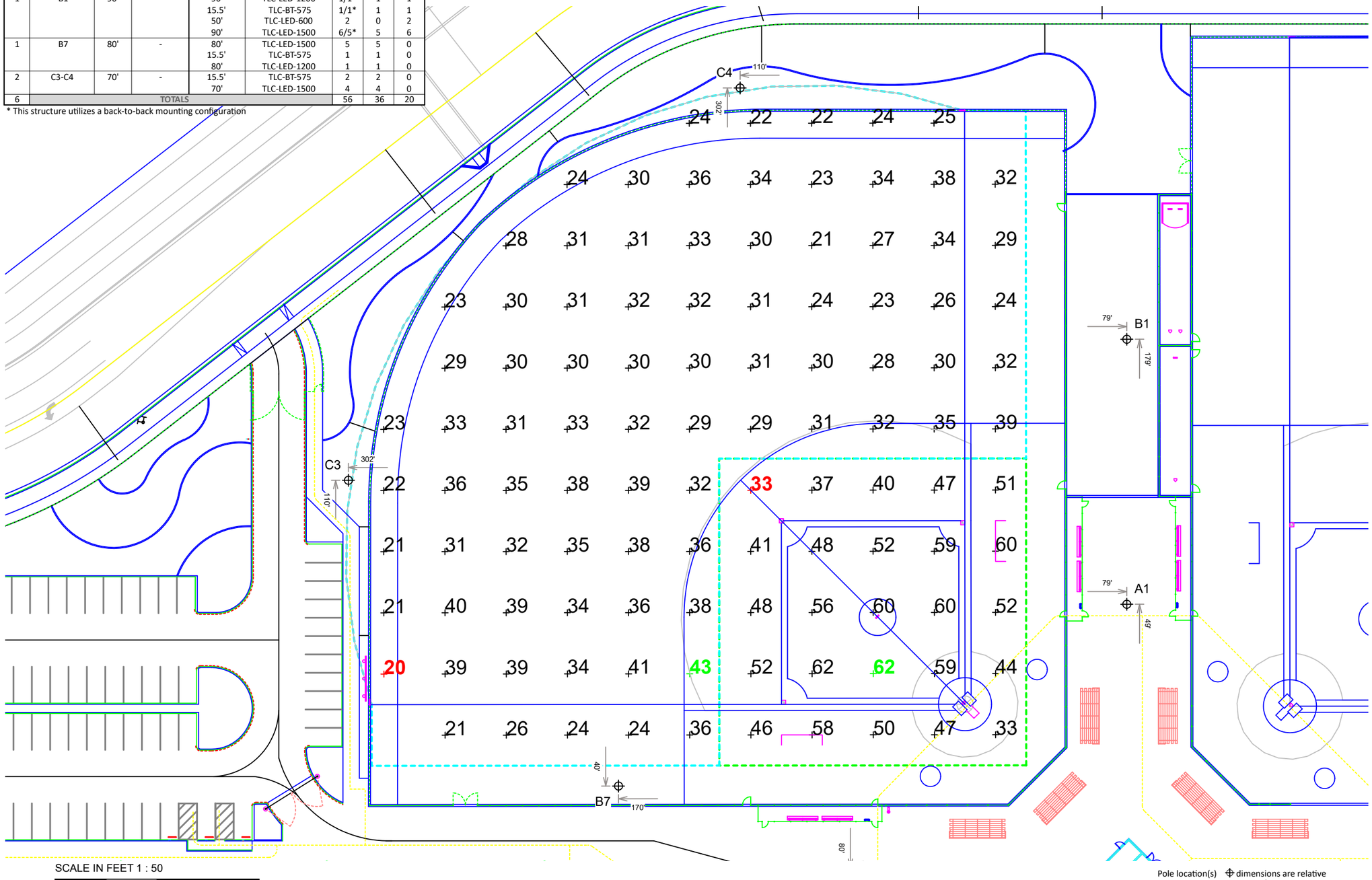
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				70'	TLC-LED-1200	4/4*	4	4
1	A4	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	0	1
				70'	TLC-LED-1200	4/3*	4	3
1	B1	90'	-	90'	TLC-LED-1200	1/1*	1	1
				15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	0	2
				90'	TLC-LED-1500	6/5*	5	6
1	B7	80'	-	80'	TLC-LED-1500	5	5	0
				15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	1	1	0
2	C3-C4	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
6	TOTALS					56	36	20

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**JV Baseball**
Size:	291'/335'/291' - basepath 90'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.27	30.51
Maximum:	62	43
Minimum:	33	20
Avg / Min:	1.53	1.51
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.89	2.14
UG (adjacent pts):	1.41	1.92
CU:	0.75	
No. of Points:	25	82

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 lum
No. of Luminaires:	**36**
Total Load:	42.5 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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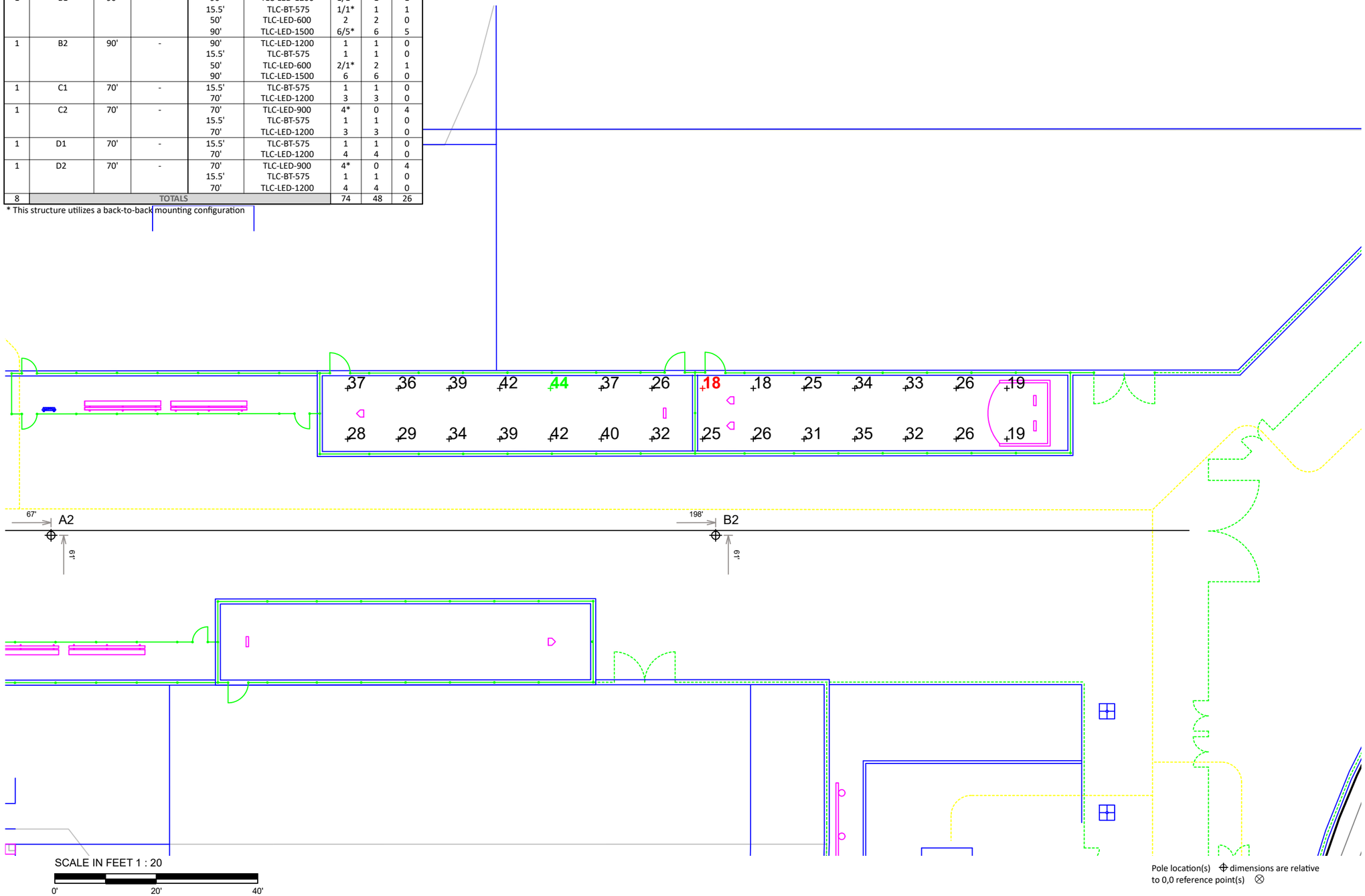
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				70'	TLC-LED-1200	4/4*	4	4
1	A2	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	0	1
				70'	TLC-LED-1200	4/3*	4	3
1	B1	90'	-	90'	TLC-LED-1200	1/1*	1	1
				15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	2	0
				90'	TLC-LED-1500	6/5*	6	5
1	B2	90'	-	90'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				50'	TLC-LED-600	2/1*	2	1
				90'	TLC-LED-1500	6	6	0
1	C1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	C2	70'	-	70'	TLC-LED-900	4*	0	4
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	D1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
1	D2	70'	-	70'	TLC-LED-900	4*	0	4
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
8	TOTALS					74	48	26

* This structure utilizes a back-to-back mounting configuration



Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Baseball RF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**31.15**
Maximum:	44
Minimum:	18
Avg / Min:	1.70
Max / Min:	**2.42**
UG (adjacent pts):	1.45
CU:	0.02
No. of Points:	28

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 136,000 / 132,300 / 52,000 / 65,600 lume
No. of Luminaires:	**48**
Total Load:	52.52 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

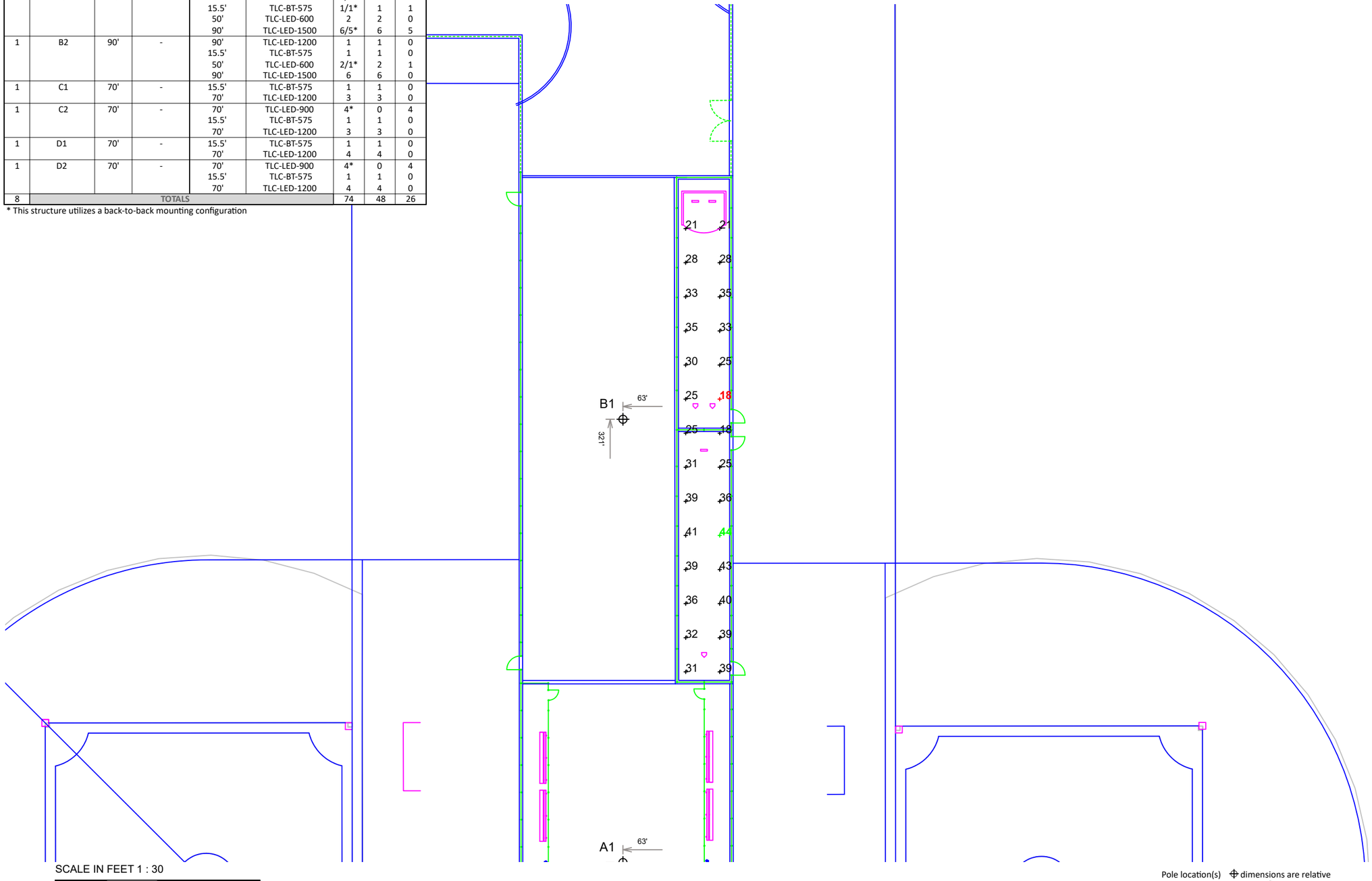
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				70'	TLC-LED-1200	4/4*	4	4
1	A2	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	0	1
				70'	TLC-LED-1200	4/3*	4	3
1	B1	90'	-	90'	TLC-LED-1200	1/1*	1	1
				15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	2	0
				90'	TLC-LED-1500	6/5*	6	5
1	B2	90'	-	90'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				50'	TLC-LED-600	2/1*	2	1
				90'	TLC-LED-1500	6	6	0
1	C1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	C2	70'	-	70'	TLC-LED-900	4*	0	4
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	D1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
1	D2	70'	-	70'	TLC-LED-900	4*	0	4
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
8	TOTALS					74	48	26

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Baseball LF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**31.73**
Maximum:	44
Minimum:	18
Avg / Min:	1.74
Max / Min:	**2.40**
UG (adjacent pts):	1.42
CU:	0.02
No. of Points:	28

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 136,000 / 132,300 / 52,000 / 65,600 lume
No. of Luminaires:	**48**
Total Load:	52.52 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

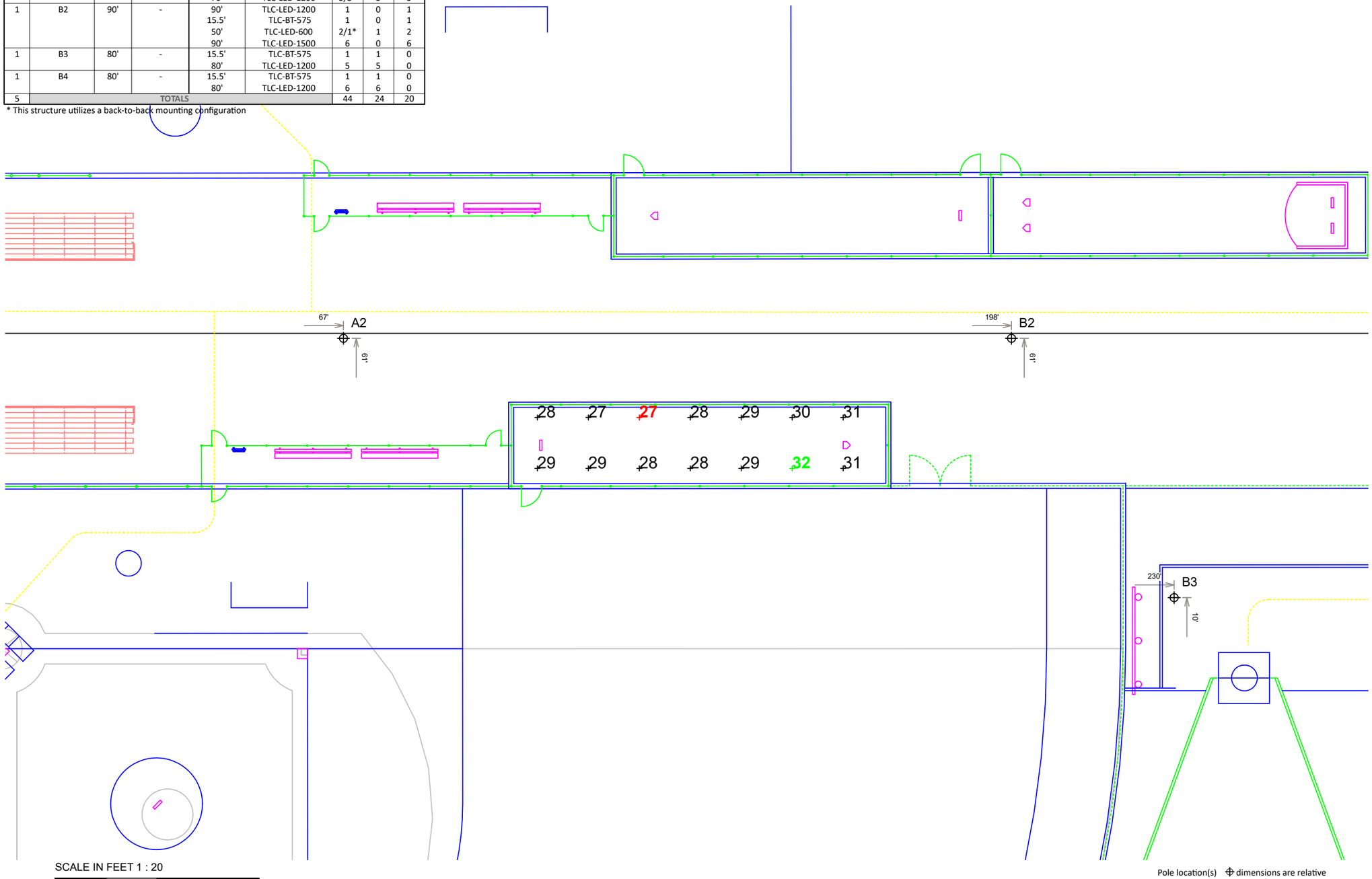
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A2	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	B2	90'	-	90'	TLC-LED-1200	1	0	1
				15.5'	TLC-BT-575	1	0	1
				50'	TLC-LED-600	2/1*	1	2
				90'	TLC-LED-1500	6	0	6
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
5	TOTALS					44	24	20

* This structure utilizes a back-to-back mounting configuration



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Softball LF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**29.01**
Maximum:	32
Minimum:	27
Avg / Min:	1.07
Max / Min:	**1.17**
UG (adjacent pts):	1.08
CU:	0.02
No. of Points:	14

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**24**
Total Load:	24.35 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

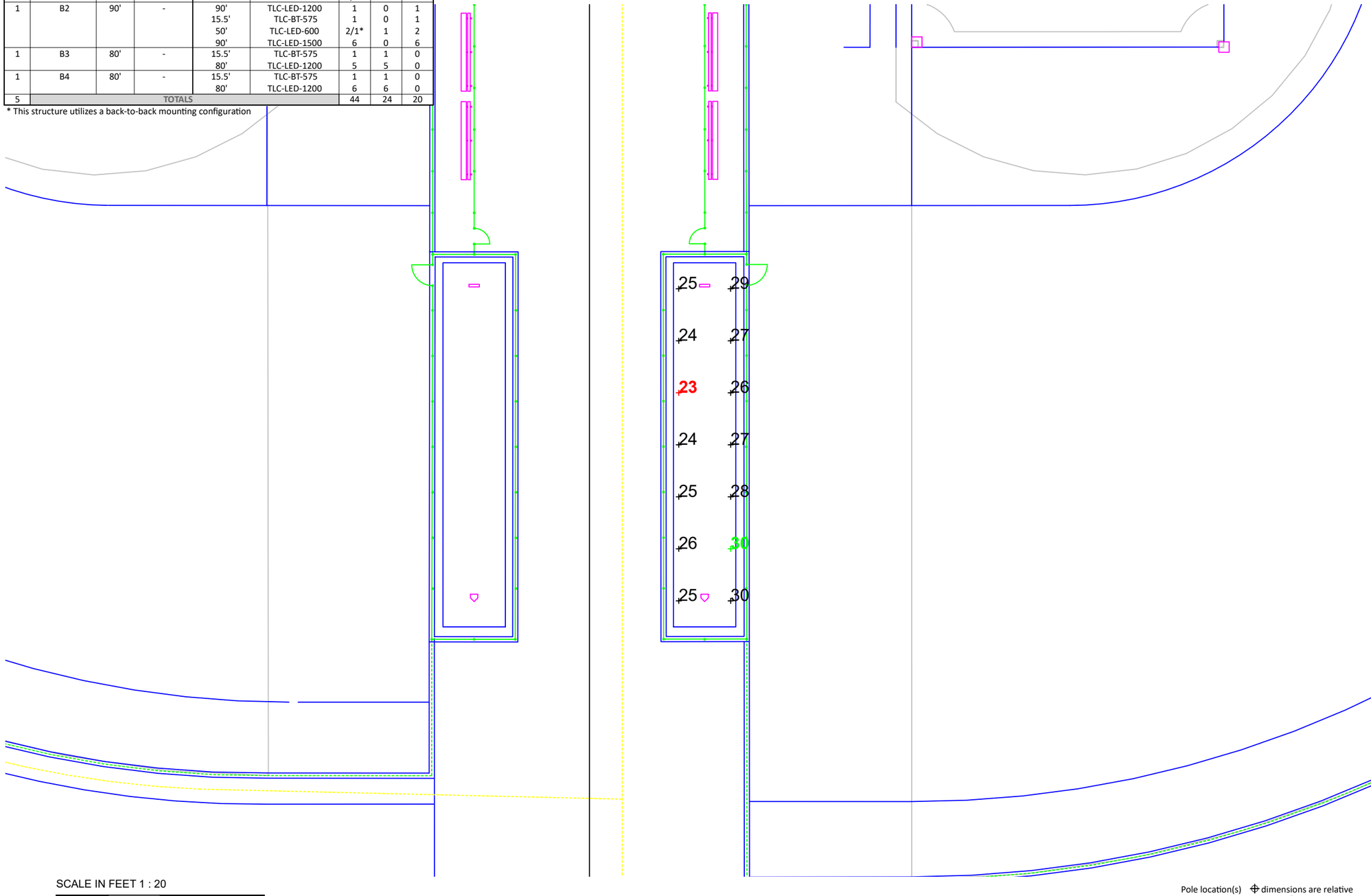
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A2	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	B2	90'	-	90'	TLC-LED-1200	1	0	1
				15.5'	TLC-BT-575	1	0	1
				50'	TLC-LED-600	2/1*	1	2
				90'	TLC-LED-1500	6	0	6
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
5	TOTALS					44	24	20

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Sotball RF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**26.14**
Maximum:	30
Minimum:	23
Avg / Min:	1.13
Max / Min:	**1.28**
UG (adjacent pts):	1.18
CU:	0.01
No. of Points:	14

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**24**
Total Load:	24.35 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

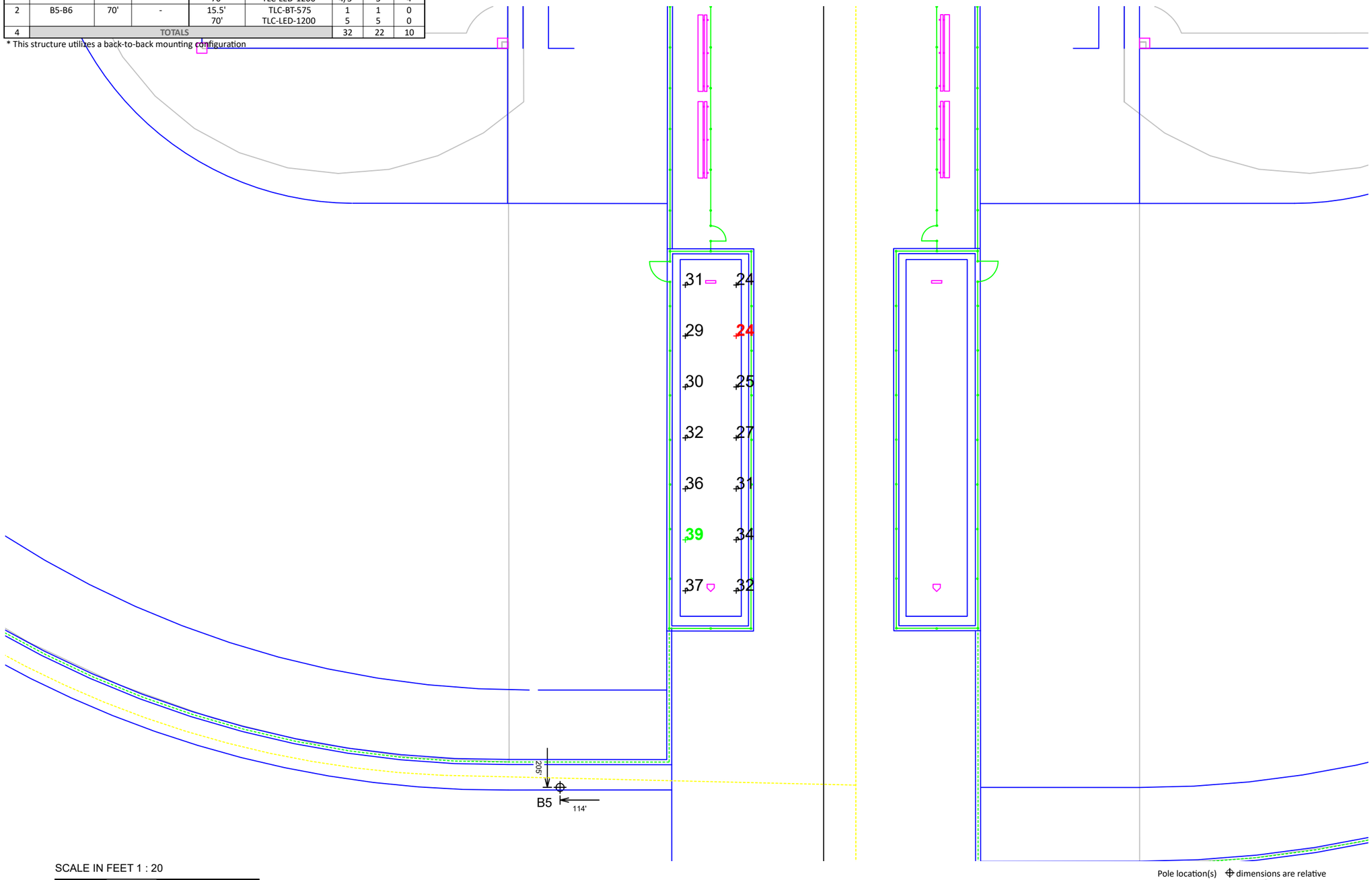
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	A4	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
4	TOTALS					32	22	10

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**JV Softball LF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**30.73**
Maximum:	39
Minimum:	24
Avg / Min:	1.29
Max / Min:	**1.64**
UG (adjacent pts):	1.27
CU:	0.02
No. of Points:	14

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**22**
Total Load:	22.42 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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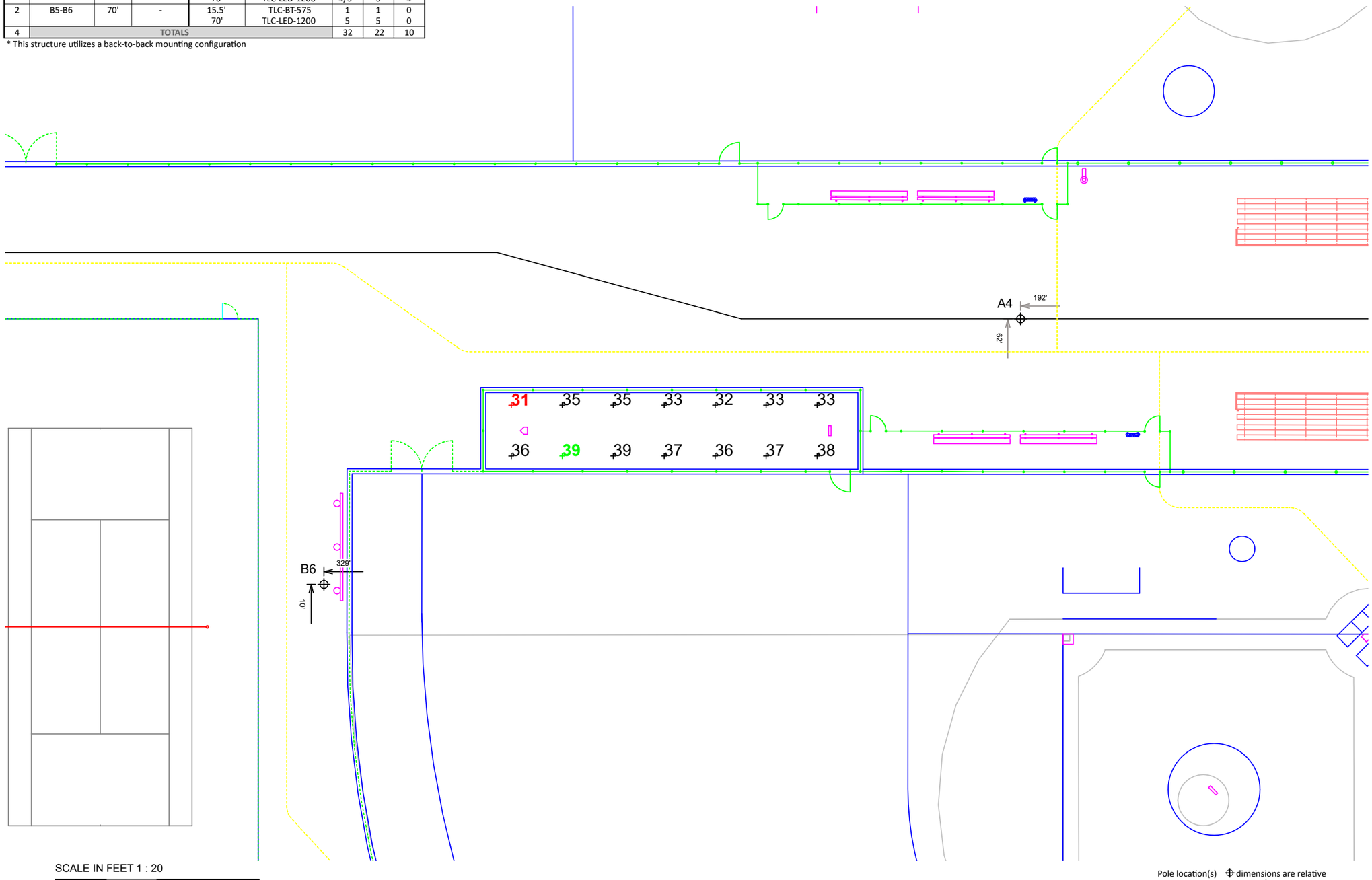
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	2	1	1
				70'	TLC-LED-1200	3/3*	3	3
1	A4	70'	-	15.5'	TLC-BT-575	1/1*	1	1
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	3	4
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
4	TOTALS					32	22	10

* This structure utilizes a back-to-back mounting configuration



Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**JV Softball RF Bullpen**
Size:	220'/220'/220' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**35.35**
Maximum:	39
Minimum:	31
Avg / Min:	1.13
Max / Min:	**1.26**
UG (adjacent pts):	1.14
CU:	0.02
No. of Points:	14

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	132,300 / 136,000 / 52,000 / 65,600 lumens
No. of Luminaires:	**22**
Total Load:	22.42 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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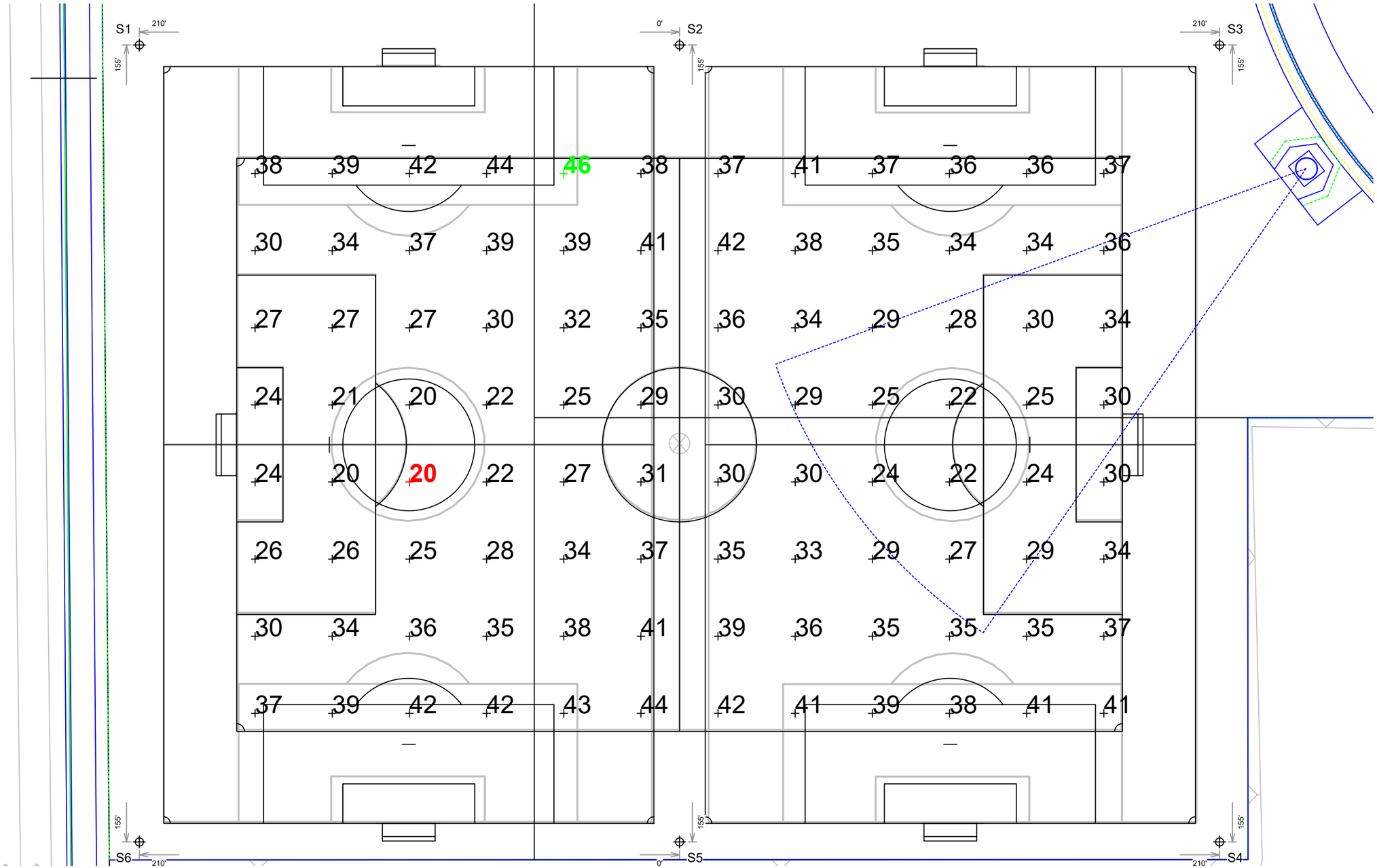
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	S1, S3-S4 S6	70'	-	70'	TLC-LED-1500	4	4	0
2	S2, S5	70'	-	70'	TLC-LED-1500	8	8	0
6	TOTALS					32	32	0



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Soccer 4**
Size:	344' x 223'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**32.96**
Maximum:	46
Minimum:	20
Avg / Min:	1.68
Max / Min:	**2.35**
UG (adjacent pts):	1.42
CU:	0.58
No. of Points:	96

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 lumens
No. of Luminaires:	**32**
Total Load:	45.76 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

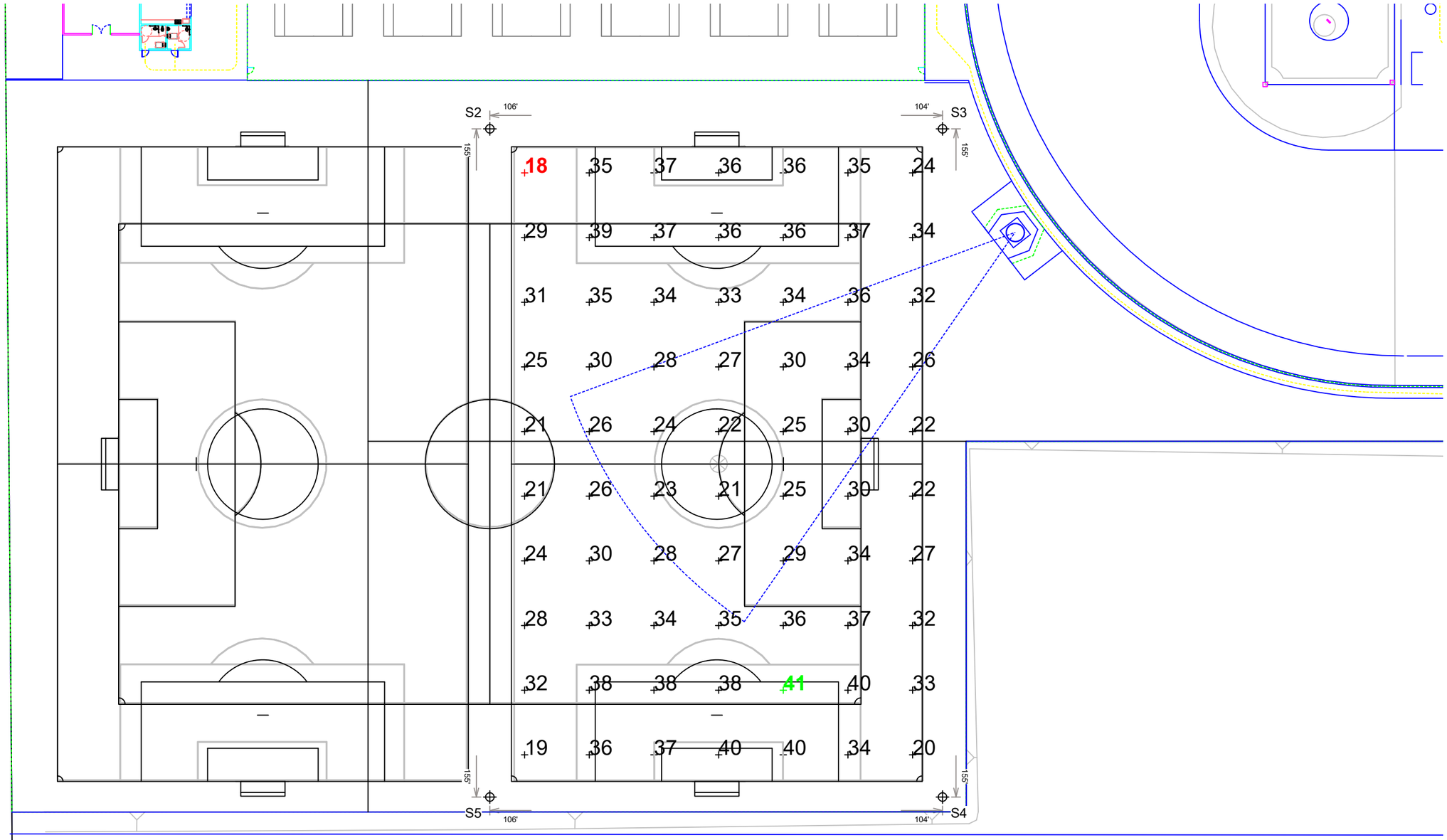
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	S2, S5	70'	-	70'	TLC-LED-1500	8	4	4
2	S3-S4	70'	-	70'	TLC-LED-1500	4	4	0
4	TOTALS					24	16	8



SCALE IN FEET 1 : 50

0' 50' 100'

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Soccer 3**
Size:	294' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**30.90**
Maximum:	41
Minimum:	18
Avg / Min:	1.71
Max / Min:	**2.29**
UG (adjacent pts):	1.96
CU:	0.79
No. of Points:	70

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 lumens
No. of Luminaires:	**16**
Total Load:	22.88 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

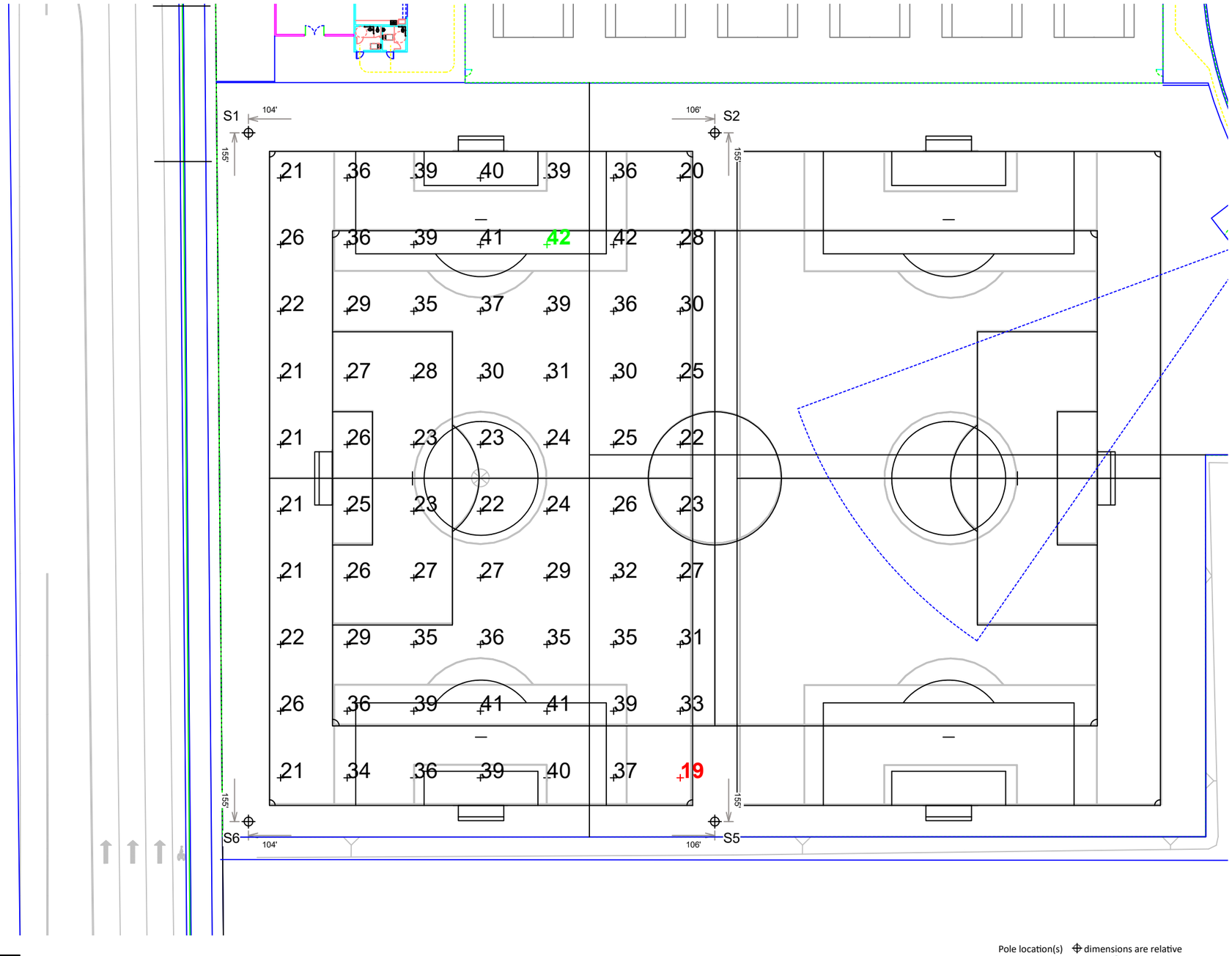
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	S1, S6	70'	3'	73'	TLC-LED-1500	4	4	0
2	S2, S5	70'	3'	73'	TLC-LED-1500	8	4	4
4	TOTALS					24	16	8



SCALE IN FEET 1 : 50

0' 50' 100'

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Soccer 2**
Size:	294' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**30.36**
Maximum:	42
Minimum:	19
Avg / Min:	1.64
Max / Min:	**2.29**
UG (adjacent pts):	1.99
CU:	0.79
No. of Points:	70

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 lumens
No. of Luminaires:	**16**
Total Load:	22.88 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

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Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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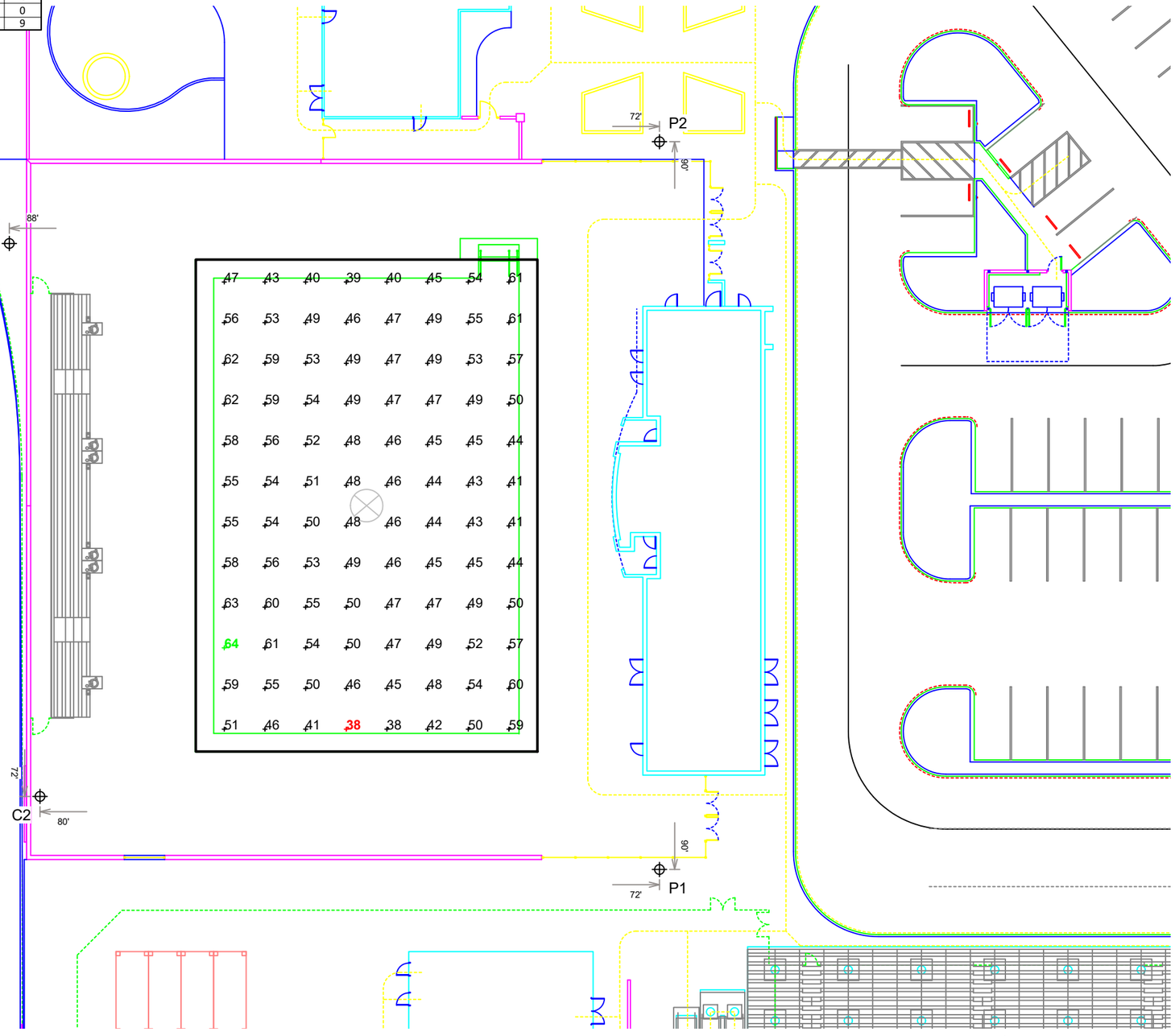
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	3	0	3
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	4	0	4
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	TOTALS					23	14	9

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Pool**
Size:	121' x 84'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**50.25**
Maximum:	64
Minimum:	38
Avg / Min:	1.33
Max / Min:	**1.70**
UG (adjacent pts):	1.23
CU:	0.38
No. of Points:	96

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	89,600 lumens
No. of Luminaires:	**14**
Total Load:	12.46 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

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Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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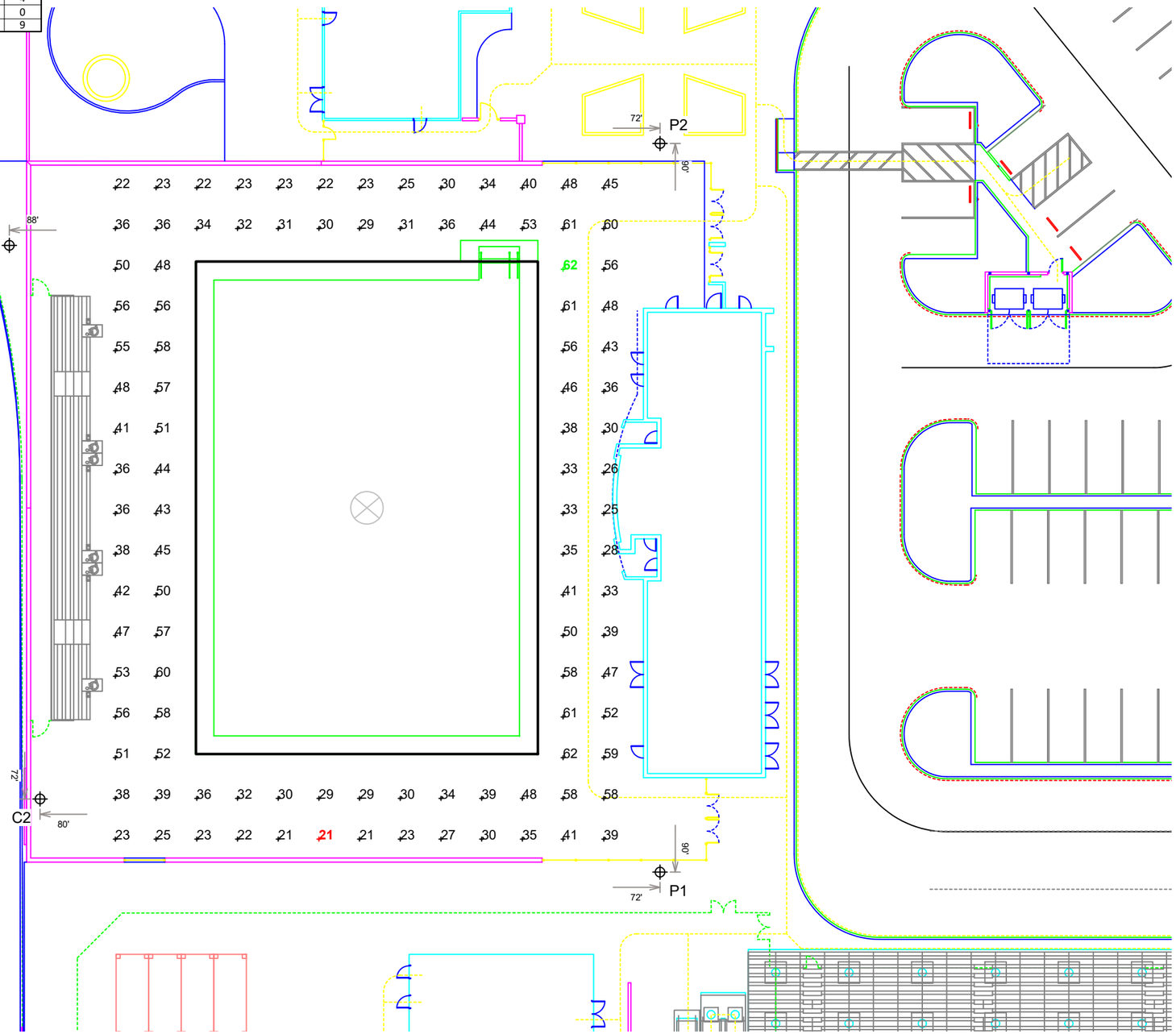
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	3	0	3
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	4	0	4
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	TOTALS					23	14	9

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Pool Deck**
Size:	121' x 84'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**40.34**
Maximum:	62
Minimum:	21
Avg / Min:	1.93
Max / Min:	**2.99**
UG (adjacent pts):	1.63
CU:	0.33
No. of Points:	104

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	89,600 lumens
No. of Luminaires:	**14**
Total Load:	12.46 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

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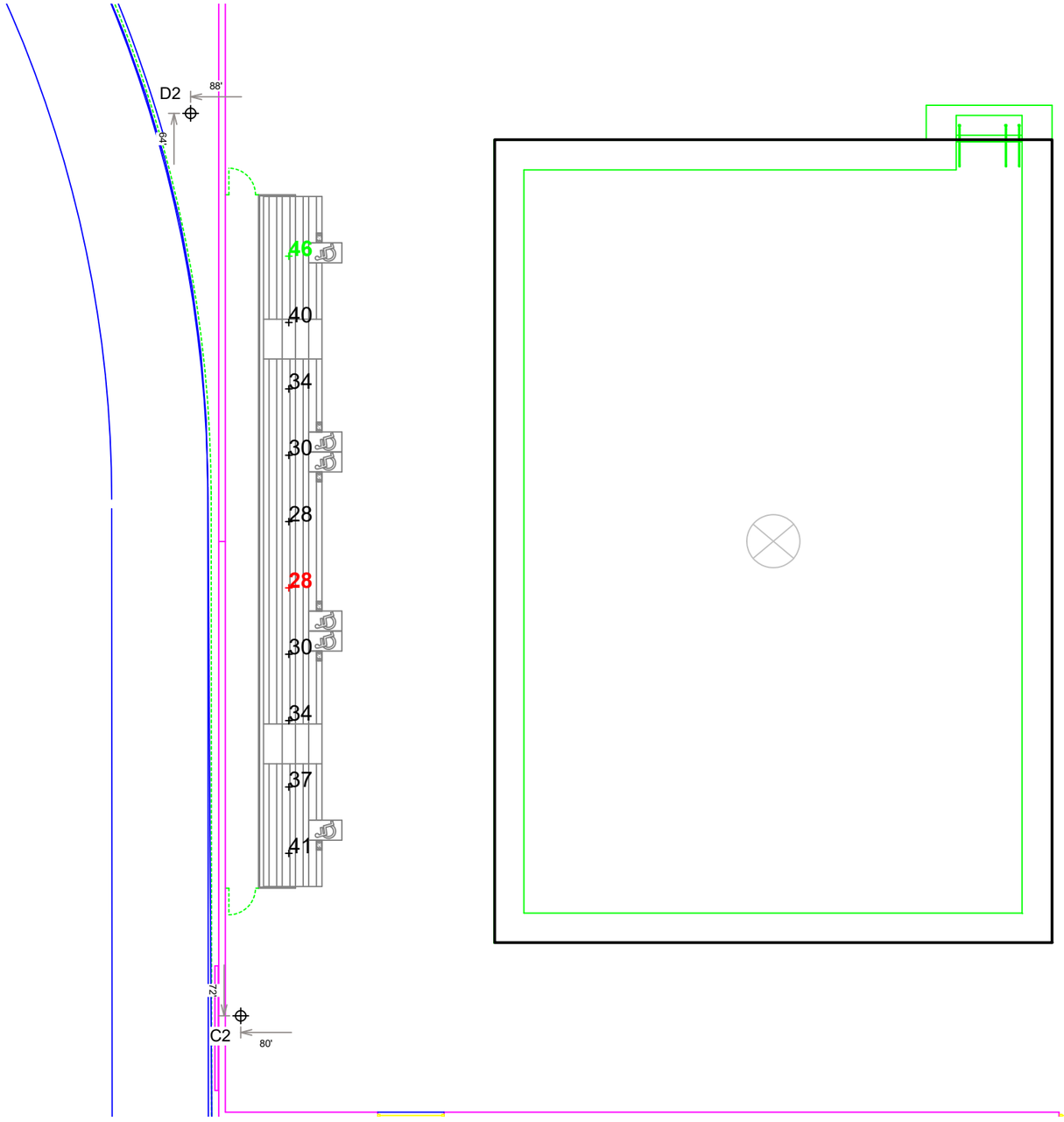
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	3	0	3
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	0	1
				70'	TLC-LED-1200	4	0	4
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	TOTALS					23	14	9

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Pool Deck Bleachers**
Size:	121' x 84'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**34.72**
Maximum:	46
Minimum:	28
Avg / Min:	1.26
Max / Min:	**1.66**
UG (adjacent pts):	1.17
CU:	0.03
No. of Points:	10

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	89,600 lumens
No. of Luminaires:	**14**
Total Load:	12.46 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

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Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0185**
Maximum:	0.16
Minimum:	0.00
No. of Points:	127

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 6
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

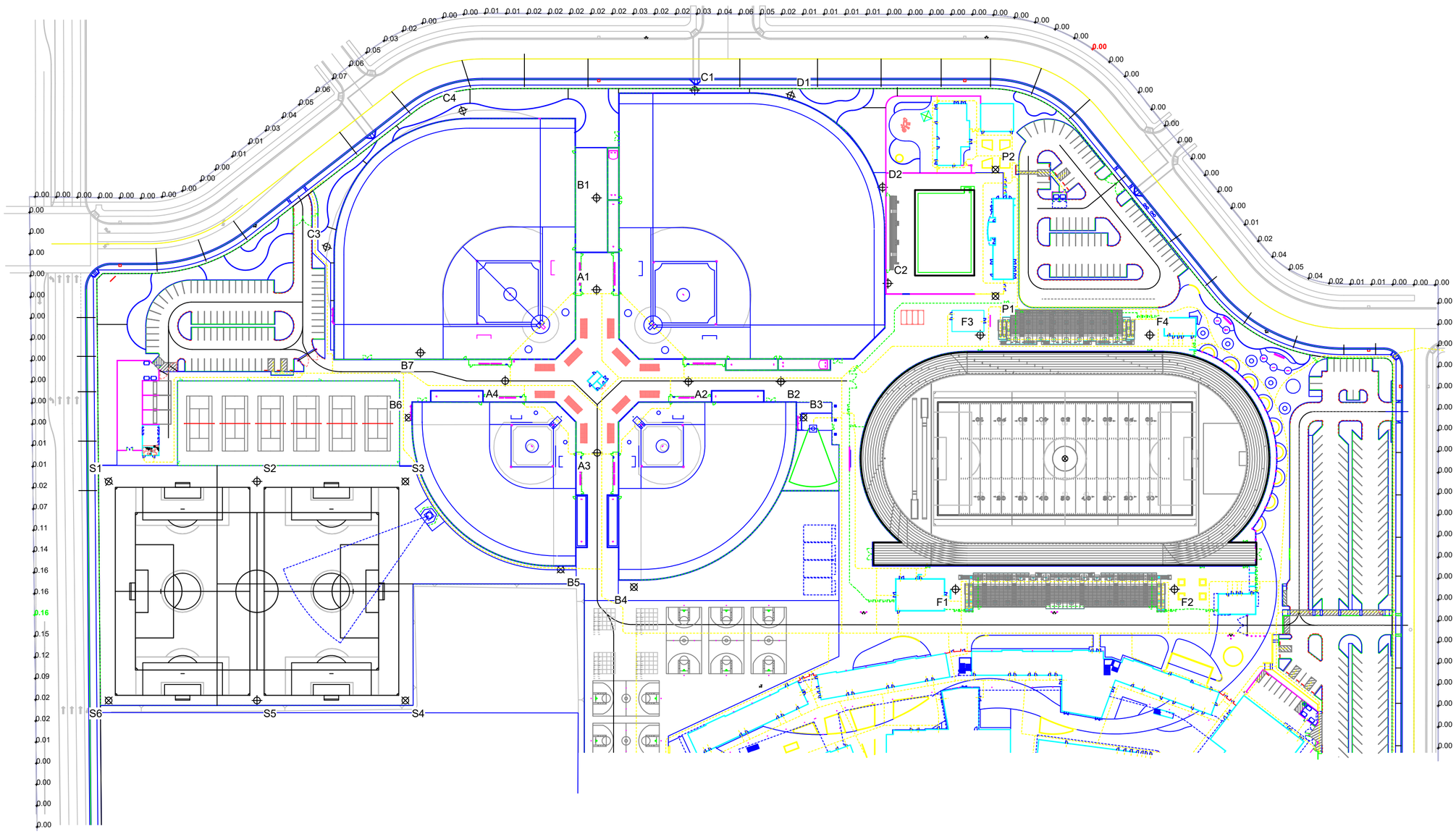
Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0438**
Maximum:	0.30
Minimum:	0.00
No. of Points:	127

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 6
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

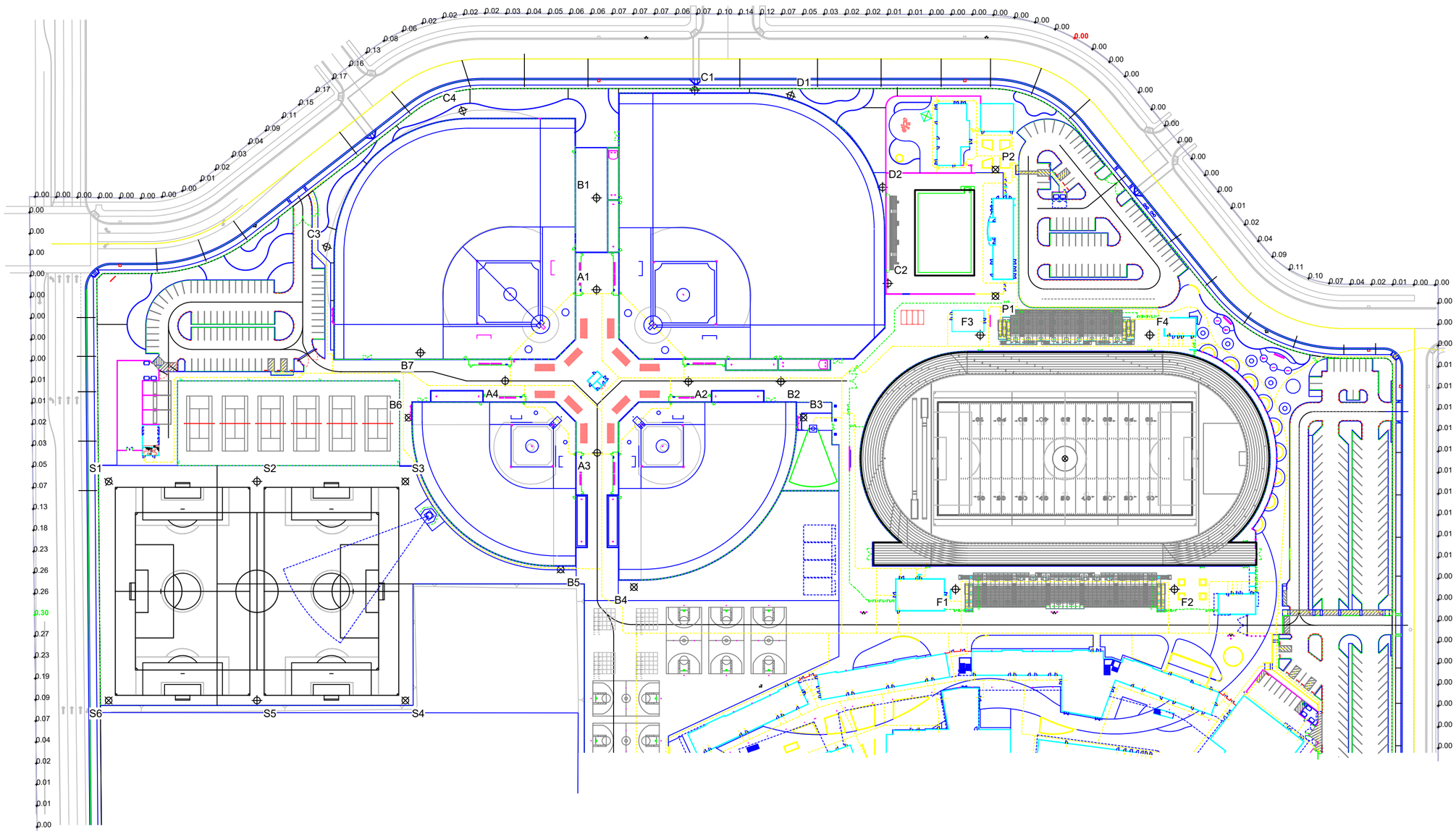
Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Oxnard High School #8

Oxnard, CA

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	**1770.3619**
Maximum:	7090.00
Minimum:	3.81
No. of Points:	127

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 6
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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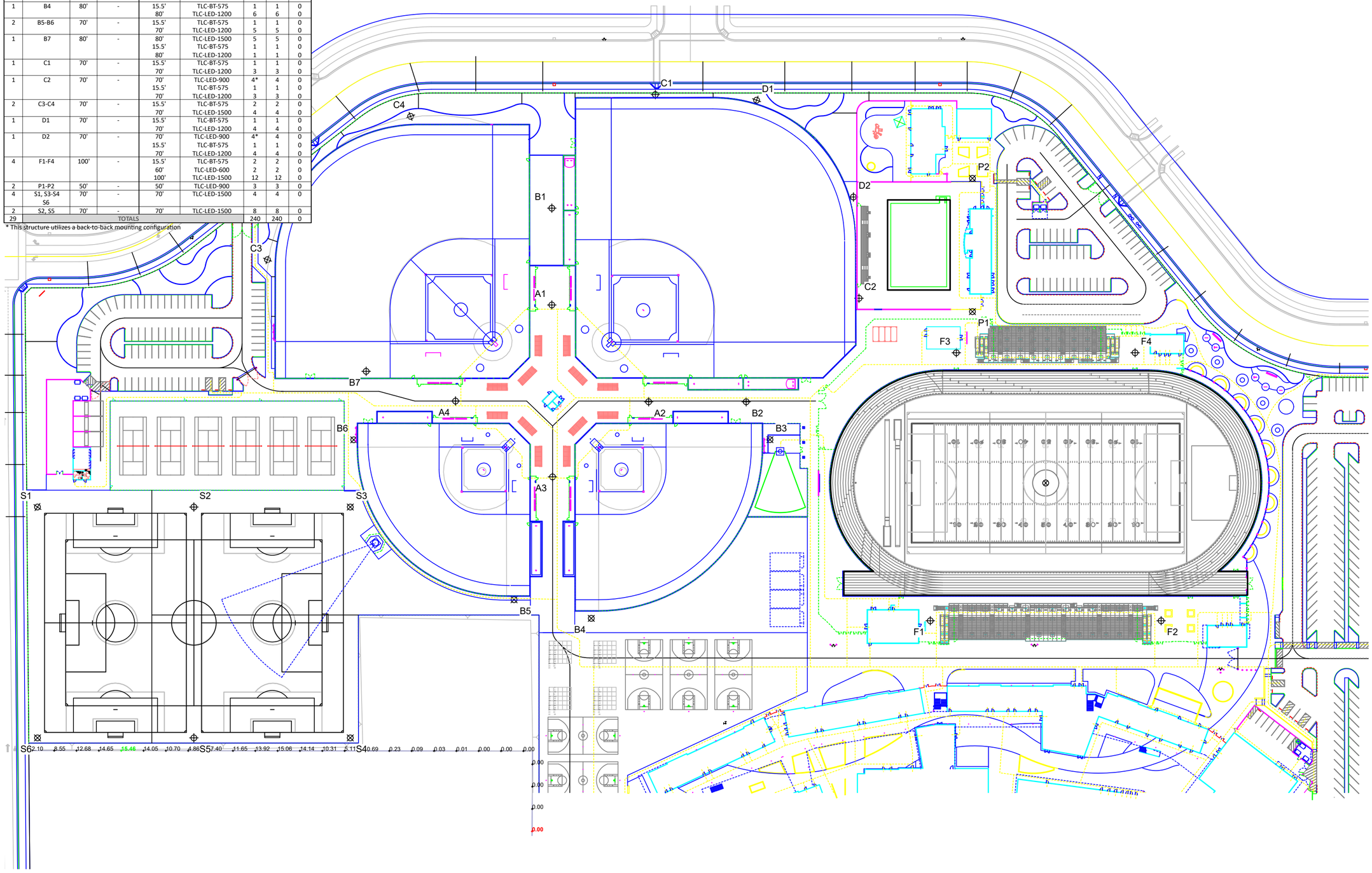
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				70'	TLC-LED-1200	4/4*	8	0
2	A2, A4	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	7	0
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				70'	TLC-LED-1200	3/3*	6	0
1	B1	90'	-	90'	TLC-LED-1200	1/1*	2	0
				15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				90'	TLC-LED-1500	6/5*	11	0
1	B2	90'	-	90'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				50'	TLC-LED-600	2/1*	3	0
				90'	TLC-LED-1500	6	6	0
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
1	B7	80'	-	80'	TLC-LED-1500	5	5	0
				15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	1	1	0
1	C1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
2	C3-C4	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
1	D1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	2	0
				100'	TLC-LED-1500	12	12	0
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	S1, S3-S4 S6	70'	-	70'	TLC-LED-1500	4	4	0
2	S2, S5	70'	-	70'	TLC-LED-1500	8	8	0
29	TOTALS					240	240	0

* This structure utilizes a back-to-back mounting configuration



GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**5.9881**
Maximum:	15.46
Minimum:	0.00
No. of Points:	27

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 65
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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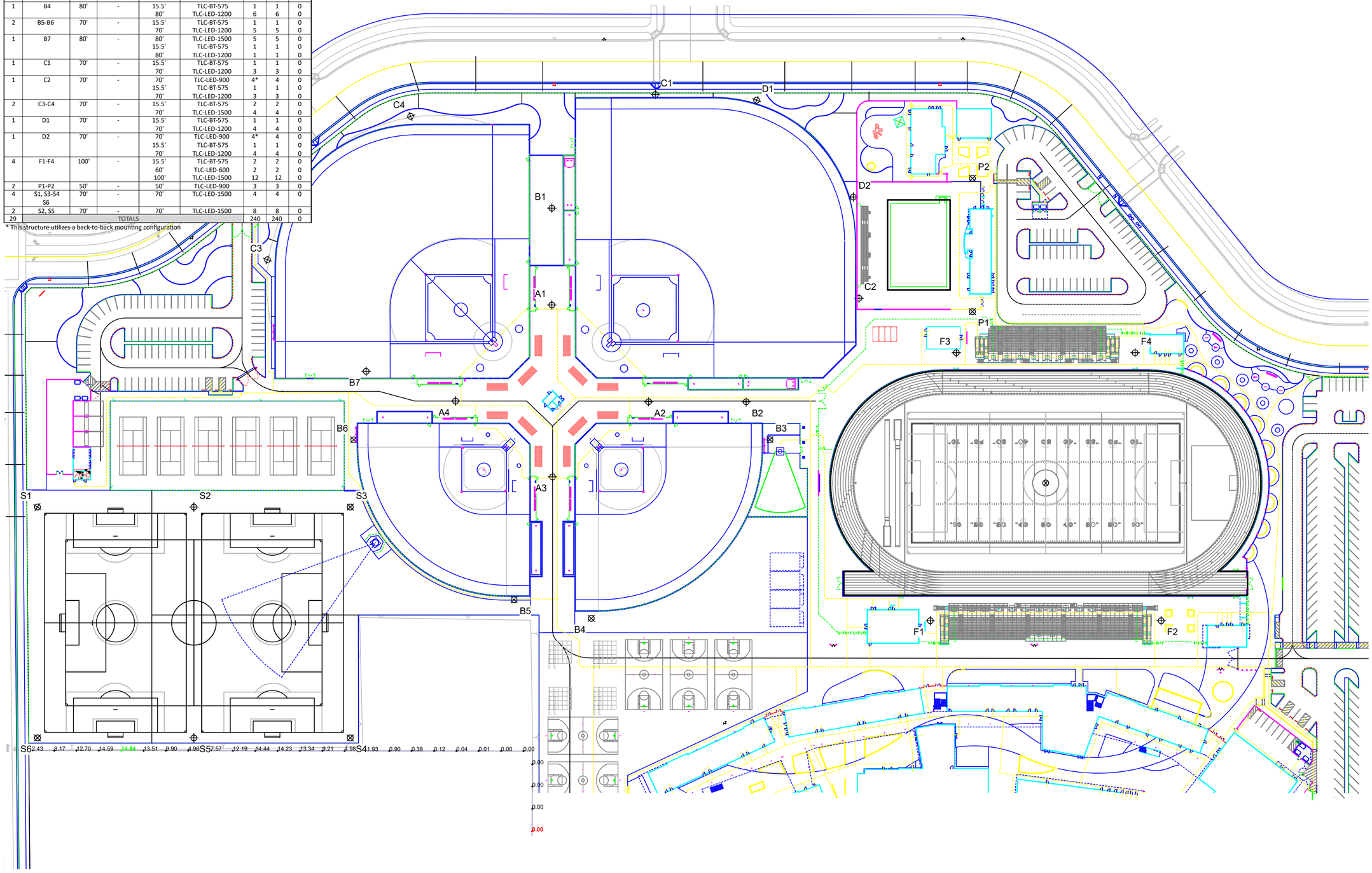
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				70'	TLC-LED-1200	4/4*	8	0
2	A2, A4	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	7	0
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				70'	TLC-LED-1200	3/3*	6	0
1	B1	90'	-	90'	TLC-LED-1200	1/1*	2	0
				15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				90'	TLC-LED-1500	6/5*	11	0
1	B2	90'	-	90'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				50'	TLC-LED-600	2/1*	3	0
				90'	TLC-LED-1500	6	6	0
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
1	B7	80'	-	80'	TLC-LED-1500	5	5	0
				15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	1	1	0
1	C1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
2	C3-C4	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
1	D1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	2	0
				100'	TLC-LED-1500	12	12	0
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	S1, S3-S4 S6	70'	-	70'	TLC-LED-1500	4	4	0
2	S2, S5	70'	-	70'	TLC-LED-1500	8	8	0
29	TOTALS					240	240	0

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**5.9459**
Maximum:	14.94
Minimum:	0.00
No. of Points:	27

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 65
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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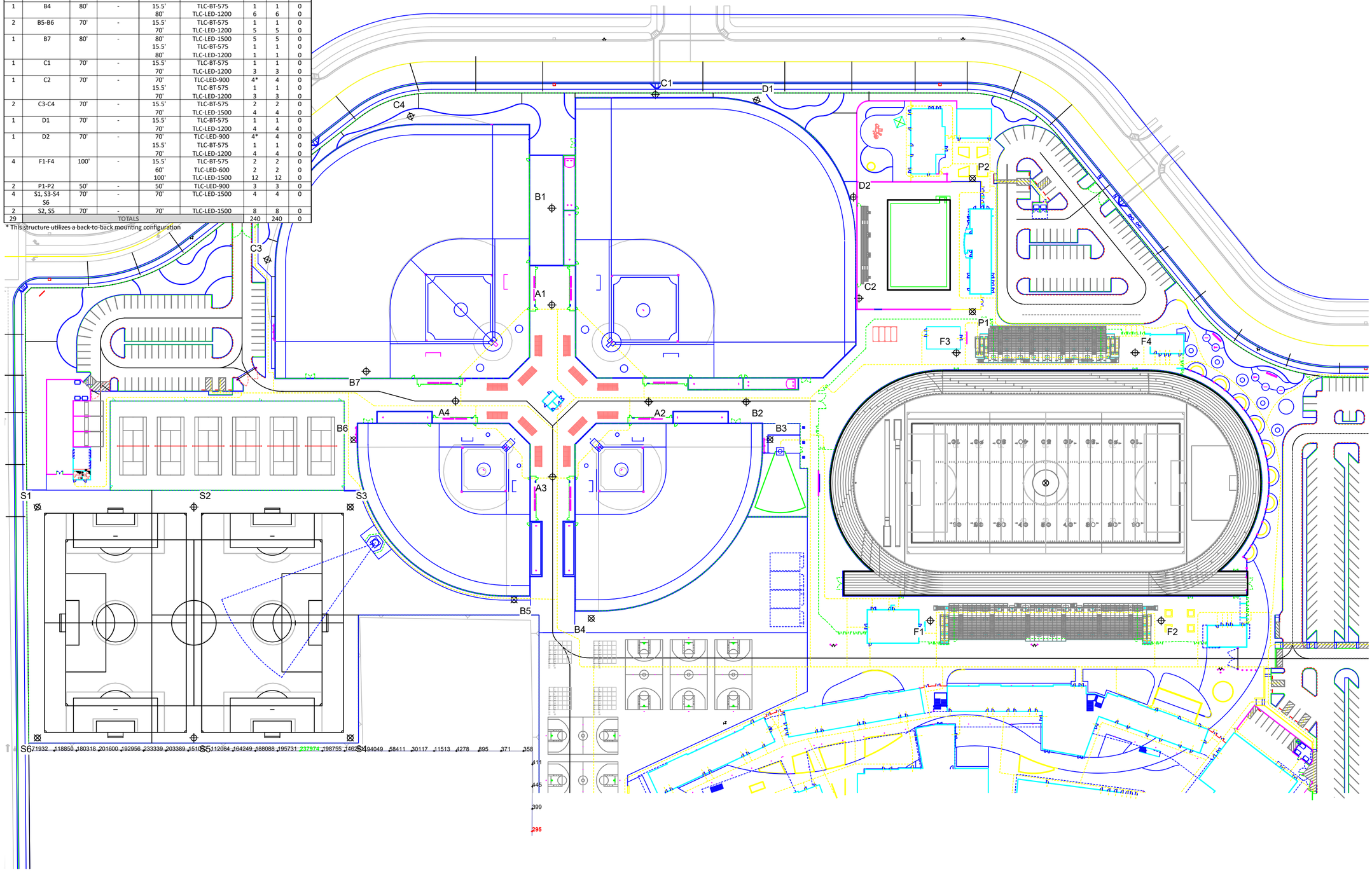
Oxnard High School #8

Oxnard, CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				70'	TLC-LED-1200	4/4*	8	0
2	A2, A4	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	1	1	0
				70'	TLC-LED-1200	4/3*	7	0
1	A3	70'	-	15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				70'	TLC-LED-1200	3/3*	6	0
1	B1	90'	-	90'	TLC-LED-1200	1/1*	2	0
				15.5'	TLC-BT-575	1/1*	2	0
				50'	TLC-LED-600	2	2	0
				90'	TLC-LED-1500	6/5*	11	0
1	B2	90'	-	90'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				50'	TLC-LED-600	2/1*	3	0
				90'	TLC-LED-1500	6	6	0
1	B3	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	5	5	0
1	B4	80'	-	15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	6	6	0
2	B5-B6	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	5	5	0
1	B7	80'	-	80'	TLC-LED-1500	5	5	0
				15.5'	TLC-BT-575	1	1	0
				80'	TLC-LED-1200	1	1	0
1	C1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	C2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
2	C3-C4	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
1	D1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
1	D2	70'	-	70'	TLC-LED-900	4*	4	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	4	4	0
4	F1-F4	100'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-600	2	2	0
				100'	TLC-LED-1500	12	12	0
2	P1-P2	50'	-	50'	TLC-LED-900	3	3	0
4	S1, S3-S4 S6	70'	-	70'	TLC-LED-1500	4	4	0
2	S2, S5	70'	-	70'	TLC-LED-1500	8	8	0
29	TOTALS					240	240	0

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	**103634.6641**
Maximum:	237974.00
Minimum:	295.18
No. of Points:	27

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 156,100 / 132,300 / 136,000 / 52,000 / 65
No. of Luminaires:	**240**
Total Load:	277.96 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>81,000	>81,000	>81,000
TLC-LED-1200	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
TLC-LED-600	>81,000	>81,000	>81,000
TLC-LED-900	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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Oxnard High School #8

Oxnard, CA

EQUIPMENT LAYOUT

INCLUDES:

- Baseball
- Bleachers
- Football
- JV Baseball
- JV Softball
- Pool
- Soccer 1
- Soccer 2
- Soccer 3
- Soccer 4
- Softball
- Track

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

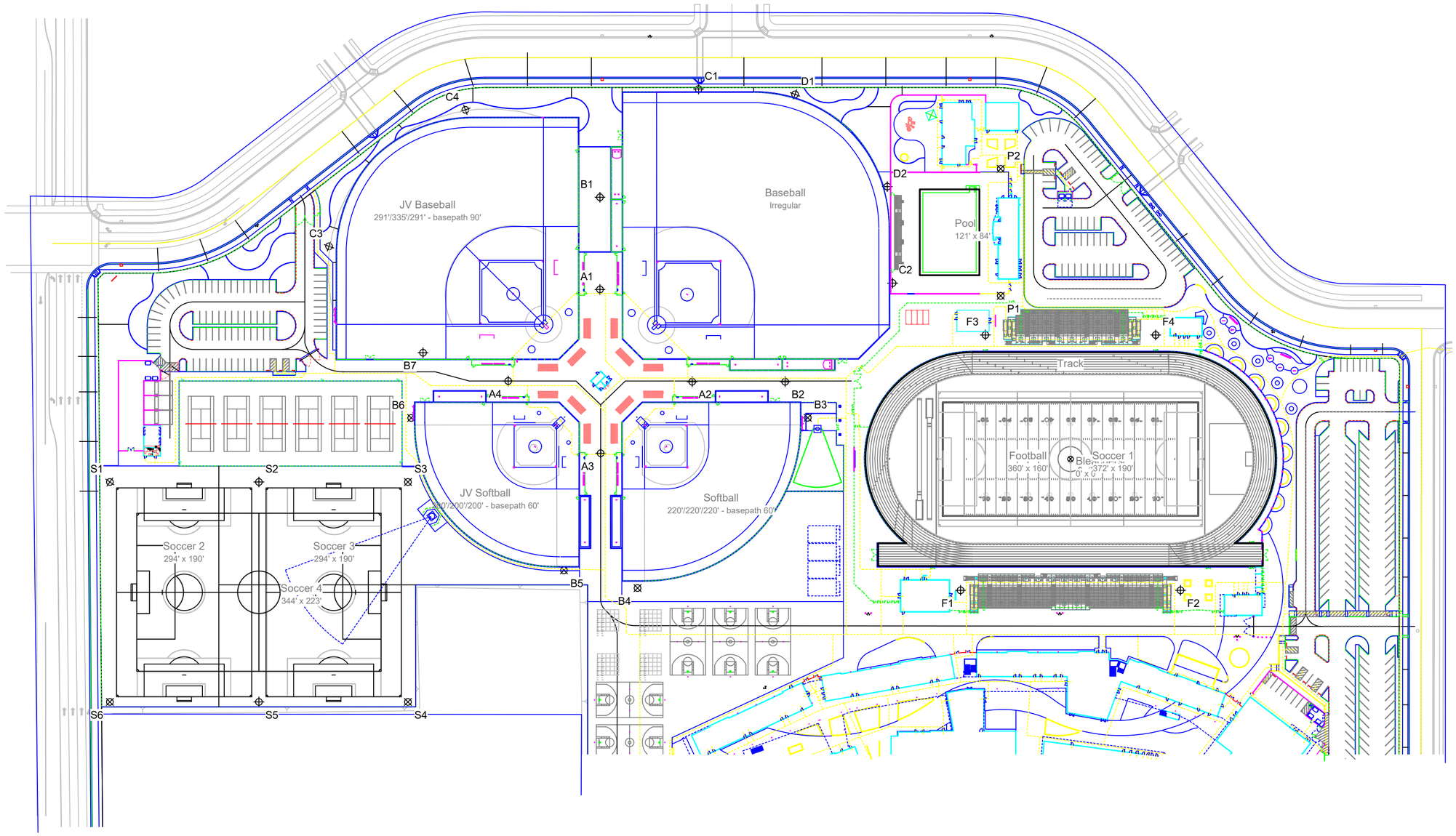
EQUIPMENT LIST FOR AREAS SHOWN

	Pole			Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
1	A1	70'	-	15.5' 70'	TLC-BT-575 TLC-LED-1200	1/1* 4/4*
2	A2, A4	70'	-	15.5' 50' 70'	TLC-BT-575 TLC-LED-600 TLC-LED-1200	1/1* 1 4/3*
1	A3	70'	-	15.5' 50' 70'	TLC-BT-575 TLC-LED-600 TLC-LED-1200	1/1* 2 3/3*
1	B1	90'	-	90' 15.5' 50' 90'	TLC-LED-1200 TLC-BT-575 TLC-LED-600 TLC-LED-1500	1/1* 1/1* 2 6/5*
1	B2	90'	-	90' 15.5' 50' 90'	TLC-LED-1200 TLC-BT-575 TLC-LED-600 TLC-LED-1500	1 1 2/1* 6
1	B3	80'	-	15.5' 80'	TLC-BT-575 TLC-LED-1200	1 5
1	B4	80'	-	15.5' 80'	TLC-BT-575 TLC-LED-1200	1 6
2	B5-B6	70'	-	15.5' 70'	TLC-BT-575 TLC-LED-1200	1 5
1	B7	80'	-	80' 15.5' 80'	TLC-LED-1500 TLC-BT-575 TLC-LED-1200	5 1 1
1	C1	70'	-	15.5' 70'	TLC-BT-575 TLC-LED-1200	1 3
1	C2	70'	-	70' 15.5' 70'	TLC-LED-900 TLC-BT-575 TLC-LED-1200	4* 1 3
2	C3-C4	70'	-	15.5' 70'	TLC-BT-575 TLC-LED-1500	2 4
1	D1	70'	-	15.5' 70'	TLC-BT-575 TLC-LED-1200	1 4
1	D2	70'	-	70' 15.5' 70'	TLC-LED-900 TLC-BT-575 TLC-LED-1200	4* 1 4
4	F1-F4	100'	-	15.5' 60' 100'	TLC-BT-575 TLC-LED-600 TLC-LED-1500	2 2 12
2	P1-P2	50'	-	50'	TLC-LED-900	3
4	S1, S3-S4 S6	70'	-	70'	TLC-LED-1500	4
2	S2, S5	70'	-	70'	TLC-LED-1500	8
29	TOTALS					240

* This structure utilizes a back-to-back mounting configuration

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-LED-1200	7.3	6.9	6.3	5.5	4.4	4.0	3.2
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-600-A	3.4	3.2	3.0	2.6	2.0	1.9	1.5
TLC-LED-900-A	5.3	5.0	4.6	4.0	3.2	2.9	2.3



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brayton Carter • File #158409B • 15-May-19

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C AIR QUALITY REPORTS

High School No. 8

Ventura County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	2,500.00	Student	7.61	281,311.00	0
Other Non-Asphalt Surfaces	699.20	1000sqft	16.05	699,197.00	0
Parking Lot	339.73	1000sqft	7.80	0.00	0
Racquet Club	43.59	1000sqft	1.00	0.00	0
Recreational Swimming Pool	7.24	1000sqft	0.17	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Non asphalt surfaces-soccer and ball fields

Construction Phase - Working days

Off-road Equipment - Equipment estimated from provided information

Off-road Equipment - Equipment based on provided information

Off-road Equipment - Equipment information provided

Trips and VMT - Trips=two one way trips per worker per day

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Averate Tier 3 for all off-road equipment

Mobile Land Use Mitigation -

Mobile Commute Mitigation - Estimate 55 percent of families will use the bus system based on https://nces.ed.gov data

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation - Recyclyng is based on statistic provided by https://lbre.stanford.edu

Off-road Equipment - Schedule provided

Off-road Equipment -

Vehicle Trips - No significant additional trips generated by tennis and pool

Energy Use - No significant energy used by tennis courts

Water And Wastewater - No water use by tennis courts

Solid Waste - No significant solid waste generated by tennis and pool

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	35.00	25.00
tblConstructionPhase	NumDays	500.00	536.00

tblConstructionPhase	NumDays	45.00	93.00
tblConstructionPhase	NumDays	35.00	107.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	PhaseEndDate	7/8/2022	11/2/2021
tblConstructionPhase	PhaseEndDate	4/1/2022	5/23/2022
tblConstructionPhase	PhaseEndDate	5/1/2020	7/8/2020
tblConstructionPhase	PhaseEndDate	5/20/2022	9/28/2021
tblConstructionPhase	PhaseEndDate	2/28/2020	2/20/2020
tblConstructionPhase	PhaseStartDate	5/21/2022	9/29/2021
tblConstructionPhase	PhaseStartDate	4/2/2022	5/2/2021
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.63	0.00
tblEnergyUse	T24NG	14.04	0.00
tblGrading	AcresOfGrading	232.50	112.50
tblLandUse	LandUseSquareFeet	331,652.44	281,311.00
tblLandUse	LandUseSquareFeet	699,200.00	699,197.00
tblLandUse	LandUseSquareFeet	339,730.00	0.00
tblLandUse	LandUseSquareFeet	43,590.00	0.00
tblLandUse	LandUseSquareFeet	7,240.00	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks

tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblSolidWaste	SolidWasteGenerationRate	248.46	0.00
tblSolidWaste	SolidWasteGenerationRate	41.27	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	23.00	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	82.00	50.00
tblVehicleTrips	ST_TR	21.35	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	SU_TR	17.40	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	WD_TR	14.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblWater	IndoorWaterUseRate	2,578,049.65	0.00
tblWater	OutdoorWaterUseRate	1,580,094.95	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.9619	90.2611	65.8861	0.1737	18.3127	3.4305	20.5119	9.9961	3.1768	12.0193	0.0000	17,317.4366	17,317.4366	3.3171	0.0000	17,400.3632
2021	284.2954	48.6744	46.7966	0.1331	4.8836	1.7090	6.4283	1.3199	1.5884	2.8647	0.0000	13,384.4406	13,384.4406	2.0608	0.0000	13,435.9601
2022	3.3738	29.9408	28.2832	0.0997	4.4730	0.7820	5.2549	1.2110	0.7334	1.9444	0.0000	10,147.4383	10,147.4383	1.1105	0.0000	10,175.2000
Maximum	**284.2954**	**90.2611**	**65.8861**	**0.1737**	**18.3127**	**3.4305**	**20.5119**	**9.9961**	**3.1768**	**12.0193**	**0.0000**	**17,317.4366**	**17,317.4366**	**3.3171**	**0.0000**	**17,400.3632**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.5422	65.8965	74.7375	0.1737	8.3763	2.3883	10.3947	4.5342	2.3818	5.4820	0.0000	17,317.4366	17,317.4366	3.3171	0.0000	17,400.3632
2021	283.1764	45.3951	53.9557	0.1331	4.8836	1.6376	6.3569	1.3199	1.6337	2.9100	0.0000	13,384.4406	13,384.4406	2.0608	0.0000	13,435.9601
2022	2.4498	29.9039	31.3881	0.0997	4.4730	0.9010	5.3739	1.2110	0.8975	2.1085	0.0000	10,147.4383	10,147.4383	1.1105	0.0000	10,175.2000
Maximum	**283.1764**	**65.8965**	**74.7375**	**0.1737**	**8.3763**	**2.3883**	**10.3947**	**4.5342**	**2.3818**	**5.4820**	**0.0000**	**17,317.4366**	**17,317.4366**	**3.3171**	**0.0000**	**17,400.3632**

High School No. 8 - Ventura County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**2.18**	**16.39**	**-13.56**	**0.00**	**35.91**	**16.80**	**31.28**	**43.60**	**10.65**	**37.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.2212	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Energy	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Mobile	6.0487	22.8309	71.3582	0.2565	23.6926	0.2074	23.9000	6.3274	0.1934	6.5208		25,972.5516	25,972.5516	1.0253		25,998.1852
Total	**14.3683**	**23.7288**	**72.4768**	**0.2619**	**23.6926**	**0.2767**	**23.9693**	**6.3274**	**0.2627**	**6.5901**		**27,046.8980**	**27,046.8980**	**1.0480**	**0.0197**	**27,078.9630**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7711	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Energy	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Mobile	5.9035	21.8745	67.0189	0.2379	21.8840	0.1936	22.0776	5.8444	0.1805	6.0249		24,097.2575	24,097.2575	0.9637		24,121.3498
Total	**13.7729**	**22.7725**	**68.1375**	**0.2433**	**21.8840**	**0.2629**	**22.1469**	**5.8444**	**0.2498**	**6.0942**		**25,171.6039**	**25,171.6039**	**0.9863**	**0.0197**	**25,202.1277**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.14**	**4.03**	**5.99**	**7.08**	**7.63**	**4.97**	**7.60**	**7.63**	**4.89**	**7.52**	**0.00**	**6.93**	**6.93**	**5.88**	**0.00**	**6.93**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/3/2020	2/20/2020	5	14	
2	Grading	Grading	2/29/2020	7/8/2020	5	93	
3	Building Construction	Building Construction	5/2/2020	5/23/2022	5	536	
4	Paving	Paving	5/2/2021	9/28/2021	5	107	
5	Architectural Coating	Architectural Coating	9/29/2021	11/2/2021	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 23.85

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 421,967; Non-Residential Outdoor: 140,656; Striped Parking Area: 41,952 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Building Construction	Welders	1	6.00	46	0.45
Grading	Off-Highway Trucks	1	4.00	402	0.38
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Off-Highway Trucks	1	4.00	402	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	412.00	161.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	50.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1096	0.0659	0.8290	2.3900e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		238.1447	238.1447	6.3600e-003		238.3036
Total	**0.1096**	**0.0659**	**0.8290**	**2.3900e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**238.1447**	**238.1447**	**6.3600e-003**		**238.3036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.9462	0.9462		0.9462	0.9462	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.9462**	**9.0760**	**4.4688**	**0.9462**	**5.4150**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1096	0.0659	0.8290	2.3900e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		238.1447	238.1447	6.3600e-003		238.3036
Total	**0.1096**	**0.0659**	**0.8290**	**2.3900e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**238.1447**	**238.1447**	**6.3600e-003**		**238.3036**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.3050	0.0000	7.3050	3.4488	0.0000	3.4488			0.0000			0.0000
Off-Road	4.7833	53.3747	33.8729	0.0686		2.2897	2.2897		2.1065	2.1065		6,648.3728	6,648.3728	2.1502		6,702.1283
Total	**4.7833**	**53.3747**	**33.8729**	**0.0686**	**7.3050**	**2.2897**	**9.5946**	**3.4488**	**2.1065**	**5.5552**		**6,648.3728**	**6,648.3728**	**2.1502**		**6,702.1283**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1096	0.0659	0.8290	2.3900e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		238.1447	238.1447	6.3600e-003		238.3036
Total	**0.1096**	**0.0659**	**0.8290**	**2.3900e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**238.1447**	**238.1447**	**6.3600e-003**		**238.3036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2872	0.0000	3.2872	1.5519	0.0000	1.5519			0.0000			0.0000
Off-Road	1.6856	33.1191	40.2426	0.0686		1.4186	1.4186		1.4186	1.4186	0.0000	6,648.3728	6,648.3728	2.1502		6,702.1283
Total	**1.6856**	**33.1191**	**40.2426**	**0.0686**	**3.2872**	**1.4186**	**4.7058**	**1.5519**	**1.4186**	**2.9705**	**0.0000**	**6,648.3728**	**6,648.3728**	**2.1502**		**6,702.1283**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1096	0.0659	0.8290	2.3900e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		238.1447	238.1447	6.3600e-003		238.3036
Total	**0.1096**	**0.0659**	**0.8290**	**2.3900e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**238.1447**	**238.1447**	**6.3600e-003**		**238.3036**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0245	18.6642	15.3904	0.0282		1.0118	1.0118		0.9479	0.9479		2,694.2825	2,694.2825	0.7192		2,712.2636
Total	**2.0245**	**18.6642**	**15.3904**	**0.0282**		**1.0118**	**1.0118**		**0.9479**	**0.9479**		**2,694.2825**	**2,694.2825**	**0.7192**		**2,712.2636**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5392	17.2520	4.4084	0.0416	1.0883	0.1033	1.1916	0.3132	0.0989	0.4120		4,466.1156	4,466.1156	0.3540		4,474.9643
Worker	1.5053	0.9043	11.3855	0.0328	3.3845	0.0239	3.4084	0.8977	0.0220	0.9197		3,270.5209	3,270.5209	0.0873		3,272.7033
Total	**2.0445**	**18.1563**	**15.7938**	**0.0744**	**4.4728**	**0.1272**	**4.6000**	**1.2109**	**0.1209**	**1.3318**		**7,736.6365**	**7,736.6365**	**0.4413**		**7,747.6677**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0282		0.8407	0.8407		0.8407	0.8407	0.0000	2,694.2825	2,694.2825	0.7192		2,712.2636
Total	**0.7025**	**14.5553**	**17.8720**	**0.0282**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,694.2825**	**2,694.2825**	**0.7192**		**2,712.2636**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5392	17.2520	4.4084	0.0416	1.0883	0.1033	1.1916	0.3132	0.0989	0.4120		4,466.1156	4,466.1156	0.3540		4,474.9643
Worker	1.5053	0.9043	11.3855	0.0328	3.3845	0.0239	3.4084	0.8977	0.0220	0.9197		3,270.5209	3,270.5209	0.0873		3,272.7033
Total	**2.0445**	**18.1563**	**15.7938**	**0.0744**	**4.4728**	**0.1272**	**4.6000**	**1.2109**	**0.1209**	**1.3318**		**7,736.6365**	**7,736.6365**	**0.4413**		**7,747.6677**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8215	16.7067	15.0642	0.0282		0.8659	0.8659		0.8111	0.8111		2,694.4906	2,694.4906	0.7141		2,712.3433
Total	**1.8215**	**16.7067**	**15.0642**	**0.0282**		**0.8659**	**0.8659**		**0.8111**	**0.8111**		**2,694.4906**	**2,694.4906**	**0.7141**		**2,712.3433**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4521	15.5298	3.9799	0.0412	1.0884	0.0432	1.1316	0.3132	0.0414	0.3546		4,436.9297	4,436.9297	0.3396		4,445.4208
Worker	1.4111	0.8146	10.5219	0.0318	3.3845	0.0235	3.4079	0.8977	0.0216	0.9193		3,172.3548	3,172.3548	0.0796		3,174.3447
Total	**1.8632**	**16.3444**	**14.5018**	**0.0731**	**4.4729**	**0.0667**	**4.5396**	**1.2109**	**0.0630**	**1.2739**		**7,609.2846**	**7,609.2846**	**0.4192**		**7,619.7655**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0282		0.8407	0.8407		0.8407	0.8407	0.0000	2,694.4906	2,694.4906	0.7141		2,712.3433
Total	**0.7025**	**14.5553**	**17.8720**	**0.0282**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,694.4906**	**2,694.4906**	**0.7141**		**2,712.3433**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4521	15.5298	3.9799	0.0412	1.0884	0.0432	1.1316	0.3132	0.0414	0.3546		4,436.9297	4,436.9297	0.3396		4,445.4208
Worker	1.4111	0.8146	10.5219	0.0318	3.3845	0.0235	3.4079	0.8977	0.0216	0.9193		3,172.3548	3,172.3548	0.0796		3,174.3447
Total	**1.8632**	**16.3444**	**14.5018**	**0.0731**	**4.4729**	**0.0667**	**4.5396**	**1.2109**	**0.0630**	**1.2739**		**7,609.2846**	**7,609.2846**	**0.4192**		**7,619.7655**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6265	14.5922	14.7671	0.0283		0.7217	0.7217		0.6766	0.6766		2,695.5541	2,695.5541	0.7112		2,713.3332
Total	**1.6265**	**14.5922**	**14.7671**	**0.0283**		**0.7217**	**0.7217**		**0.6766**	**0.6766**		**2,695.5541**	**2,695.5541**	**0.7112**		**2,713.3332**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4205	14.6134	3.7757	0.0408	1.0885	0.0374	1.1258	0.3132	0.0357	0.3490		4,396.1641	4,396.1641	0.3273		4,404.3470
Worker	1.3268	0.7353	9.7403	0.0307	3.3845	0.0229	3.4074	0.8977	0.0211	0.9188		3,055.7201	3,055.7201	0.0720		3,057.5198
Total	**1.7473**	**15.3487**	**13.5161**	**0.0715**	**4.4730**	**0.0602**	**4.5332**	**1.2110**	**0.0568**	**1.2678**		**7,451.8842**	**7,451.8842**	**0.3993**		**7,461.8668**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0283		0.8407	0.8407		0.8407	0.8407	0.0000	2,695.5541	2,695.5541	0.7112		2,713.3332
Total	**0.7025**	**14.5553**	**17.8720**	**0.0283**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,695.5541**	**2,695.5541**	**0.7112**		**2,713.3332**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4205	14.6134	3.7757	0.0408	1.0885	0.0374	1.1258	0.3132	0.0357	0.3490		4,396.1641	4,396.1641	0.3273		4,404.3470
Worker	1.3268	0.7353	9.7403	0.0307	3.3845	0.0229	3.4074	0.8977	0.0211	0.9188		3,055.7201	3,055.7201	0.0720		3,057.5198
Total	**1.7473**	**15.3487**	**13.5161**	**0.0715**	**4.4730**	**0.0602**	**4.5332**	**1.2110**	**0.0568**	**1.2678**		**7,451.8842**	**7,451.8842**	**0.3993**		**7,461.8668**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5600	15.5639	16.4644	0.0294		0.7747	0.7747		0.7128	0.7128		2,849.6687	2,849.6687	0.9216		2,872.7097
Paving	0.1910					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7510**	**15.5639**	**16.4644**	**0.0294**		**0.7747**	**0.7747**		**0.7128**	**0.7128**		**2,849.6687**	**2,849.6687**	**0.9216**		**2,872.7097**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1028	0.0593	0.7662	2.3200e-003	0.2464	1.7100e-003	0.2482	0.0654	1.5700e-003	0.0669		230.9967	230.9967	5.8000e-003		231.1416
Total	**0.1028**	**0.0593**	**0.7662**	**2.3200e-003**	**0.2464**	**1.7100e-003**	**0.2482**	**0.0654**	**1.5700e-003**	**0.0669**		**230.9967**	**230.9967**	**5.8000e-003**		**231.1416**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7234	14.4362	20.8157	0.0294		0.7285	0.7285		0.7285	0.7285	0.0000	2,849.6687	2,849.6687	0.9216		2,872.7097
Paving	0.1910					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9144**	**14.4362**	**20.8157**	**0.0294**		**0.7285**	**0.7285**		**0.7285**	**0.7285**	**0.0000**	**2,849.6687**	**2,849.6687**	**0.9216**		**2,872.7097**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1028	0.0593	0.7662	2.3200e-003	0.2464	1.7100e-003	0.2482	0.0654	1.5700e-003	0.0669		230.9967	230.9967	5.8000e-003		231.1416
Total	**0.1028**	**0.0593**	**0.7662**	**2.3200e-003**	**0.2464**	**1.7100e-003**	**0.2482**	**0.0654**	**1.5700e-003**	**0.0669**		**230.9967**	**230.9967**	**5.8000e-003**		**231.1416**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	280.2205					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**280.4394**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1713	0.0989	1.2769	3.8600e-003	0.4107	2.8500e-003	0.4136	0.1090	2.6200e-003	0.1116		384.9945	384.9945	9.6600e-003		385.2360
Total	**0.1713**	**0.0989**	**1.2769**	**3.8600e-003**	**0.4107**	**2.8500e-003**	**0.4136**	**0.1090**	**2.6200e-003**	**0.1116**		**384.9945**	**384.9945**	**9.6600e-003**		**385.2360**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	280.2205					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**280.4394**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1713	0.0989	1.2769	3.8600e-003	0.4107	2.8500e-003	0.4136	0.1090	2.6200e-003	0.1116		384.9945	384.9945	9.6600e-003		385.2360
Total	**0.1713**	**0.0989**	**1.2769**	**3.8600e-003**	**0.4107**	**2.8500e-003**	**0.4136**	**0.1090**	**2.6200e-003**	**0.1116**		**384.9945**	**384.9945**	**9.6600e-003**		**385.2360**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

Provide Traffic Calming Measures

Implement School Bus Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.9035	21.8745	67.0189	0.2379	21.8840	0.1936	22.0776	5.8444	0.1805	6.0249		24,097.2575	24,097.2575	0.9637		24,121.3498
Unmitigated	6.0487	22.8309	71.3582	0.2565	23.6926	0.2074	23.9000	6.3274	0.1934	6.5208		25,972.5516	25,972.5516	1.0253		25,998.1852

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	4,275.00	1,525.00	625.00	8,798,892	8,127,222
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Racquet Club	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Total	4,275.00	1,525.00	625.00	8,798,892	8,127,222

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	9.50	7.30	7.30	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Racquet Club	9.50	7.30	7.30	11.50	69.50	19.00	52	39	9
Recreational Swimming Pool	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Other Non-Asphalt Surfaces	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Parking Lot	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Racquet Club	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Recreational Swimming Pool	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
NaturalGas Unmitigated	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	9125.27	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0984**	**0.8946**	**0.7515**	**5.3700e-003**		**0.0680**	**0.0680**		**0.0680**	**0.0680**		**1,073.5608**	**1,073.5608**	**0.0206**	**0.0197**	**1,079.9404**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	9.12527	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0984**	**0.8946**	**0.7515**	**5.3700e-003**		**0.0680**	**0.0680**		**0.0680**	**0.0680**		**1,073.5608**	**1,073.5608**	**0.0206**	**0.0197**	**1,079.9404**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.7711	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Unmitigated	8.2212	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0341	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Total	**8.2212**	**3.3500e-003**	**0.3671**	**3.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**		**0.7856**	**0.7856**	**2.0700e-003**		**0.8374**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.8176					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0341	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Total	**7.7711**	**3.3500e-003**	**0.3671**	**3.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**		**0.7856**	**0.7856**	**2.0700e-003**		**0.8374**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

High School No. 8

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	2,500.00	Student	7.61	281,311.00	0
Other Non-Asphalt Surfaces	699.20	1000sqft	16.05	699,197.00	0
Parking Lot	339.73	1000sqft	7.80	0.00	0
Racquet Club	43.59	1000sqft	1.00	0.00	0
Recreational Swimming Pool	7.24	1000sqft	0.17	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Non asphalt surfaces-soccer and ball fields

Construction Phase - Working days

Off-road Equipment - Equipment estimated from provided information

Off-road Equipment - Equipment based on provided information

Off-road Equipment - Equipment information provided

Trips and VMT - Trips=two one way trips per worker per day

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Averate Tier 3 for all off-road equipment

Mobile Land Use Mitigation -

Mobile Commute Mitigation - Estimate 55 percent of families will use the bus system based on https://nces.ed.gov data

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation - Recyclyng is based on statistic provided by https://lbre.stanford.edu

Off-road Equipment - Schedule provided

Off-road Equipment -

Vehicle Trips - No significant additional trips generated by tennis and pool

Energy Use - No significant energy used by tennis courts

Water And Wastewater - No water use by tennis courts

Solid Waste - No significant solid waste generated by tennis and pool

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	35.00	25.00
tblConstructionPhase	NumDays	500.00	536.00

tblConstructionPhase	NumDays	45.00	93.00
tblConstructionPhase	NumDays	35.00	107.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	PhaseEndDate	7/8/2022	11/2/2021
tblConstructionPhase	PhaseEndDate	4/1/2022	5/23/2022
tblConstructionPhase	PhaseEndDate	5/1/2020	7/8/2020
tblConstructionPhase	PhaseEndDate	5/20/2022	9/28/2021
tblConstructionPhase	PhaseEndDate	2/28/2020	2/20/2020
tblConstructionPhase	PhaseStartDate	5/21/2022	9/29/2021
tblConstructionPhase	PhaseStartDate	4/2/2022	5/2/2021
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.63	0.00
tblEnergyUse	T24NG	14.04	0.00
tblGrading	AcresOfGrading	232.50	112.50
tblLandUse	LandUseSquareFeet	331,652.44	281,311.00
tblLandUse	LandUseSquareFeet	699,200.00	699,197.00
tblLandUse	LandUseSquareFeet	339,730.00	0.00
tblLandUse	LandUseSquareFeet	43,590.00	0.00
tblLandUse	LandUseSquareFeet	7,240.00	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks

tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblSolidWaste	SolidWasteGenerationRate	248.46	0.00
tblSolidWaste	SolidWasteGenerationRate	41.27	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	23.00	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	82.00	50.00
tblVehicleTrips	ST_TR	21.35	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	SU_TR	17.40	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	WD_TR	14.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblWater	IndoorWaterUseRate	2,578,049.65	0.00
tblWater	OutdoorWaterUseRate	1,580,094.95	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.6133	6.0168	4.4712	0.0124	0.8614	0.2211	1.0825	0.3370	0.2053	0.5422	0.0000	1,124.0769	1,124.0769	0.1907	0.0000	1,128.8455
2021	4.0911	5.2066	4.8004	0.0148	0.5914	0.1646	0.7560	0.1603	0.1536	0.3139	0.0000	1,355.5674	1,355.5674	0.1803	0.0000	1,360.0752
2022	0.1717	1.5243	1.4218	4.9500e-003	0.2219	0.0395	0.2614	0.0602	0.0371	0.0973	0.0000	457.0911	457.0911	0.0512	0.0000	458.3703
Maximum	**4.0911**	**6.0168**	**4.8004**	**0.0148**	**0.8614**	**0.2211**	**1.0825**	**0.3370**	**0.2053**	**0.5422**	**0.0000**	**1,355.5674**	**1,355.5674**	**0.1907**	**0.0000**	**1,360.0752**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3322	4.5540	4.9934	0.0124	0.6050	0.1570	0.7620	0.2105	0.1564	0.3670	0.0000	1,124.0762	1,124.0762	0.1907	0.0000	1,128.8448
2021	3.9004	4.8655	5.3996	0.0148	0.5914	0.1588	0.7502	0.1603	0.1583	0.3186	0.0000	1,355.5668	1,355.5668	0.1803	0.0000	1,360.0747
2022	0.1250	1.5224	1.5786	4.9500e-003	0.2219	0.0456	0.2674	0.0602	0.0454	0.1056	0.0000	457.0910	457.0910	0.0512	0.0000	458.3702
Maximum	**3.9004**	**4.8655**	**5.3996**	**0.0148**	**0.6050**	**0.1588**	**0.7620**	**0.2105**	**0.1583**	**0.3670**	**0.0000**	**1,355.5668**	**1,355.5668**	**0.1907**	**0.0000**	**1,360.0747**

High School No. 8 - Ventura County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**10.63**	**14.17**	**-11.95**	**0.00**	**15.31**	**15.03**	**15.25**	**22.68**	**9.05**	**17.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**2-3-2020**	**5-2-2020**	1.6484	0.9424
2	**5-3-2020**	**8-2-2020**	2.7394	2.0021
3	**8-3-2020**	**11-2-2020**	1.3483	1.1698
4	**11-3-2020**	**2-2-2021**	1.3070	1.1540
5	**2-3-2021**	**5-2-2021**	1.1807	1.0761
6	**5-3-2021**	**8-2-2021**	1.7813	1.6093
7	**8-3-2021**	**11-2-2021**	5.0952	4.9477
8	**11-3-2021**	**2-2-2022**	1.1773	1.0970
9	**2-3-2022**	**5-2-2022**	1.0650	1.0344
10	**5-3-2022**	**8-2-2022**	0.2499	0.2427
		Highest	5.0952	4.9477

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4972	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684
Energy	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	722.7008	722.7008	0.0259	7.9100e-003	725.7067
Mobile	0.8112	3.3992	10.0837	0.0354	3.3281	0.0298	3.3579	0.8902	0.0278	0.9179	0.0000	3,255.2729	3,255.2729	0.1331	0.0000	3,258.6007
Waste						0.0000	0.0000		0.0000	0.0000	92.6146	0.0000	92.6146	5.4734	0.0000	229.4488
Water						0.0000	0.0000		0.0000	0.0000	3.6296	148.6344	152.2640	0.3789	0.0101	164.7387
Total	**2.3264**	**3.5628**	**10.2539**	**0.0364**	**3.3281**	**0.0423**	**3.3704**	**0.8902**	**0.0403**	**0.9304**	**96.2442**	**4,126.6723**	**4,222.9165**	**6.0115**	**0.0180**	**4,378.5632**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4151	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684
Energy	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	542.5411	542.5411	0.0185	6.3700e-003	544.9024
Mobile	0.7907	3.2522	9.5032	0.0329	3.0740	0.0278	3.1018	0.8222	0.0259	0.8481	0.0000	3,020.2614	3,020.2614	0.1253	0.0000	3,023.3937
Waste						0.0000	0.0000		0.0000	0.0000	64.8302	0.0000	64.8302	3.8314	0.0000	160.6142
Water						0.0000	0.0000		0.0000	0.0000	2.9037	132.9702	135.8738	0.3037	8.1800e-003	145.9039
Total	**2.2238**	**3.4158**	**9.6734**	**0.0339**	**3.0740**	**0.0403**	**3.1144**	**0.8222**	**0.0385**	**0.8607**	**67.7339**	**3,695.8368**	**3,763.5707**	**4.2790**	**0.0146**	**3,874.8826**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.41**	**4.13**	**5.66**	**7.01**	**7.63**	**4.66**	**7.60**	**7.63**	**4.57**	**7.50**	**29.62**	**10.44**	**10.88**	**28.82**	**19.08**	**11.50**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	0.0000
Total	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/3/2020	2/20/2020	5	14	
2	Grading	Grading	2/29/2020	7/8/2020	5	93	
3	Building Construction	Building Construction	5/2/2020	5/23/2022	5	536	
4	Paving	Paving	5/2/2021	9/28/2021	5	107	
5	Architectural Coating	Architectural Coating	9/29/2021	11/2/2021	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 23.85

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 421,967; Non-Residential Outdoor: 140,656; Striped Parking Area: 41,952 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Building Construction	Welders	1	6.00	46	0.45
Grading	Off-Highway Trucks	1	4.00	402	0.38
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Off-Highway Trucks	1	4.00	402	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	412.00	161.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	50.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1265	0.0000	0.1265	0.0695	0.0000	0.0695	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0285	0.2969	0.1506	2.7000e-004		0.0154	0.0154		0.0142	0.0142	0.0000	23.4015	23.4015	7.5700e-003	0.0000	23.5907
Total	**0.0285**	**0.2969**	**0.1506**	**2.7000e-004**	**0.1265**	**0.0154**	**0.1418**	**0.0695**	**0.0142**	**0.0837**	**0.0000**	**23.4015**	**23.4015**	**7.5700e-003**	**0.0000**	**23.5907**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.2000e-004	5.6100e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4507	1.4507	4.0000e-005	0.0000	1.4517
Total	**7.7000e-004**	**5.2000e-004**	**5.6100e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4507**	**1.4507**	**4.0000e-005**	**0.0000**	**1.4517**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0569	0.0000	0.0569	0.0313	0.0000	0.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5200e-003	0.1335	0.1607	2.7000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	23.4015	23.4015	7.5700e-003	0.0000	23.5907
Total	**6.5200e-003**	**0.1335**	**0.1607**	**2.7000e-004**	**0.0569**	**6.6200e-003**	**0.0635**	**0.0313**	**6.6200e-003**	**0.0379**	**0.0000**	**23.4015**	**23.4015**	**7.5700e-003**	**0.0000**	**23.5907**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.2000e-004	5.6100e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4507	1.4507	4.0000e-005	0.0000	1.4517
Total	**7.7000e-004**	**5.2000e-004**	**5.6100e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4507**	**1.4507**	**4.0000e-005**	**0.0000**	**1.4517**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3397	0.0000	0.3397	0.1604	0.0000	0.1604	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2224	2.4819	1.5751	3.1900e-003		0.1065	0.1065		0.0980	0.0980	0.0000	280.4556	280.4556	0.0907	0.0000	282.7232
Total	**0.2224**	**2.4819**	**1.5751**	**3.1900e-003**	**0.3397**	**0.1065**	**0.4462**	**0.1604**	**0.0980**	**0.2583**	**0.0000**	**280.4556**	**280.4556**	**0.0907**	**0.0000**	**282.7232**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1500e-003	3.4700e-003	0.0373	1.1000e-004	0.0113	8.0000e-005	0.0113	2.9900e-003	7.0000e-005	3.0600e-003	0.0000	9.6369	9.6369	2.6000e-004	0.0000	9.6434
Total	**5.1500e-003**	**3.4700e-003**	**0.0373**	**1.1000e-004**	**0.0113**	**8.0000e-005**	**0.0113**	**2.9900e-003**	**7.0000e-005**	**3.0600e-003**	**0.0000**	**9.6369**	**9.6369**	**2.6000e-004**	**0.0000**	**9.6434**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1529	0.0000	0.1529	0.0722	0.0000	0.0722	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0784	1.5400	1.8713	3.1900e-003		0.0660	0.0660		0.0660	0.0660	0.0000	280.4552	280.4552	0.0907	0.0000	282.7229
Total	**0.0784**	**1.5400**	**1.8713**	**3.1900e-003**	**0.1529**	**0.0660**	**0.2188**	**0.0722**	**0.0660**	**0.1381**	**0.0000**	**280.4552**	**280.4552**	**0.0907**	**0.0000**	**282.7229**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1500e-003	3.4700e-003	0.0373	1.1000e-004	0.0113	8.0000e-005	0.0113	2.9900e-003	7.0000e-005	3.0600e-003	0.0000	9.6369	9.6369	2.6000e-004	0.0000	9.6434
Total	**5.1500e-003**	**3.4700e-003**	**0.0373**	**1.1000e-004**	**0.0113**	**8.0000e-005**	**0.0113**	**2.9900e-003**	**7.0000e-005**	**3.0600e-003**	**0.0000**	**9.6369**	**9.6369**	**2.6000e-004**	**0.0000**	**9.6434**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1761	1.6238	1.3390	2.4600e-003		0.0880	0.0880		0.0825	0.0825	0.0000	212.6464	212.6464	0.0568	0.0000	214.0656
Total	**0.1761**	**1.6238**	**1.3390**	**2.4600e-003**		**0.0880**	**0.0880**		**0.0825**	**0.0825**	**0.0000**	**212.6464**	**212.6464**	**0.0568**	**0.0000**	**214.0656**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0480	1.5211	0.4067	3.5800e-003	0.0932	9.0900e-003	0.1023	0.0269	8.7000e-003	0.0356	0.0000	348.8681	348.8681	0.0287	0.0000	349.5863
Worker	0.1323	0.0891	0.9570	2.7400e-003	0.2890	2.0800e-003	0.2911	0.0768	1.9200e-003	0.0787	0.0000	247.6176	247.6176	6.6700e-003	0.0000	247.7845
Total	**0.1803**	**1.6102**	**1.3637**	**6.3200e-003**	**0.3823**	**0.0112**	**0.3934**	**0.1037**	**0.0106**	**0.1143**	**0.0000**	**596.4857**	**596.4857**	**0.0354**	**0.0000**	**597.3708**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0611	1.2663	1.5549	2.4600e-003		0.0731	0.0731		0.0731	0.0731	0.0000	212.6462	212.6462	0.0568	0.0000	214.0654
Total	**0.0611**	**1.2663**	**1.5549**	**2.4600e-003**		**0.0731**	**0.0731**		**0.0731**	**0.0731**	**0.0000**	**212.6462**	**212.6462**	**0.0568**	**0.0000**	**214.0654**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0480	1.5211	0.4067	3.5800e-003	0.0932	9.0900e-003	0.1023	0.0269	8.7000e-003	0.0356	0.0000	348.8681	348.8681	0.0287	0.0000	349.5863
Worker	0.1323	0.0891	0.9570	2.7400e-003	0.2890	2.0800e-003	0.2911	0.0768	1.9200e-003	0.0787	0.0000	247.6176	247.6176	6.6700e-003	0.0000	247.7845
Total	**0.1803**	**1.6102**	**1.3637**	**6.3200e-003**	**0.3823**	**0.0112**	**0.3934**	**0.1037**	**0.0106**	**0.1143**	**0.0000**	**596.4857**	**596.4857**	**0.0354**	**0.0000**	**597.3708**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2377	2.1802	1.9659	3.6900e-003		0.1130	0.1130		0.1059	0.1059	0.0000	318.9943	318.9943	0.0845	0.0000	321.1078
Total	**0.2377**	**2.1802**	**1.9659**	**3.6900e-003**		**0.1130**	**0.1130**		**0.1059**	**0.1059**	**0.0000**	**318.9943**	**318.9943**	**0.0845**	**0.0000**	**321.1078**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0606	2.0492	0.5516	5.3300e-003	0.1399	5.7800e-003	0.1457	0.0403	5.5300e-003	0.0459	0.0000	519.8642	519.8642	0.0413	0.0000	520.8974
Worker	0.1860	0.1204	1.3244	3.9900e-003	0.4335	3.0600e-003	0.4366	0.1152	2.8200e-003	0.1180	0.0000	360.2679	360.2679	9.1200e-003	0.0000	360.4958
Total	**0.2466**	**2.1696**	**1.8760**	**9.3200e-003**	**0.5734**	**8.8400e-003**	**0.5823**	**0.1555**	**8.3500e-003**	**0.1638**	**0.0000**	**880.1321**	**880.1321**	**0.0505**	**0.0000**	**881.3932**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0917	1.8995	2.3323	3.6900e-003		0.1097	0.1097		0.1097	0.1097	0.0000	318.9939	318.9939	0.0845	0.0000	321.1075
Total	**0.0917**	**1.8995**	**2.3323**	**3.6900e-003**		**0.1097**	**0.1097**		**0.1097**	**0.1097**	**0.0000**	**318.9939**	**318.9939**	**0.0845**	**0.0000**	**321.1075**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0606	2.0492	0.5516	5.3300e-003	0.1399	5.7800e-003	0.1457	0.0403	5.5300e-003	0.0459	0.0000	519.8642	519.8642	0.0413	0.0000	520.8974
Worker	0.1860	0.1204	1.3244	3.9900e-003	0.4335	3.0600e-003	0.4366	0.1152	2.8200e-003	0.1180	0.0000	360.2679	360.2679	9.1200e-003	0.0000	360.4958
Total	**0.2466**	**2.1696**	**1.8760**	**9.3200e-003**	**0.5734**	**8.8400e-003**	**0.5823**	**0.1555**	**8.3500e-003**	**0.1638**	**0.0000**	**880.1321**	**880.1321**	**0.0505**	**0.0000**	**881.3932**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0821	0.7369	0.7457	1.4300e-003		0.0365	0.0365		0.0342	0.0342	0.0000	123.4910	123.4910	0.0326	0.0000	124.3055
Total	**0.0821**	**0.7369**	**0.7457**	**1.4300e-003**		**0.0365**	**0.0365**		**0.0342**	**0.0342**	**0.0000**	**123.4910**	**123.4910**	**0.0326**	**0.0000**	**124.3055**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0218	0.7453	0.2024	2.0400e-003	0.0541	1.9300e-003	0.0561	0.0156	1.8500e-003	0.0175	0.0000	199.3086	199.3086	0.0154	0.0000	199.6936
Worker	0.0677	0.0421	0.4736	1.4900e-003	0.1678	1.1600e-003	0.1689	0.0446	1.0600e-003	0.0456	0.0000	134.2916	134.2916	3.1900e-003	0.0000	134.3713
Total	**0.0895**	**0.7874**	**0.6761**	**3.5300e-003**	**0.2219**	**3.0900e-003**	**0.2250**	**0.0602**	**2.9100e-003**	**0.0631**	**0.0000**	**333.6002**	**333.6002**	**0.0186**	**0.0000**	**334.0648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0355	0.7350	0.9025	1.4300e-003		0.0425	0.0425		0.0425	0.0425	0.0000	123.4908	123.4908	0.0326	0.0000	124.3053
Total	**0.0355**	**0.7350**	**0.9025**	**1.4300e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**	**0.0000**	**123.4908**	**123.4908**	**0.0326**	**0.0000**	**124.3053**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0218	0.7453	0.2024	2.0400e-003	0.0541	1.9300e-003	0.0561	0.0156	1.8500e-003	0.0175	0.0000	199.3086	199.3086	0.0154	0.0000	199.6936
Worker	0.0677	0.0421	0.4736	1.4900e-003	0.1678	1.1600e-003	0.1689	0.0446	1.0600e-003	0.0456	0.0000	134.2916	134.2916	3.1900e-003	0.0000	134.3713
Total	**0.0895**	**0.7874**	**0.6761**	**3.5300e-003**	**0.2219**	**3.0900e-003**	**0.2250**	**0.0602**	**2.9100e-003**	**0.0631**	**0.0000**	**333.6002**	**333.6002**	**0.0186**	**0.0000**	**334.0648**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0835	0.8327	0.8809	1.5700e-003		0.0415	0.0415		0.0381	0.0381	0.0000	138.3069	138.3069	0.0447	0.0000	139.4252
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0937**	**0.8327**	**0.8809**	**1.5700e-003**		**0.0415**	**0.0415**		**0.0381**	**0.0381**	**0.0000**	**138.3069**	**138.3069**	**0.0447**	**0.0000**	**139.4252**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5500e-003	3.5900e-003	0.0395	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4400e-003	8.0000e-005	3.5200e-003	0.0000	10.7546	10.7546	2.7000e-004	0.0000	10.7614
Total	**5.5500e-003**	**3.5900e-003**	**0.0395**	**1.2000e-004**	**0.0129**	**9.0000e-005**	**0.0130**	**3.4400e-003**	**8.0000e-005**	**3.5200e-003**	**0.0000**	**10.7546**	**10.7546**	**2.7000e-004**	**0.0000**	**10.7614**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0387	0.7723	1.1136	1.5700e-003		0.0390	0.0390		0.0390	0.0390	0.0000	138.3068	138.3068	0.0447	0.0000	139.4250
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0489**	**0.7723**	**1.1136**	**1.5700e-003**		**0.0390**	**0.0390**		**0.0390**	**0.0390**	**0.0000**	**138.3068**	**138.3068**	**0.0447**	**0.0000**	**139.4250**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5500e-003	3.5900e-003	0.0395	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4400e-003	8.0000e-005	3.5200e-003	0.0000	10.7546	10.7546	2.7000e-004	0.0000	10.7614
Total	**5.5500e-003**	**3.5900e-003**	**0.0395**	**1.2000e-004**	**0.0129**	**9.0000e-005**	**0.0130**	**3.4400e-003**	**8.0000e-005**	**3.5200e-003**	**0.0000**	**10.7546**	**10.7546**	**2.7000e-004**	**0.0000**	**10.7614**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5028					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0191	0.0227	4.0000e-005		1.1800e-003	1.1800e-003		1.1800e-003	1.1800e-003	0.0000	3.1916	3.1916	2.2000e-004	0.0000	3.1970
Total	**3.5055**	**0.0191**	**0.0227**	**4.0000e-005**		**1.1800e-003**	**1.1800e-003**		**1.1800e-003**	**1.1800e-003**	**0.0000**	**3.1916**	**3.1916**	**2.2000e-004**	**0.0000**	**3.1970**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1600e-003	1.4000e-003	0.0154	5.0000e-005	5.0400e-003	4.0000e-005	5.0800e-003	1.3400e-003	3.0000e-005	1.3700e-003	0.0000	4.1879	4.1879	1.1000e-004	0.0000	4.1906
Total	**2.1600e-003**	**1.4000e-003**	**0.0154**	**5.0000e-005**	**5.0400e-003**	**4.0000e-005**	**5.0800e-003**	**1.3400e-003**	**3.0000e-005**	**1.3700e-003**	**0.0000**	**4.1879**	**4.1879**	**1.1000e-004**	**0.0000**	**4.1906**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5028					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0191	0.0227	4.0000e-005		1.1800e-003	1.1800e-003		1.1800e-003	1.1800e-003	0.0000	3.1916	3.1916	2.2000e-004	0.0000	3.1970
Total	**3.5055**	**0.0191**	**0.0227**	**4.0000e-005**		**1.1800e-003**	**1.1800e-003**		**1.1800e-003**	**1.1800e-003**	**0.0000**	**3.1916**	**3.1916**	**2.2000e-004**	**0.0000**	**3.1970**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1600e-003	1.4000e-003	0.0154	5.0000e-005	5.0400e-003	4.0000e-005	5.0800e-003	1.3400e-003	3.0000e-005	1.3700e-003	0.0000	4.1879	4.1879	1.1000e-004	0.0000	4.1906
Total	**2.1600e-003**	**1.4000e-003**	**0.0154**	**5.0000e-005**	**5.0400e-003**	**4.0000e-005**	**5.0800e-003**	**1.3400e-003**	**3.0000e-005**	**1.3700e-003**	**0.0000**	**4.1879**	**4.1879**	**1.1000e-004**	**0.0000**	**4.1906**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

Provide Traffic Calming Measures

Implement School Bus Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7907	3.2522	9.5032	0.0329	3.0740	0.0278	3.1018	0.8222	0.0259	0.8481	0.0000	3,020.2614	3,020.2614	0.1253	0.0000	3,023.3937
Unmitigated	0.8112	3.3992	10.0837	0.0354	3.3281	0.0298	3.3579	0.8902	0.0278	0.9179	0.0000	3,255.2729	3,255.2729	0.1331	0.0000	3,258.6007

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	4,275.00	1,525.00	625.00	8,798,892	8,127,222
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Racquet Club	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Total	4,275.00	1,525.00	625.00	8,798,892	8,127,222

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	9.50	7.30	7.30	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Racquet Club	9.50	7.30	7.30	11.50	69.50	19.00	52	39	9
Recreational Swimming Pool	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Other Non-Asphalt Surfaces	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Parking Lot	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Racquet Club	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Recreational Swimming Pool	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	364.8011	364.8011	0.0151	3.1200e-003	366.1062
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	544.9608	544.9608	0.0225	4.6500e-003	546.9104
NaturalGas Mitigated	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	177.7400	177.7400	3.4100e-003	3.2600e-003	178.7962
NaturalGas Unmitigated	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	177.7400	177.7400	3.4100e-003	3.2600e-003	178.7962

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	3.33072e+006	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	177.7400	177.7400	3.4100e-003	3.2600e-003	178.7962
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0180**	**0.1633**	**0.1372**	**9.8000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**177.7400**	**177.7400**	**3.4100e-003**	**3.2600e-003**	**178.7962**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	3.33072e+006	0.0180	0.1633	0.1372	9.8000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	177.7400	177.7400	3.4100e-003	3.2600e-003	178.7962
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0180**	**0.1633**	**0.1372**	**9.8000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**177.7400**	**177.7400**	**3.4100e-003**	**3.2600e-003**	**178.7962**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	1.71037e+006	544.9608	0.0225	4.6500e-003	546.9104
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**544.9608**	**0.0225**	**4.6500e-003**	**546.9104**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	1.14494e+006	364.8011	0.0151	3.1200e-003	366.1062
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**364.8011**	**0.0151**	**3.1200e-003**	**366.1062**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4151	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684
Unmitigated	1.4972	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3503					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1439					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0700e-003	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684
Total	**1.4972**	**3.0000e-004**	**0.0330**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0641**	**0.0641**	**1.7000e-004**	**0.0000**	**0.0684**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3503					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0617					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0700e-003	3.0000e-004	0.0330	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.0641	0.0641	1.7000e-004	0.0000	0.0684
Total	**1.4151**	**3.0000e-004**	**0.0330**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0641**	**0.0641**	**1.7000e-004**	**0.0000**	**0.0684**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	135.8738	0.3037	8.1800e-003	145.9039
Unmitigated	152.2640	0.3789	0.0101	164.7387

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	11.0124 / 28.3176	149.4227	0.3649	9.7200e-003	161.4407
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.428196 / 0.262443	2.8414	0.0141	3.5000e-004	3.2980
Total		**152.2640**	**0.3789**	**0.0101**	**164.7387**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	8.80992 / 26.5902	133.4716	0.2925	7.8900e-003	143.1359
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.342557 / 0.246434	2.4022	0.0113	2.8000e-004	2.7680
Total		**135.8739**	**0.3037**	**8.1700e-003**	**145.9039**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	64.8302	3.8314	0.0000	160.6142
Unmitigated	92.6146	5.4734	0.0000	229.4488

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	456.25	92.6146	5.4734	0.0000	229.4488
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**92.6146**	**5.4734**	**0.0000**	**229.4488**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	319.375	64.8302	3.8314	0.0000	160.6142
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**64.8302**	**3.8314**	**0.0000**	**160.6142**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Others	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

High School No. 8

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	2,500.00	Student	7.61	281,311.00	0
Other Non-Asphalt Surfaces	699.20	1000sqft	16.05	699,197.00	0
Parking Lot	339.73	1000sqft	7.80	0.00	0
Racquet Club	43.59	1000sqft	1.00	0.00	0
Recreational Swimming Pool	7.24	1000sqft	0.17	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Non asphalt surfaces-soccer and ball fields

Construction Phase - Working days

Off-road Equipment - Equipment estimated from provided information

Off-road Equipment - Equipment based on provided information

Off-road Equipment - Equipment information provided

Trips and VMT - Trips=two one way trips per worker per day

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Averate Tier 3 for all off-road equipment

Mobile Land Use Mitigation -

Mobile Commute Mitigation - Estimate 55 percent of families will use the bus system based on https://nces.ed.gov data

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation - Recyclyng is based on statistic provided by https://lbre.stanford.edu

Off-road Equipment - Schedule provided

Off-road Equipment -

Vehicle Trips - No significant additional trips generated by tennis and pool

Energy Use - No significant energy used by tennis courts

Water And Wastewater - No water use by tennis courts

Solid Waste - No significant solid waste generated by tennis and pool

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	35.00	25.00
tblConstructionPhase	NumDays	500.00	536.00

tblConstructionPhase	NumDays	45.00	93.00
tblConstructionPhase	NumDays	35.00	107.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	PhaseEndDate	7/8/2022	11/2/2021
tblConstructionPhase	PhaseEndDate	4/1/2022	5/23/2022
tblConstructionPhase	PhaseEndDate	5/1/2020	7/8/2020
tblConstructionPhase	PhaseEndDate	5/20/2022	9/28/2021
tblConstructionPhase	PhaseEndDate	2/28/2020	2/20/2020
tblConstructionPhase	PhaseStartDate	5/21/2022	9/29/2021
tblConstructionPhase	PhaseStartDate	4/2/2022	5/2/2021
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.63	0.00
tblEnergyUse	T24NG	14.04	0.00
tblGrading	AcresOfGrading	232.50	112.50
tblLandUse	LandUseSquareFeet	331,652.44	281,311.00
tblLandUse	LandUseSquareFeet	699,200.00	699,197.00
tblLandUse	LandUseSquareFeet	339,730.00	0.00
tblLandUse	LandUseSquareFeet	43,590.00	0.00
tblLandUse	LandUseSquareFeet	7,240.00	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks

tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblSolidWaste	SolidWasteGenerationRate	248.46	0.00
tblSolidWaste	SolidWasteGenerationRate	41.27	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	23.00	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00
tblTripsAndVMT	WorkerTripNumber	82.00	50.00
tblVehicleTrips	ST_TR	21.35	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	SU_TR	17.40	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	WD_TR	14.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblWater	IndoorWaterUseRate	2,578,049.65	0.00
tblWater	OutdoorWaterUseRate	1,580,094.95	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	9.2088	90.4429	66.1606	0.1710	18.3127	3.4332	20.5119	9.9961	3.1795	12.0193	0.0000	17,038.3120	17,038.3120	3.3370	0.0000	17,121.7363
2021	284.5368	48.8013	47.0247	0.1304	4.8836	1.7115	6.4308	1.3199	1.5907	2.8670	0.0000	13,110.6697	13,110.6697	2.0794	0.0000	13,162.6547
2022	3.5819	30.0287	28.4992	0.0972	4.4730	0.7842	5.2572	1.2110	0.7356	1.9466	0.0000	9,890.7348	9,890.7348	1.1280	0.0000	9,918.9352
Maximum	**284.5368**	**90.4429**	**66.1606**	**0.1710**	**18.3127**	**3.4332**	**20.5119**	**9.9961**	**3.1795**	**12.0193**	**0.0000**	**17,038.3120**	**17,038.3120**	**3.3370**	**0.0000**	**17,121.7363**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.7890	66.0783	75.0120	0.1710	8.3763	2.3910	10.3975	4.5342	2.3844	5.4820	0.0000	17,038.3120	17,038.3120	3.3370	0.0000	17,121.7363
2021	283.4178	45.5220	54.1838	0.1304	4.8836	1.6400	6.3593	1.3199	1.6361	2.9124	0.0000	13,110.6697	13,110.6697	2.0794	0.0000	13,162.6546
2022	2.6580	29.9918	31.6041	0.0972	4.4730	0.9032	5.3762	1.2110	0.8997	2.1107	0.0000	9,890.7348	9,890.7348	1.1280	0.0000	9,918.9352
Maximum	**283.4178**	**66.0783**	**75.0120**	**0.1710**	**8.3763**	**2.3910**	**10.3975**	**4.5342**	**2.3844**	**5.4820**	**0.0000**	**17,038.3120**	**17,038.3120**	**3.3370**	**0.0000**	**17,121.7363**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**2.17**	**16.35**	**-13.49**	**0.00**	**35.91**	**16.78**	**31.26**	**43.60**	**10.64**	**37.59**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.2212	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Energy	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Mobile	5.7243	23.7978	72.0813	0.2458	23.6926	0.2096	23.9021	6.3274	0.1955	6.5229		24,894.0984	24,894.0984	1.0410		24,920.1227
Total	**14.0439**	**24.6957**	**73.1998**	**0.2512**	**23.6926**	**0.2789**	**23.9714**	**6.3274**	**0.2648**	**6.5922**		**25,968.4448**	**25,968.4448**	**1.0636**	**0.0197**	**26,000.9005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7711	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Energy	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Mobile	5.5810	22.7625	68.0473	0.2280	21.8840	0.1958	22.0798	5.8444	0.1826	6.0270		23,093.1650	23,093.1650	0.9809		23,117.6879
Total	**13.4504**	**23.6605**	**69.1658**	**0.2334**	**21.8840**	**0.2651**	**22.1491**	**5.8444**	**0.2519**	**6.0963**		**24,167.5113**	**24,167.5113**	**1.0036**	**0.0197**	**24,198.4658**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.23**	**4.19**	**5.51**	**7.08**	**7.63**	**4.94**	**7.60**	**7.63**	**4.85**	**7.52**	**0.00**	**6.94**	**6.94**	**5.65**	**0.00**	**6.93**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/3/2020	2/20/2020	5	14	
2	Grading	Grading	2/29/2020	7/8/2020	5	93	
3	Building Construction	Building Construction	5/2/2020	5/23/2022	5	536	
4	Paving	Paving	5/2/2021	9/28/2021	5	107	
5	Architectural Coating	Architectural Coating	9/29/2021	11/2/2021	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 23.85

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 421,967; Non-Residential Outdoor: 140,656; Striped Parking Area: 41,952 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Building Construction	Welders	1	6.00	46	0.45
Grading	Off-Highway Trucks	1	4.00	402	0.38
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Off-Highway Trucks	1	4.00	402	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	412.00	161.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	50.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1243	0.0772	0.8095	2.2800e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		226.6128	226.6128	6.1400e-003		226.7664
Total	**0.1243**	**0.0772**	**0.8095**	**2.2800e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**226.6128**	**226.6128**	**6.1400e-003**		**226.7664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.9462	0.9462		0.9462	0.9462	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.9462**	**9.0760**	**4.4688**	**0.9462**	**5.4150**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1243	0.0772	0.8095	2.2800e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		226.6128	226.6128	6.1400e-003		226.7664
Total	**0.1243**	**0.0772**	**0.8095**	**2.2800e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**226.6128**	**226.6128**	**6.1400e-003**		**226.7664**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.3050	0.0000	7.3050	3.4488	0.0000	3.4488			0.0000			0.0000
Off-Road	4.7833	53.3747	33.8729	0.0686		2.2897	2.2897		2.1065	2.1065		6,648.3728	6,648.3728	2.1502		6,702.1283
Total	**4.7833**	**53.3747**	**33.8729**	**0.0686**	**7.3050**	**2.2897**	**9.5946**	**3.4488**	**2.1065**	**5.5552**		**6,648.3728**	**6,648.3728**	**2.1502**		**6,702.1283**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1243	0.0772	0.8095	2.2800e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		226.6128	226.6128	6.1400e-003		226.7664
Total	**0.1243**	**0.0772**	**0.8095**	**2.2800e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**226.6128**	**226.6128**	**6.1400e-003**		**226.7664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2872	0.0000	3.2872	1.5519	0.0000	1.5519			0.0000			0.0000
Off-Road	1.6856	33.1191	40.2426	0.0686		1.4186	1.4186		1.4186	1.4186	0.0000	6,648.3728	6,648.3728	2.1502		6,702.1283
Total	**1.6856**	**33.1191**	**40.2426**	**0.0686**	**3.2872**	**1.4186**	**4.7058**	**1.5519**	**1.4186**	**2.9705**	**0.0000**	**6,648.3728**	**6,648.3728**	**2.1502**		**6,702.1283**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1243	0.0772	0.8095	2.2800e-003	0.2464	1.7400e-003	0.2482	0.0654	1.6000e-003	0.0670		226.6128	226.6128	6.1400e-003		226.7664
Total	**0.1243**	**0.0772**	**0.8095**	**2.2800e-003**	**0.2464**	**1.7400e-003**	**0.2482**	**0.0654**	**1.6000e-003**	**0.0670**		**226.6128**	**226.6128**	**6.1400e-003**		**226.7664**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0245	18.6642	15.3904	0.0282		1.0118	1.0118		0.9479	0.9479		2,694.2825	2,694.2825	0.7192		2,712.2636
Total	**2.0245**	**18.6642**	**15.3904**	**0.0282**		**1.0118**	**1.0118**		**0.9479**	**0.9479**		**2,694.2825**	**2,694.2825**	**0.7192**		**2,712.2636**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5702	17.2667	4.9705	0.0406	1.0883	0.1061	1.1944	0.3132	0.1015	0.4147		4,356.8945	4,356.8945	0.3770		4,366.3201
Worker	1.7064	1.0600	11.1174	0.0312	3.3845	0.0239	3.4084	0.8977	0.0220	0.9197		3,112.1494	3,112.1494	0.0844		3,114.2580
Total	**2.2767**	**18.3268**	**16.0878**	**0.0718**	**4.4728**	**0.1300**	**4.6027**	**1.2109**	**0.1235**	**1.3344**		**7,469.0439**	**7,469.0439**	**0.4614**		**7,480.5781**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0282		0.8407	0.8407		0.8407	0.8407	0.0000	2,694.2825	2,694.2825	0.7192		2,712.2636
Total	**0.7025**	**14.5553**	**17.8720**	**0.0282**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,694.2825**	**2,694.2825**	**0.7192**		**2,712.2636**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5702	17.2667	4.9705	0.0406	1.0883	0.1061	1.1944	0.3132	0.1015	0.4147		4,356.8945	4,356.8945	0.3770		4,366.3201
Worker	1.7064	1.0600	11.1174	0.0312	3.3845	0.0239	3.4084	0.8977	0.0220	0.9197		3,112.1494	3,112.1494	0.0844		3,114.2580
Total	**2.2767**	**18.3268**	**16.0878**	**0.0718**	**4.4728**	**0.1300**	**4.6027**	**1.2109**	**0.1235**	**1.3344**		**7,469.0439**	**7,469.0439**	**0.4614**		**7,480.5781**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8215	16.7067	15.0642	0.0282		0.8659	0.8659		0.8111	0.8111		2,694.4906	2,694.4906	0.7141		2,712.3433
Total	**1.8215**	**16.7067**	**15.0642**	**0.0282**		**0.8659**	**0.8659**		**0.8111**	**0.8111**		**2,694.4906**	**2,694.4906**	**0.7141**		**2,712.3433**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4808	15.5063	4.5013	0.0402	1.0884	0.0457	1.1341	0.3132	0.0437	0.3569		4,328.0583	4,328.0583	0.3613		4,337.0913
Worker	1.6008	0.9548	10.2486	0.0303	3.3845	0.0235	3.4079	0.8977	0.0216	0.9193		3,018.6477	3,018.6477	0.0767		3,020.5662
Total	**2.0816**	**16.4611**	**14.7499**	**0.0705**	**4.4729**	**0.0691**	**4.5420**	**1.2109**	**0.0653**	**1.2762**		**7,346.7059**	**7,346.7059**	**0.4381**		**7,357.6575**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0282		0.8407	0.8407		0.8407	0.8407	0.0000	2,694.4906	2,694.4906	0.7141		2,712.3433
Total	**0.7025**	**14.5553**	**17.8720**	**0.0282**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,694.4906**	**2,694.4906**	**0.7141**		**2,712.3433**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4808	15.5063	4.5013	0.0402	1.0884	0.0457	1.1341	0.3132	0.0437	0.3569		4,328.0583	4,328.0583	0.3613		4,337.0913
Worker	1.6008	0.9548	10.2486	0.0303	3.3845	0.0235	3.4079	0.8977	0.0216	0.9193		3,018.6477	3,018.6477	0.0767		3,020.5662
Total	**2.0816**	**16.4611**	**14.7499**	**0.0705**	**4.4729**	**0.0691**	**4.5420**	**1.2109**	**0.0653**	**1.2762**		**7,346.7059**	**7,346.7059**	**0.4381**		**7,357.6575**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6265	14.5922	14.7671	0.0283		0.7217	0.7217		0.6766	0.6766		2,695.5541	2,695.5541	0.7112		2,713.3332
Total	**1.6265**	**14.5922**	**14.7671**	**0.0283**		**0.7217**	**0.7217**		**0.6766**	**0.6766**		**2,695.5541**	**2,695.5541**	**0.7112**		**2,713.3332**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4473	14.5749	4.2681	0.0398	1.0885	0.0396	1.1281	0.3132	0.0379	0.3511		4,287.4316	4,287.4316	0.3476		4,296.1210
Worker	1.5081	0.8616	9.4639	0.0292	3.3845	0.0229	3.4074	0.8977	0.0211	0.9188		2,907.7491	2,907.7491	0.0693		2,909.4811
Total	**1.9554**	**15.4365**	**13.7320**	**0.0690**	**4.4730**	**0.0625**	**4.5355**	**1.2110**	**0.0590**	**1.2699**		**7,195.1807**	**7,195.1807**	**0.4169**		**7,205.6021**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7025	14.5553	17.8720	0.0283		0.8407	0.8407		0.8407	0.8407	0.0000	2,695.5541	2,695.5541	0.7112		2,713.3332
Total	**0.7025**	**14.5553**	**17.8720**	**0.0283**		**0.8407**	**0.8407**		**0.8407**	**0.8407**	**0.0000**	**2,695.5541**	**2,695.5541**	**0.7112**		**2,713.3332**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4473	14.5749	4.2681	0.0398	1.0885	0.0396	1.1281	0.3132	0.0379	0.3511		4,287.4316	4,287.4316	0.3476		4,296.1210
Worker	1.5081	0.8616	9.4639	0.0292	3.3845	0.0229	3.4074	0.8977	0.0211	0.9188		2,907.7491	2,907.7491	0.0693		2,909.4811
Total	**1.9554**	**15.4365**	**13.7320**	**0.0690**	**4.4730**	**0.0625**	**4.5355**	**1.2110**	**0.0590**	**1.2699**		**7,195.1807**	**7,195.1807**	**0.4169**		**7,205.6021**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5600	15.5639	16.4644	0.0294		0.7747	0.7747		0.7128	0.7128		2,849.6687	2,849.6687	0.9216		2,872.7097
Paving	0.1910					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7510**	**15.5639**	**16.4644**	**0.0294**		**0.7747**	**0.7747**		**0.7128**	**0.7128**		**2,849.6687**	**2,849.6687**	**0.9216**		**2,872.7097**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1166	0.0695	0.7463	2.2100e-003	0.2464	1.7100e-003	0.2482	0.0654	1.5700e-003	0.0669		219.8044	219.8044	5.5900e-003		219.9441
Total	**0.1166**	**0.0695**	**0.7463**	**2.2100e-003**	**0.2464**	**1.7100e-003**	**0.2482**	**0.0654**	**1.5700e-003**	**0.0669**		**219.8044**	**219.8044**	**5.5900e-003**		**219.9441**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7234	14.4362	20.8157	0.0294		0.7285	0.7285		0.7285	0.7285	0.0000	2,849.6687	2,849.6687	0.9216		2,872.7097
Paving	0.1910					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9144**	**14.4362**	**20.8157**	**0.0294**		**0.7285**	**0.7285**		**0.7285**	**0.7285**	**0.0000**	**2,849.6687**	**2,849.6687**	**0.9216**		**2,872.7097**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1166	0.0695	0.7463	2.2100e-003	0.2464	1.7100e-003	0.2482	0.0654	1.5700e-003	0.0669		219.8044	219.8044	5.5900e-003		219.9441
Total	**0.1166**	**0.0695**	**0.7463**	**2.2100e-003**	**0.2464**	**1.7100e-003**	**0.2482**	**0.0654**	**1.5700e-003**	**0.0669**		**219.8044**	**219.8044**	**5.5900e-003**		**219.9441**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	280.2205					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**280.4394**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1943	0.1159	1.2438	3.6800e-003	0.4107	2.8500e-003	0.4136	0.1090	2.6200e-003	0.1116		366.3407	366.3407	9.3100e-003		366.5736
Total	**0.1943**	**0.1159**	**1.2438**	**3.6800e-003**	**0.4107**	**2.8500e-003**	**0.4136**	**0.1090**	**2.6200e-003**	**0.1116**		**366.3407**	**366.3407**	**9.3100e-003**		**366.5736**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	280.2205					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**280.4394**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1943	0.1159	1.2438	3.6800e-003	0.4107	2.8500e-003	0.4136	0.1090	2.6200e-003	0.1116		366.3407	366.3407	9.3100e-003		366.5736
Total	**0.1943**	**0.1159**	**1.2438**	**3.6800e-003**	**0.4107**	**2.8500e-003**	**0.4136**	**0.1090**	**2.6200e-003**	**0.1116**		**366.3407**	**366.3407**	**9.3100e-003**		**366.5736**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

Provide Traffic Calming Measures

Implement School Bus Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5810	22.7625	68.0473	0.2280	21.8840	0.1958	22.0798	5.8444	0.1826	6.0270		23,093.1650	23,093.1650	0.9809		23,117.6879
Unmitigated	5.7243	23.7978	72.0813	0.2458	23.6926	0.2096	23.9021	6.3274	0.1955	6.5229		24,894.0984	24,894.0984	1.0410		24,920.1227

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	4,275.00	1,525.00	625.00	8,798,892	8,127,222
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Racquet Club	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Total	4,275.00	1,525.00	625.00	8,798,892	8,127,222

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	9.50	7.30	7.30	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Racquet Club	9.50	7.30	7.30	11.50	69.50	19.00	52	39	9
Recreational Swimming Pool	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Other Non-Asphalt Surfaces	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Parking Lot	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Racquet Club	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490
Recreational Swimming Pool	0.588665	0.041515	0.188382	0.110464	0.019030	0.006351	0.019720	0.017925	0.001164	0.001012	0.003904	0.000380	0.001490

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
NaturalGas Unmitigated	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	9125.27	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0984**	**0.8946**	**0.7515**	**5.3700e-003**		**0.0680**	**0.0680**		**0.0680**	**0.0680**		**1,073.5608**	**1,073.5608**	**0.0206**	**0.0197**	**1,079.9404**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	9.12527	0.0984	0.8946	0.7515	5.3700e-003		0.0680	0.0680		0.0680	0.0680		1,073.5608	1,073.5608	0.0206	0.0197	1,079.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Racquet Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0984**	**0.8946**	**0.7515**	**5.3700e-003**		**0.0680**	**0.0680**		**0.0680**	**0.0680**		**1,073.5608**	**1,073.5608**	**0.0206**	**0.0197**	**1,079.9404**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.7711	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Unmitigated	8.2212	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2677					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0341	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Total	**8.2212**	**3.3500e-003**	**0.3671**	**3.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**		**0.7856**	**0.7856**	**2.0700e-003**		**0.8374**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.8176					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0341	3.3500e-003	0.3671	3.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003		0.7856	0.7856	2.0700e-003		0.8374
Total	**7.7711**	**3.3500e-003**	**0.3671**	**3.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**		**0.7856**	**0.7856**	**2.0700e-003**		**0.8374**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

JOB: High School No. 8
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	16. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	20. DEGREES	TEMP=	7.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Rose Ave N	*	0	0	0	200	* AG	5020	35.0	0.0	46.0
B. Rose Ave S	*	0	0	0	-200	* AG	4340	35.0	0.0	46.0
C. Gonzales E	*	0	0	200	0	* AG	3770	35.0	0.0	46.0
D. Gonzales W	*	0	0	-200	0	* AG	4210	35.0	0.0	46.0
E. Rose Ave N	*	-120	-2430	-120	-2230	* AG	3870	35.0	0.0	32.0
F. Rose Ave S	*	-120	-2430	-120	-2630	* AG	3850	35.0	0.0	36.0
G. Fifth E	*	-120	-2430	80	-2430	* AG	2250	35.0	0.0	26.0
H. Fifth W	*	-120	-2430	-320	-2430	* AG	2150	35.0	0.0	36.0
I. Gibraltar N	*	396	-1396	396	-1296	* AG	117	53.0	0.0	14.0
J. Gibraltar S	*	396	-1396	396	-1596	* AG	275	53.0	0.0	14.0
K. Camino Del S	*	396	-1396	596	-1396	* AG	1887	53.0	0.0	29.0
L. Camino Del S	*	396	-1396	196	-1396	* AG	1975	53.0	0.0	29.0
M. Rice N	*	1502	0	1502	100	* AG	5760	35.0	0.0	44.0
N. Rice S	*	1502	0	1502	-200	* AG	5420	35.0	0.0	40.0
O. Gonzales E	*	1502	0	1602	0	* AG	3950	35.0	0.0	39.0
P. Gonzales W	*	1502	0	1302	0	* AG	3850	35.0	0.0	39.0
Q. Rice N	*	1500	-1405	1500	-1205	* AG	5040	35.0	0.0	34.0
R. Rice S	*	1500	-1405	1500	-1605	* AG	4640	35.0	0.0	41.0
S. Camino Del S	*	1500	-1405	1590	-1405	* AG	1560	53.0	0.0	38.0
T. Camino Del S	*	1500	-1405	1300	-1405	* AG	1700	53.0	0.0	30.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: High School No. 8
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Business	40	40	1.8
2. Business	-40	40	1.8
3. Business	-40	-30	1.8
4. Residenc	-65	-190	1.8
5. Bussines	-165	-2475	1.8
6. Residenc	389	-1416	1.8
7. Residenc	411	-1416	1.8
8. HS No. 8	396	-1336	1.8
9. Business	1442	50	1.8
10. Business	1450	-1455	1.8
11. Business	1570	-1345	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Business	242.	6.5	2.9	0.5	0.7	2.5	0.0	0.0	0.0	0.0
2. Business	135.	6.6	2.0	1.5	1.3	1.6	0.0	0.0	0.0	0.0
3. Business	65.	7.2	0.9	2.3	2.4	1.7	0.0	0.0	0.0	0.0
4. Residenc	26.	3.5	0.7	1.8	0.7	0.3	0.0	0.0	0.0	0.0
5. Bussines	45.	4.5	0.0	0.0	0.0	0.0	1.3	1.4	0.8	0.8
6. Residenc	72.	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. Residenc	289.	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. HS No. 8	197.	2.3	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
9. Business	135.	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. Business	36.	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Business	231.	4.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0

JOB: High School No. 8
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Business	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Business	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
3. Business	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Residenc	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Bussines	*	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
6. Residenc	*	0.0	0.6	3.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
7. Residenc	*	0.0	0.4	0.4	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. HS No. 8	*	0.4	0.2	0.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. Business	*	0.0	0.0	0.0	0.0	1.3	1.8	0.9	1.6	0.0	0.0	0.0	0.0
10. Business	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.9	0.4	1.1
11. Business	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.0	0.7	0.8

High School No. 8 EMFAC Output Results

calendar_year	season_month	sub_area	vehicle_class	temperature	relative_humidity	process	speed_time	pollutant	emission_rate (g/mi)
2020	Winter	Ventura (SCC)	LDA	60	70	RUNEX	25	CO	0.788655
2020	Winter	Ventura (SCC)	LDA	60	70	RUNEX	30	CO	0.723368
2020	Winter	Ventura (SCC)	LDA	60	70	RUNEX	40	CO	0.617481
2020	Winter	Ventura (SCC)	LDA	60	70	RUNEX	45	CO	0.574642
2020	Winter	Ventura (SCC)	LDA	60	70	RUNEX	55	CO	0.505894
2020	Winter	Ventura (SCC)	LDT1	60	70	RUNEX	25	CO	1.872307
2020	Winter	Ventura (SCC)	LDT1	60	70	RUNEX	30	CO	1.70298
2020	Winter	Ventura (SCC)	LDT1	60	70	RUNEX	40	CO	1.449729
2020	Winter	Ventura (SCC)	LDT1	60	70	RUNEX	45	CO	1.357196
2020	Winter	Ventura (SCC)	LDT1	60	70	RUNEX	55	CO	1.230339
2020	Winter	Ventura (SCC)	LDT2	60	70	RUNEX	25	CO	0.999214
2020	Winter	Ventura (SCC)	LDT2	60	70	RUNEX	30	CO	0.917002
2020	Winter	Ventura (SCC)	LDT2	60	70	RUNEX	40	CO	0.782764
2020	Winter	Ventura (SCC)	LDT2	60	70	RUNEX	45	CO	0.728111
2020	Winter	Ventura (SCC)	LDT2	60	70	RUNEX	55	CO	0.639495
2020	Winter	Ventura (SCC)	LHD1	60	70	RUNEX	25	CO	1.26056
2020	Winter	Ventura (SCC)	LHD1	60	70	RUNEX	30	CO	1.115026
2020	Winter	Ventura (SCC)	LHD1	60	70	RUNEX	40	CO	0.966679
2020	Winter	Ventura (SCC)	LHD1	60	70	RUNEX	45	CO	0.947498
2020	Winter	Ventura (SCC)	LHD1	60	70	RUNEX	55	CO	1.023414
2020	Winter	Ventura (SCC)	LHD2	60	70	RUNEX	25	CO	0.587802
2020	Winter	Ventura (SCC)	LHD2	60	70	RUNEX	30	CO	0.509647

High School No. 8 EMFAC Output Results

calendar_year	season_month	sub_area	vehicle_class	temperature	relative_humidity	process	speed_time	pollutant	emission_rate (g/mi)
2020	Winter	Ventura (SCC)	LHD2	60	70	RUNEX	40	CO	0.429514
2020	Winter	Ventura (SCC)	LHD2	60	70	RUNEX	45	CO	0.416148
2020	Winter	Ventura (SCC)	LHD2	60	70	RUNEX	55	CO	0.440137
2020	Winter	Ventura (SCC)	MCY	60	70	RUNEX	25	CO	23.01662
2020	Winter	Ventura (SCC)	MCY	60	70	RUNEX	30	CO	20.49253
2020	Winter	Ventura (SCC)	MCY	60	70	RUNEX	40	CO	17.98684
2020	Winter	Ventura (SCC)	MCY	60	70	RUNEX	45	CO	17.75734
2020	Winter	Ventura (SCC)	MCY	60	70	RUNEX	55	CO	19.51042
2020	Winter	Ventura (SCC)	MDV	60	70	RUNEX	25	CO	1.810765
2020	Winter	Ventura (SCC)	MDV	60	70	RUNEX	30	CO	1.652753
2020	Winter	Ventura (SCC)	MDV	60	70	RUNEX	40	CO	1.416306
2020	Winter	Ventura (SCC)	MDV	60	70	RUNEX	45	CO	1.330399
2020	Winter	Ventura (SCC)	MDV	60	70	RUNEX	55	CO	1.218581
2020	Winter	Ventura (SCC)	MH	60	70	RUNEX	25	CO	4.190974
2020	Winter	Ventura (SCC)	MH	60	70	RUNEX	30	CO	3.720479
2020	Winter	Ventura (SCC)	MH	60	70	RUNEX	40	CO	3.258962
2020	Winter	Ventura (SCC)	MH	60	70	RUNEX	45	CO	3.221468
2020	Winter	Ventura (SCC)	MH	60	70	RUNEX	55	CO	3.563919
2020	Winter	Ventura (SCC)	OBUS	60	70	RUNEX	25	CO	1.530371
2020	Winter	Ventura (SCC)	OBUS	60	70	RUNEX	30	CO	1.404941
2020	Winter	Ventura (SCC)	OBUS	60	70	RUNEX	40	CO	1.203045
2020	Winter	Ventura (SCC)	OBUS	60	70	RUNEX	45	CO	1.122494

High School No. 8 EMFAC Output Results

calendar_year	season_month	sub_area	vehicle_class	temperature	relative_humidity	process	speed_time	pollutant	emission_rate (g/mi)
2020	Winter	Ventura (SCC)	OBUS	60	70	RUNEX	55	CO	0.997659
2020	Winter	Ventura (SCC)	SBUS	60	70	RUNEX	25	CO	0.973675
2020	Winter	Ventura (SCC)	SBUS	60	70	RUNEX	30	CO	0.858759
2020	Winter	Ventura (SCC)	SBUS	60	70	RUNEX	40	CO	0.685313
2020	Winter	Ventura (SCC)	SBUS	60	70	RUNEX	45	CO	0.620954
2020	Winter	Ventura (SCC)	SBUS	60	70	RUNEX	55	CO	0.527236
2020	Winter	Ventura (SCC)	T6 Ag	60	70	RUNEX	25	CO	2.230272
2020	Winter	Ventura (SCC)	T6 Ag	60	70	RUNEX	30	CO	1.861309
2020	Winter	Ventura (SCC)	T6 Ag	60	70	RUNEX	40	CO	1.31373
2020	Winter	Ventura (SCC)	T6 Ag	60	70	RUNEX	45	CO	1.126211
2020	Winter	Ventura (SCC)	T6 Ag	60	70	RUNEX	55	CO	0.910138
2020	Winter	Ventura (SCC)	T6 Public	60	70	RUNEX	25	CO	0.311663
2020	Winter	Ventura (SCC)	T6 Public	60	70	RUNEX	30	CO	0.242626
2020	Winter	Ventura (SCC)	T6 Public	60	70	RUNEX	40	CO	0.151009
2020	Winter	Ventura (SCC)	T6 Public	60	70	RUNEX	45	CO	0.121983
2020	Winter	Ventura (SCC)	T6 Public	60	70	RUNEX	55	CO	0.087246
2020	Winter	Ventura (SCC)	T6 Utility	60	70	RUNEX	25	CO	0.290089
2020	Winter	Ventura (SCC)	T6 Utility	60	70	RUNEX	30	CO	0.213774
2020	Winter	Ventura (SCC)	T6 Utility	60	70	RUNEX	40	CO	0.116093
2020	Winter	Ventura (SCC)	T6 Utility	60	70	RUNEX	45	CO	0.085552
2020	Winter	Ventura (SCC)	T6 Utility	60	70	RUNEX	55	CO	0.04646
2020	Winter	Ventura (SCC)	T7 SWCV	60	70	RUNEX	25	CO	7.456263

High School No. 8 EMFAC Output Results

calendar_year	season_month	sub_area	vehicle_class	temperature	relative_humidity	process	speed_time	pollutant	emission_rate (g/mi)
2020	Winter	Ventura (SCC)	T7 SWCV	60	70	RUNEX	30	CO	5.501839
2020	Winter	Ventura (SCC)	T7 SWCV	60	70	RUNEX	40	CO	2.998484
2020	Winter	Ventura (SCC)	T7 SWCV	60	70	RUNEX	45	CO	2.215739
2020	Winter	Ventura (SCC)	T7 SWCV	60	70	RUNEX	55	CO	1.215732
2020	Winter	Ventura (SCC)	UBUS	60	70	RUNEX	25	CO	6.051383
2020	Winter	Ventura (SCC)	UBUS	60	70	RUNEX	30	CO	5.242881
2020	Winter	Ventura (SCC)	UBUS	60	70	RUNEX	40	CO	4.196209
2020	Winter	Ventura (SCC)	UBUS	60	70	RUNEX	45	CO	3.876804
2020	Winter	Ventura (SCC)	UBUS	60	70	RUNEX	55	CO	3.565757

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D CULTURAL RESOURCES REPORTS

Phase I Archaeological Study of the Proposed Oxnard Union High School No. 8 Site Ventura County, California



Prepared for:
Oxnard Union High School District
309 South K Street
Oxnard, CA 93030

Submitted to:
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July 2019

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National Archaeological Data Base Information

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Report Date:	May 2019
Report Title:	Phase I Archaeological Study of the Proposed Oxnard Union High School District High School No. 8 Site, Oxnard, Ventura County, California
Prepared for:	Oxnard Union High School District 309 South K Street Oxnard, CA 93030
Submitted to:	Tetra Tech, Inc. 5383 Hollister Avenue, Suite 130 Santa Barbara, CA 93111
Submitted by:	Provenience Group, Inc. 1552 N. Refugio Road Santa Ynez, California 93460 (805) 350-3134
Contract No:	100-SBA-T38846/1163664
U.S.G.S. Quad:	Oxnard, California
Acreage:	Approximately 46.8 acres
Key words:	Ventura County, Oxnard, APN 214-002-059, Maulhardt Ranch, Chumash

MANAGEMENT SUMMARY

At the request of Tetra Tech, Inc., Provenience Group, Inc. (PGI) performed a Phase I archaeological pedestrian survey of a 46.8 acre property northeast of Camino Del Sol and Rose Avenue in Oxnard, Ventura County, California. The objective of the Phase I survey was to record any prehistoric and historic archaeological resources within the 46.8 acre survey area, defined as the project area. This report summarizes the results of the study.

The record search, completed by PGI staff archaeologist Roderic McLean, M.A. on March 12, 2019, did not identify any previously identified archaeological resources within 0.5-mile of the project area. On March 21, 2019, PGI archaeologist Debra Hargett completed a Phase I archaeological pedestrian survey of the project area to detect prehistoric and historic archaeological resources. There were no major constraints during the pedestrian survey; however, the ground surface was very muddy due to recent rains and ground visibility in much of the survey area ranged from 0 to 20 percent, largely due to the placement of black plastic on the planted strawberry mounds, which extended into the rows between mounds.

The proposed project is located on the east and north sides of the historic Maulhardt Ranch property, which was previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014. Indirect visual impacts of the project, which have the potential to visually alter the characteristics of the ranch and diminish its integrity, will require mitigation. PGI recommends mitigation that will entail planting a thick windrow of tall trees and bushes along the east and north sides of the Maulhardt Ranch property to visually obscure the school complex from the ranch.

[redacted]

[redacted]

PGI recommends limited Extended Phase 1 testing in the two areas [redacted]

[redacted]

[redacted]

A copy of this report and attachments will be submitted to the Central Coast Information Center (CCIC) at the University of California, Santa Barbara. Field notes and other project materials are on file at Provenience Group, Inc.'s office in Santa Ynez, California.

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1.0 INTRODUCTION

At the request of Tetra Tech, Inc., Provenience Group, Inc. (PGI) completed a records search and performed a Phase I archaeological resources pedestrian survey in support of the proposed Oxnard Union High School District High School No. 8 Site in Oxnard, Ventura County, California. The project area encompasses Township 2 North, Range 22 West, as shown on the U.S. Geological Survey (USGS) *Oxnard, California* 7.5-minute series topographic quadrangle map (Figure 1). This report summarizes the results of the study.

PGI completed the Phase I cultural resources study pursuant to the California Environmental Quality Act (CEQA) and Ventura County guidelines. CEQA requires lead agencies to evaluate proposed projects for their potential to impact archaeological resources (Public Resources Code Section 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5).

According to the CEQA Guidelines, "historical resources" include buildings, structures, objects, districts, or sites that may possess prehistoric or historical archaeological, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant effect on important cultural resources, then alternative plans or mitigation measures need to be developed. However, only important cultural resources need to be considered in the mitigation plans.

Prior to completing an archaeological pedestrian survey of the project area, PGI staff conducted a record search and completed historic background research. On March 21, 2019, archaeologist Debra Hargett surveyed approximately 46.8 acres, defined as the project area, to identify prehistoric and historic archaeological resources.

Carole Denardo, M.A., RPA, who exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61, served as PGI's principal investigator and project manager. Staff archaeologist Debra Hargett, M.St. performed the Phase I archaeological survey.

PGI initiated consultation with the California Native American Heritage Commission (NAHC) on March 10, 2019 to inquire if known sacred sites are present in the project area; the result was negative. The NAHC provided a list of ten Native American groups and individuals. Letters and/or emails were provided to each of the contacts on March 18, 2019. Follow-up phone calls were made on March 22, 28, and 29, 2019.

The remainder of this section provides the project description and location; Section 2.0 discusses the regulatory framework; Section 3.0 summarizes environmental, ethnographic, and archaeological overviews for the region; Section 4.0 describes the records search results; Section 5.0 presents the field methodology; Section 6.0 discusses the survey results; Section 7.0 provides a summary and recommendation; and references are listed in Section 8.0.

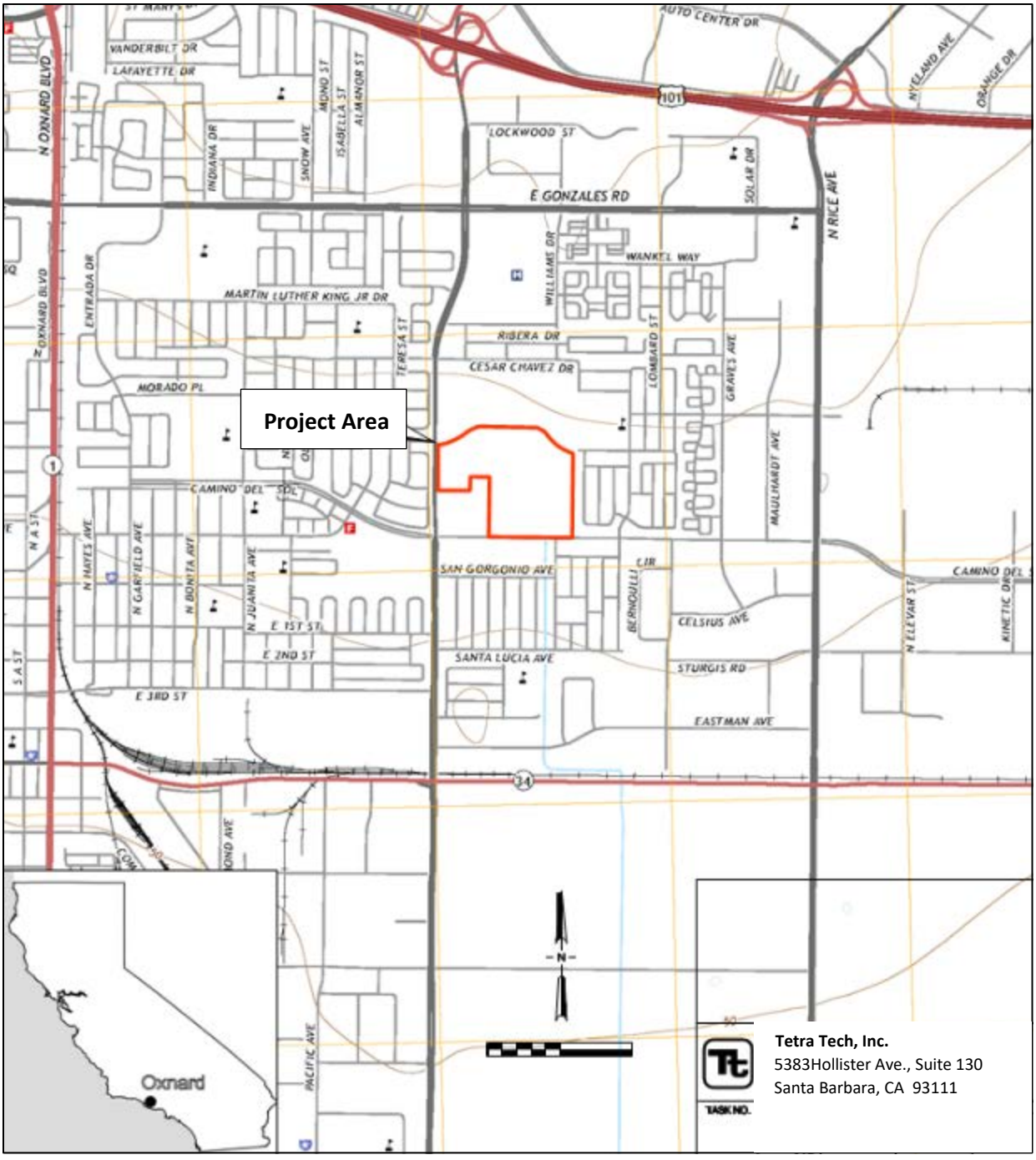


Figure 1. Project Location Map.

1.1 Project Description and Location

The 46.8 acre property is located northeast of Camino Del Sol and Rose Avenue in Oxnard, Ventura County, California (Figure 1). Presently, the parcel (Assessor's Parcel Number 214-002-059) (Figure 2), within the historic Maulhardt Ranch, is planted with strawberries. The purpose of the Phase I survey was to identify prehistoric and historic archaeological resources that have the potential to be adversely affected by development in the project area.

The project area is within the southern expanse of the Santa Clara River flood plain. The parcel is surrounded by residential properties on each side, and the Rio Rosales Elementary School and Park are located to the east-northeast and Del Sol Park is present to the southwest. The topography of the agricultural field is mostly flat (Figure 3). The elevation ranges between approximately 54 and 60 feet above mean average sea level (amsl) (Google Earth 2019).

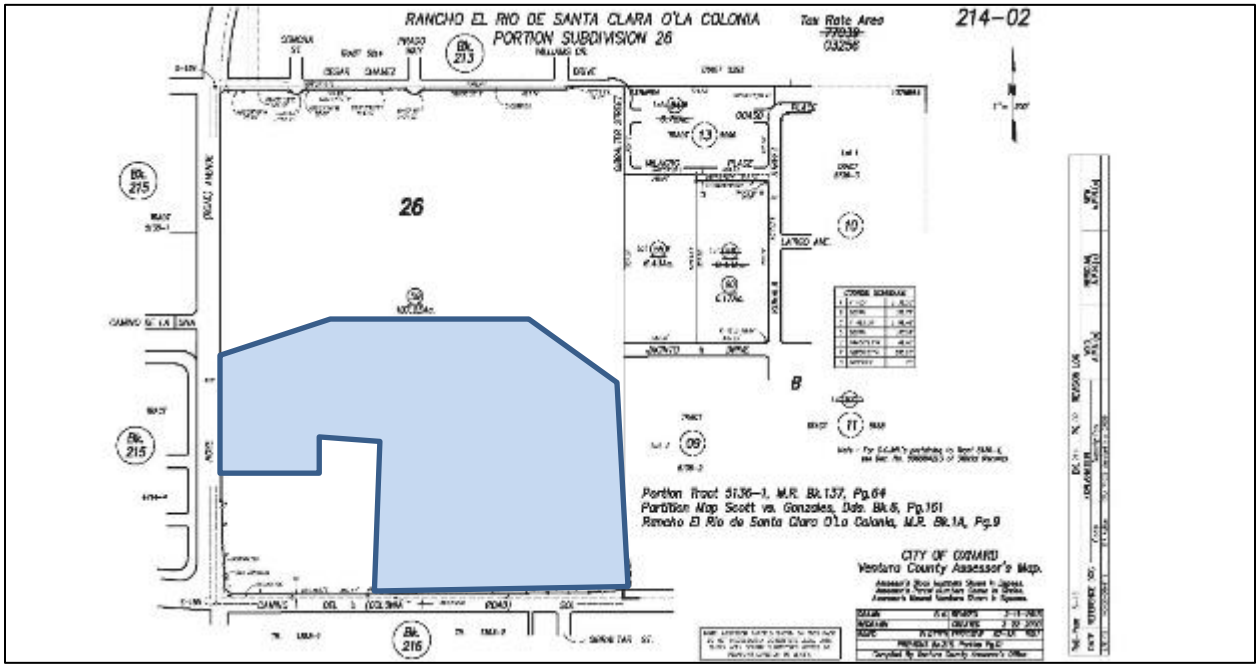


Figure 2. Assessor Parcel Map of Project Area (APN 214-002-059), shaded blue.



Figure 3. Aerial photograph indicating the surveyed Project Area. (Google Map 2019).

2.0 REGULATORY FRAMEWORK

The following regulatory framework describes the applicable state and local statutes, ordinances, and policies pertaining to the protection of cultural resources. These laws must be considered during the planning process for projects that have the potential to affect cultural resources in Ventura County.

2.1 State Regulations

2.1.1 California Environment Quality Act (CEQA)

The California Environmental Quality Act (CEQA) statute and guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the NRHP or CRHR;

- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

- A resource identified as significant (i.e., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or

- Any object, building, structure, site, area, place, record or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the CRHR (CEQA Guidelines Section 15064.5).

2.1.2 California Register of Historical Resources

CRHR Criteria of Evaluation

All resources listed in or formally determined eligible for the NRHP are eligible for the CRHR. The CRHR is a listing of California resources that are significant within the context of California's history. The CRHR is a state-wide program of similar scope to the NRHP. In addition, properties designated under municipal or county ordinances are eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the following criteria that are defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or

2. It is associated with the lives of persons important to local, California, or national history; or

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The CRHR criteria are similar to NRHP criteria, and are tied to CEQA, as any resource that meets the above criteria is considered an historical resource under CEQA.

2.2 Local Ordinances and Guidelines

2.2.1 Ventura County Guidelines

Ventura County maintains a Cultural Heritage Ordinance. Its purpose is to "promote the economic and general welfare of the County by preserving and protecting public and private historic, cultural and natural resources which are of special historical or aesthetic character or interest, or relocating or recreating such resources where necessary for their preservation and for their use, education, and view by the general public" (Ventura County Zoning Ordinance 2019).

2.2.2 Ventura County Cultural Heritage Board

The purpose of the Ventura County Cultural Heritage Board is to "research and record County history and to make historic landmark designations" (County Ordinance Nos. 2026, 2737, and 3568). According to The Cultural Heritage Board is responsible for reviewing plans that entail alterations or demolition to any site designated as an official County Landmark. They have the authority to assess and make determinations of eligibility for landmarking using the following Criteria for Landmark Status:

1. Character, interest or value, regardless of age, is significant to the heritage of the community.
2. A significant historical event occurred at the site.
3. It is reminiscent of an early state of development.
4. It is identified with a person who significantly contributed to the culture or development of the County, State or the Nation.
5. It exemplifies a particular architectural style or way of life.
6. It is the design or work of a person whose efforts have significantly influenced the heritage of the County.
7. It demonstrates outstanding architectural design, detail, materials, or craftsmanship.
8. Its preservation is essential to the integrity of another landmark.
9. Its location or physical characteristics represent an established visual feature of a neighborhood.
10. It has potential of yielding significant information of archaeological interest.
11. It is a natural environment that strongly contributes to the well-being of the community.

2.2.3 City of Oxnard

The City of Oxnard largely defers to CEQA for guidance with cultural resources projects. Among the City of Oxnard's 2030 General Plan Goals and Policies Related to Cultural and Tribal Cultural Resources, are the following:

Chapter 3 Community Development - Goal CD-11: Protected historic and authentic qualities of Oxnard's traditional neighborhoods and historic districts;

Chapter 5 Environmental Resources - Goal ER-1: Protection of natural and cultural resources, agriculture, and open spaces is well integrated with the built environment and human activities and achieves a symbiotic, mutually beneficial, sustainable relationship.

2.3 Regulations Concerning Discovery of Human Remains

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

(a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

(b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant, and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13, commencing with Section 21000).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20, commencing with Section 30000).

3.0 NATURAL AND CULTURAL OVERVIEW

3.1 Environmental Setting

The 46.8-acre project area is in the western portion of the Transverse Ranges Geomorphic Province. It is within the Oxnard Plain, a large alluvial basin bounded on the north by the Santa Clara River and on the south by Calleguas Creek and the Santa Monica Mountains. Alluvial sediments, including poorly consolidated silt, sand, and gravel deposits along modern drainages and alluvial fans and floodplains appear in lower elevations (Conkling 2012). Elevations in the project area range from 60 to 65 feet above mean sea level (amsl), and soils consist of Holocene wash deposits composed of unconsolidated sand, silt, and gravel (Clahan 2003).

3.1.1 Paleoenvironment

An understanding of the late Pleistocene and Holocene environments is crucial to the understanding of prehistoric California (West et al. 2007). The archaeological/geologic time scale of California can be divided into four broad periods: Terminal Pleistocene (before 10,000 years BP), early Holocene (10,000 - 7,000 years BP), middle Holocene (7,000 - 3,350 years BP), and late Holocene (3,350 - 200 years BP) (Erlandson and Colten 1991). The period between 11,000 and 8,000 years ago is marked by the Pleistocene/Holocene transition. This was a time of dramatic change in vegetation and a warming period following the Late Glacial Maximum.

Initial development of Holocene plant communities (oak woodland, chaparral and coastal sage scrub) began during the Pleistocene-Holocene transition (11,000 to 8,000 years ago). The rapid increase in oaks, herbs and chaparral taxa corresponded with a decrease in conifers. During the Holocene, there were brief shifts in the pine to oak transition occurring at approximate one thousand-year intervals between 11,000 and 3,000 years ago (West et al. 2007). This indicates vegetation changes came in pulses, with a brief change event followed by a stabilization period with slower, more gradual changes, until the next change event or pulse. Vegetation changes were associated with similar climatic changes as conditions shifted from cool and wet to warm and dry (Brandoff-Kerr 2010).

Climatic data from the middle Holocene show a distinct drying period with decreases in the woodland environments. The late Holocene was marked by a moist and cool climate up until about 1,000 years ago when the climate shifted to present norms.

Fire may have begun to be a factor in shaping the landscape as early as the middle Holocene. The changing plant species compositions and lower rainfall, particularly when fuel/vegetation moisture was low during prolonged dry periods, would have created conditions for wildfire. Fire ecology studies in California have demonstrated regular intervals of large fires in 20 to 50-year cycles (Mensing et al. 1999; Lightfoot 2005) during the late Holocene, in addition to evidence of anthropogenic-caused fires. In evaluating column samples from the Santa Barbara basin, “Firestorms erupted occasionally especially at the end of wet periods and at the beginning of significant droughts” (Mensing et al. 1999). Geomorphic changes are commensurate with fires of this magnitude: slope failures, mudflows, and debris flows that changed water courses (Brandoff-Kerr 2010).

3.1.2 Climate and Precipitation

The area is characterized by a Mediterranean climate with hot dry summers and cool wet winters. The rainy season occurs from October through April with precipitation averaging at about 16 inches annually.

Where coastal influences meet interior high temperatures, summer temperatures range from the 68 to 74 degrees. Cool humid marine air causes frequent fog and low clouds on the coast, generally at night and early morning in the late spring and early summer. The area experiences a diurnal cycle of onshore winds from the west and northwest that are replaced by mild offshore breezes flowing from warm inland valleys during the night and early morning. Winters are relatively mild annually and nighttime temperatures only rarely drop below freezing.

3.2 Archaeological Context

The history of human habitation in Ventura County extends back at least 12,000 years on the Channel Islands, and 6,900 years in the mountainous interior. Permanent villages or base camps would have been at lower elevations, along creeks and river drainages. Prehistoric archaeological sites within Ventura County range from chipped stone debitage and fire-affected rock at higher elevations, which indicates specialized activities and short-term occupation akin to camping, to multi-component sites representing base or seasonal settlements along the coast and closer to creeks and drainage bottoms.

3.2.1 Paleo-Indian Period (12,000 to 8,000 cal B.C.)

The Paleo-Indian Period is the earliest known human occupation of the Ventura County area, with evidence of a developing maritime culture found mostly on the Channel Islands. Recent work by scholars has pressed these earliest dates back further. People used relatively simple technology to procure plant foods, shellfish, and a limited variety of vertebrate species (Greenwood 1972; Jones and Waugh 1995; King 1982, 1990; Glassow 1996). There are at least 50 sites reported on the Channel Islands of San Miguel and Santa Rosa dating between 13,000 and 7,500 cal B.C. (Davis et al. 2010; Erlandson and Braje 2008). Mainland coastal sites occupied during this time would later become submerged by rising sea levels. Presently, there is a lack of archaeological evidence that demonstrates Paleo-Indian occupation in Ventura County.

3.2.2 Early Period (7,000 to 2,000 cal B.C.)

The Early Period reveals the earliest evidence of established occupation, with the Millingstone Horizon ending around 5,000 B.C. Most of the archaeological sites from this period are recorded at or near the coast, or on the Channel Islands. It was a time of rising sea levels that created an abundance of lagoons and estuaries (Glassow et al. 2007). This period is characterized by a subsistence shift to small seeds found in the chaparral plant community, as demonstrated by the abundance of multi-facial manos. Other common artifacts include metates, and a variety of flaked stone; plano-convex cores and core tools of quartzite, basalt and other volcanic stones. Larger populations were supported by a more diversified subsistence base that included not only seeds and other plant resources, but terrestrial and marine mammals, fish, and shellfish (Erlandson 1994; Glassow et al. 1988). Although deer are represented in the archaeological record, hunting and fishing contributed little to the diet, with the faunal diet relying heavily on mussels and Pismo clams. Residential bases are presumed to have been comprised of extended families during this period. Although quantities of animal bones do not appear to increase much in the archaeological record, hunting gained more prominence, as indicated by the variety of flaked stone artifacts and tools. A semi-sedentary lifestyle seems to have evolved. Occurrences of digging stick weights suggest harvest of tuberous plants.

3.2.3 Middle Period (1,400 B.C. to A.D. 1,150)

The Middle Period is marked by continued subsistence intensification and increased technological and economic complexity. Several technological developments include the inception of the mortar and pestle

for processing acorns and other foods, use of the bow and arrow to replace the *atlatl* for hunting, and the introduction of the plank canoe (*tomol*), to more effectively exploit marine resources. Coastal settlement increases significantly between 2,000 and 1,000 B.C. Sedentism is apparent, along with formal architecture, ceremonial structures and traditional cemeteries.

3.2.4 Middle to Late Transition Period (A.D. 1,150 - 1,300)

The Middle to Late Transition Period is characterized by the beginnings of political and social complexity and development of social hierarchy (Arnold 1992). Inland settlement became more pronounced as a result of climatic shifts and elevated sea temperatures (Jones et al. 1994). Population densities expanded, along with more sophisticated technology and craft specialization. By the end of this period, *Olivella* callus beads were used as currency throughout the region, and trade networks intensified between villages. There was an increase in the manufacture of elaborate shell ornaments and beads for trade between the Santa Barbara Channel groups, their neighbors, and the interior (Erlandson 1994). By the Late Transition Period, climatic fluctuations that increased ocean temperatures prompted a decrease in maritime activities and augmented a shift in settlement away from the coast as populations moved inland (Jones and Waugh 1995).

3.2.5 Late Period (1,000 cal A.D. to Missionization)

Around 1,000 A.D., the Medieval Climatic Anomaly, a 300-year period of warmer temperatures and drier climate, caused consequential, adverse environmental conditions, particularly intermittent droughts (Rabb and Larson 1997). During the Late Period, terrestrial resource production is thought to have decreased significantly, while socioeconomic complexity evolved. A conversion to concave based projectile points led to the abandonment of asphaltum, which had been used for hafting. Shellfish remained the principal protein food. A ranked society with hereditary elite was established, and population growth and socioeconomic complexity transpired, along with environmental change (Glassow et al. 2007). Several new artifact styles became popular after A.D. 1300, including leaf-shaped and triangular concave-based arrow points, “flowerpot” mortars, and circular shell fishhooks (Glassow 1996). It is likely that the aboriginal society was akin to the Chumash culture first encountered by Europeans (King 1990).

3.3 Ethnographic Context

Prior to Euro-American contact, the central California coastal region, including the northern Channel Islands and inland areas, was occupied by Chumash-speaking people. Their territory extended from San Luis Obispo to Malibu, and inland as far as the San Joaquin Valley. The Chumash have been divided into several geographic groups with strong Hokan language dialect associations, comprised of the Barbareño, Purisimeño, Inezeño, and Ventureño (Grant 1978). The project is within the ethnographic and historic territory inhabited by the Ventureño Chumash dialect group (Kroeber 1925). The Chumash occupied the area from Topanga Canyon to the Ventura River Valley, Oxnard Plain, Santa Clara Valley, Ojai, and Castaic (Van Valkenburgh 1935).

The Chumash were a non-agrarian culture known for having one of the most populous thriving, advanced societies of hunting-gathering California Native American groups. They practiced a regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources (Landberg 1965). In this way, large coastal villages would have been fully populated only in the late summer when pelagic fishing was at its peak. Shellfish were also exploited, including mussel and abalone from rocky shores and cockle and clams from sandy beaches. Acorns were a food staple;

they were ground into flour using stone mortars and pestles and then leached to remove tannic acid. In addition, a wide variety of seeds, including *chia* from various species of sage, were utilized. Through the winter months, the Chumash depended largely on stored food resources.

In this area, as elsewhere in California, basketry served many of the functions that pottery did in other places. Baskets were used for cooking, serving, storage, and transporting burdens. Some basket makers wove baskets so tightly that they could hold water, while others waterproofed their baskets by lining them with pitch or asphaltum (Chartkoff and Chartkoff 1984:130).

The Chumash lived in large, hemispherical houses constructed by planting willows or other poles in a circle and bending and tying them together at the top. These structures were then covered with tule mats or thatch. Structures such as this housed 40 to 50 individuals, or three-to-four-member family groups. Dance houses and sweathouses are also reported for the Chumash (Kroeber 1925:557).

Political organization was typified by small-scale chiefdoms. Chiefs were associated with villages or segments of larger villages. Higher status chiefs controlled entire regions containing several villages. The chiefly offices were normally inherited through the male line with a primogeniture rule in effect. Chiefs had several bureaucratic assistants to help in political affairs and serve as messengers, orators, and ceremonial assistants. A number of status positions were associated with specialized knowledge and rituals, such as a weather prophet, ritual poisoner, or herbalist (Bean 1974).

The protohistoric culture of the Chumash, defined as the time when intermittent trade and contact was experienced between Native Americans and Spanish trading vessels in route to the Orient, was disrupted by the arrival of the Spanish expedition led by Gaspar de Portolá in 1769. The establishment of the San Buenaventura Mission in 1782 further disrupted Chumash culture in Ventura County. Archaeological evidence verifies not only that the native population was rapidly decimated by missionization, but also that the culture itself disintegrated rapidly. Chartkoff and Chartkoff (1984:264) note that Spanish settlement barred many Native Americans from traditionally important resources including shellfish, clam shell beads, steatite, and asphaltum. Disease and forced relocation to Mission San Buenaventura disrupted traditional subsistence systems and, by 1810, most of the Chumash villages had been abandoned.

3.4 Historic Period Context

3.4.1 Mission Period (1760-1821)

In 1542, Juan Sebastían Cabrillo was the first of the exploring Europeans to sail along the California coast. The aftermath of Spanish exploration in Alta California led to immigrations and settlement. In 1769, Gaspar de Portolá led the first land expeditions from Baja California to the San Francisco Bay. Coined the Sacred Expedition, Fray Junípero Serra joined the journey with the intent to establish California missions and colonize the region. During the expedition the site was selected for the future San Buenaventura Mission, which would be established in 1782 as the ninth of 21 missions established in Alta California (Triem 1985). Newly baptized Chumash provided nearly all the labor to construct and maintains the missions, which soon produced surplus amounts of wheat, beans, corn, cattle, and sheep for trade.

By 1804, five missions had been established in Chumash territory. Of sad note during this period was the perish of large populations of Native American tribes and mission neophytes, largely triggered from exposure to European diseases and the sudden introduction to subsistence and cultural changes, which contributed to low fertility rates and high infant mortality (Tompkins 1975).

To some extent, the San Buenaventura Mission and other missions along the central coast were somewhat geographically disconnected from the Alta California headquarters in Monterey and Los Angeles, largely due to a lack of accessible seaports and the shortcomings of travel along El Camino Real. The geographic divide continued during Mexican revolution from 1810 to 1821 (Hildebrandt and Darcangelo 2009:48).

3.4.2 Rancho Period (1821-1845)

California officially became a Mexican Territory after the Treaty of Cordoba was signed in 1821. The transfer of sovereignty from Spain to Mexico altered Mission San Buenaventura irrevocably. After secularization of the missions in 1834, approximately ten million acres were gradually transferred to private ownership via a system of land grants. Mexican officials dispersed large land grants to former Mexican military soldiers and their descendants as compensation for their service. In 1837, Governor Juan B. Alvarado ceded Rancho El Rio de Santa Clara o La Colonia, consisting of 44.883-acres of fertile soil in the plain south of the Santa Clara River, to a group of former soldiers who had served at the Santa Barbara Presidio The soldiers included Valentine Cota, Salvador Valenzuela, Vicente Pico, Rafael Valdez, Vincent Feliz, Leandro Gonzalez, Rafael Gonzalez, and Jose Maria Valenzuela (Maulhardt 2004, 2016).

The Mexican government also sold some of their holdings as a tactic to thwart Spain's control of California. California also opened to international trade, which caused "great and rapid economic transportation" as foreign companies competed for access to the developing hide-and-tallow industry (Hackel 1997). Native people who suffered from the mission's reduced economic circumstances were hired as vaqueros at the ranches.

3.4.3 Anglo-Mexican Period (1845-1880)

The Mexican-American War in 1846 weakened Mexico's hold on Alta California, and American influence steadily increased. In 1848, hostilities between the Mexican Californios and the Americans ceased and the two-year war ended with the Treaty of Guadalupe Hidalgo. As a result, California was declared a United States territory, and in 1850 it became the nation's thirty-first state (Chartkoff and Chartkoff 1984). Following statehood, passage of the Land Act of 1851 created the California State Lands Commission to adjudicate disputes regarding Mexican citizens' land claims, to determine their validity, and redistribute land where ownership was in question (Gates 1971). Often land grants were denied to the original grantee when formal legal documents were lacking, and the property fell into the hands of new owners, generally the recent American arrivals. This process also allowed settlers to homestead on unclaimed government lands. Proper documentation was filed for Rancho El Rio de Santa Clara o La Colonia in 1852, and twenty years later it was legally patented (Willey 1886).

During the Gold Rush, a rapid population increase caused the demand (and price) for California livestock to soar. However, a long drought from 1860 to 1864, which coincided with the Civil War, was devastating for the cattle industry throughout California. It decimated large numbers of cattle within Ventura County. As a result, most of the ranchos were divvied up and sold, with large acreages purchased by investors from the east, some who hoped to profit amid reports of oil discoveries in the area. Over the next twenty years, American settlers continued their influx into the state of California, with many marrying into the families of wealthy Californios and gradually outnumbering the Mexican citizens.

In 1865, Rafael Gonzalez sold 4,000 acres of La Colonia to Juan Camarillo. By 1866, German immigrant Johannes Christian Borchard arrived in the area and sought arable land for crop production and sheep grazing, and in 1866, he purchased the Gonzalez home and 1,000 acres of Rancho El Rio de Santa Clara o La Colonia, which had belonged to Leandro and Rafael Gonzalez. In the following year, German settlers

Gottfried and Sophie Maulhardt and brothers Jacob and Anton Maulhardt arrived. In 1871, other portions of the land grant were bought by Thomas Bard who subdivided much of the rancho into farm plots and sought to establish a wharf so crops could be loaded on ships locally for transport to market (Maulhardt 2004).

In 1872, after Christian Borchard found that barley crops thrived in alkali soils, brothers Jacob Maulhardt and Gottfried Maulhardt and Johannes Borchard got together to purchase 1,230 acres of prime farm land from Juan Camarillo who had earlier obtained a portion of the land grant from Leandro and Rafael Gonzalez. The Maulhardt brothers and Johannes Borchard later split the property three ways, so each would own 410 acres. In 1878, Jacob Maulhardt built his home, not far from the present Maulhardt residence next to the project site (Figure 4). It was there that he and his wife Dorothea Kohler raised their family (Maulhardt 2004; San Buenaventura Research Associates 2014).

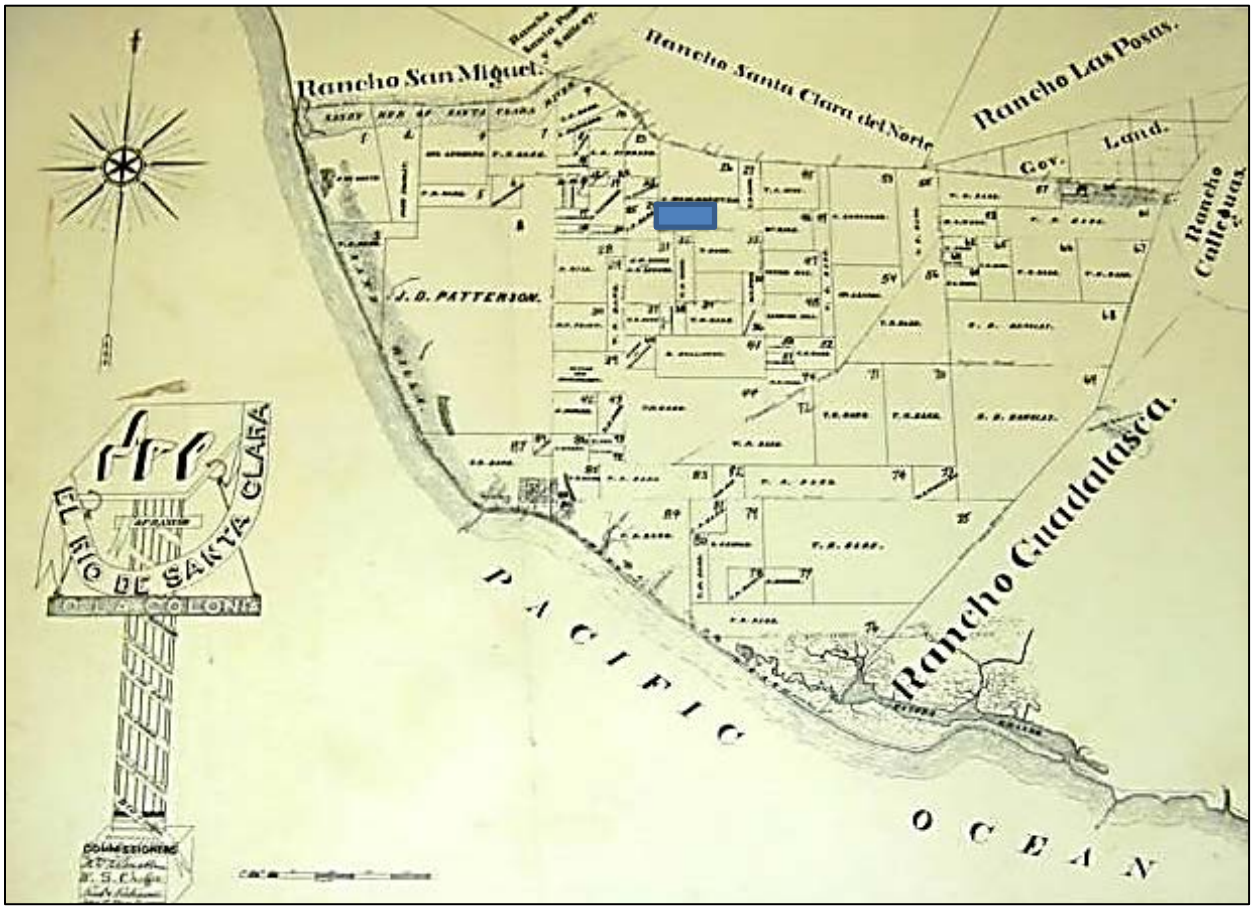


Figure 4. 1877 Map of Rancho el Rio de Santa Clara O La Colonia: partitioned by order Dist. Court 1st Jud. Dist. California. Hon. Eugene Fawcett; / John T. Storr, Surveyor. (Huntington Library archives). Blue-shaded area depicts project area within the Maulhardt Ranch property.

Along with agriculture, homes and businesses sprang up and towns emerged in the area that would later become Ventura County. In 1866, the community of San Buenaventura incorporated, and at that time the fledging city boasted a wharf, courthouse, bank, and library (City of Ventura 2019). Ventura County then seceded from Santa Barbara County in 1873.

3.4.4 Americanization Period (1880-1915)

During the early American Period, the ranchos continued to raise cattle and sheep, but the industry shifted from hides and tallow to dairy, meat, and agricultural products such as lima beans and sugar beets.

In 1887, the Southern Pacific Railroad constructed a spur from the Newhall Pass to San Buenaventura and a depot to expedite shipments of agricultural products produced in the Santa Clara River Valley and Oxnard Plain (Triem 2002). In 1897, the railroad established the Oxnard Depot in advance of the American Beet Sugar Factory, which opened on the north side of Wooley Road, east of Oxnard Boulevard in 1898 (Figure 5). The sugar beet factory, launched by entrepreneur Henry T. Oxnard, offered prosperity for the farming community that would later be named Oxnard. Mr. Oxnard was a well-known 'sugar baron' who had established the American Crystal Sugar Company. He was persuaded to invest in the superior quality sugar beets grown by farmers Albert Maulhardt, John Borchard, and others. The profitable $2 million sugar facility had the capacity to process 2,000 tons of sugar beets daily, which eliminated the need for shipping the product elsewhere, plus the factory provided plenty of jobs for the community. For a time, it was considered the world's largest sugar beet factory (Maulhardt 2016).

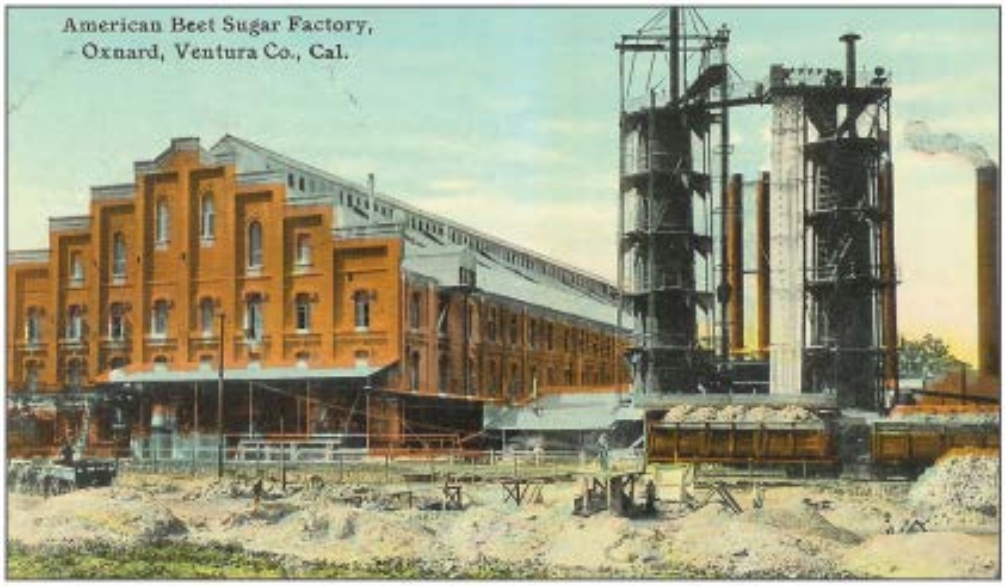


Figure 5. Postcard depicting the American Beet Sugar Factory in Oxnard.

In 1898, the townsite of Oxnard was platted by James A. Driffilll of the Colonia Improvement Company, who also managed construction of the sugar mill. The sugar beet industry created a population surge that brought many foreign workers, especially Japanese immigrants. In 1903, Oxnard became incorporated (Maulhardt 2014).

Louis G. Maulhardt inherited 100 acres of the Maulhardt Ranch after his father's death in 1899. He later accumulated additional acreage, where he and his wife Theresa Borchard raised a family, and successfully expanded the farming operation (Maulhardt 2004; San Buenaventura Research Associates 2014).

3.4.5 Twentieth Century Development (1915-Present)

In 1915/1916 the original Maulhardt Ranch farm house was demolished and replaced with a new residence. Other extant buildings on the ranch include a large two-story wooden barn constructed in 1906, and other ancillary buildings constructed ca. 1915. The oldest building on the property, the wood

carriage house, dates to ca. 1880 (San Buenaventura Research Associates 2014). The proposed project is located on the north and east sides of the Maulhardt Ranch.

The Great Depression of the 1930s were a difficult time in Oxnard, as it was throughout the United States. However, Oxnard felt an economic upswing during the 1940s, as it experienced significant growth due to increased populations and business interests subsequent to World War II. People were attracted to Oxnard and the overall Ventura County area by jobs in the petroleum industry at the Oxnard Oil Fields, the aerospace and technology, and other industry and retail business opportunities. In 1947, the Wagon Wheel Junction, conceived by developer Martin V. Smith, was a central automobile stop on the 101 Freeway between Los Angeles and Santa Barbara County, offering shopping, dining, and lodging accommodations for travelers. Between 1940 and 1950, the population more than doubled, from approximately 8,500 to over 21,500 residents. By 1960, there were more than 40,000 people living in Oxnard. Agriculture remained strong in Oxnard with sugar beet industry leading, with an estimate of 40 million bags of 100 pound sugar produced from local sugar beets for a duration of 60 years. Oxnard's sugar beet factory closed in 1958, due to the increased cost for crop production in California, as well as competition abroad and in the Southern states (CNU California 2017).

Oxnard continues to be a producer of agricultural crops, such as celery, strawberries, beans, chili peppers, onions, and bell peppers, but much of the former farm land has been replaced by commercial and retail development, as well as recreation and tourist attractions at the Channel Islands Harbor, Fisherman's Wharf, and the Maritime Museum.

4.0 RECORDS SEARCH

4.1 Records Search Results

Provenience Group, Inc. conducted a record search at the South-Central Coast Information Center of the California Historic Resources Information System (SCCIC-CHRIS), housed at the California State University, Fullerton on March 12, 2019. The SCCIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historical records and reports for Ventura, Los Angeles, Orange, and San Bernardino counties. The records search comprised a review of all recorded historic and prehistoric archaeological sites within a 0.5-mile radius of the project, as well as a review of known cultural resource studies.

The objective of the records search and literature review for this project was: (1) to determine whether previously recorded cultural resources are present within or adjacent to the project area; (2) to assess the likelihood of unrecorded cultural resources, based on archaeological, ethnographic, and historical documents and literature; (3) to make preliminary evaluations based on the significance such resources, according to CRHR criteria; and (4) to recommend procedures for avoidance or mitigation of adverse effects to potentially significant resources.

The following resources were consulted as a part of this records search:

- National Register of Historic Places (NRHP), Index of Listed Properties;
- Office of Historic Preservation Historic Property Data File for Santa Barbara County; and
- California Historical Landmarks (California OHP 2019).

4.1.1 Previous Cultural Resources Studies

The records search identified fourteen (14) previous studies within 0.5-mile of the project area. Each of the previous studies are listed in Table 1.

Table 1. Cultural Resources Studies within 0.5-mile of the Project Area.

Report No.	Author, Year	Title
VN-951	W&S Consultants 1990a	*Phase I Archaeological Survey and Cultural Resources Assessment for the Standard Pacific-Ventura Project Area, Northeast Plan Area, City of Oxnard, Ventura County, California.*
VN-733	Wlodarski 1988	*Archaeological Reconnaissance Report for Portions of Land Located Within the Northeast Industrial Assessment District, City of Oxnard, Ventura County, California.*
VN-949	W&S Consultants 1990b	*Phase I Archaeological Survey and Cultural Resources Assessment for the Frank McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California.*
VN-950	W&S Consultants 1990c	*Phase I Archaeological Survey and Cultural Resources Assessment for the John McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California.*

Report No.	Author, Year	Title
VN-1042	Boyer and Craig 1967	*UCLA-Archaeological Survey, City of Oxnard. Filed Project Number UCAS-147. Highway Construction Survey.*
VN-2020	Larson 2001	*Phase I Archaeological Investigation at 341 Bernoulli Circle, Oxnard, California.*
VN-2216	Maki 2002	*Phase I Archaeological Survey of Approximately 6.5 Acres for Pinnacle Communities Tentative Tract No. 5296, Oxnard, Ventura County, California.*
VN-2224	Duke 2002	*Cultural Resources Assessment, Cingular Wireless Facility No. VY201-04, Ventura County, California.*
VN-2472	Wlodarski 2005	*A Phase I Archaeological Study for Oxnard Meridian, Ltd., City of Oxnard PZ 04-200-07, Lots 34-39 and 53-56 of Tract 3943, City of Oxnard, County of Ventura, California.*
VN-2978	CH2M Hill 2004	*Groundwater Enhancement and Treatment (Great) Program, Cultural Resources Inventory Report.*
VN- 2968	Johnson 2008	*Cultural Resources Records Search and Site Visit for T-Mobile USA Inc. SV11876A/Del Sol Park, 1600 Camino Del Sol, Oxnard, Ventura County, California.*
VN-2932	Toren and Romani 2011	*Phase I Archaeological Investigation of 400 Lombard Street (APN 216-0-203-235 & 216-0-203-245), Oxnard, California.*
VN-2215	Wlodarski 2003	*A Phase I Archaeological Study for Lot 52, Northfield Business Park Northwest of the Junction of Hearst Drive and Cabot Place, City of Oxnard, County of Ventura, California.*
VN-1959	Maki 2001	*Phase I Archaeological Survey of Approximately 11.5 Acres for Shea Homes Tentative Tract No. 5293, Oxnard, Ventura County, California.*

4.1.2 Previously Recorded Cultural Resources

The records search did not identify any previously recorded prehistoric or historic cultural resources within 0.5-mile of the project area, which suggests the area has a low archaeological sensitivity.

4.1.3 Native American Consultation

The California Native American Heritage Commission (NAHC) was consulted to inquire if known sacred sites are present in the project area; the results were negative. On March 15, 2019, the NAHC indicated an absence of Native American traditional cultural places and sacred sites in or around the project area. The NAHC provided a list of ten (10) Native American groups and individuals. Letters and/or emails were provided to each contact on March 18, 2019 (Appendix A). Follow-up phone calls were made on March 22, 28, and 29, 2019. Voicemail messages were left for 4 of the 10 contacts; thus far, there have been no

return calls. Native Americans located outside Ventura County generally supported the recommendations of local Barbareño/Ventureño Chumash tribal members.

[redacted]

Patrick Tumamait wanted to make sure a records search was completed, in addition to the NAHC consultation.

Table 2. Native American Consultation.

Name	Date	Affiliation	Comment
Patrick Tumamait	March 22, 2019	Barbareño/Ventureño Band of Mission Indians	[redacted]
Eleanor Arrellanes	March 28, 2019	Barbareño/Ventureño Band of Mission Indians	[redacted]
Julie Tumamait-Stennslie	March 18, 2019	Barbareño/Ventureño Band of Mission Indians	[redacted]
Raudel Banuelos	March 28, 29, 2019	Barbareño/Ventureño Band of Mission Indians	[redacted]
Julio Quair	March 28, 29 2019	Chumash Council of Bakersfield	[redacted]
Gino Altamirano	March 28, 2019	Coastal Band of the Chumash Nation	[redacted]
Fred Collins	March 28, 2019	Northern Chumash Tribal Council (NCTC)	[redacted]
Mark Vigil	March 28, 29, 2019	San Luis Obispo County Chumash Council	[redacted]
Kenneth Kahn	March 28, 2019	Santa Ynez Band of Chumash Indians	[redacted]

Name	Date	Affiliation	Comment
Mona Tucker	March 28, 2019	Yak tityu yak tihini-Northern Chumash Tribe	[redacted]

5.0 METHODOLOGY

5.1 Archaeological Field Methods

5.1.1 Phase I Cultural Resources Survey

On March 21, 2019, PGI staff archaeologist Debra Hargett surveyed the approximately 46.8 acre project area to identify cultural resources. Most of the project area, with the exception of unimproved access roads, is within an active strawberry field. The area was surveyed using transect intervals that varied between three and ten meters. All transects were surveyed within the pathways between strawberry rows, which were oriented in a north-south direction.

The focus of the survey was the level strawberry fields, unimproved access roads, and slopes between the roads and strawberry rows in the central and southern parts of the property (Figures 6-8). The southwest portion of the parcel surrounding the residence and associated buildings, was excluded from archaeological survey. Ground visibility ranged from zero to 20 percent at best throughout the strawberry fields and 90 to 100 percent on the maintained unimproved access roads throughout the property. Strawberry plasticulture is practiced in the fields with raised beds; they measure approximately 8 to 12 inches high, 32 inches at the base, 30 inches at the top, and with a slightly crowned top to allow for water runoff. The raised beds are covered in plastic and consist of four offset rows of strawberries and three drip lines per bed. Narrow passageways, about 6 inches wide, are located between each bed. The tops of the beds are level with the roads and surrounding ground surface. Bare swatches of ground, especially the exposed road slopes, were carefully inspected for the presence of cultural materials. The sidewalls of unimproved access roads along the perimeter and between sections of the planted strawberry field offered the best visibility. [redacted]

Photographs were taken with a digital camera. No cultural materials were collected or removed.



Figure 6. Project area overview, facing north from the south end of the field.



Figure 7. [redacted]



Figure 8. Road through center of southeast project area, facing south.

5.1.2 Project Personnel

Carole Denardo, M.A., RPA served as principal investigator and project manager. Ms. Denardo exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61. Staff archaeologist Debra Hargett, M.St. performed the pedestrian field survey.

6.0 FIELD SURVEY RESULTS

The results of the Phase I cultural resources pedestrian survey of the project area was positive for archaeological resources (Figure 9).

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

PGI archaeologists reviewed historical aerial photographs obtained from EDR, and provided by Tetra Tech Inc., included photographs dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017).

[redacted]

The northernmost area [redacted] was undeveloped in 1927 and 1938, but by 1947 row crops were planted in that location. By 1985, a road cut through diagonally and then turned north from the artifact location, which depicts either a small building or an unidentified activity area. In 1994, this location is within row crops. Subsequent aerial photographs that date to 2005, 2009, 2010, and 2012, depict this area as the juncture of north-south and east oriented access roads. The closest extant buildings are a tin shed and a small storage shed to the southeast.

[redacted] farm buildings are present southeast of the extant tin shed, east of the garage, and northeast of the horse barn. There appears to be access from the farm buildings to the north-south oriented unimproved access road [redacted] In 1927, this area was part of the farmyard, and appears to have been graded and although the image is blurred, small sheds, possibly chicken coops or pig pens, are present [redacted]. By 1938, no buildings are present in this area, but the horse barn has an addition on the east side, and it appears that this area is dedicated to row crops. Later aerial photographs dated 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 do not show any development other that row crops and unimproved access roads [redacted]

[redacted]

[redacted]

An examination of historic and modern aerial imagery dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012, revealed that other than crop production, no development has occurred [redacted]

7.0 CONCLUSIONS AND RECOMMENDATIONS

At the request of Tetra Tech, Inc., PGI completed a records search, Native American consultation, and a Phase I archaeological pedestrian survey of the project area parcel northeast of Camino Del Sol and Rose Avenue in Oxnard, Ventura County, California. The proposed project is located on the east and north sides of the historic Maulhardt Ranch property, which was previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

Despite 14 prior studies, no previously identified prehistoric or historic archaeological resources have been recorded within 0.5-mile of the project area. There was poor ground visibility throughout much of the project area [redacted]

[redacted]

7.1 Recommendations

Indirect visual impacts of the project, which have the potential to visually alter the characteristics of the ranch and diminish its integrity, will require mitigation. PGI recommends mitigation that will entail planting a thick windrow of tall trees and bushes along the east and north sides of the Maulhardt Ranch property to visually obscure the school complex from the ranch.

PGI also recommends [redacted]

Depending on the results of the Extended Phase 1 study, additional mitigation may be required if avoidance is not feasible.

In addition, given the poor visibility throughout most of the project area, archaeological monitoring during initial grading for the project is recommended.

7.2 Procedure for Unanticipated Discoveries

If previously unidentified cultural resources are encountered during construction within the project area, then the archaeologist will have the authority to halt work within 50 feet of the area until the project archaeologist can assess the find; determine its potential for significance; and develop measures to eliminate adverse impacts. Such measures may include avoidance through project redesign, or Phase 2 testing (excavation) to evaluate the significance of the find.

CEQA provides a measure of protection for human remains (Guidelines section 15064.5[d]), and for the accidental discovery of cultural resources (Guidelines section 15064.5[e]). These guidelines are particularly important as they consider the possibility that significant archaeological resources not noted as a result of previous research efforts may be present within a project area and need to be treated in a way commensurate with CEQA standards.

7.2.1 Regulations Concerning Discovery of Human Remains

There is a possibility of encountering human remains either in association with prehistoric occupation sites or as separate finds. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

> (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
>
> (b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.
>
> (c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

8.0 REFERENCES CITED

Bean, L. J.

1974 Social Organization in Native California. In *Antap: California Indian Political and Economic Organization.* Anthropological Papers 2:93-110. Ballena Press, Ramona.

J. Boyer, J., and S. Craig

1967 *UCLA-Archaeological Survey, City of Oxnard*. Filed Project Number UCAS-147. Highway Construction Survey. (VN-1042).

Brandoff-Kerr, Joan E.

2010 *Archaeological Investigations in the Santa Barbara Backcountry*. Paper presented at the 2010 Society for American Archaeology Annual Meetings, Saint Louis, Missouri.

CH2M Hill

2004 *Groundwater Enhancement and Treatment (Great) Program, Cultural Resources Inventory Report*. Prepared for City of Oxnard, Oxnard, California. Prepared by CH2MHILL, Santa Ana, California. (VN-2978).

Clahan, Kevin B.

2003 *Geologic Map of the Oxnard 7.5' Quadrangle, Ventura County, California.* Version 1.0. Prepared by the California Department of Conservation California Geological Survey.

Chartkoff, J. L., and K. K. Chartkoff

1984 *The Archaeology of California.* Stanford University Press, Stanford, California.

Davis, Troy W., Jon Erlandson, Gerrit L. Fenenga, and Keith Hamm

2010 "Chipped Stone Crescents and the Antiquity of Maritime Settlement on San Nicolas Island, Alta California." *Journal of the Society of California Archaeology* 2:2.

Duke, Curt

2002 *Cultural Resources Assessment, Cingular Wireless Facility No. VY201-04, Ventura County, California*. Prepared for Collen Dooley, Cingular Wireless, Tustin, California. Prepared by LSA Associates, Inc., Irvine, California. (VN-2224).

Erlandson, Jon

1994 *Early Hunter-Gatherers of the California Coast*. Plenum, New York.

Erlandson, Jon M. and Todd J. Braje

2008 Five Crescents from Cardwell: Context and Chronology of Chipped Stone Crescents at CA-SMI-679, San Miguel Island, California. *Pacific Coast Archaeological Society Quarterly* 40: 35-45.

Erlandson, Jon M. and Roger H. Colten

1991 An Archaeological Context for Early Holocene Studies on the California Coast. In *Hunter-Gatherers of Early Holocene Coastal California*, Vol. 1-10. *Perspectives in California Archaeology*, Vol. I. Institute of Archaeology, University of California (Los Angeles, California).

Gates, Paul W.
1971 *The California Land Act of 1851*, California Historical Society, Vol. 50, No. 4 (Dec. 1971).

Glassow, Michael (editor)
1996 *Purisimeño Chumash Prehistory: Maritime Adaptations along the Southern California Coast.* Wadsworth Publishing. Glassow, M. A., L. W. Spanne, and J. Quilter.

Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell
2007 Prehistory of the Northern California Bight and the Adjacent Transverse Ranges. *California Prehistory,* Terry L. Jones and Kathryn A. Klar, eds., Alta Mira Press (Lantham, Maryland).

Glassow, M., L. Wilcoxon, and J. Erlandson
1988 Cultural and Environmental Change during the Early Period of Santa Barbara Channel Prehistory. In *The Archaeology of Hunter-Gatherer Subsistence Economics in Coastal Environments,* edited by G. Parkington and B. Bailey. Cambridge University Press, New York.

Grant, Campbell
1978 Chumash. *Handbook of North American Indians,* Vol. 8. Smithsonian Institution (Washington, D.C.).

Greenwood, Roberta S.
1972 9,000 Years of Prehistory at Diablo Canyon. *San Luis Obispo County Archaeological Society Occasional Papers* 7. Paso Robles, California.

Hackel, Steven W.
1997 Land, Labor, and Production: The Colonial Economy of Spanish and Mexican California. In *Contested Eden, California Before the Gold Rush*.

Hildebrandt, William and Michael Darcangelo
2009 Archaeological *Survey Report for the South Coast 101 High Occupancy Vehicle Project, Santa Barbara County, California, 05-SB-101, PM 2.1/12.3—EA 05-0N7000*. Prepared by Far Western Anthropological Research Group, Inc. Davis, California.

Johnson, Brent
2010 *Cultural Resources Records Search and Site Visit for T-Mobile USA Inc. SV11876A/Del Sol Park, 1600 Camino Del Sol, Oxnard, Ventura County, California*. Prepared for Gavin Leaver, Environmental Assessment Specialists, Inc., Mission Hills, California. Prepared by Heritage Preservation Consultants, Rancho Santa Margarita, California. (VN-2968).

Jones, Terry L. and G. Waugh
1995 Central California Coastal Prehistory: A View from Little Pico Creek. Perspectives in California Archaeology 3, Institute of Archaeology, University of California, Los Angeles.

King, Chester
1982 *The Evolution of Chumash Society.* Unpublished Ph.D. dissertation, University of California, Davis.

1990 *The Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region before A.D. 1804*. Garland, New York.

Kroeber, A. L.

1925 *Handbook of the Indians of California*. *Bulletin 78* of the Bureau of American Ethnology of the Smithsonian Institution, Government Printing Office, Washington. Republished in 1976 by Dover Publications, Inc., New York.

Landberg, L. C. W.

1965 The Chumash Indians of Southern California. *Southwest Museum Papers* No. 19. Southwest Museum, Los Angeles.

Larson, Dan

2001 *Phase I Archaeological Investigation at 341 Bernoulli Circle, Oxnard, California.* Prepared for Daniel F. Gluck, Gluck Development Company, Inc., Calabasas, California. Prepared by Compass Rose Archaeological, Inc., Van Nuys, California. (VN-2020).

Lightfoot, Kent G.

2005 *Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers.* University of California Press, Berkeley, California.

Maki, Mary K.

2001 *Phase I Archaeological Survey of Approximately 11.5 Acres for Shea Homes Tentative Tract No. 5293, Oxnard, Ventura County, California.* Prepared for Shea Homes, Thousand Oaks, California. Prepared by Conejo Archaeological Consultants, Thousand Oaks, California. (VN-1959).

2002 *Phase I Archaeological Survey of Approximately 6.5 Acres for Pinnacle Communities Tentative Tract No. 5296, Oxnard, Ventura County, California*. Prepared for Pinnacle Communities, Laguna Woods, California. Prepared by Conejo Archaeological Consultants, Thousand Oaks, California. (VN-2216).

Maulhardt, Jeffrey W.

2004 *Oxnard: 1867-1940*. Arcadia Publishing, Charleston SC, Chicago, IL, Portsmouth NH, San Francisco CA.

2016 *Oxnard Sugar Beets: Ventura County's Lost Cash Crop*. Arcadia Publishing & History Press.

Mensing, S.A., J. Michaelson, and R. Byrne

1999 "A 560-year record of Santa Ana fires reconstructed from charcoal deposited in the Santa Barbara basin, California." *Quaternary Research* 51.

Rabb, L. Mark, and Daniel O. Larson

1997 "Medieval Climatic Anomaly and Punctuated Cultural Evolution in Coastal Southern California." *American Antiquity* 62: 319-336

2014 *DPR 523 Site Record for the Louis G. Maulhardt Ranch*. Prepared for Maulhardt Trust et al., Oxnard, California.

Tompkins, Walker
1975 *Santa Barbara Past and Present*. Schauer Printing Company, Santa Barbara.

Toren, A. George, and Gwen R. Romani
2011 *Phase I Archaeological Investigation of 400 Lombard Street (APN 216-0-203-235 & 216-0-203-245), Oxnard, California*. Prepared for Scott T. Deardoff, Deardoff Family Farms, Oxnard, California. Prepared by Compass Rose Archaeological, Inc., Van Nuys, California. (VN-2932).

Triem, Judith
1985 *Ventura County, Land of Good Fortune.* Northridge: Windsor.

West, James G., W. Woolfenden, J. Wanket, and R. Scott Anderson
2007 Late Pleistocene and Holocene Environments. In *California Prehistory: Colonization, Culture, and Complexity*, Terry L. Jones and Kathryn A. Klar, eds. AltaMira Press (Lanham, Maryland): 215-227.

Willey, H. I. (Surveyor-General)
1886 *Report of the Surveyor-General of the State of California – From August 1, 1884, to August 1, 1886.* Sacramento State Office, James J. Ayers, Supt. State Printing.

W & S Consultants
1990a *Phase I Archaeological Survey and Cultural Resources Assessment for the Standard Pacific-Ventura Project Area, Northeast Plan Area, City of Oxnard, Ventura County, California*. Prepared for Steve Boggs, Westlake Village, California. (VN-951).

1990b *Phase I Archaeological Survey and Cultural Resources Assessment for the Frank McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California*. Prepared for Steve Boggs, Westlake Village, California. (VN-949).

1990c *Phase I Archaeological Survey and Cultural Resources Assessment for the John McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California*. Prepared for Steve Boggs, Standard Pacific-Ventura, Westlake Village, California. (VN-950).

Wlodarski. Robert J.
1988 *Archaeological Reconnaissance Report for Portions of Land located within the Northeast Industrial Assessment District, City of Oxnard, Ventura County, California*. Prepared for City of Oxnard Public Works Department, Oxnard, California. Prepared by Historical, Environmental, Archaeological, Research, Team, Chatsworth, California. (VN-733).

2003 *A Phase I Archaeological Study for Lot 52, Northfield Business Park Northwest of the Junction of Hearst Drive and Cabot Place, City of Oxnard, County of Ventura, California*. Prepared for Paul Bergman, Lot 52 Oxnard LLC, 120 El Camino Drive, #208, Beverly Hills, California. Prepared by Historical, Environmental, Archaeological, Research Team, West Hills, California. (VN-2215).

2005 *A Phase I Archaeological Study for Oxnard Meridian, Ltd., City of Oxnard PZ 04-200-07, Lots 34-39 and 53-56 of Tract 3943, City of Oxnard, County of Ventura, California*. Prepared for Martin Teitelbaum, Teitelbaum Construction, Camarillo, California. Prepared by Historical, Environmental, Archaeological, Research Team, West Hills, California. (VN-2472).

Websites

CNU California, 2017. http://cnucalifornia.org/brief-history-downtown-oxnard/.

Extended Phase 1 Archaeological Subsurface Testing
Oxnard Union High School No. 8 Site
Ventura County, California



Prepared for:
Oxnard Union High School District
309 South K Street
Oxnard, CA 93030

Submitted to:
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Prepared by:

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Dated: July 2019

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NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

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Consulting firm: Provenience Group, Inc.

Report Date: July 2019

Report Title: Extended Phase 1 Archaeological Subsurface Testing Oxnard Union High School No. 8 Site, Ventura County, California

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Contract No: 1163664

U.S.G.S. Quad: Oxnard, CA 1:24,000

Acreage: 46.8 acres

Key words: Ventureño Chumash, Oxnard, American Sugar Beet Factory, Maulhardt Ranch.

MANAGEMENT SUMMARY

At the request of the Oxnard Union High School District, under contract with Tetra Tech, Inc., Provenience Group, Inc. completed Extended Phase 1 (XP1) archaeological subsurface testing for the Oxnard Union High School No. 8 Site in the City of Oxnard, Ventura County, California.

On June 19 and 20, 2019, Provenience Group archaeologists excavated eight (8) shovel test probes (STPs). T

As a result, Provenience Group, Inc. recommends archaeological monitoring during trenching, grading, excavation, or other ground-disturbing activities to identify and protect any intact midden or possible archaeological features that may be uncovered by earth-moving activities. it is also recommended that a local Chumash Native American representative be retained to monitor during construction.

In the event human remains are encountered, the monitoring archaeologist or construction crew should adhere to the provisions of sections 7052 and 7050.5 of the California Health and Safety Code. Section 7052 states that disturbance of Indian cemeteries is a felony. Section 7050.5 requires that construction or excavation be stopped near discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are Native American, Section 7052 states that the coroner must contact the California Native American Heritage Commission.

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1.0 INTRODUCTION

At the request of the Oxnard Union High School District, under contract with Tetra Tech, Inc., Provenience Group, Inc. has completed Extended Phase 1 (XP1) archaeological subsurface testing for the Oxnard Union High School No. 8 Site in the City of Oxnard, Ventura County, California (Figure 1).

[redacted]

[redacted]

Because much of the ground surface in the Direct APE where the new high school is proposed was obscured by ripening strawberry fields, it was determined that XP1 testing was warranted. [redacted]

On June 19 and 20, 2019, under the direction of Provenience Group, Inc. principal archaeologist Carole Denardo, M.A., archaeologists Gina Zavala, M.A., and Caitlin Paulson, B.A. excavated eight (8) STPs. Field methods included excavation of STPs, photographic documentation, and mapping. In total, Provenience Group, Inc. excavated approximately 2.03 $m^3$of soil.

The remainder of this section describes the project and its location and outlines the regulations that guided the excavation; Section 2.0 outlines the research design and contextual framework; Section 3.0 provides environmental, ethnographic, and archaeological overviews for the region; Section 4.0 provides the records search results and Native American consultations; Section 5.0 provides the field methodology and survey results; Section 6.0 provides recommendations; and references are listed in Section 7.0.

1.1 PROJECT LOCATION AND DESCRIPTION

The project entails the construction of a new high school by Oxnard Union High School District within a 46.8 acre property northeast of Camino Del Sol and Rose Avenue in Oxnard, Ventura County, California. The project area is within the Oxnard, California USGS 7.5-Minute Series topographic quadrangle map. Specifically, the project area is unsectioned, in T 2 North, R 22 West in the City of Oxnard, Ventura County, California (Figure 1).

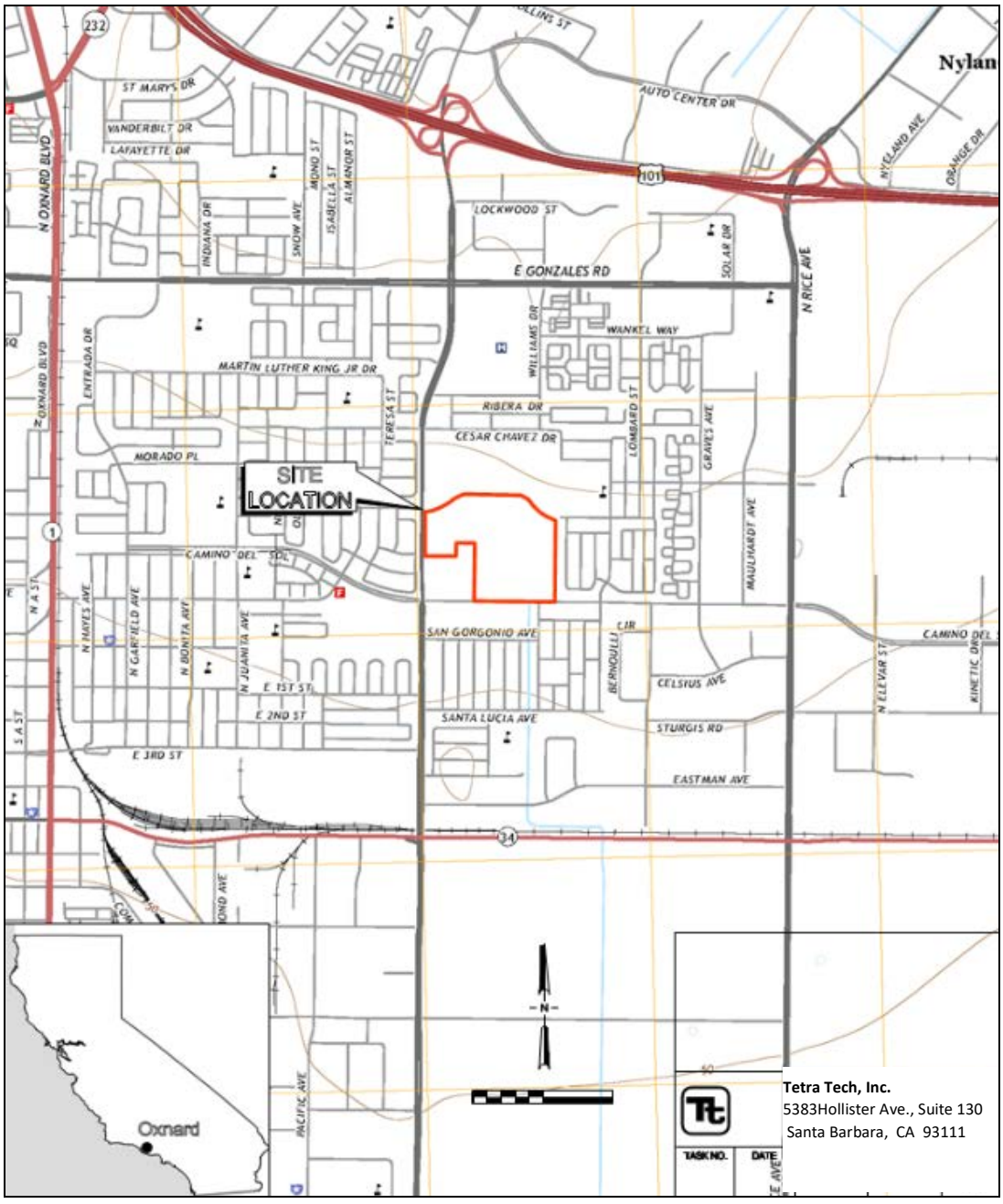


Figure 1. Project Location Map—Oxnard, California topographic quadrangle map.

The Oxnard High School No. 8 Site envelops the historic Maulhardt Ranch buildings on the north and east sides. Presently, the parcel (Assessor's Parcel Number 214-002-059) (Figure 2), within the historic Maulhardt Ranch, is cultivated with strawberries. The project area is surrounded by residential properties on each side, and the Rio Rosales Elementary School and Park are located to the east-northeast and Del Sol Park is present to the southwest. The topography of the agricultural field is mostly flat. The approximate elevation of the project area ranges between 45 and 60 feet above mean sea level.



Figure 2. Aerial photograph indicating the surveyed Project Area. (Google Map 2019).

1.2 REGULATORY AUTHORITY

Provenience Group, Inc. conducted the project in accordance with state (CEQA guidelines) and local regulations (California Resources Agency 1996). CEQA equates a substantial adverse change in the significance of a cultural resource with a significant effect on the environment (Public Resources Code, Section 21084.1). "Substantial adverse change" is defined as demolition, destruction, relocation, or alteration activities that would impair significance (Public Resources Code, Section 5020.1).

Under the provisions of CEQA, where a project has the potential to affect an archaeological resource, it must be determined whether the resource at hand is "significant," as defined by CEQA, and therefore eligible for certain protections under the law (Public Resources Code, Sections 4852, 21083.2, and 21084.1). Provenience Group, Inc. conducted the XP1 study described in this report in fulfillment of these requirements. Research focused on prehistoric and historic land use.

1.3 CEQA CONSIDERATIONS

This study was carried out in compliance with the requirements of CEQA. The purpose of this study was to locate, record, and evaluate the significance of archaeological resources located within the area that would be impacted by the construction of the new Oxnard Union High School No. 8.

The California Register of Historical Resources (California Register) is the authoritative guide to the state's significant historical and archaeological resources (Public Resources Code, Section 4852). According to criteria established by the California Register, a resource is considered "historically significant" if it:

(A) is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;

(B) is associated with the lives of persons important to local, California, or National history;

(C) embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of a master or possesses high artistic values; or

(D) has yielded, or has the potential to yield, information important to prehistory or history of the local area, California, or the United States.

Resources meeting one or more of these criteria may be eligible for listing on the CRHR, and, therefore, for certain protections under CEQA. Additionally, CEQA Guidelines specify that an archaeological resource is "unique" and significant if it:

- is associated with an event or person of recognized significance in California or American history, or recognized scientific importance in prehistory;
- can provide information, which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;
- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- is at least 100 years old and possesses substantial stratigraphic integrity; or
- involves important research questions that historical research has shown can be answered only with archaeological methods (California Public Resources Code Section 21083.2).

2.0 PROJECT DESIGN

2.1 RESEARCH FOCUS

This research design follows the California Office of Historic Preservation's guidelines for *Archaeological Resource Management Reports (ARMR) Recommended Contents and Format*, the California Office of Historic Preservation's *Preservation Planning Bulletin - Guidelines for Archaeological Research Designs* (1991). Its purpose is to describe research themes and address the types of anticipated artifacts, locales of increased archaeological sensitivity, probable depth of cultural deposits, previous disturbances, and California Register-eligibility.

To create an accurate reconstruction of site history and function, and to understand the processes of development and change occurring within the project area, information from published sources, historic maps, aerial photographs, archival documents, and archaeological materials is required.

Scientific or scholarly research values are judged within the context of a research design that provides the framework for examining variability and change in the archaeological record. A research design outlines the topics or questions that could be asked, given the kinds of data that a particular property type is likely to contain, and evaluates whether that information can be gained from other sources (Maniery and Brown 1995).

This research design is based on a contextual approach, which emphasizes the specific historical, social, and cultural behaviors contributing to the creation of archaeological remains (Hodder 1986:118-146; 1982:215-218). Through this approach, an archaeologist can examine cultural processes on a small scale, at the level of the mundane and day-to-day activities and experiences that together form a society's broader patterns of development. Use of a contextual approach requires the development of an historic context within which to place the activities that have led to the creation of an archaeological site. An historic context for an archaeological deposit might include information about specific characteristics of an individual or group, such as ethnicity and profession, as well as information about the political, social, and economic climate of the larger society, and may address technological trends relating to site formation processes and site components.

2.2 RESEARCH OBJECTIVE AND CONTEXT OF EVALUATION

Scientific or scholarly research values are judged within the context of a research design that provides the framework for examining variability and change in the archaeological record. A research design outlines the topics or questions that could be asked, given the kinds of data that a particular property type is likely to contain, and evaluates whether that information can be gained from other sources (Maniery and Brown 1995). Archaeological research requires a broad theoretical perspective and framework for asking questions about the historical and archaeological record, as well as the appropriate middle-range theory linking general research questions to archaeological data. While most historical archaeological sites in California contain some information, the key to productive archaeology is to assess whether a property is likely to contain important new information not available from traditional historical sources.

The objectives of the XP1 study for this project was to establish the presence or absence of cultural materials within the proposed project location. The primary criteria used for assessing archaeological sites are a resource's ability to provide information of importance to the prehistory or history of an area and to illustrate the culture and lifeways of past inhabitants in the Central Coast region. Archaeological sites in Ventura County have the potential to contain important data that can increase our knowledge of past lives of people in the prehistoric and historic past. These data potentials must be evaluated in the context of regional research interests.

Based on previous work in Ventura County and current academic research Southern California, three general research domains are applicable for the study of regional prehistory for this project, including 1) Cultural Chronology, 2) Site Formation, and 3) Prehistoric Settlement and Subsistence. Research domains for the regional history relate to area settlement and agricultural-based occupation. Given the sparse density of prehistoric archaeological materials, the research topics are designed to be flexible enough to be used for the current Project.

2.3 CULTURAL CHRONOLOGY

Cultural chronology is germane to achieve research objectives and requires temporal controls in order to place a site within a specific context. Chronological data provides a framework for comparing sites that date to the same period within the established cultural sequence for the Central Coast. Identification of temporally sensitive artifacts and ecofacts and precision in defining their periods of use is pertinent to research goals.

Data Requirements

- Radiocarbon dating using suitable organic material (e.g., charcoal, marine shell, and/or bone)
- Obsidian for source and hydration analyses
- Time sensitive diagnostic artifacts
- Artifacts obtained from distinct, dated contexts

2.4 SITE FORMATION PROCESSES

To attain a clear understanding of past lifeways, it is crucial for researchers to understand the processes by which cultural and natural strata are formed in order to interpret cultural resource data and to evaluate their importance. The formation of layers and the creation of new feature interfaces create archaeological strata that represent the sequence of events that have occurred at a particular site. Cultural resource deposits reflect periods of continuous use, as well as intervals of transition in site occupation and use. Continuous use of a site creates a gradually accumulated layer of deposition, such as sheet refuse or an ash layer, over a period of months, years, or thousands of years. It entails perception of how the resources in archaeological sites were acquired, as well as consideration for potential changes that occurred after formation of the site. Deposits of these types allow archaeologists to examine research questions including those that relate to change over time. In contrast, other cultural resource deposits are created during events of transition. Natural forces, such as floods fires, or erosional episodes, and human activity, agricultural activities, or mechanical grading can transform the character of a site. Recognizing this enables us to evaluate a site's integrity. If a site's integrity has become impaired and its constituents jumbled or disturbed, then it reduces the likelihood of a site

producing meaningful interpretive value because archaeological analyses depend upon on associations between a site's intact constituents and its depositional context. However, it should be noted that despite extensive disturbance, single component sites can be determined significant.

Data Requirements

- Chronological analysis
- Lithic technology
- Tool stone procurement
- Faunal, and archaeobotanical remains from distinct, well-dated components
- Cultural features

2.5 PREHISTORIC SETTLEMENT AND SUBSISTENCE

Settlement patterns refer to the spatial distribution of sites, and in part, reflect the choices people make in stationing themselves to best exploit available resources. Prehistoric settlement and land use data, consisting of compilations of major village site locations, are also derived from ethnographic and historic literature, site survey, and archaeological syntheses. Studies based upon the forager-collector model (Binford 1980) can be helpful in addressing questions about sedentism and resource exploitation. Foraging requires residential mobility to increase a group's ability to exploit different resources as they become seasonally available. However, people who collect rather than forage may remain more sedentary and exploit resources by being logistically flexible (e.g., place their settlements between varied environments). Whether people forage or collect is in part determined by the availability of resources and the return on the costs of their collection. Faunal data directly reflects subsistence practices. Numbers of identified species represented per assemblage provide a qualitative measure of animal selection, which, when compared with other sites/components, can indicate spatio-temporal changes in resource selection.

Material that would need to be recovered to address settlement pattern questions includes lithics, shell, bone, and/or charcoal for radiometric dating; protein residue, pollen, and phytolith material to determine what plants and animals were used; and fish otoliths to determine season of occupation. Recovery and analysis of artifacts and cultural material will be necessary to determine site function. Also important, would be identification of single occupation sites or site components; stratigraphy that exhibits cultural integrity and/or identifiable patterns in formation; and discrete features, including hearths, living surfaces, structures, or other architectural remains.

Data Requirements

- Lithic material
- Faunal remains and/or archaeobotanical dietary materials from distinct, well-dated components
- Protein residue, pollen, and phytolith material
- Fish otoliths
- Hearths and other features

3.0 METHODS AND RESULTS

3.1 ARCHAEOLOGICAL FIELD METHODS

On June 19 and 20, 2019, under the direction of Provenience Group, Inc. principal archaeologist Carole Denardo, M.A., archaeologists Gina Zavala, M.A. and Kate Paulson, B.A. excavated eight (8) STPs within the project area, which is currently a cultivated strawberry field (Figures 3), and presented as an overlay of the proposed plans on an aerial photograph (Figure 4).

[redacted]

STP levels were excavated in arbitrary 20-cm layers, and sediments were dry-screened in the field through 3.0-millimeter (mil) (1/8-inch) hardware cloth. A Munsell soil color chart was used to describe soil color and texture for each 10-cm level. Color digital photographs were taken to document the fieldwork. A Global Positioning System (GPS) unit was used to record the locations of the STPs and a map was created. Each of the STPs were backfilled upon completion of the excavation and the area restored as nearly as possible to its original appearance.

[redacted]



Figure 3. Overview of cultivated strawberry field.



3.2 EXTENDED PHASE 1 RESULTS

On June 19 and 20, 2019 Provenience Group, Inc. archaeologists Gina Zavala, M.A. and Kate Paulson, B.A. excavated eight (8) STPs measuring 30-cm in diameter, to determine the presence or absence of cultural materials (Table 1).

Table 1. Excavation Results.

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Table 2. Unit Summary.

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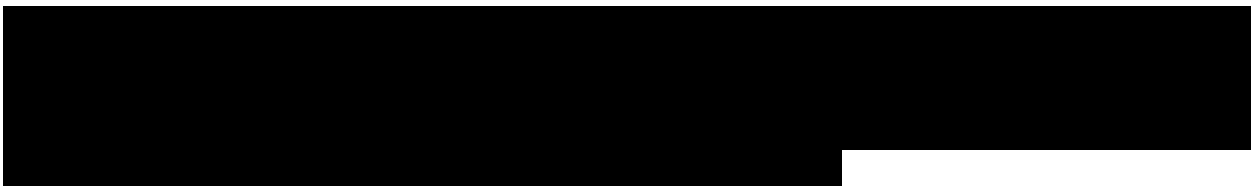


STP 8











4.0 SUMMARY AND RECOMMENDATIONS

The XP1 archaeological study at the proposed Oxnard Union High School No. 8 Site was completed pursuant to the California Environmental Quality Act (CEQA), which requires a review of projects sponsored by public agencies to determine the effects of the project on historical resources. According to CEQA, "historical resources" comprise buildings, structures, objects, districts, or sites that may possess prehistoric or historical archaeological, architectural, cultural, or scientific importance.

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[redacted] If intact soils containing prehistoric cultural materials are found during construction, they have the potential to address important research questions and yield important information about prehistoric people in this area of California.

As a result, Provenience Group, Inc. recommends archaeological monitoring during trenching, grading, excavation, or other ground-disturbing activities. to identify and protect any intact midden or possible archaeological features that may be uncovered by earth-moving activities. Given the prehistoric context, it is also recommended that a local Chumash Native American representative be retained to monitor during construction.

4.1 PROCEDURES FOR UNANTICIPATED DISCOVERIES

CEQA provides a measure of protection for the accidental discovery of cultural resources (Guidelines section 15064.5[e]). These guidelines are particularly important as they consider the possibility that significant archaeological resources not noted as a result of previous research efforts may be present within a project area and need to be treated in a way commensurate with CEQA standards.

If previously unidentified cultural resources or intact archaeological deposits are encountered during construction within the project area, then the archaeologist will have the authority to halt work within 50 feet of the area until the project archaeologist can assess the find; determine its potential for significance; and develop measures to eliminate adverse impacts. Such measures may include avoidance through project redesign, or Phase 2 archaeological testing (excavation) to evaluate the significance of the find.

4.2 REGULATIONS CONCERNING DISCOVERY OF HUMAN REMAINS

In the event human remains are encountered, the monitoring archaeologist or construction crew should adhere to the provisions of sections 7052 and 7050.5 of the California Health and Safety Code. Section 7052 states that disturbance of Indian cemeteries is a felony. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

> (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
>
> (b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her

authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

5.0 REFERENCES CITED

Binford, L. R.

1980 Willow Smoke and Dogs Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:4-20.

California Office of Historic Preservation

1991 *Preservation Planning Bulletin 5: Guidelines for Archaeological Resource Management Reports (ARMR) Recommended Contents and Format.* California Office of Historic Preservation, Department of Parks and Recreation, Sacramento, California.

California Resources Agency

1996 *California Environmental Quality Act: Guidelines.* http://ceres.ca.gov/topic/env_law/ceqa/guidelines/index.html

Hodder, Ian

1982 *Symbols in Action: Ethnoarchaeological Studies of Material Culture.* Cambridge University Press, New York.

1986 *Reading the Past: Current Approaches to Interpretation in Archaeology.* Cambridge University Press, New York.

Maniery, M.L., and J. Brown

1995 *Predictive Historic Archaeology Sites Model for the Mare Island Nava Shipyard, Vallejo, Solano California.* PAR Environmental Services, Inc., Sacramento, California. Submitted to Engineering Field Activity West, Naval Facilities Engineering Command, San Bruno, California.

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E GEOTECHNICAL/GEOHAZARD REPORTS

Job No. 100-SBA-T38628

Geohazard Assessment/Geotechnical Investigation
High School No. 8
APN 214-002-059 on North Rose Avenue
Oxnard, California

Prepared for:

Jeff Weinstein
Assistant Superintendent Business Services
Oxnard Union High School District
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Oxnard, California 93030

Prepared by:

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5383 Hollister Avenue, Suite 130
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October 11, 2018

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1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) has prepared this Geohazard Assessment/Geotechnical Soil Investigation for the Oxnard Union High School District (OUHSD) for the proposed High School No. 8 located in the City of Oxnard in Ventura County, California (Figures 1 and 2). The proposed High School No. 8 is hereinafter referred to as the "Site." The project will include the construction of new parking areas, driveways, buildings, playgrounds, and athletic fields on properties currently owned by Maulhardt family.

This Geohazard Assessment/Geotechnical Soil Investigation was performed in accordance with requirements of Sections 17212 and 17212.5 of the California Education Code (CEC), the 2016 California Building Code (CBC) (International Code Council 2016 [ICC] 2017) as described in California Code of Regulations (CCR) Title 24, and California Department of Conservation, California Geological Survey (CGS) Note 48 (*Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings* (CGS 2014). Earth Systems Pacific (ESP) prepared the Geotechnical Engineering Report (ESP 2018b) that is included in Appendix A under subcontract to Tetra Tech.

2.0 PURPOSE AND SCOPE

This assessment evaluates potential geologic hazards for the Site and provides input for the design recommendations relative to mitigation of potential geologic hazards. The work performed by Tetra Tech included:

- Reviewing selected published geologic documents, groundwater elevation records, historical aerial photographs, project plans, and in-house files;
- Performing a Site reconnaissance on July 2, 2018;
- Evaluation of the potential for geologic hazards at the Site, including surface fault rupture, ground shaking, liquefaction, seismically induced settlement, subsidence, landslides, and flooding; and
- Preparing this report summarizing the data reviewed, the results of our assessment, and our recommendations to reduce the potential for the Site to be impacted by geologic hazards.

The scope of work for ESP's Geotechnical Engineering Report (ESP 2018) includes the following tasks:

- Drilling borings B-1, B-2, B-22, and B-51 to 51.5 to feet below ground surface (bgs), borings B-35 and B-43 to 50 feet bgs, B-16 to 46 feet bgs, B-9, B-14, B-20, B-24, B-27, B-34, B-41, B-45, and B-50 to 26.5 feet bgs, borings B-7, B-8, B-10, B-13, B-15, B-17 through B-19, B-21, B-23, B-25, B-28 through B-33, B-36 through B-42, B-46 through B-49, and B-52 to 16.5 feet bgs, borings B-3 and B-11 to 11.5 feet bgs, and B-4, B-5, B-6, B-12, B-26, B-44, and B-53 to 10 feet bgs. The boring locations are shown on Figure 2. The borings were completed on April 10, 2018 and from July 16 through 26, 2018 using a hollow stem auger (HSA) Mobile Drill Rig, Model B-53 equipped with a 6-inch diameter hollow stem auger and an automatic trip hammer for soil sampling. Copies of the boring logs are included in Appendix A of ESP's Geotechnical Engineering Report (ESP 2018b) (Appendix A).
- Ten cone penetrometer test (CPT) soundings were completed at the Site on April 20, 2018 and July 16, 2018 in general accordance with ASTM D5778-12 and D3441-16 using an electric cone penetrometer. The CPT soundings were advanced to depths ranging from approximately 11 to 60 feet bgs. Three of the CPT soundings met refusal at relatively shallow depths; therefore, those soundings are not included in ESP's Geotechnical Engineering Report (ESP 2018b). The logs for the seven CPT soundings that extend to depths of approximately 45 feet bgs or greater are included in Appendix A of ESP's Geotechnical Engineering Report (ESP 2018b) (Appendix A).
- Soils encountered in the borings were categorized and logged in general accordance with the Unified Soil Classification System (USCS) and ASTM D2488-17 (Appendix A).
- Soil samples from the borings were taken using a ring-lined barrel sampler (ASTM D3550-17, with shoe similar to D2937-17) and Standard Penetration

Tests (SPT) were conducted at selected depths within the borings (ASTM D1586-11). Bulk soil samples were also obtained from the auger cuttings

- Ring samples were tested for bulk density (ASTM D2937-17 as modified for ring samplers). Four bulk samples were tested for maximum density and optimum moisture content (ASTM 1557-12). Direct shear tests (ASTM D3080/D3080M-11) were conducted on the same four bulk samples after they were remolded to approximately 90 percent of maximum dry density. Six one-dimensional consolidation tests (ASTM D2435/D2435M-11) were performed on ring samples. Particle size tests (ASTM D422-63/07 and D1140-17) were conducted on fourteen bulk and ring samples. The expansion index (ASTM D4829-11) was determined for one bulk sample. For use in the development of pavement design criteria, two bulk samples were tested for R-value (ASTM D2844/D2844M-13). Four bulk samples were also sent to Cerco Analytical of Concord, California for use in preparing a corrosion evaluation report. The evaluation and associated test results are for use by the architect/engineer in determining appropriate corrosion mitigation measures. The laboratory test results are presented in Appendix B of ESP's Geotechnical Engineering Report and the corrosion evaluation report prepared by Cerco Analytical are presented in Appendix C of ESP's Geotechnical Engineering Report (ESP 2018b) (Appendix A).

- The field and laboratory data were reviewed by a State of California Registered Geotechnical Engineer and evaluated with respect to development of geotechnical criteria for site development. The following items were addressed:

    - Soil and groundwater conditions encountered;
    - Settlement potential;
    - Excavation characteristics;
    - Suitability of the site soils for fill/backfill;
    - Stability of soils during grading;
    - Corrosive soils;
    - Erodible nature of the soils;
    - Liquefaction and seismically induced settlement of dry sand;
    - CBC seismic design criteria;
    - Preparation of improvement areas prior to construction;
    - Grading;
    - Utility trenches;
    - Types and depths of foundation systems;
    - Maximum allowable bearing capacities;
    - Slabs-on-grade and exterior flatwork;
    - Pavement sections;
    - Drainage and maintenance; and
    - Construction observation and testing.

- Preparing the Geotechnical Engineering Report (ESP 2018b) which contains a more detailed description of the methods, conclusions, and recommendations from the geotechnical

investigation. The ESP Geotechnical Engineering Report is being submitted concurrently with this report in Appendix A.

3.0 SITE DESCRIPTION

3.1 PHYSICAL SETTING

The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 48 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the city of Oxnard. The geographic coordinates of the Site are approximately Latitude 34° 12' 27.76" North, Longitude 119° 9' 19.44" West. Surface elevations at the Site are approximately 63 feet above mean sea level (EDR 2017).

Currently, the Site is used for the cultivation of strawberries. Historical aerial photographs, Google Earth images, and information from the Site owners indicate that the Site has been used for cultivation of row crops from as early as 1869 to the present.

3.2 PROPOSED SCHOOL DEVELOPMENT

Tetra Tech's knowledge of the proposed project improvements is limited as of this time and is based on the Overall Site Plan Oxnard High School District High School No. 8 prepared by WLC Architects (WLC Architects 2018). The Site Plan is summarized in Table 1.

Table 1
Conceptual Site Plan Summary

Building	Building Footprint ft^2	Notes
Lockers/Gymnasium	45,730	Two-Story
Performing Arts	26,500	Two-Story
Media/Administration	14,575	One-Story
Academic/Classroom 1	5,380	Two-Story
Academic/Classroom 2	5,960	Two-Story
Academic/Classroom 3	14,470	Two-Story
Academic/Labs	17,400	Two-Story
Shops 1	14,025	Two-Story
Shops 2	11,160	One-Story
Kitchen/Multipurpose Room	17,770	One-Story
Daycare	2,900	One-Story
Home Bleachers	15,175	Two-Story
Visitor Bleachers	7,500	Two-Story
Stadium Restroom 1	1,600	One-Story
Stadium Restroom 2	1,600	One-Story
Pool Building	2,270	One-Story
Maintenance & Ops.	7,100	One-Story
Total	**211,115**	

Parking Lot	Parking Lot ft^2	No. Parking Spaces
Staff	180,088	318
Student	123,300	305
Visitor	3,230	18
Northeast Joint Use	33,115	89
Northwest Joint Use	46,810	76
Total	**386,543**	**806**

Sport Facility	Facility ft^2	Ground Surface
Track/Football Field	159,031	Turf
Varsity Baseball Field	135,347	Turf
JV Baseball Field	113,034	Turf
Varsity Softball Field	55,259	Turf
JV Softball Field	53,695	Turf
Soccer Field	182,831	Turf
Basketball Courts	52,960	Paved
Tennis Courts	43,590	Paved
Pool	7,240	Paved
Total	**802,987**	

Note:
ft^2 - Square Foot. All square footage estimates are approximate.

The proposed buildings will be of wood or metal frame construction, or cast in place concrete tilt up construction with concrete slab-on-grade foundations. No other structures are planned. The proposed grading plan for the project and finish floor elevations were not provided to Tetra Tech for the preparation of this report. It is anticipated that the final grade will be similar to the existing grade and that the grading required to achieve the building pad subgrade will be minor and necessary only to provide adequate foundation and slab support and positive drainage away from the structures.

It is assumed that surface and subsurface improvements will also be constructed. Surface improvements will include concrete flat work for pedestrian use. Subsurface improvements will include underground utility conduits.

3.3 SITE VICINITY CHARACTERISTICS

3.3.1 Previous Development

The review of historical aerial photographs dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017) and interviews with representatives of the Site owner, the Maulhardt family, indicates that the Site and surrounding area were used for agricultural (row crop production) land use as part of the historic Maulhardt Ranch from at least 1869 to the present. The Site is located within the Oxnard Oil Field, however no oil production activities are known to have occurred on the Site property.

3.3.2 Current Area Development

The Site is currently being used for strawberry cultivation. The Site is located in an area that is developed for commercial, residential, park, and agricultural land use. The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential

neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

3.4 CLIMATE

The City of Oxnard is situated in a Mediterranean (dry subtropical) climate zone, experiencing mild and relatively wet winters, and warm, dry summers, in a climate called the warm-summer Mediterranean climate. Onshore breezes keep the communities of Oxnard cooler in summer and warmer in winter than those further inland. The average mean temperature is 61 degrees Fahrenheit (F). The average minimum temperature is 52 F and the average maximum temperature is 69 F. Generally, the weather is mild and dry, with 354 days of sunshine annually. The average annual precipitation is 15.62 inches (Wikipedia 2018).

4.0 GEOLOGIC/HYDROGEOLOGIC SETTING

4.1 REGIONAL GEOLOGY

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa and Pine Mountains, to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (CGS 2002a).

4.2 SITE GEOLOGY

The geology of the Site area is shown on Figures 3A and 3B (Gutierrez, et al. 2008). The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

4.3 EARTH MATERIALS

4.3.1 Stratigraphy

The geology of the Site surface is shown on Figure 2. The geology of the Site subsurface was constructed from the geotechnical soil boring logs in ESP's 2018 Geotechnical Engineering Report (ESP 2018b) (Appendix A) and is depicted on Figure 4A (Cross Section A – A') and Figure 4B (Cross Section B – B'). Based on the geologic map in Figure 2 (Gutierrez, et al. 2008) and information in *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area* (Turner, et al 1975), the Site is underlain at the ground surface by Holocene deltaic alluvium and wash fan deposits to approximately 70 feet bgs. These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

4.3.2 U.S. Department of Agriculture, Soil Conservation Service Data

The U.S. Department of Agriculture, Soil Conservation Service (USDA) data identifies the native soil types at the Site to be Mocho loam, Pico sandy loam and sandy loam substratum, Hueneme sandy loam, and Camarillo sandy loam. These soils are nearly level and occur on alluvial fans and flood plains. Permeability is rapid and surface runoff is very slow, such that there is no hazard of erosion by water (USDA 1970).

4.3.3 Earth Systems Pacific April and July 2018 Soil Boring Data

ESP completed 53 geotechnical soil borings to depths ranging from 10 feet bgs to 51.5 feet bgs during April and July 2018 for the OUHSD to collect soil samples and soil blow-count density data for use in development of the High School No. 8 (Figures 2, 4A, and 4B). The general subsurface profile observed in the borings consisted of silty sand at the ground surface extending to approximately 3 to 8 feet bgs, underlain by interbedded poorly to well graded sand and occasional gravel with clay and silt layers that are exposed in the borings completed for this project to 51.5 feet bgs. These alluvium and wash deposits were deposited by the Santa Clara River. Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project. The soils were in a slightly moist to moist condition above the water table and wet below the water table. The sandy soils have a loose to very dense consistency while the silt and clay soils were medium stiff to stiff. Several of these soil layers also had varying amounts of fine to coarse gravel and cobbles. Based on the subsurface profile described above, the Site Class per Chapter 20 Table 20.3-1 (ASCE 2013) is "D", a "Stiff Soil Profile" (ESP 2018b). Please refer to the boring logs and CPT data included in Appendix A of ESP's Geotechnical Engineering Report (ESP 2018b) (Appendix A).

4.4 GROUNDWATER

4.4.1 Hydrogeology

The Site is located in the northern portion of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975; Ventura County Public Works Department [VCPWA] 1975). The Oxnard Plain Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Basin are grouped into three major units; 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System (UAS), and 3) the Lower Aquifer System (LAS).

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer. In the Site area, the semi-perched aquifer extends to depths of approximately 75 feet bgs and the clay cap from approximately 75 feet bgs to 150 feet bgs (Turner, et al 1975). The semi-perched aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the deltaic channel complex of the ancestral Santa Clara River and form lenses perpendicular to the channels of the ancestral Santa Clara River (Figure 3). The depth to the historically highest groundwater elevation for the Site area shown on Plate 1.2 of the *Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle. Ventura County, California* (CGS 2002a) is approximately 8 feet bgs. The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Oxnard aquifer of the UAS. This clay cap acts as an aquitard. Based on topographic controls, groundwater in the site vicinity is expected to flow toward the south to south-southwest.

The UAS system consists of the Oxnard and underlying Mugu aquifer zones. These two water bearing units were combined due to their similar, planar structure. Both the Oxnard and Mugu aquifers are composed of sediments deposited largely by the ancestral Santa Clara River during the Upper Pleistocene. The Oxnard aquifer zone extends from approximately 150 to 200 feet bgs in the Site area and is a laterally continuous layer gravel and cobbles and coarse to fine sand, with local fine grained lenses deposited in non-marine environment. The underlying Mugu aquifer zone extends from approximately 200 to 400 feet bgs in the Site area and consists of laterally continuous sand and gravel deposited in a shallow marine embayment on an erosional unconformity on top of the San Pedro formation that forms the top of the LAS.

The LAS system in the Site area, in descending order, consists of the Hueneme and Fox Canyon aquifer zones. The sediments in the LAS are more structurally complex than the UAS resulting from folding and faulting. Both the Hueneme and Fox Canyon aquifer zones are composed of lower Pleistocene age San Pedro Formation.

4.4.2 Groundwater Levels Recorded by ESP During April and July 2018

Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project during April and July 2018 (ESP 2018b).

4.4.3 Groundwater Quality

Groundwater in the borings completed for this project in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use (Turner, et al 1975). The groundwater in the underlying UAS system, the Oxnard and underlying Mugu aquifer zones is generally of good quality and serves as a major source of water for agriculture, municipal, and industrial use in the Oxnard area.

4.4.4 Aquifers Impacted by Site Releases

Tetra Tech is currently performing a Preliminary Environmental Assessment (PEA) for the Site and identified a potential for impacts to the groundwater of the semi-perched zone from fuel formerly stored in underground storage tanks in the Maulhardt Ranch farmyard area. Soil and groundwater samples were collected from the area of the Site adjacent to farmyard area and tested for fuel related volatile organic compound (VOCs) and total petroleum hydrocarbons (TPH). The PEA groundwater assessment did not identify any evidence of a release fuel release from the Site to groundwater.

4.5 SURFACE WATER

No surface water was observed at the Site during the reconnaissance performed on July 2, 2018. It is likely that during periods of moderate rainfall, free surface water that accumulates on the Site may flow south and southwest and possibly into gutters along Camino Del Sol and North Rose Avenue (Figures 1 and 2). However, the U.S. Department of Agriculture, Soil Conservation Service report indicates that soil permeability at the Site is moderate to rapidly moderate and surface runoff is very slow, such that there is a low hazard of erosion by water (U.S. Department of Agriculture, Soil Conservation Service 1970).

4.6 SEISMICITY

4.6.1 Regional Earthquake Fault Analysis

The high rate of seismic activity in California and the Site area is the result of large-scale earth processes in which the Pacific plate slides northwestward relative to the North American plate at about 2 inches/year. This plate motion results in horizontal slip (primarily on the San Andreas "strike-slip" fault) and crustal block rotation and compression within a restraining bend of the San Andreas Fault, that has created the series of the prominent mountain ranges and intervening valleys situated between Santa Monica and Santa Barbara and associated thrust and reverse faults (CGS 2002a). Although slower moving than the strike-slip faults of the San Andreas system, these numerous thrust and reverse faults account for over half of the significant earthquakes that have occurred in southern California during the past century, including the damaging 1971 M 6.6 San Fernando, 1994 M 6.7 Northridge, and 2003 M 6.5 San Simeon earthquakes (Ross *et al.* 2004).

Active and potentially active faults in the Site area were evaluated by reviewing the *Fault Activity Map of California and Adjacent Areas* (Jennings 1994), *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California* (Jennings, *et* al. 2010), *Draft Background Report, City of Oxnard General Plan* (City of Oxnard 2006), Figures 2.2.1b, 2.2.2 and 2.2.3b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and Earthquake Zones of Required Investigation Maps for the Saticoy Quadrangle (CDMG 1978), Camarillo Quadrangle (CDMG 1998b; CGS 2002a), and Santa Paula Quadrangle (CDMG 1998a; CGS 2002a). Active faults are defined as those faults with evidence of displacement within the last 11,000 years and potentially active faults are defined as those with evidence of displacement within the last 1.6 million years (CGS 2007). The faults shown on Figures 5A through D are from the *Fault Activity Map of California and Adjacent Areas* (Jennings 2010). The terms active and inactive faults have been interpreted differently by geologists, seismologists, and agencies. For this report, active faults are defined as having evidence of surface displacement within the last 11,000 years and potentially active faults are defined as having evidence of surface displacement in the last 1.6 million years (CGS 2007). The fault classification terms shown on Figures 5A through 5D are specific to 2010 Fault Activity Map and will not be considered for design purposes.

Table 2 contains a summary of earthquake faults within approximately 100 kilometers (62.1 miles) listed in *Appendix A: California Fault Parameters for the National Seismic Hazards Map and Working Group on California Earthquake Probabilities* (U.S. Geological Survey [USGS] and CGS 2007). Most of these faults are shown on the 2010 Fault Activity Map.

The earthquake faults located nearest to the Site are the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site, the Wright Road Fault, located approximately 6.1 km (3.7 miles) north of the Site, the Oak Ridge Fault, located approximately 7.3 km (4.5 miles) north of the Site, the Camarillo Fault located approximately 8.3 km (5.1 miles) east of the Site, and the Ventura-Pitas Point Fault, located approximately 8.9 km (5.5 miles) north of the Site.

The Oak Ridge Fault System (Reference Number 335 on the 2010 Fault Activity Map 2010 in Figure 4) is a Late Quaternary dip slip fault dipping at approximately 65 degrees to the south that extends from the Santa Susana Mountains where it has been overridden by the north-dipping Santa Susana Thrust Fault, westward along the southerly side of the Santa Clara River Valley and thence into the Oxnard Plain. The Oak Ridge Fault System is an active reverse fault with a slip rate of 3.0 mm/year, a maximum moment magnitude of 6.9 and a recurrence interval of 299 years. It does not have a surface expression nor have any been shown to cut near-surface sediments (alluvium). It is conceivable that past movement of this

fault system in the Oxnard Plain area has not resulted in surface displacements but, instead, has resulted in only broad warping or tilting of the near-surface alluvial sediments. The lack of surface evidence of fault displacement in the Oxnard Plain is not necessarily indicative of activity in the recent geologic past as surface features could easily have been obscured by fluvial processes (erosion or deposition of alluvium). Several recorded earthquake epicenters in the offshore as well as mainland area during historic time may have been associated with the Oak Ridge Fault System or within close proximity and associated with it (County of Ventura 2013).

The Ventura-Pitas Point Fault (Reference Number 336 on the 2010 Fault Activity Map 2010 in Figure 4) is a Holocene, oblique left lateral reverse fault, dipping at approximately 64 degrees to the north that extends along the base of the foothills on the north side of the Santa Clara River from Santa Paula westerly to the mouth of the Ventura River, thence westerly into the Santa Barbara Channel area. Evidence for the existence of the Ventura-Pitas Point Fault is based mainly upon minor faulting of terrace deposits north of San Buenaventura and evidence of faulting from the Tidewater Oil Company corehole #5. It has slip rate of 1.0 mm/yr, a maximum moment magnitude of 6.8 and a recurrence interval of 1,112 years (County of Ventura 2013).

The Wright Road Fault (Reference Number 536 on the 2010 Fault Activity Map 2010 in Figure 4) is considered to be an active "tear" fault, terminating the west end of the Camarillo and Springville anticlines. It may be interpreted as a structural boundary between the Ventura Anticline on the west and South Mountain to the east (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 1), or discussed in the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Springville Fault Zone (Reference Number 348 on the 2010 Fault Activity Map 2010 in Figure 4) marks the southern edge of the Camarillo Hills, which are largely the expression of the Camarillo Anticline. This fold is relatively young, having developed within the last few hundred thousand years above young, concealed thrust faults of the Springville Fault Zone, which may be a back thrust off of the Oakridge Fault Zone. The Springville Fault Zone is approximately 5.5 miles long. The southern trace is largely concealed, extends approximately 2.5 miles east from the west end of the Camarillo Hills, and it is considered to be an active, Holocene fault, with an estimated an average earthquake recurrence interval of 900 years with a displacement of 0.6 to 11 meters per event. The northern trace lies along the main body of the Camarillo Hills extending approximately 5.5 miles east from the west end of the Camarillo Hills, is considered to be an active fault, and marks the southern margin of the Camarillo Anticline (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 1), so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Camarillo Fault (Reference Number 349 on the 2010 Fault Activity Map 2010 in Figure 4) is expressed by an east-west anticlinal ridge approximately 5.5 miles long located southwest of Camarillo. This fault extends in an east-west direction immediately south of Camarillo from Calleguas Creek to Camarillo Airport. The present of the fault is based primarily upon the abrupt uplifted sediments along the north side of the fault that resulted in the long linear hill of the southern portion of Camarillo just south of the 101 Freeway (County of Ventura 2013). Limited trenching has not revealed a surface trace for this fault, however the straight planar nature of most of the escarpment and the steepening of bedding near the base of the slope strongly suggests a surface fault. Although there is no hard evidence for Holocene activity on this fault, the step in the Calleguas Creek flood plain across the fault trace appears to be Holocene. Therefore, this fault is considered to be active (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 1), so characteristics such as the configuration slip rate, and maximum moment magnitude were not reviewed for this report.

4.6.2 Analysis of Historical Earthquakes

The rate of seismic activity for the Site areas summarized in Table 3 was estimated from the USGS Earthquake Hazards Program Search Earthquake Catalogue website for the Site area from 1900 through 2018 (USGS 2018b).

According to the USGS database, 119 earthquakes with magnitudes exceeding 4.5 have occurred within 63 miles (100 kilometers) of the Site since 1900 (Table 2). Significant historical earthquakes of the Oxnard region include the 1812 earthquake that effected most of southern California (Richter Magnitude [M_L] 7.0), the 1827 Ventura Earthquake (M_L 7.0), the 1857 Fort Tejon Earthquake (M_L 7.1), the 1952 Tehachpi Earthquake (M_L 7.7), and the 2004 Northridge Earthquake (M_L 6.7). While all of these earthquakes were felt in the Site area, no historical earthquakes have caused a great amount of property damage or loss of human life in the Site area. However, the historical earthquake record of California spans a little over 200 years and provides only a partial indication of seismic hazards. The absence of earthquakes on many recognized active faults and fault-related folds in California probably reflects recurrence intervals greater than the historical record.

5.0 PREVIOUS REPORTS

5.1 2018 ESP PRELIMINARY FOUNDATION DESIGN PARAMETERS AND INFILTRATION TESTING REPORT

In May 2018, ESP prepared the *Preliminary Foundation Design Parameters and Infiltration Testing Report* for the OUHSD to provide preliminary foundation design parameters and preliminary infiltration rates for use by the architect/engineer in starting their work in the preparation of plans and specifications for the project (ESP 2018a). On April 10, 2018, ESP completed four borings at the site to depths ranging from approximately 3 to 51.5 feet below the existing ground surface. Two of the borings (borings B-1 and B-2) were drilled for exploration and soil sample acquisition purposes, and the other two borings (Infiltration Tests A and B) were drilled for the infiltration testing. All of the borings were drilled with a Mobile Drill Model B-53 drill rig, equipped with 6-inch outside diameter hollow stem auger and an automatic trip hammer for sampling. On April 20, 2018, four cone penetrometer test (CPT) soundings were also performed at the Site. The CPT soundings were advanced to a depth of approximately 18 to 60 feet bgs.

The *Preliminary Foundation Design Parameters and Infiltration Testing Report* (ESP 2018a) contained the following conclusions:

Infiltration Test Results

"The 30-minute constant head portion of the infiltration testing resulted in introducing an approximate volume of water of 0.5 to 3 gallons (0.07 to 0.4 cubic ft.) into the infiltration test borings. The infiltration rates varied between 0.5 and 73 inches/hour over the testing period depending on the water's head or elevation, and the soil's hydraulic conductivity that existed in the infiltration test borings."

Liquefaction and Seismically Induced Settlement of Dry Sand

"Total and differential settlement due to liquefaction and seismically induced settlement of dry sand may approach approximately 3 inches and 1.5 inches, respectively."

Foundation Type

"Pending the completion and the results of the additional geotechnical work needed at the site, it is our opinion at this time that the buildings and other ancillary structures can be supported by either shallow or deep foundation systems.

Shallow foundations may consist of conventional continuous and spread footings or rigid mat foundations. If conventional shallow foundations are used, the spread footings should be interconnected with grade beams on at least two sides. Additionally, the entire conventional foundation system will need to be underlain with a series of two geogrids, both covered with Class 2 Aggregate Base (Caltrans, 2015). If rigid mat foundations are used, they can be supported by compacted native soils. The purpose of underlaying shallow conventional foundations with the geogrid and aggregate base or utilizing shallow rigid mat foundations is to reduce seismic differential settlement to approximately 1-inch."

More heavily loaded structures (such as stadium grandstands, scoreboards, light poles, etc.) can be supported by deeper reinforced concrete cast-in-drilled hole piles (CIDH).

5.2 2018 PHASE I ENVIRONMENTAL ASSESSMENT

A Phase I Environmental Site Assessment (ESA) was performed for the Site by Tetra Tech for the OUSHD in 2017 and 2018 (Tetra Tech 2018). The Phase I ESA was performed under regulatory oversight by the California Department of Toxic Substances Control (DTSC). Based on Tetra Tech's background research for the Site in the High School No. 8 Phase I ESA (Tetra Tech 2018), the following six Recognized Environmental Concerns (RECs) were identified at the Site:

1. Potential toxic soil gas from potential formation leakage from the Oxnard Oil Field;

2. Potential residual organochlorine pesticides (OCPs), arsenic, semivolatile organic compounds (SVOCs), polyaromatic hydrocarbons (PAHs), and diesel to heavy end total petroleum hydrocarbons (TPHde) in soil from agricultural production;

3. Potential impacts to shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former above ground storage tanks (ASTs) and underground storage tanks (USTs) formerly used for the storage of motor fuel and herbicides;

4. Potentially hazardous substances and petroleum products (volatile organic compounds [VOCs] and gasoline range total petroleum hydrocarbons [TPHg]) have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area;

5. Potential polychlorinated biphenyl (PCB) soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol; and

6. The following hazardous pipelines identified within 1,500 feet of the Site:

    - The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site;

    - The City of Oxnard maintains a 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site;

    - The United Water Conservation District (UWCD) maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site; and

    - The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch.

5.3 2018 PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT

The six RECs identified in the Phase I ESAs are currently being evaluated in a Preliminary Environmental Assessment (PEA) being performed by Tetra Tech under DTSC oversight. The hazardous pipelines identified as REC 6 are being assessed in a separate task in accordance with the *Guidance*

Protocol for School Site Pipeline Risk Analysis (CDE 2007). The methods, findings, and recommendations of the hazardous pipeline risk analysis will be presented in a High School No. 8 Pipeline Risk Analysis Report that will be summarized as an addendum to the PEA report.

6.0 GEOLOGIC HAZARDS

The following geologic hazard assessment was performed in general accordance with the guidelines contained in the CGS Note 48 (CGS 2013), *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A* (CGS 2008), and the 2016 California Building Code (CBC) (ICC 2017). It is based on published information on the regional and local geologic conditions along with data from the geotechnical assessments of the Site performed by ESP (ESP 2018b).

6.1 SURFACE FAULT RUPTURE

6.1.1 Alquist-Priolo Earthquake Fault Zones

The Site is not located within a designated Alquist-Priolo Earthquake Fault Zone (AP Zone) (CGS 2007). Because the Site is not located within an AP Zone and there are no known active faults with the potential for surface rupture beneath or trending toward the Site, the probability of surface rupture due to faulting at the Site is considered low. Based on review of the Earthquake Fault Zone Maps for the Saticoy (CDMG 1978), Camarillo (CDMG 1998a), and Santa Paula (CDMG 1998b) Quadrangles, and Figure 2.2.3b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), the nearest AP Zones are located at the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site, the Wright Road Fault, located approximately 6.1 km (3.7 miles) north of the Site, the Camarillo Fault located approximately 8.3 km (5.1 miles) east of the Site, and the Ventura-Pitas Point Fault, located approximately 8.9 km (5.5 miles) north of the Site.

6.1.2 Site Reconnaissance/Aerial Photograph Review

The potential for surface fault rupture at the Site was also evaluated through review of historical aerial photographs available in Tetra Tech files and EDR (EDR 2017) (Appendix C), and visual evaluation of the Site geomorphology during the July 2, 2018 reconnaissance. No evidence for surface fault rupture at the Site (such as scarps, lineations, or other geomorphic features) was observed during the July 2, 2018 Site reconnaissance or in historical aerial photographs dating from 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017) (Appendix B). The Site is generally flat. It is shown as being used for various types of row crop agricultural development in all of the aerial photographs reviewed. Relict lineations of braided stream channel morphology from former flood events of the ancestral Santa Clara River are visible on the Site and surrounding areas in the aerial photographs dating from 1927, 1938, 1947, and 1959.

6.2 SITE SPECIFIC EARTHQUAKE GROUND MOTION ANALYSIS

The site is in a region of generally high seismicity and has the potential to experience strong ground shaking from earthquakes on regional or local causative faults. According to the 2016 California Building Code (CBC) Section 1616A.1.3 (International Code Council [ICC] 2017), the site should be assigned to Seismic Design Category E or F, as the site's mapped spectral response acceleration parameter at a 1-second period (S_1) is 0.938 g, which is greater than 0.75 g (see Table 1 ASCE 7-10 Standard Acceleration Parameters later in this section). Based on this S_1 parameter, a site-specific response analysis is warranted to analyze the ground motion hazard at the site. The site-specific response analysis is intended to be in general conformance with ASCE Standard 7-10, Chapter 21, Site Specific Ground Motion Procedures for Seismic Design, Sections 21.1.1 through 21.5.3 (ASCE 2013).

ASCE 7-10 (ASCE 2013) requires that the following site-specific seismic information be developed: 1) Risk-Targeted Maximum Considered Earthquake (MCE_R) Probabilistic and Deterministic response

curves; 2) Site-Specific MCE_R spectral response curve; 3) Site Design Response Curve (2/3 Site-Specific MCE); and 4) Site Design Acceleration Parameters.

The MCE_R is defined as an event having a 2 percent chance of exceedance in 50 years, with a return period of approximately 2,475 years, which is expected to achieve a 1 percent probability of partial or total structure collapse within a 50-year period. The deterministic and probabilistic ground motions were calculated using the USGS 2008 Lower 48 California outside of Cascadia seismic source database and Next Generation Attenuations (NGA) from the EZ-FRISK Version 7.65 by Fugro (Fugro 2018). The NGAs used for this ground motion analysis were as follows: 1) Boore & Atkinson, 2008; 2) Campbell & Bozorgnia, 2008; and 3) Chiou & Young, 2007, all of which are applicable to shallow crustal earthquakes in the western United States. The geometric mean spectral curve of these three NGAs was used as the Probabilistic MCE_R and Deterministic MCE_R.

6.2.1 Probabilistic (MCE_R) Ground Motions

To develop the probabilistic MCE_R spectrum for the site, EZ-FRISK was used. Mapped faults within a 105-kilometer radius (65 miles) were selected from the program database. The peak horizontal ground acceleration (PGA) and spectral accelerations, at 5 percent damped for a Site Class "D" (ASCE, 2013), were estimated using the NGAs mentioned above. The geometric mean of these three generated curves was used as the probabilistic MCE_R response spectrum. The ordinates of the probabilistic ground motions were then computed using Method 1 of ASCE 7-10 Section 21.2.1.1 (ASCE, 2013). To obtain the probabilistic MCE_R spectrum using this method, at each spectral response period for which the acceleration is computed, the ordinates of the probabilistic ground motion are determined as the product of the risk coefficient C_R, and the spectral response acceleration from a 5 percent damped acceleration response spectrum having a two percent probability of exceedance within a 50-year period. The value of the risk coefficient C_R, is determined using the values of C_{RS} (0.910) and C_{R1} (0.909) from Figures 22-17 and 22-18 of ASCE 7-10 (ASCE, 2013) that were obtained from the USGS Earthquake Hazards Program website (USGS, 2018a) (Appendix C). The ground motions were multiplied by the mapped risk coefficient C_{RS} (0.910) at periods up to 0.2 seconds, and C_{R1} the mapped risk coefficient (0.909) at periods greater than or equal to 1 second. At response spectral periods greater than 0.2 seconds and less than 1.0 seconds, C_R was based on linear interpolation of C_{RS} and C_{R1}. The Probabilistic Response Spectra (MCE_R) are included in a single graph presented in Figure 6. The probabilistic geometric mean PGA (MCE_G) is 0.969g (includes risk factor), which is the PGA with a 2 percent probability of exceedance within a 50-year period.

6.2.2 Deterministic (MCE_R) Ground Motions

A deterministic analysis using the NGAs was performed in accordance with ASCE 7-10 (ASCE, 2013). The parameters used in this analysis included the stiff soil classification (Site Class "D"), and the controlling seismic source being the late Quaternary Oak Ridge—Connected-Fault with a maximum magnitude of 7.40 and 5.04 kilometers from the Site and the Oak Ridge (Onshore)-Fault with a maximum magnitude of 7.20 and 5.72 kilometers from the site. Values for the three spectral NGA curves were calculated using EZ-FRISK. The geometric mean of the obtained values was used as the basis for calculating the Deterministic Response Spectrum (MCE_R) presented on the graph in Figure 7. The Deterministic (MCE_R) Lower Limit was calculated using F_a = 1.00 and F_v = 1.50, obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix C). The Deterministic Response Spectra (MCE_R) are included in a single graph presented in Figure 7.

ASCE 7-10 Section 21.2.2 (ASCE, 2013) requires that the ordinates of the deterministic ground motion response spectrum shall not be less than the corresponding ordinates of the Deterministic Lower Limit

determined in accordance with Figure 21.2.1. The ordinates of the Deterministic Geometric Mean (MCE_R) spectrum are higher than the corresponding ordinates of the Deterministic Lower Limit response spectrum at spectral periods less than 1.6 seconds, and less than the corresponding ordinates of the Deterministic Lower Limit at spectral periods greater than 1.6 seconds. Therefore, it is our opinion that the deterministic ground motion response spectrum should comprise the Deterministic Geometric Mean (MCE_R) curve at spectral periods less than 1.6 seconds and the Deterministic Lower Limit response spectrum curve at spectral periods greater than 1.6 seconds. This Deterministic Site-Specific (MCE_R) is indicated by the red dashed line on the Deterministic Response Spectra graph presented in Figure 7.

The Deterministic Geometric Mean (MCE_R) PGA is 1.222 g, which was calculated from the largest source earthquake from the Oak Ridge-Connected-Fault.

6.2.3 Site-Specific (MCE_R)

The Site-Specific (MCE_R) is defined by ASCE 7-10, Section 21.2.3 (ASCE, 2013) as the lesser of the Probabilistic (MCE_R) and the Deterministic (MCE_R). A review of the Probabilistic and Deterministic Geometric Mean Response Spectra graphs presented in Figure 8 indicates that the Probabilistic (MCE_R) spectral response accelerations is the lesser curve. Therefore, the Site-Specific (MCE_R) should consist of the Probabilistic Geometric Mean with Risk Coefficient spectral response curve. The Probabilistic Geometric Mean with Risk Coefficient curve is shown on the Probabilistic Response Spectra and Probabilistic and Deterministic Response Spectra graphs presented in Figure 8.

6.2.4 ASCE 7-10 Standard Acceleration Parameters

The site coefficients, mapped and design seismic ground motions that could occur at the site were analyzed based on the CBC (ICC 2017) and ASCE 7-10 Standard method (ASCE, 2013). The site coordinates used in this analysis were latitude 34.2077 north and longitude 119.1554 west (Google Earth 2018), with a Site Classification of "D". The ASCE 7-10 Standard method available on the USGS Earthquake Hazards Program website (USGS 2018a) was used (Appendix C). The results of the seismic ground motion analysis are presented in Table 4.

Table 4
ASCE 7-10 Standard Acceleration Parameters

Mapped Acceleration Values for Site Class "B"		**Site Coefficients and Adjusted MCE_R Design Response Spectrum Acceleration Parameters For Site C ass "D"**					
Seismic Parameters	**Values (g)**	**Site Coefficients**	**Values**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_S	2.596	F_a	1.000	S_{MS}	2.596	S_{DS}	1.731
S_1	0.938	F_v	1.500	S_{M1}	1.407	S_{D1}	0.938

6.2.5 Design Response Spectrum

Per ASCE 7-10 Section 21.3 (ASCE, 2013), the Site Design Response Spectra is obtained by taking 2/3 of the Site-Specific (MCE_R), except that the ordinates shall not be less than those obtained from 80% of the ASCE 7-10 Standard adjusted Design Response Spectra values per ASCE 7-10 Section 11.4.5 (ASCE, 2013). The Site Design Response Spectra accelerations for 2/3 of the Site-Specific (MCE_R) were higher

from periods 0.0 to 0.29 seconds, and lower from periods 0.29 to 4.0 seconds than the accelerations from the 80% of the ASCE 7-10 Standard adjusted Design Response Spectrum ground accelerations per ASCE 7-10 Section 11.4.5 (ASCE, 2013), as shown on the Site Design Response Spectra graph presented in Figure 9. Therefore, the ground accelerations for 2/3 of the Site-Specific (MCE_R) from periods 0.0 to 0.29 seconds should be used, and for periods greater than 0.29 seconds to 4 seconds 80 percent of the ASCE 7-10 Standard adjusted Design Response Spectra values should be used. This Governing Site Design Response Spectrum combination is indicated by the red dashed line on the Site Design Response Spectra graph presented in Figure 9.

Note that ASCE 7-10, Section 21.4 (ASCE, 2013), requires that the parameter S_{DS} shall be obtained from site-specific spectra as the spectral acceleration S_a, determined in accordance with ASCE 7-10, Section 21.3, at a period of 0.2 second (1.64g), except it shall not be taken as less than 90 percent of the peak acceleration, S_a, at any period larger than 0.2 seconds. In this case, S_a is greater than 90 percent of the peak acceleration spectral acceleration at any period larger than 0.2 seconds. The parameter S_{D1} shall be taken as the greater of the spectral acceleration, S_a, at a period of 1 second (0.750 g) or two times the spectral acceleration, S_a, at 2 seconds (0.375 g). In this case, the value at two times the spectral acceleration, S_a, at a period of 2 seconds (2 x 0.3752 g = 0.7504 g) is equal to the spectral acceleration, S_a, at a period of 2 of 0.750 g. Therefore 0.750 g shall be used as the value for S_{D1}. The parameters S_{MS} and S_{M1} were taken as 1.5 times S_{DS} and S_{D1}, respectively. The Site Design Response Parameters are provided in Table 5.

Table 5
Site Design Response Parameters

80% of the ASCE 7-10 Design Response Spectrum Acceleration Values for Site Class "D"				**Site Design Response Spectrum Acceleration Values for Site Class "D"**			
Seismic Parameters	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_{MS}	2.466	S_{DS}	1.644	S_{MS}	2.466	S_{DS}	1.644
S_{M1}	1.1256	S_{D1}	0.7504	S_{M1}	1.1256	S_{D1}	0.7504

6.2.6 Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration

6.2.6.1 Probabilistic (MCE_G) Peak Ground Acceleration

The Probabilistic geometric mean PGA (MCE_G) is 0.969 g (includes risk factor), taken as the geometric mean PGA with a 2% probability of exceedance over a 50-year period.

6.2.6.2 Deterministic (MCE_G) Peak Ground Acceleration

The Deterministic MCE_G geometric mean PGA is 1.222 g, taken as the geometric mean peak ground acceleration of the largest 84th percentile earthquake, which was the late Quaternary Age Oak Ridge—Connected-Fault located approximately 5.04 kilometers north of the site and the Oak Ridge (Onshore)-Fault located approximately 5.72 kilometers north the site.

ASCE 7-10, Section 11.8.3 (ASCE, 2013) indicates that the Site PGA for evaluation of potential liquefaction and soil strength loss shall be determined based on the peak ground acceleration adjusted for site class effects (PGA_M) from equation 11.8-1 ($PGA_M = F_{PGA}$ PGA) using the coefficient F_{PGA} from Table

11.8-1. The PGA value is based on the mapped Maximum Considered Earthquake (MCE) ground motion peak ground acceleration shown on Figure 22-7 of ASCE 7-10 (1.020 g) that was obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix C). For Site Class = D, PGA = 1.020 g, and F_{PGA} = 1.0. Therefore, PGA_M = 1.02 g and should be used as the Deterministic MCE_G geometric mean peak ground acceleration.

6.2.6.3 Site Specific (MCE_G) Peak Ground Acceleration

The site-specific MCE_G PGA is the lesser of the Probabilistic (MCE_G) and the Deterministic (MCE_G). In this case, the Probabilistic (MCE_R) geometric mean PGA of 0.969 g is the lesser PGA. The Probabilistic (MCE_R) geometric mean PGA of 0.969 g is not less than 80 percent of the PGA_M = 1.02 g determined from ASCE 7-10 Eq. 11.8-1 (ASCE, 2013). Therefore, the site-specific MCE_G PGA should be Probabilistic (MCE_R) geometric mean PGA of 0.969 g.

6.2.7 Deaggregated Seismic Parameters

A seismic hazards analysis procedure was used to estimate the probabilistic modal magnitude at the Site using the USGS Unified Hazard Tool available at the USGS Earthquake Hazards Program Website (USGS 2018c) (See the Unified Hazard Tool output presented in Appendix C). The Probabilistic Maximum Considered Earthquake (MCE) was used in the analysis. The MCE is defined as having a 2 percent chance of exceedance in 50 years, with a return period of approximately 2,475 years. The results of this analysis indicate that the Site could experience a probabilistic mean magnitude of 7.01g at a distance of 10.79 km.

6.2.8 Seismic Design Category

The S_1 calculated for the Site is 0.938 g. CBC Section 1613A.3.5 (CBSC, 2013) states that structures assigned to Risk Category I, II, or III where the $S_1 \geq 0.75$g should be assigned to Seismic Design Category E. If structures are assigned to Risk category IV, they should be assigned to Seismic Design Category F.

6.3 LIQUEFACTION

Liquefaction is the significant loss of soil strength due to pore pressure increase (CGS 2008). Ground shaking reorients the unconsolidated sediment grains into a more compact arrangement. If the water table is close to the surface during this reorientation, the grain-to-grain contacts are reduced and the load is temporarily transferred to the pore water. This increases pore pressure and decreases the soil strength, and the deposit then behaves like a liquid (Costa and Baker 1981). Liquefaction may occur when groundwater is present within the potentially liquefiable material (granular soils within a specific range of grain sizes in a relatively loose state of low relative density). If these conditions are present and strong ground motion occurs, portions of the soil column could liquefy, depending on the intensity and duration of the strong ground motion. Soils most susceptible to liquefaction are saturated, very loose to loose, fine grained sandy and silty soils. Liquefaction may manifest itself at the surface as lateral spreading, sand boils, lurching and ground fissuring, loss of bearing strength, and settlement. Any structures founded on or above potentially liquefiable soils may experience settling (both total and differential) and loss of foundation support during ground shaking.

6.3.1 Regional Conditions

Generally, there is a potential for liquefaction when the following three conditions are met: (1) a site is located on Holocene age, unconsolidated, coarse-grained sediments; (2) the site is in area of potentially strong ground motion; and (3) groundwater is less than 50 bgs. The *Seismic Hazards Zone Report for the Oxnard 7.5-Minute Quadrangle, Ventura County California* (CGS 2002a), *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map* (CGS 2002b), and Figure 2.4b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) indicates that the Site is located in a recognized geological hazard zone for earthquake induced liquefaction. The findings in these data are based on the assumptions that the Site area is underlain by coarse grained Holocene age sediments, which are generally considered have a significant liquefaction potential, because the depth to groundwater for the Site area is less than 50 feet bgs with a historic high groundwater elevation of approximately 8 feet bgs (CGS 2002a). Groundwater was encountered in exploratory soil borings drilled at the Site by ESP in April and July 2018 at depths ranging from approximately 20 to 25 feet bgs, which is much shallower than the 50 feet bgs depth used as the maximum depth criterion for potentially liquefiable conditions.

6.3.2 2018 Earth Systems Pacific Liquefaction Analysis

ESP evaluated the liquefaction potential at the Site in accordance with the 2016 CBC (ICC 2017) and the methods in the *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A* (Special Publication 117A) (CGS 2008). ESP has analyzed the boring data for this project and utilized methods suggested in Special Publication 117A (CDMG 2008), and based on this analysis, concluded that due to the presence of groundwater in the upper 50 feet of soil (measured at 20 to 25 feet bgs) and the density of sand and silt soils, there appears to be a potential for both liquefaction and seismically induced settlement of dry sand to occur at the site (ESP 2018b). Tetra Tech concurs with this finding.

ESP evaluated the potential effects of liquefaction by performing analysis of the CPT data using the site-specific PGA of 0.969 g from the site specific ground motion analysis (Section 6.2.6.3), an earthquake modal magnitude of 7.01 g (USGS 2018c), an assumed historical high groundwater depth of 8 feet bgs (CGS 2002a), and the approximate existing groundwater depth of approximately 20 feet bgs. Based on the analyses presented in Appendix D of ESP's 2018 report (Appendix A), it appears liquefaction occurs in relatively thin discontinuous soil layers as shown on in the cross sections on Figures 4a and 4b. Total liquefaction induced dynamic settlement assuming a groundwater depth of 8 feet ranged between 0.2 to 1.2 inches, and 0.1 to 0.6 inches for a groundwater depth of 20 feet (ESP 2018b).

6.4 SEISMICALLY INDUCED SETTLEMENT OF DRY SAND

Seismically induced settlement of dry sand is also caused by a significant seismic event, and may occur in lower density and sand and silt soils that are not saturated by groundwater. During a major earthquake, the void spaces between the unsaturated soil particles that are filled with air tend to compress which translates to a decrease in volume or settlement (ESP 2018b).

ESP evaluated seismically induced settlement of dry sand as part of the liquefaction evaluation using a reduced or modified PGA value of 2/3 (0.969 g) = 0.646 g. Additionally, the upper 30 inches of soil were neglected in the analyses because the upper 2 to 3 feet of the surface soils had been recently ripped and plowed as part of the on-going agriculture operations at the Site, and these soils will ultimately be removed and replaced as moisture conditioned compacted fill as part of future Site development as recommended later in the "Grading" section ESP's 2018 report. Total seismically induced settlement of dry sand assuming

a groundwater depth of 8 feet ranged between 0 to 0.2 inches, and 0.1 to 0.2 inches for a groundwater depth of 20 feet (ESP 2018b).

6.5 LANDSLIDES/SLOPE INSTABILITY

The Site is relatively flat and is surrounded by flat terrain away from slopes on all sides. On the basis of the July 2, 2018 Site reconnaissance and review of the CGS Seismic Hazards Map for the 7.5 Minute Series Oxnard Quadrangle (CGS 2002b), Figure 2.7.1b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006), the Site is not in an area prone to landslides and slope instability.

6.6 LATERAL SPREADING

Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on gently sloping ground. Based on the results ESP's liquefaction analysis, the potential for loss of soil bearing strength and lateral spreading was determined to be very low. ESP developed the assessment for loss of soil bearing strength by comparing the thickness of the overlying non-liquefiable soils with respect to the depth, the relatively thin thickness, and the discontinuous nature of the underlying liquefiable soils. Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on sloping ground. ESP stated that since a free slope face does not exist within or near the Site, they focused on the sloping ground aspect of lateral spreading. ESP deduced from the Google Earth website that the Site slopes at approximately 0.35 percent from the north to the south. The assessment for lateral spreading was developed by considering the relatively flat to very gently sloping ground surface with respect to the discontinuous nature of the underlying liquefiable soils. ESP concluded that the conditions needed for lateral spreading to occur do not appear to exist at the Site. Tetra Tech concurs with this finding.

6.7 SUBSIDENCE

Subsidence is any settling or sinking of the ground surface over a regional area arising from surface or subsurface causes, such as earthquakes or groundwater and/or oil extraction. Figure 2.8 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the Site is located in an area susceptible to subsidence. The subsidence has been caused by overdraft of the groundwater aquifers that underlie the Oxnard Plain. Although it could occur, it is considered to be an insignificant risk due to the absence of reported problems.

6.8 GROUND LURCHING

Ground lurching occurs when the ground is accelerated during a seismic event. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. Because the Site is within a seismically active area, there is a potential for ground lurching to occur.

6.9 FLOODING

6.9.1 FEMA Map Data

According to the FEMA Flood Insurance Rate Map No. 06111C0910E the Western half of the Site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain , while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA, 2010).

6.10 RESERVOIR FAILURE INUNDATION

A dam that stores more than 1,000 acre-feet of water, is higher than 150 feet, and has the potential to cause downstream property damage is classified as a high hazard dam by FEMA. A review of Section 2.11 and Figures 2.11.1 and 2.11.2 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 4.3.3.1 and Tables 4-5, 4-6, and, 4-7, and Figure 4-3 of the *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California* (County of Ventura 2005) indicates that there are four major reservoirs in the Santa Clara River watershed upstream of the Site that are FEMA high hazard dams that would inundate the Site area in the event of a reservoir failure. Information for each of these four dams is summarized below.

Santa Felicia Dam: The Santa Felicia Dam (Lake Piru) is operated by the United Water Conservation District (UWCD), can hold up to 100,000 acre-feet of water, and is located on Piru Creek approximately 32 miles upstream of the Site (Figure 10). Data provided by the UWCD indicates that the Site would be inundated by flood waters approximately 4 hours after the dam failure (UWCD 1974).

Castaic Dam. The Castaic Dam is operated by the California Department of Water Resources (CDWR), can hold up to 325,000 acre-feet of water, and is located on Castaic Creek approximately 42 miles upstream of the Site (Figure 10). Data provided by the CDWR indicates that the Site would be inundated by flood waters approximately 4 hours after a failure of the Castaic Dam (CDWR 1975).

Pyramid Dam. The Pyramid Dam is operated by the CDWR, can hold up to 179,000 acre-feet of water, and is located on Piru Creek approximately 20 miles upstream of the Santa Felicia Dam and 52 miles upstream of the Site (Figure 10). Data provided by the CDWR indicates that the Site would be inundated by flood waters to depths of 10 to 20 feet approximately 4 hours after a failure of the Pyramid Dam (CDWR 1975).

Bouquet Canyon Dam. The Bouquet Canyon Dam is operated by the Los Angeles Department of Water and Power (LADWP), can hold up to 36,500 acre-feet of water, and is located approximately 57 miles upstream of the Site (Figure 10). Data provided by the LADWP indicates that the Site would be inundated by flood waters approximately 4.5 hours after a failure of the Bouquet Canyon Dam (LADWP 2015).

The need for dam failure disaster planning was demonstrated by the midnight collapse in March 1928 of the St. Francis Dam in Los Angeles County, which occurred after the newly constructed cement arched dam was completely filled for the first time. The ensuing flooding from the dam's total collapse resulted in the loss of over 400 lives in Ventura County as floodwaters washed out homes and structures along the banks of the Santa Clara River. The communities of Piru, Fillmore, Santa Paula, Bardsdale, Saticoy, Montalvo and El Rio sustained extensive life and property loss from the flood (County of Ventura 2013).

More recently, the San Fernando Earthquake in 1971 resulted in ground shaking in the vicinity of the Van Norman Dam in Los Angeles County. As a result of the earthquake, structural damage threatened the dam's immediate collapse. Approximately 80,000 residents in the San Fernando Valley had to be evacuated to areas of safety in the midst of many other earthquake-related emergencies (County of Ventura 2013).

The California's Dam Safety Act (Section 8589.5 California Emergency Services Act) requires the preparation of dam inundation maps showing areas of potential flooding in the event of sudden or total dam failure as well as emergency procedures for notification and evacuation of nearby residents (County of Ventura 2013).

In Ventura County, disaster coordination and planning is the responsibility of the Sheriff's Department through its Office of Emergency Services (OES). Within California's emergency management organizational structure, each county serves as an Operational Area. In this role, Sheriff's OES acts as an agent between Cal OES and the cities (including the City of Oxnard), special districts and unincorporated areas of Ventura County. OES is responsible for countywide disaster planning, mitigation, response and recovery activities. The OES serves as the depository for the County's Dam Inundation Maps and is charged with ongoing maintenance of the County's Dam Failure Response Plan which was adopted by the Board of Supervisors on September 13, 1983. The Dam Failure Response Plan was currently updated by the OES during 2013 (County of Ventura 2013).

6.11 TSUNAMIS

The Site is not likely to be inundated by tsunamis because it is located at an elevation higher than approximately 60 to 65 feet above msl and over 12 miles from the ocean, therefore, tsunamis are not a concern. This finding is supported by information on Figure 2.6 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013).

6.12 SEICHE INUNDATION

As there are no large bodies of water near the Site, seiche is not a concern.

6.13 EXPANSIVE SOILS

6.13.1 USDA Soil Survey

The *Soil Survey, Ventura Area, California* (USDA 1970) indicates that the Huenme sandy loam, and Camarillo sandy loam are non-plastic, have no coefficient of linear extensibility, and no percent expansion rating. Mocho loam, Pico sandy loam and sandy loam substratum have a liquid limit of 25 to 35 percent and a plasticity index of 5 to 10.

6.13.2 2018 ESP Report

The 2018 ESP geotechnical report concluded the upper site soils were judged to be generally nonexpansive; therefore, no special measures with respect to expansive soils are considered necessary (ESP 2018b).

6.14 CORROSIVE SOILS

ESP retained Cerco Analytical to perform laboratory testing for resistivity, chloride, and sulfate soil content. Based on the testing performed by Cerco Analytical, the upper site soils were classified as "corrosive" to certain construction materials that will be in contact with the soils. The ESP report recommended that the architect/engineer should refer to the Cerco Analytical report presented in Appendix C of the 2018 ESP report for use in determining appropriate mitigation measures for the soil's corrosivity (Appendix A) (ESP 2018b).

6.15 ASBESTOS-CONTAINING ROCKS

Tetra Tech has reviewed available topographic and geologic maps for the Site area and *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDMG 2000) for potential sources of naturally occurring asbestos (NOA) and believes the risk for NOA at the proposed High School No. 8 site is low. The nearest sources of NOA are in the Santa Ynez River watershed in the Santa Ynez Mountains, approximately 30 miles northwest of the Site. NOA sources are not known to exist in the Santa Clara River watershed.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the work performed for this geohazard assessment, Tetra Tech makes the following conclusions and recommendations regarding potential geohazards at the Site.

7.1 SITE SUITABILITY

The results of the geohazard assessment and the ESP geotechnical investigation indicate the Site is suitable for the proposed High School No. 8 project. Tetra Tech recommends that the ESP conclusions and recommendations for design and construction at the Site be implemented (ESP 2018b).

7.2 SITE PREPARATION AND GRADING

Tetra Tech recommends that the conclusions and recommendations in the 2018 ESP Report (ESP 2018b) (Appendix A) for Site Preparation and Grading be implemented.

7.3 SEISMIC DESIGN CONSIDERATIONS

It is our understanding that the proposed school will be designed in accordance with the current standards of the 2016 CBC (ICC 2017). Seismic data that can be used with the 2016 CBC are included in this report.

7.4 GEOLOGIC HAZARDS

7.4.1 Surface Fault Rupture

Data reviewed for this report do not indicate that the Site is located in an AP Fault Zone nearest the Site is along the Los Alamos-Baseline fault approximately 13.2 miles to the south. The closest known active fault to the Site and AP Fault Zone is the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site. Based on these data, there is a low potential for surface fault rupture to occur at the Site.

No geomorphic evidence for surface fault rupture at the Site was noted in reviews of historical aerial photographs or during the July 2, 2018 Site reconnaissance.

7.4.2 Liquefaction and Seismic Settlement

ESP evaluated the liquefaction potential at the Site in accordance with the 2016 CBC (ICC 2017) and the methods in the *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A* (Special Publication 117A) (CGS 2008). Based on the analyses presented in Appendix D of ESP's 2018 report (Appendix A), it appears liquefaction occurs in relatively thin discontinuous soil layers as shown on in the cross sections on Figures 4a and 4b. Total liquefaction induced dynamic settlement assuming a groundwater depth of 8 feet ranged between 0.2 to 1.2 inches, and 0.1 to 0.6 inches for a groundwater depth of 20 feet (ESP 2018b).

7.4.3 Seismically Induced Settlement of Dry Sand

ESP's analysis of the seismically induced settlement of dry sand is presented in Appendix D of their 2018 Geotechnical Engineering Report (ESP 2018b) (Appendix A). Total seismically induced settlement of dry sand assuming a groundwater depth of 8 feet ranged between 0 to 0.2 inches, and 0.1 to 0.2 inches for a groundwater depth of 20 feet (ESP 2018b).

7.4.4 Landslides/Slope Instability

On the basis of the July 2, 2018 Site reconnaissance and review of the CGS Seismic Hazards Map for the 7.5 Minute Series Oxnard Quadrangle (CGS 2002b), Figure 2.7.1b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006), the Site is not in an area prone to landslides and slope instability.

7.4.5 Lateral Spreading

ESP's evaluated the potential for lateral spreading to occur at the Site and based on the liquefaction analysis found that the potential for loss of soil bearing strength and lateral spreading was determined to be very low. ESP stated that since a free slope face does not exist within or near the site, they focused on the sloping ground aspect of lateral spreading. ESP concluded that the conditions needed for lateral spreading to occur do not appear to exist at the site. Tetra Tech concurs with this finding.

7.4.6 Subsidence

Figure 2.8 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the Site is located in an area susceptible to subsidence. The subsidence has been caused by overdraft of the groundwater aquifers that underlie the Oxnard Plain. Although it could occur, it is considered to be an insignificant risk due to the absence of reported problems.

7.4.7 Flooding

FEMA Flood Insurance Rate Map No. 06111C0910E indicates that the Western half of the Site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain , while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA, 2010).

7.4.8 Reservoir Failure Inundation

A review of Section 2.11 and Figures 2.11.1 and 2.11.2 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 4.3.3.1 and Tables 4-5, 4-6, and, 4-7, and Figure 4-3 of the *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California* (County of Ventura 2005) indicates that there are four major reservoirs in the Santa Clara River watershed upstream of the Site that are FEMA high hazard dams that would inundate the Site area in the event of a reservoir failure. Tetra Tech recommends that the OUHSD develop and implement a Site specific flooding evacuation plan to be implemented in conjunction with the County of Ventura OES Dam Failure Response Plan.

7.4.9 Tsunamis

The Site is not likely to be inundated by tsunamis because it is located at an elevation higher than approximately 60 to 65 feet above msl and over 12 miles from the ocean, therefore, tsunamis are not a concern. This finding is supported by information on Figure 2.6 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013).

7.4.10 Seiche Inundation

As there are no large bodies of water near the Site, seiche is not a concern.

7.4.11 Expansive Soils

The 2018 ESP geotechnical report concluded the upper site soils were judged to be generally nonexpansive; therefore, no special measures with respect to expansive soils are considered necessary (ESP 2018b).

7.4.12 Corrosive Soils

The 2018 Cerco Analytical report in Appendix C of the 2018 ESP report (Appendix A) indicated that the upper site soils were classified as "corrosive" to certain construction materials that will be in contact with the soils. The ESP report recommended that the architect/engineer should refer to the Cerco Analytical report presented in Appendix C of the 2018 ESP report for use in determining appropriate mitigation measures for the soil's corrosivity (Appendix A) (ESP 2018b).

7.4.13 Asbestos Containing Rocks

Based on review of available topographic and geologic maps for the Site area and *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDMG 2000) the risk for NOA in the soils of the proposed High School No. 8 site is low.

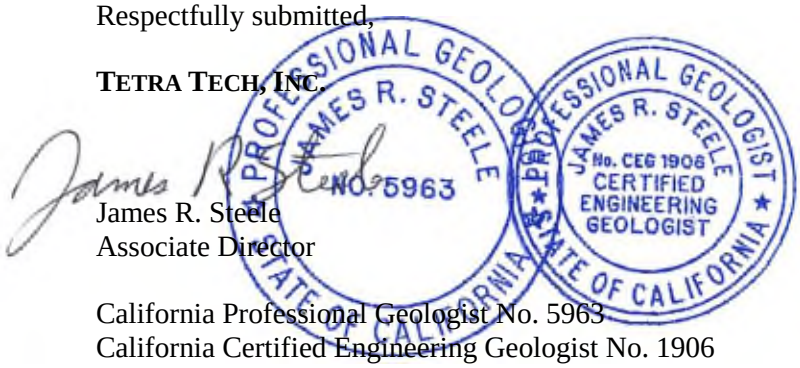
8.0 DISCLAIMER

This report was compiled based partially on information supplied to Tetra Tech from outside sources and other information, which is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others which may be contained in the report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for the report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under local, state, or federal laws or any modifications or changes to such laws.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

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9.0 REFERENCES

American Society of Civil Engineers (ASCE)

2013 *Standard 7-10, Minimum Design Loads for Buildings and other Structures (7-10, third printing).*

California Department of Conservation, Division of Mines and Geology (CDMG)

1998a *Earthquake Fault Zones, Camarillo Quadrangle Official Map, Ventura County, California*. May 1.

California Department of Conservation, Division of Mines and Geology (CDMG)

1998b *Earthquake Fault Zones, Santa Paula Quadrangle, Official Map Ventura County, California*. May 1.

California Department of Conservation, Division of Mines and Geology (CDMG)

2000 *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. April.

California Department of Conservation, California Geological Survey (CGS)

2002a *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

California Department of Conservation, California Geological Survey (CGS)

2002b *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map.* December 20.

California Department of Conservation, California Geological Survey (CGS)

2007 *Special Publication 42. Fault-Rupture Hazard Zones In California, Alquist–Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*. Interim Revision.

California Department of Conservation, Division of Mines and Geology (CGS)

2008 *Special Publication 117A Guidelines for Evaluating and Mitigating Seismic Hazards in California.*

California Department of Conservation, California Geological Survey (CGS)

2014 *Note 48. Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*. October.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2001 Map 214. February 14.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2018 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.)

California Department of Education (CDE)

2007 *Guidance Protocol for School Site Pipeline Risk Analysis*.

California Department of Education (CDE)
2016 *School Site Selection and Approval Guide.* June 21. http://www.cde.ca.gov/ls/fa/sf/schoolsiteguide.asp.

California Department of Water Resources (CDWR)
1975 Inundation Map for Castaic Dam. February 28.

California Department of Water Resources (CDWR)
1975 Inundation Map for Pyramid Dam.

California Department of Water Resources (CDWR)
1975 Inundation Map for Castaic Dam. February 28.

City of Oxnard
2006 *City of Oxnard General Plan Draft Background Report*. April.

County of Ventura
2005 *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California*. March.

Costa, J.E., and V.R. Baker
1981 *Surficial Geology, Building With the Earth.* John Wiley & Sons, Canada.

County of Ventura
2013 *Ventura County General Plan Hazards Appendix.* 2008, Amended October 22, 2013.

Earth Systems Pacific (ESP)
2018a *Preliminary Foundation Design Parameters and Infiltration Testing Report*. May 15.

Earth Systems Pacific (ESP)
2018b *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California.* August 31.

Environmental Data Resources, Inc. (EDR)
2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Federal Emergency Management Agency (FEMA)
2010 Flood Insurance Rate Map No. 06111C0910E. May 16.

Fugro
2018 EZ-FRISK Seismic Hazard Analysis Program. May 9 – August 9.

Gutierrez, Carlos I., Siang, Tan S. and Clahan, Kevin B.
2008 *Geologic Map of the East Half of the Santa Barbara 30' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

International Code Council (ICC)
2017 2016 California Building Code (CBC). January 1.

Jennings, Charles W.
1994 *Fault Activity Map of California and Adjacent Areas,* California Department of Conservation, Division of Mines and Geology California Geologic Data Map Series Map No. 06.

Jennings, Charles W, William A Bryant, and George Saucedo.
2010 *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California.*

Jensen Design and Survey, Inc.
2018 *Northeast Community Specific Plan, Maulhardt Property Urban Village Site Plan*. June 20.

Los Angeles Department of Water and Power (LADWP)
2015 Inundation Map of Boquet Dam.

Norris, R.M. and Webb, R.W.
1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Oakeshott, Gordon B.
1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

Ross, Stephanie L., David M. Boore, Michael A. Fisher, Arthur D. Frankel, Eric L. Geist, Kenneth W. Hudnut, Robert E. Kayen, Homa J. Lee, William R. Normark, and Florence L. Wong
2004 *Comments on Potential Geologic and Seismic Hazards Affecting Coastal Ventura County, California.* U.S. Department of the Interior, U.S. Geological Survey Open File Report 2004-1286.

Tetra Tech, Inc. (Tetra Tech)
2018 *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on north Rose Avenue, Oxnard, California*. March 29.

Treiman, Jerome A.
1997 *Springville, Camarillo and Related Faults in the Camarillo and Santa Paula Quadrangles, Ventura County, California*. California Division of Mines and Geology (CDMG) Fault Evaluation Report FER-237. September 23.

Turner, John, and Mike Mukae
1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

United Water Conservation District
1974 *Inundation Map of Santa Felicia Dam*. January.

U.S. Department of Agriculture, Soil Conservation Service (USDA)
1970 *Soil Survey of Ventura Area, California.* July.

U. S. Geological Survey (USGS)
2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program
2018a U.S. Seismic Design Maps. https://earthquake.usgs.gov/hazards/designmaps/. July.

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program
2018b Search Earthquake Catalogue. https://earthquake.usgs.gov/earthquakes/search/. September.

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program
2018c Unified Hazards Tool. https https://earthquake.usgs.gov/hazards/interactive/. September.

U.S. Department of the Interior, Geological Survey (USGS) and California Geological Survey (CGS)
2007 *Appendix A: California Fault Parameters for the National Seismic Hazards Maps and Working Group on California Earthquake Probabilities.*

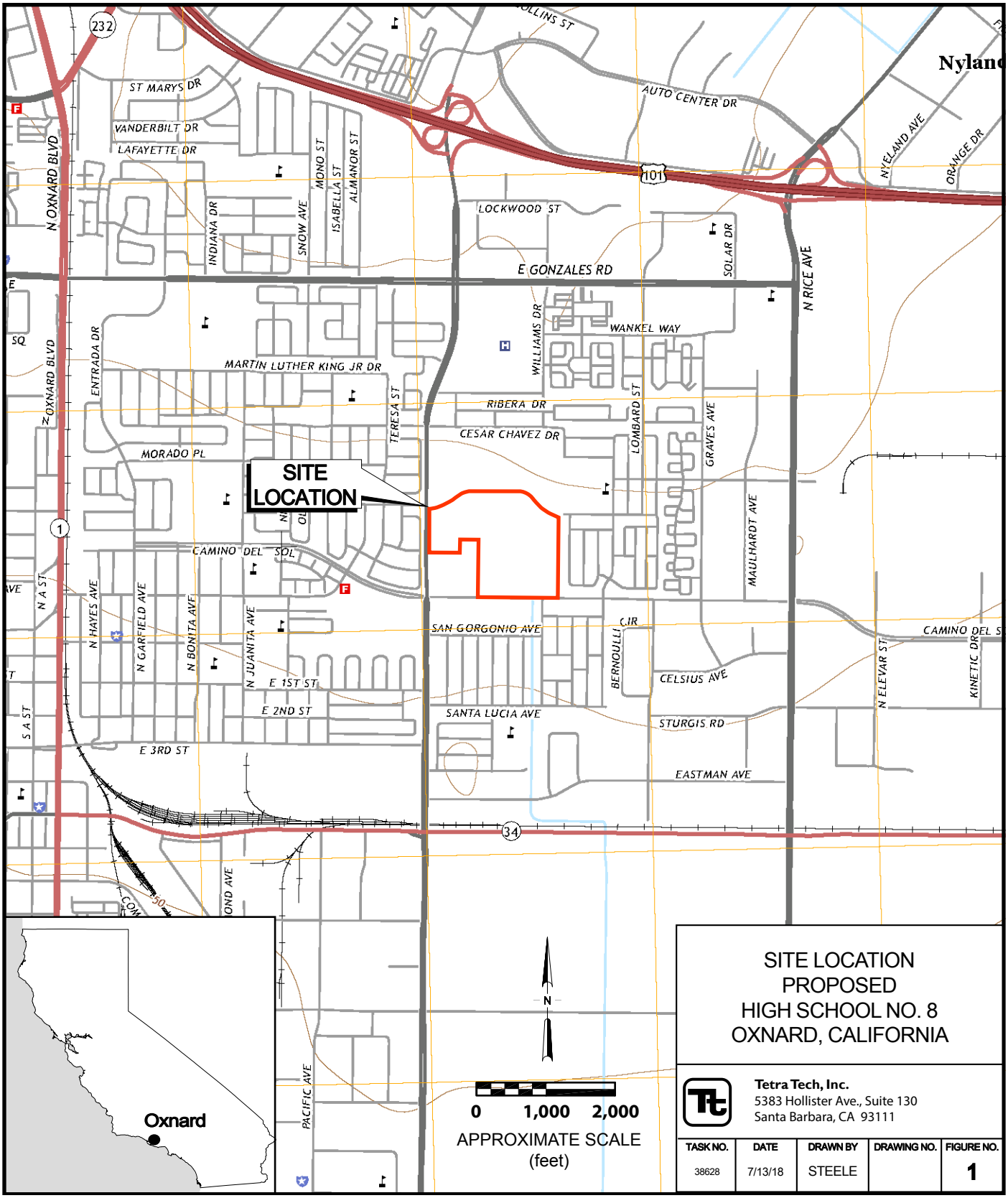
U.S. Department of the Interior, Geological Survey (USGS) and California Geological Survey (CGS)
2008 *The Uniform California Earthquake Rupture Forecast, Version 2 (UCEFR 2)*.

Ventura County Public Works Department (VCPWA)
1975 *Ventura County Water Resources Management Study, Aquifer Delineation in the Oxnard-Calleguas Area, Ventura County*

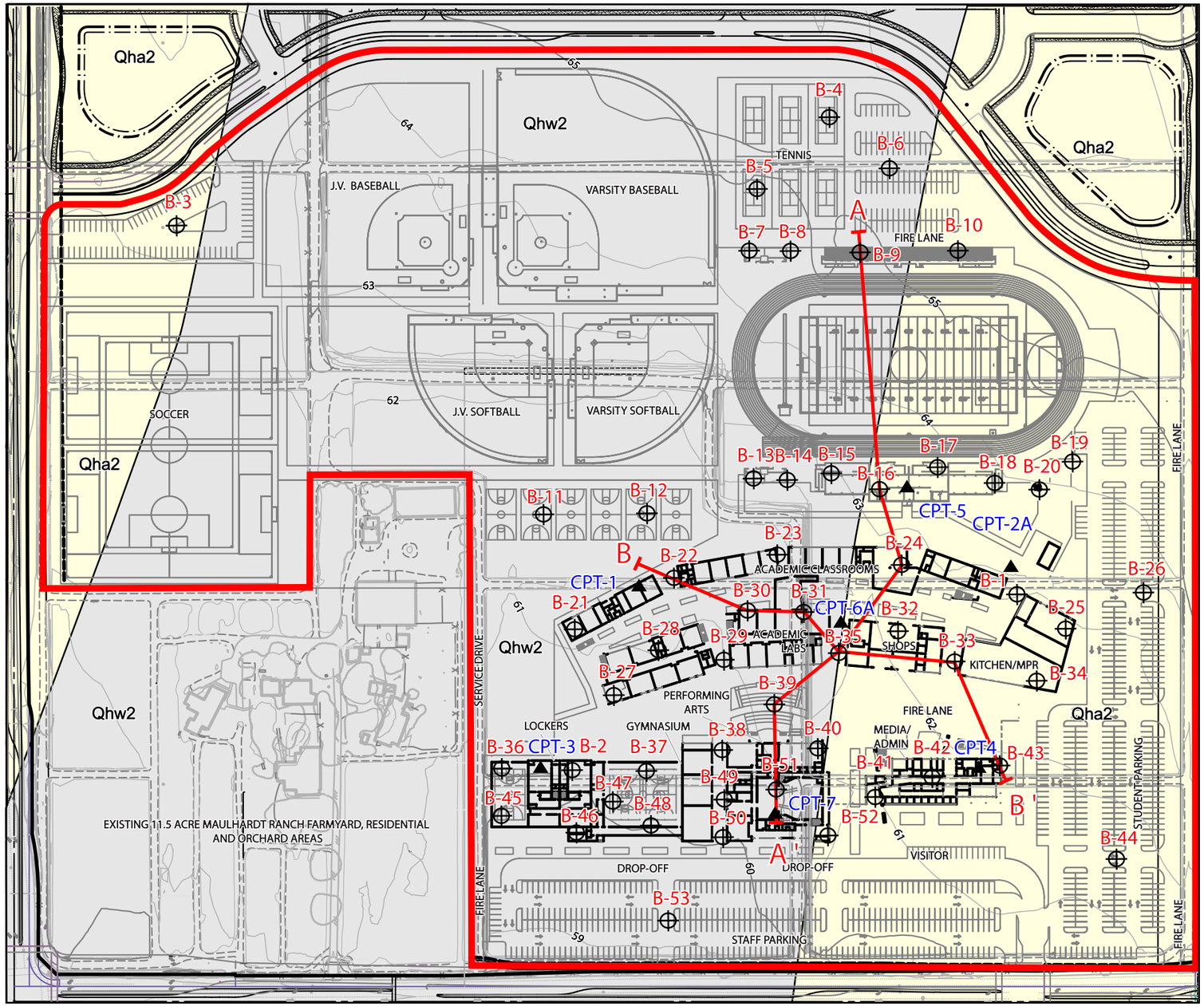
Wikipedia
2018 *Oxnard, California*. https://en.wikipedia.org/wiki/Oxnard,_California

WLC Architects
2018 Overall Site Plan. June 18.

FIGURES



Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Boundary

A — A' Line of Cross Section (Refer to Figures 4A and 4B)

63 Surface Elevation Contour Feet Above Mean Sea Level

Borings and Soundings

- Hollow Stem Auger (HSA) Exploratory Soil Boring
- ▲ Cone Penetrometer Test (CPT) Sounding

Geologic Formations

Qhw2 Holocene Alluvial Wash Deposits, Associated With Qha2

Qha2 Holocene Alluvium and Colluvial Deposits, Associated With Qhw2

Notes:

1) All features locations, including borings, CPT soundings,building, utility, and boundary locations are approximate.

2) The geologic formations are based on the *Geologic Map of the Santa Barbara 30' x 60' Quadrangle, California* (Gutierrez, et al. 2008)

3) The map shows the proposed school campus features superimposed on the existing Maulhardt Ranch facilities and is based on the *Northeast Community Specific Plan Maulhardt Property Urban Village Site Plan* (Jensen Design and Survey June 20, 2018).

N

0 100 200 400

Feet

SITE PLAN/GEOLOGIC MAP
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	10/04/2018	JRS		2

CALIFORNIA GEOLOGICAL SURVEY
JOHN G. PARRISH, Ph.D., STATE GEOLOGIST

STATE OF CALIFORNIA - ARNOLD SCHWARZENEGGER, GOVERNOR
THE RESOURCES AGENCY - MIKE CHRISMAN, SECRETARY
DEPARTMENT OF CONSERVATION - BRIDGETT LUTHER, DIRECTOR



Base Map

Shaded topographic base and hypsography from U.S.G.S. digital elevation models (DEM's). Bathymetric contours from NOAA bathymetry DEM. Projection is UTM, zone 11, North American Datum 1927.

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The Department of Conservation makes no warranties as to the suitability of this product for any particular purpose.

SCALE 1:100,000

2 0 2 4 6 Miles

2 0 2 4 6 Kilometers

Contour Interval: 50 meters (approximately 164 feet)
Bathymetric Contour Interval: 50 meters (approximately 164 feet)



APPROXIMATE MEAN DECLINATION, 2008

Geology compiled 2008

This map was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program, STATEMAP Award no. 07HQAG0143

REGIONAL GEOLOGIC MAP
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

JOB NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
38628	07/24/18	STEELE		3A

GEOLOGIC MAP OF THE EAST HALF SANTA BARBARA 30' × 60' QUADRANGLE, CALIFORNIA

Compiled by

Carlos I. Gutierrez[1], Siang S. Tan[1], and Kevin B. Clahan[1]

2008

Digital preparation by

Carlos I. Gutierrez[1] and Karen Toman-Sager[1]

1. Department of Conservation, California Geological Survey

ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only;
see pamphlet for more detailed information

Holocene

- af — Artificial fill (Holocene)
- alf — Artifical levee fill (Holocene)
- Qb — Active beach deposits (Holocene)
- Qe — Active coastal eolian (sand dune) deposits (Holocene)
- Qes — Active coastal estuarine deposits (Holocene)
- Qw — Active wash deposits within major river channels (Holocene)
- Qw_1 — Historically active wash deposits adjacent to active channel (Holocene)
- Qhw_3 — Wash deposits Unit 3 (Holocene), associated with units Qht_3 and Qha_3
- Qhw_2 — Wash deposits Unit 2 (Holocene), associated with unit Qha_2
- Qhw_1 — Wash deposits Unit 1 (Holocene), associated with units Qht_1 and Qha_1
- Qhfy — Alluvial fan deposits (latest holocene)
- Qhf — Alluvial fan deposits (Holocene)
- Qhff — Alluvial fan deposits, fine facies (Holocene)
- Ql — Lacustrine deposits (Holocene)
- Qls — Landslide deposits (Holocene to Pleistocene)
- Qha — Alluvial deposits and colluvial deposits, associated with Qw (Holocene)
- Qha_3 — Unit 3, associated with unit Qhw_3
- Qha_2 — Unit 2, associated with unit Qhw_2
- Qha_1 — Unit 1, associated with unit Qhw_1
- Qht — Stream terrace deposits, associated with unit Qw (latest Holocene)
- Qht_3 — Unit 3, associated with unit Qhw_3
- Qht_1 — Unit 1, associated with unit Qhw_1
- Qhps — Paralic deposits of the Sea Cliff marine terrace (Holocene)

Pleistocene

- Qf — Alluvial fan deposits (late Pleistocene)
- Qppp — Paralic deposits of Punta Gorda marine terrrace (Pleistocene)
- Qpmw — Undivided mass-wasting deposits (Pleistocene)
- Qpa — Alluvial deposits, undivided (late Pleistocene)
- Qpa_2 — Unit 2
- Qpa_1 — Unit 1
- Qpf — Alluvial fan deposits (late to middle Pleistocene)
- Qpf_2 — Unit 2
- Qpf_1 — Unit 1
- Qoa — Alluvial deposits (early to middle Pleistocene)
- Qca — Casitas Formation (Pleistocene)
- Qs — Saugus Formation (Pleistocene)
- Qlp — Las Posas Formation (Pleistocene)
- Qsb / Qsbc — Santa Barbara Formation (Pleistocene)
  - Qsbc - conglomerate

Pliocene

- Tps / Tpsc — Pico Formation (Pliocene) (Tp)
  - Tp - undivided
  - Tps -sandstone
  - Tpsc - sandstone and conglomerate
- Tsq — Sisquoc Formation (Pliocene-Miocene)

Miocene

- Ta — Andesite sill (Miocene)
- Tcvai — Conejo Volcanics, andesitic (middle Miocene)
- Tcvdi — Conejo Volcanics, dacitic (middle Miocene)
- Tcvb — Conejo Volcanics, basaltic (middle Miocene)
- Tcvbs — Conejo Volcanics, interbedded with sandstone and siltstone (middle Miocene)
- Tcvbb — Conejo Volcanics, basaltic flow breccias (middle Miocene)
- Tcvab — Conejo Volcanics, andesitic flow breccias (middle Miocene)
- Tcvdb — Conejo Volcanics, dacitic flow breccias (middle Miocene)
- Tcvadb — Conejo Volcanics, mix of andesitic and dacitic flow breccias (middle Miocene)
- Tdb — Undivided diabase and mafic hypabyssal intrusive rocks (Miocene)
- Tmyu / Tmyl (Tmy) — Monterey Formation (middle and late Miocene)
  - Tmy - undivided
  - Tmyu - upper
  - Tmyl - lower
- Tm / Tmb — Modelo Formation (Miocene)
  - Tmb - burnt rock
- Tr — Rincon Shale (Miocene)
- Tt / Tts — Topanga Formation (middle to early Miocene)
  - Tts - dominantly sandstone
- Tv / Tvs — Vaqueros Sandstone (early Miocene)
  - Tvs - dominantly sandstone

Oligocene

- Ts — Sespe Formation (Oligocene)

Eocene

- Tcw / Tcwsh — Coldwater Sandstone (late Eocene)
  - Tcwsh - dominantly shale
- Tcd — Cozy Dell Shale (late Eocene)
- Tma / Tmash — Matilija Sandstone (middle to late Eocene)
  - Tmash - micaceous shale
- Tj / Tjs — Juncal Formation (early to middle Eocene)
  - Tjs - dominantly arkosic sandstone

Cretaceous

- Ku — Unnamed conglomerate (late Cretaceous)

SYMBOL EXPLANATION

- Contact between map units - Solid where accurately located, dashed where approximately located; dotted where concealed; queried where uncertain.
- Fault - Solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed, queried where uncertain. Ball and bar on downthrown block. Arrow and number indicate direction and angle of dip of fault plane.
- Contact between similar map units; approximately located.
- Inferred shoreline angle of marine terraces.
- Erosional scarps in terraced alluvial units; hatchures point towards topograhically lower surfaces
- Anticline - Solid where accurately located, dashed where approximately located, dotted where concealed, queried where uncertain, arrow indicates direction of plunge.
- Overturned Anticline - Solid where accurately located, dotted where concealed, queried where uncertain.
- Syncline - Solid where accurately located, dotted where concealed, queried where uncertain arrow indicates direction of plunge.
- Overturned Syncline - Solid where accurately located, dotted where concealed, queried where uncertain.

Strike and dip of sedimentary beds:

- Inclined bedding
- Vertical bedding
- Overturned bedding
- Landslide - arrow indicates principal direction of movement; hachured where headscarp is mappable. The existence of some landslides may be questionable; .

Prepared in cooperation with the U.S. Geological Survey, Southern California Areal Mapping Project.

ABBREVIATED INDEX TO GEOLOGIC SOURCE DATA

See pamphlet for complete citation

Anacapa Island
Dibblee, 2001.

Camarillo Quadrangle
Bailey, 1951; Dibblee and Ehrenspeck, 1990a; Gamble, 1957; Hitchcock and others, 2000; Jakes, 1979; Pasta, 1958; Tan and others, 2004a; Williams, 1977.

Matilija Quadrangle
Barnard, 1979; Dibblee, 1987a; Moser and Frizzell, 1983; Tan and Jones, 2006; Weber and others, 1973; William Lettis and Associates, 2001.

Ojai Quadrangle
Dibblee, 1987b; Morton, 1976; Moser and Frizzell, 1983; Tan and Irvine, 2005a; Weber and others, 1973; William Lettis and Associates, 2000.

Oxnard Quadrangle
Clahan, 2003; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Sarna-Wojcicki and others, 1976.

Pitas Point Quadrangle
Dibblee, 1988; Hitchcock and others, 2000; Tan and others, 2003a.

Point Mugu Quadrangle
Dibblee and Ehrenspeck, 1990b; Gamble, 1957; Hitchcock and others, 2000; Tan and Clahan, 2003.

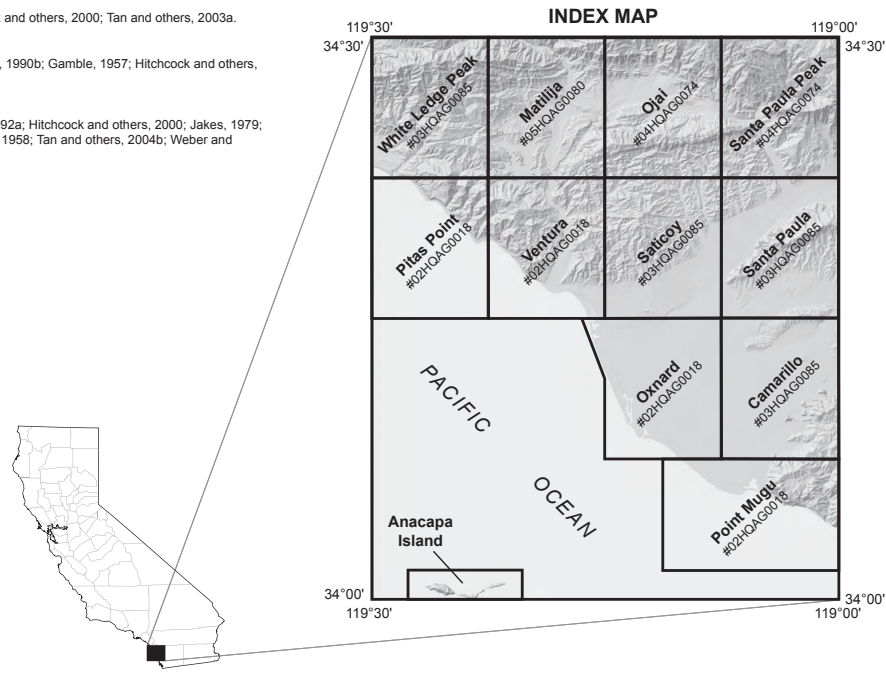
Santa Paula Quadrangle
Bailey, 1951; Dibblee, 1992a; Hitchcock and others, 2000; Jakes, 1979; Lung, 1958; Morton, 1976; Pasta, 1958; Tan and others, 2004b; Weber and others, 1973.

Santa Paula Peak Quadrangle
Dibblee, 1990; Morton, 1976; Tan and Irvine, 2005b; Weber and others, 1973; William Lettis and Associates, 2000.

Saticoy Quadrangle
Dibblee, 1992b; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Morton, 1976; Sarna-Wojcicki and others, 1976; Tan and others 2004c; Weber and others, 1973; Yerkes and others, 1987.

Ventura Quadrangle
Dibblee, 1988; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Sarna-Wojcicki and others, 1976; Tan and others, 2003b; Yerkes and others, 1987.

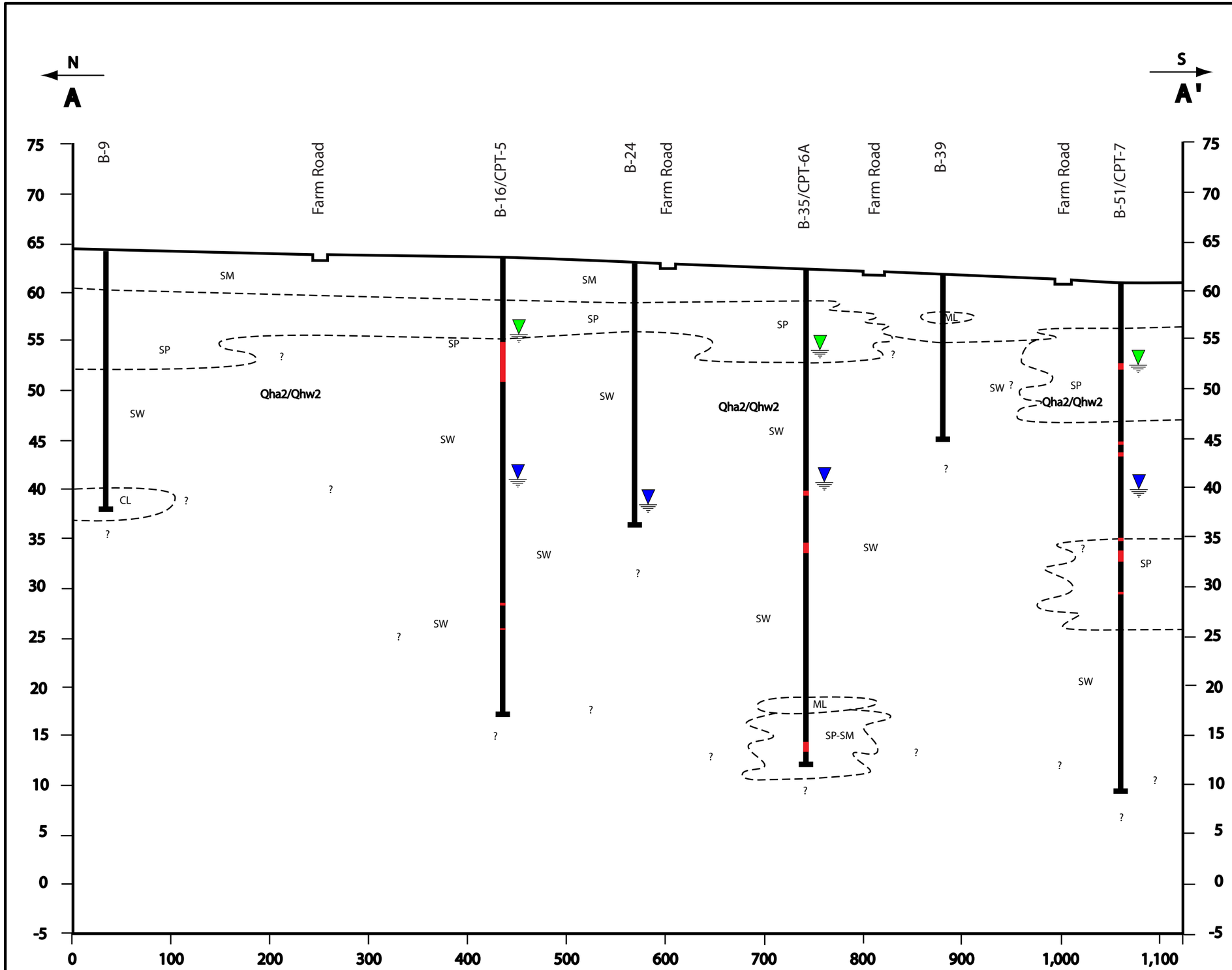
White Ledge Peak Quadrangle
Dibblee, 1982, 1987c; Moser and Frizzell, 1983; Tan and Clahan, 2004; Upson, 1951.



REGIONAL GEOLOGIC MAP KEY HIGH SCHOOL NO. 8 OXNARD, CALIFORNIA

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39628	07/24/18	STEELE		3B



LEGEND

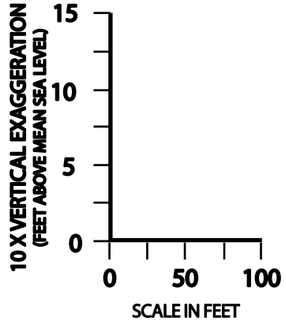
- GROUND SURFACE
- SOIL BORING
- POTENTIALLY LIQUEFIABLE SOIL INTERVAL FROM CPT DATA
- ESTIMATED HIGHEST HISTORIC GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION DURING JULY 2018

SOIL CLASSIFICATION SYMBOLS

Qha2/Qhw2	HOLOCENE WASH, ALLUVIAL, AND COLLUVIAL DEPOSITS (GUTIERREZ, ET AL. 2008)
?	APPROXIMATE SOIL TYPE CONTACT, QUERIED WHERE UNCERTAIN

UNITED SOIL CLASSIFICATION SYSTEM

SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SM	SILTY SAND
SP-SM	POORLY GRADE SAND WITH SILT
CL	LEAN CLAY
ML	SILT



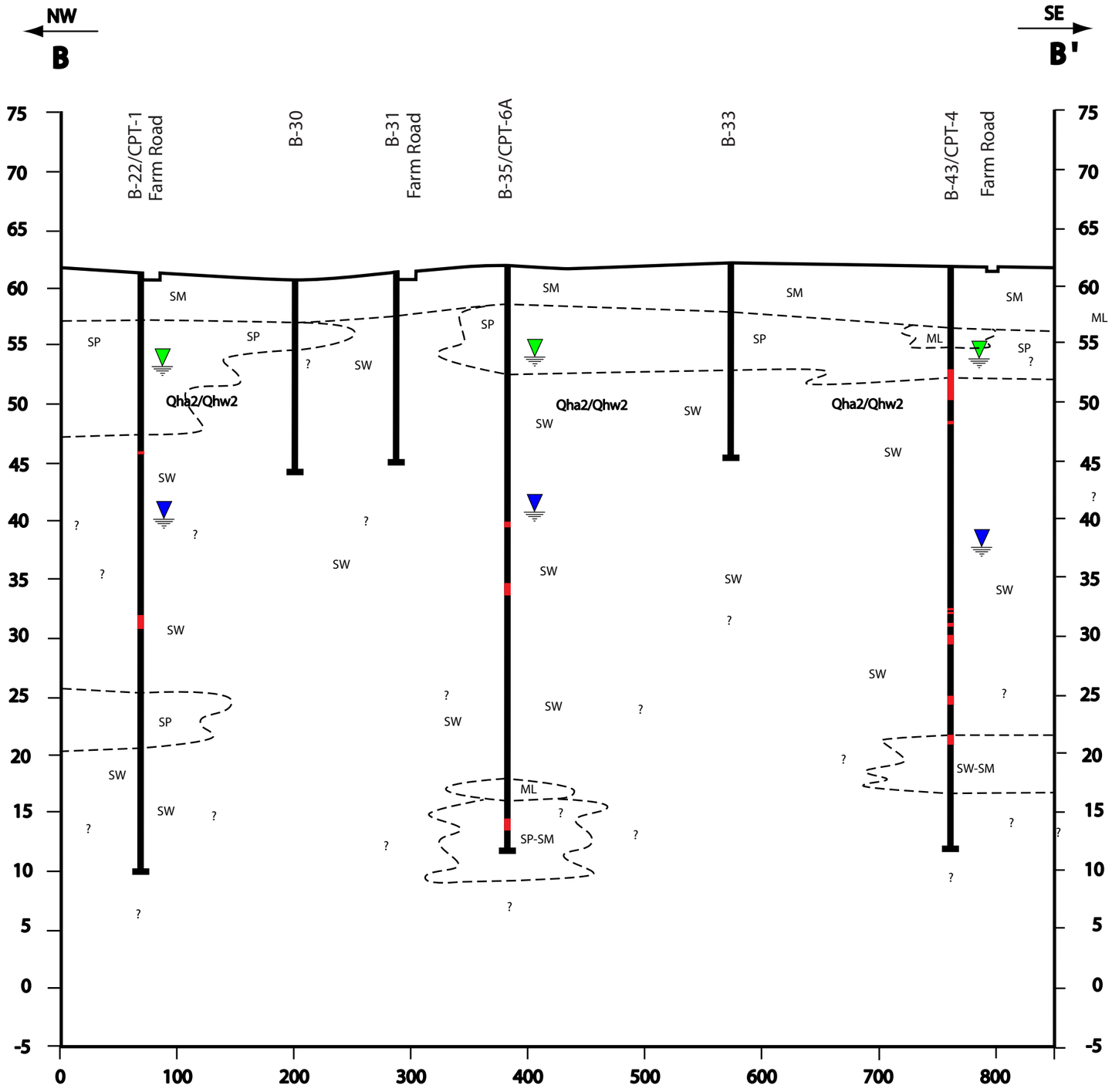
Notes:
1) The lines of cross section are shown on Figure 2.
2) The depiction of the ground surface and all elevations are approximate.
3) The cross sections are constructed from boring logs prepared by Earth System Pacific (Earth System Pacific 2018).

High School No. 8
Oxnard Union High School District
Oxnard, California

Cross Section A-A '

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TC NO.	DATE	DRAWN BY	DWG NO.	FIGURE
38628-06	10/6/18	STEELE		4A



LEGEND

GROUND SURFACE

SOIL BORING

POTENTIALLY LIQUEFIABLE SOIL INTERVAL FROM CPT DATA

ESTIMATED HIGHEST HISTORIC GROUNDWATER ELEVATION

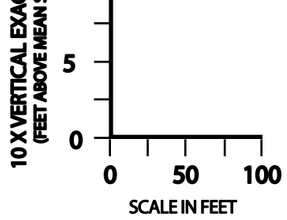
GROUNDWATER ELEVATION DURING JULY 2018

SOIL CLASSIFICATION SYMBOLS

Qha2/Qhw2	HOLOCENE WASH, ALLUVIAL, AND COLLUVIAL DEPOSITS (GUTIERREZ, ET AL. 2008)
?	APPROXIMATE SOIL TYPE CONTACT, QUERIED WHERE UNCERTAIN

UNITED SOIL CLASSIFICATION SYSTEM

SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SM	SILTY SAND
SP-SM	POORLY GRADED SAND WITH SILT
SW-SM	WELL GRADED SAND WITH SILT
ML	SILT



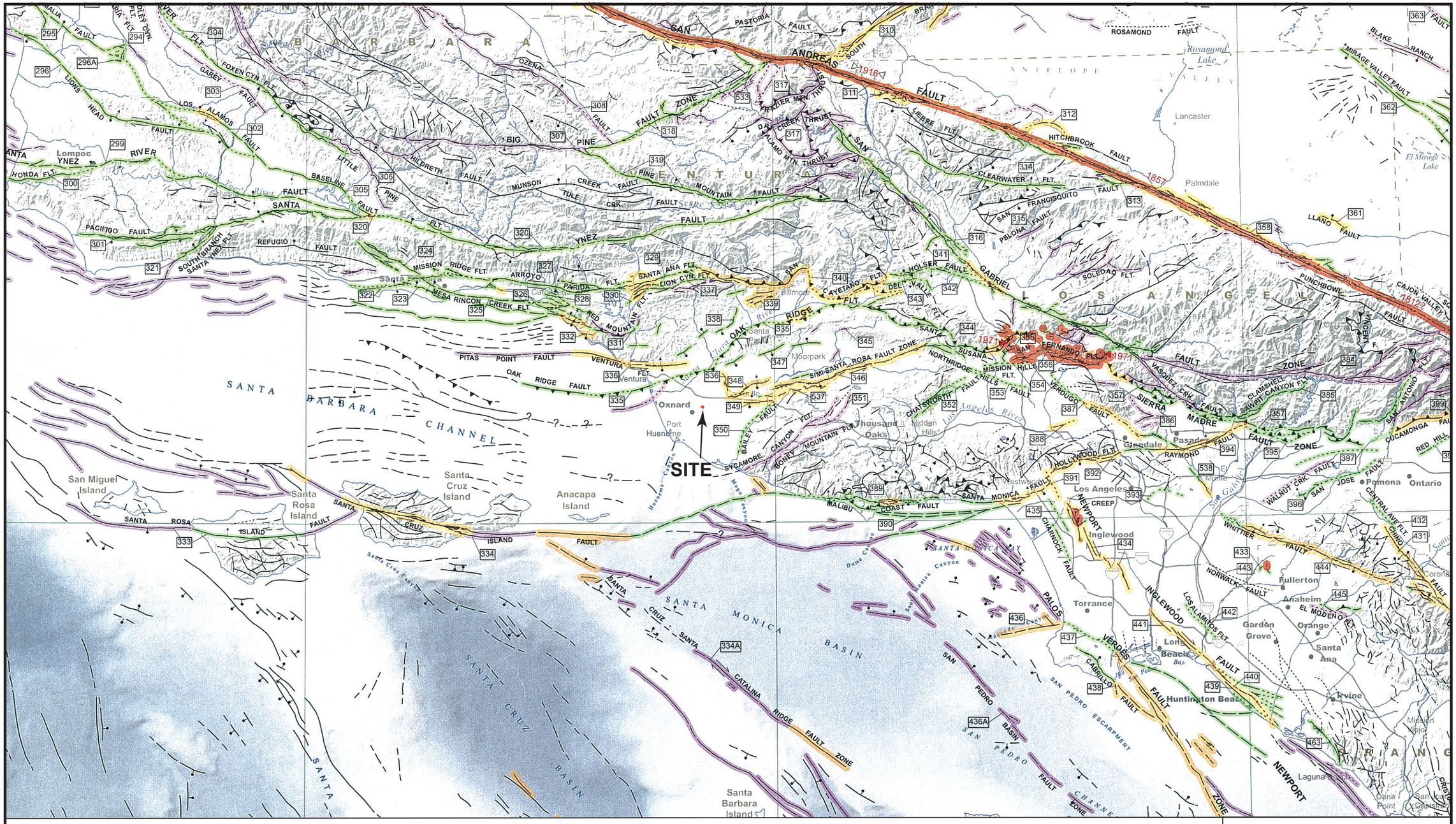
Notes:
1) The lines of cross section are shown on Figure 2.
2) The depiction of the ground surface and all elevations are approximate.
3) The cross sections are constructed from boring logs prepared by Earth System Pacific (Earth System Pacific 2018).

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Oxnard Union High School District
Oxnard, California

Cross Section B-B '

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TC NO.	DATE	DRAWN BY	DWG NO.	FIGURE
38628-06	10/6/18	STEELE		4B



NOTE: Map Explanation shown on Figures 5a through 5c.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

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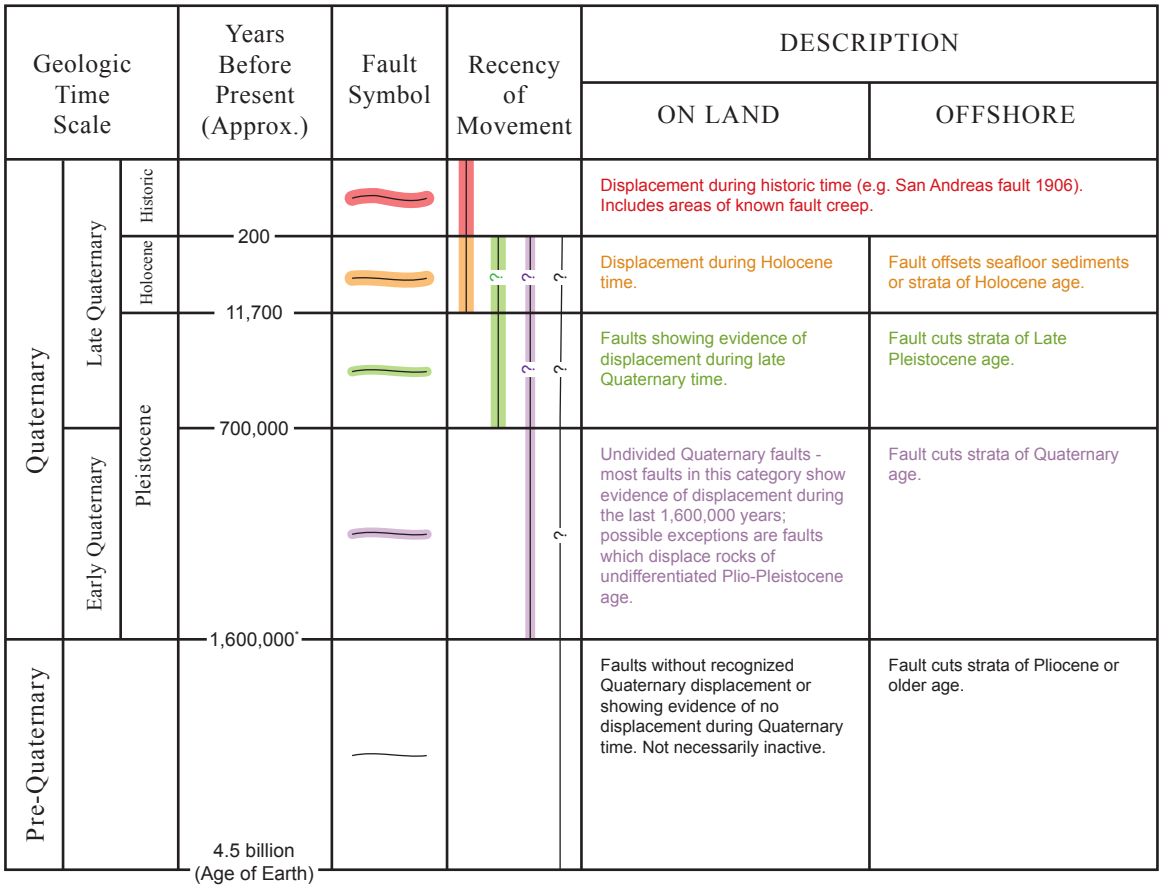
0 12

APPROXIMATE SCALE IN MILES

REGIONAL FAULT MAP
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

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TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
38628	07/23/18	STEELE		5A



* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

REGIONAL FAULT MAP EXPLANATION
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38628	07/23/18	STEELE		5B

FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines.



A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.



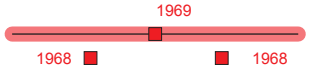
Date bracketed by triangles indicates local fault break.



No triangle by date indicates an intermediate point along fault break.



Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.



Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).



Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.



Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.



Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.



Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

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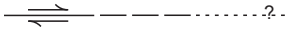
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TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
38628	07/23/18	STEELE		5C

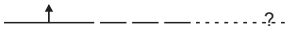
ADDITIONAL FAULT SYMBOLS



Bar and ball on downthrown side (relative or apparent).



Arrows along fault indicate relative or apparent direction of lateral movement.

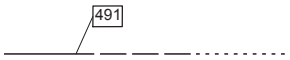


Arrow on fault indicates direction of dip.



Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

OTHER SYMBOLS



Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.

Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks.



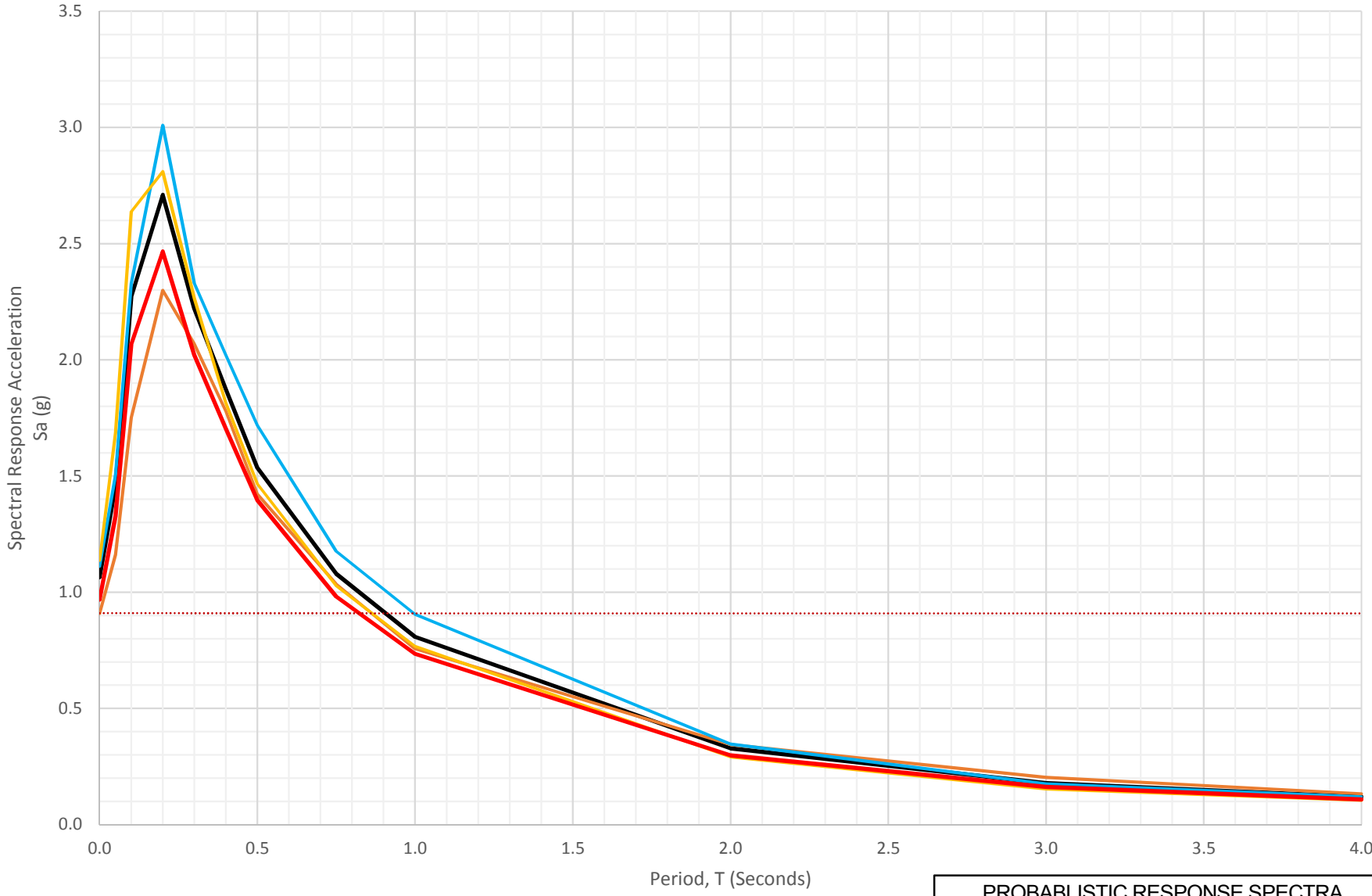
Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

REGIONAL FAULT MAP EXPLANATION
HIGN SCHOOL NO. 8
OXNARD, CALIFORNIA

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Santa Barbara, CA 93111

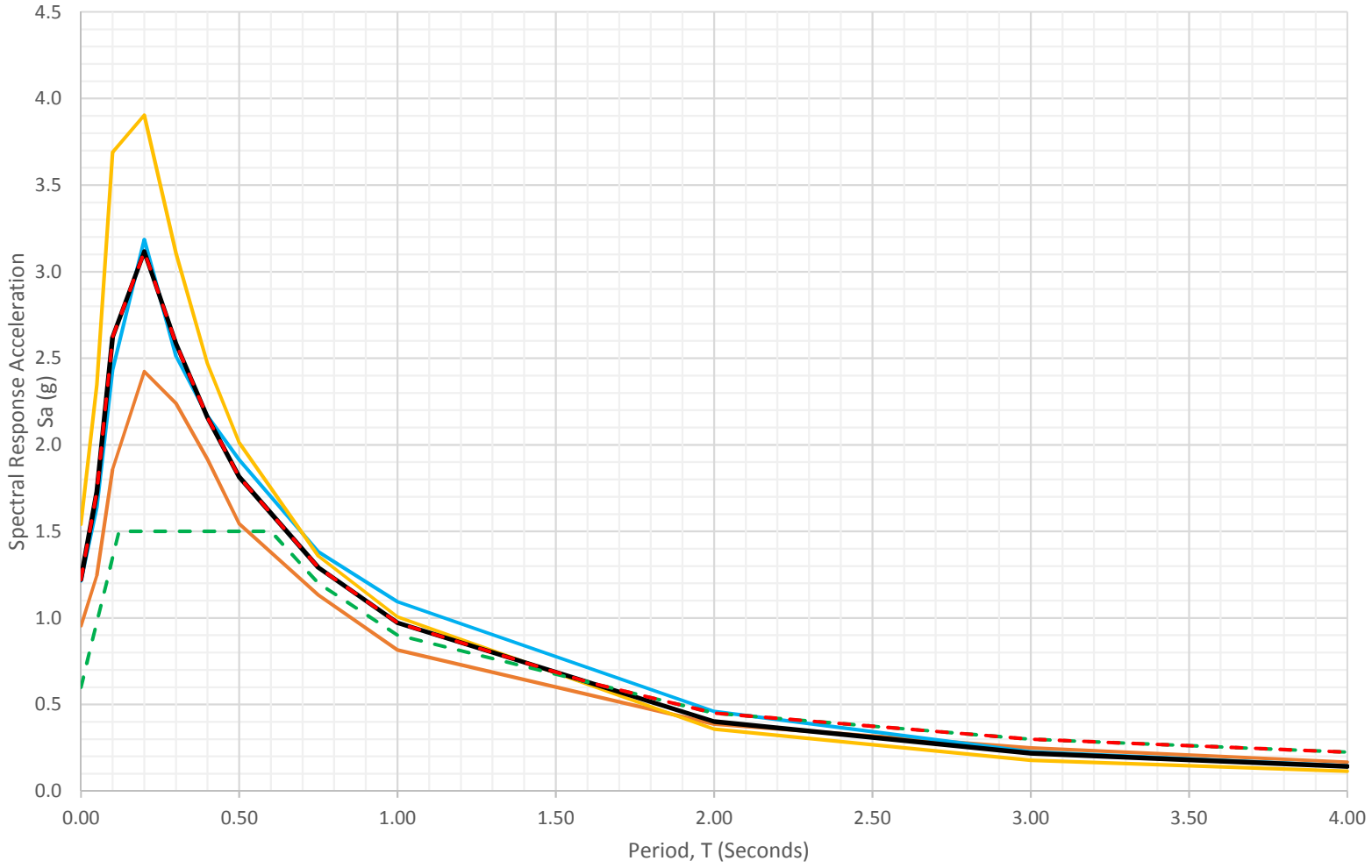
TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
38628	07/23/18	STEELE		5D



PROBABLISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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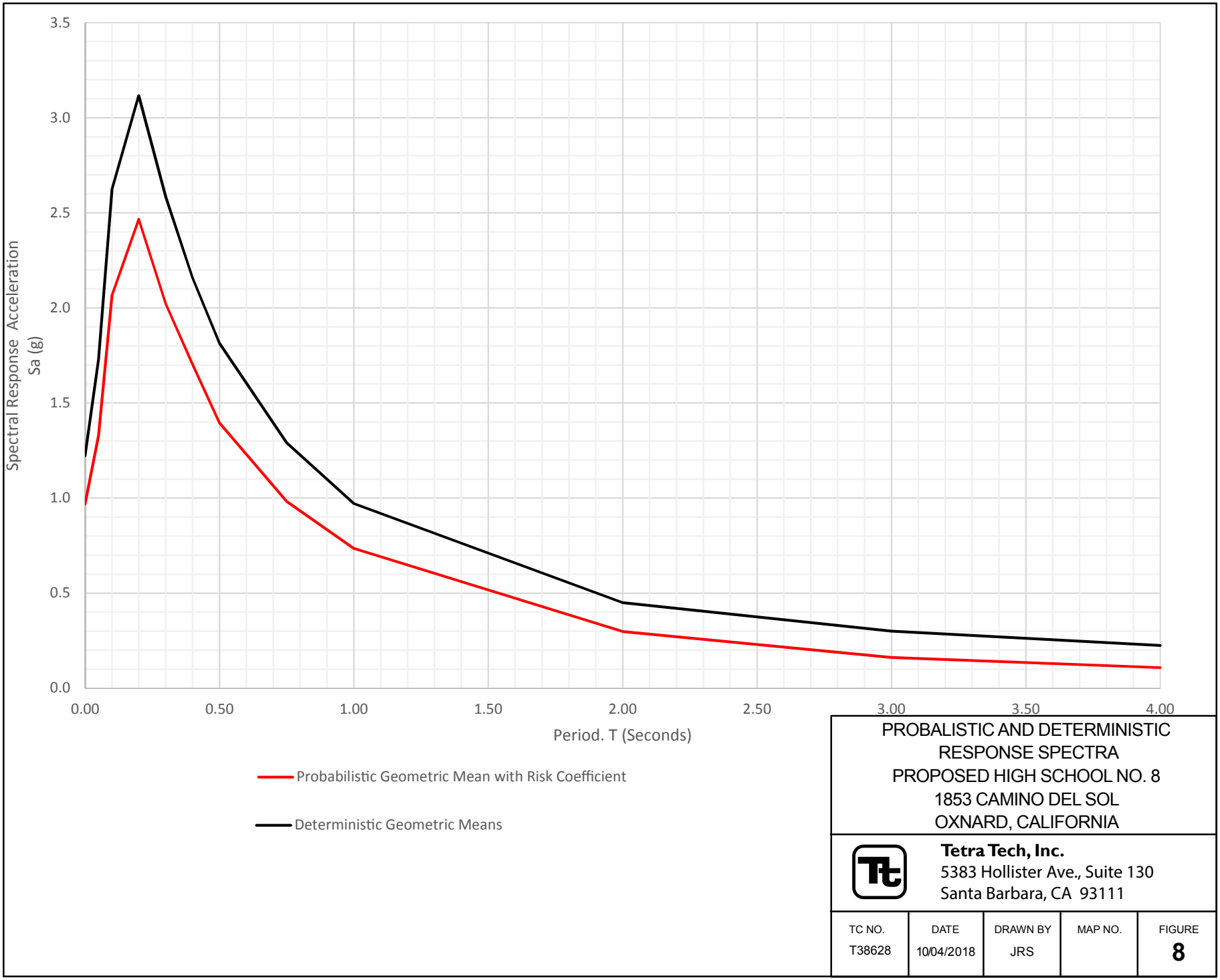
TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	10/04/2018	JRS		6



DETERMINISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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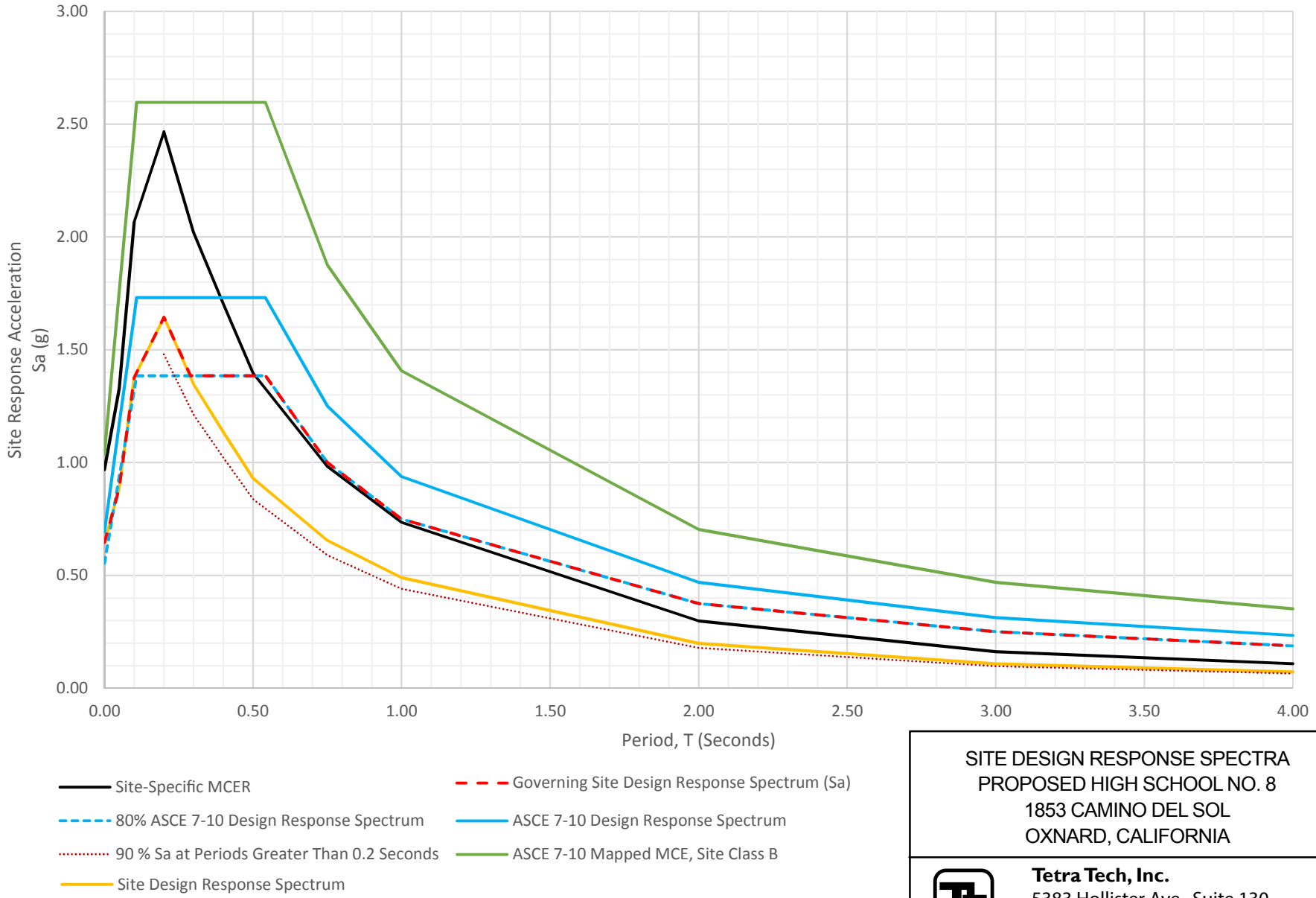
TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	10/04/2018	JRS		7



PROBALISTIC AND DETERMINISTIC
RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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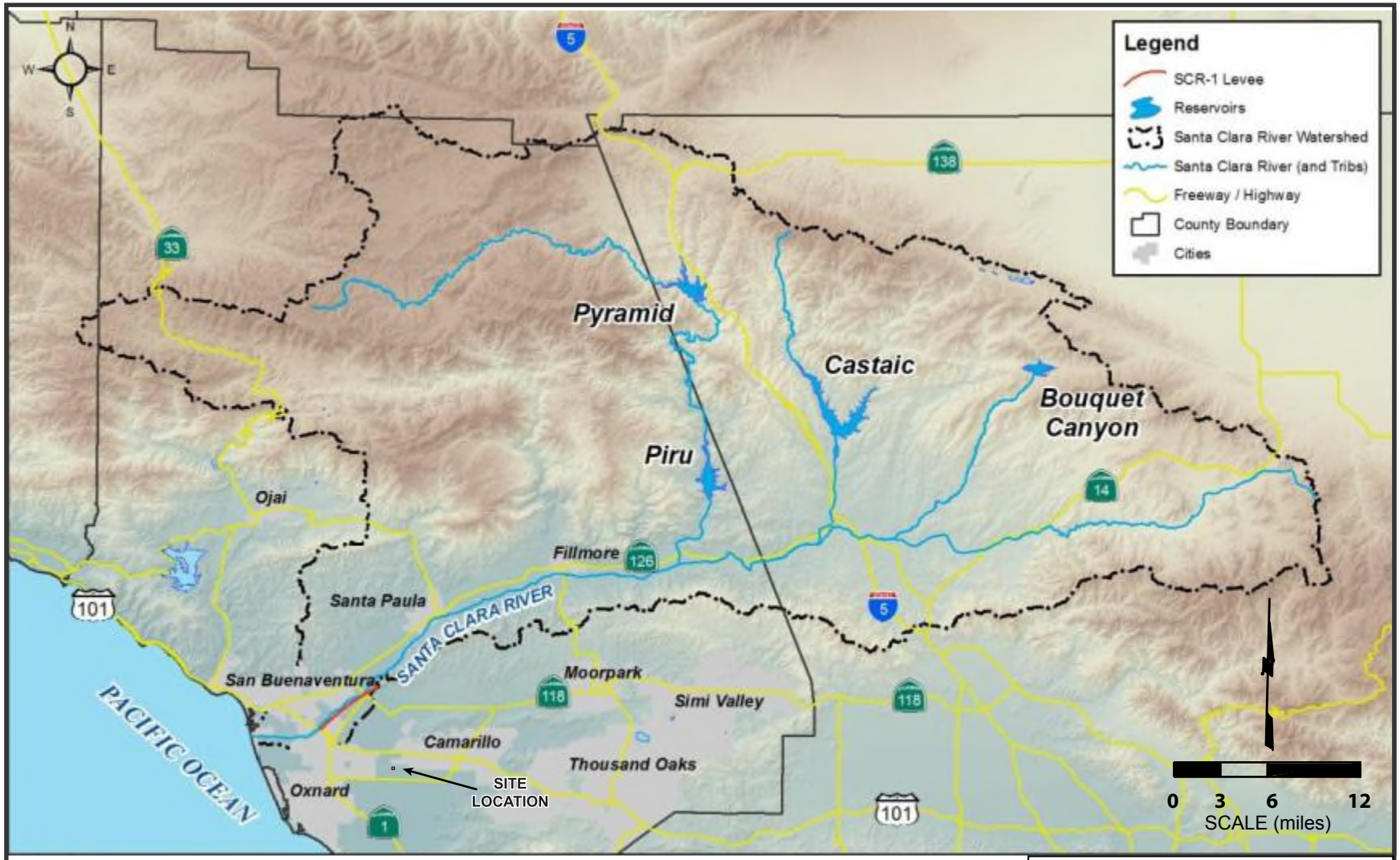
TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	10/04/2018	JRS		8



SITE DESIGN RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	10//04/2018	JRS		9



MAJOR RESEVOIR LOCATIONS
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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JOB NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
38628	10/4/18	STEELE		10

TABLES

Table 2
Characteristics of Faults within 100 Kilometers of Site
Proposed High School No. 8 Site
Oxnard, California

Fault Name and Section	Approximate Distance (kilometers)	Seismic Source Type	Maximum Magnitude (Mmax)	Slip Rate (mm/yr)	Fault Type
OAK RIDGE (Onshore)	6.6	B	6.9	4	DS
VENTURA - PITAS POINT	8.9	B	6.8	1	DS
OAK RIDGE(Blind Thrust Offshore)	11.7	B	6.9	3	BT
CHANNEL IS. THRUST (Eastern)	24.0	B	7.4	1.5	BT
SIMI-SANTA ROSA	5.1	B	6.7	1	DS
RED MOUNTAIN	20.5	B	6.8	2	DS
ANACAPA-DUME	20.2	B	7.3	3	DS
SAN CAYETANO	26.1	B	6.8	6	DS
M.RIDGE-ARROYO PARIDA-SANTA ANA	26.0	B	6.7	0.4	DS
MALIBU COAST	19.2	B	6.7	0.3	DS
SANTA YNEZ (East)	36.5	B	7	2	SS
SANTA SUSANA	39.1	B	6.6	5	DS
SANTA CRUZ ISLAND	29.3	B	6.8	1	DS
HOLSER	46.3	B	6.5	0.4	DS
NORTHRIDGE (E. Oak Ridge)	46.3	B	6.9	1.5	BT
SANTA YNEZ (West)	77.0	B	6.9	2	SS
BIG PINE	55.0	B	6.7	0.8	SS
PALOS VERDES	50.5	B	7.1	3	SS
SAN GABRIEL	57.0	B	7	1	SS
SANTA MONICA	54.2	B	6.6	1	DS
SIERRA MADRE (San Fernando)	62.2	B	6.7	2	DS
SAN ANDREAS - 1857 Rupture	72.0	A	7.8	34	SS
SAN ANDREAS - Carrizo	75.0	A	7.2	34	SS
PLEITO THRUST	84.0	B	7.2	2	DS
GARLOCK (West)	73.2	A	7.1	6	SS
SANTA ROSA ISLAND	72.2	B	6.9	1	DS
VERDUGO	69.1	B	6.7	0.5	DS
SIERRA MADRE	81.3	B	7	3	DS
NEWPORT-INGLEWOOD (L.A.Basin)	70.7	B	6.9	1	SS
LOS ALAMOS-W. BASELINE	76.7	B	6.8	0.7	DS
HOLLYWOOD	70.4	C	6.4	1	DS
SAN ANDREAS - Mojave	72.2	A	7.1	30	SS
COMPTON THRUST	88.4	B	6.8	1.5	BT
RAYMOND	84.5	B	6.5	0.5	DS

Notes: - The data presented in this table are from *The Uniform California Earthquake Rupture Forecast, Version 2 (UCEFR 2)* (U. S. Geologial Survey and California Geological Survey 2008), Appendix A and the Supplimentary Excel Spreadsheet.

A - Faults with a MwMax ≥ 7 and a slip rate ≥ 5 mm/yr.

B - Faults with a MwMax ≥ 7 and a slip rate < 5 mm/yr, MwMax < 7 and a slip rate > 2, or MwMax ≥ 6.5 and a slip rate < 2mm/yr.

BT - blind thrust fault

DS - dip slip fault

mm/yr - millimeters per year

Mmax - Maximum earthquake moment magnitued (Mw) where Mw is equal to the rigidity of the earth times the average amount of

SS - strike slip fault

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Magnitude	Location
Latitude North	Longitude West	Date and Time[a]	Magnitude	Type	
33.8375	-119.7258333	2018-04-05T19:29:16.500Z	5.31	mw	29km SW of Santa Cruz Is. (E end), CA
34.4061667	-119.9198333	2013-05-29T14:38:03.410Z	4.80	mw	6km W of Isla Vista, CA
33.9376667	-118.3356667	2009-05-18T03:39:36.340Z	4.70	mw	2km E of Lennox, CA
34.2995	-118.6195	2007-08-09T07:58:49.590Z	4.66	ml	5km NNW of Chatsworth, CA
35.0433333	-119.0143333	2005-09-22T20:24:48.620Z	4.69	mw	14km NW of Grapevine, CA
35.0223333	-119.191	2005-04-16T19:18:13.400Z	4.59	mw	20km ESE of Maricopa, CA
33.666	-119.33	2002-03-16T21:33:23.820Z	4.60	ml	33km NW of Santa Barbara Is., CA
34.377	-118.649	1997-04-27T11:09:28.380Z	4.92	ml	11km SW of Valencia, California
34.369	-118.67	1997-04-26T10:37:30.670Z	5.07	ml	12km ESE of Piru, California
34.394	-118.669	1995-06-26T08:40:28.940Z	5.02	ml	11km SW of Valencia, California
34.293	-118.389	1994-12-06T03:48:34.490Z	4.54	ml	3km NW of Lake View Terrace, California
34.231	-118.475	1994-03-20T21:20:12.260Z	5.24	ml	3km WNW of Panorama City, California
34.306	-118.579	1994-01-29T11:20:35.970Z	5.06	ml	6km NNE of Chatsworth, California
34.273	-118.563	1994-01-27T17:19:58.830Z	4.57	ml	4km ENE of Chatsworth, California
34.347	-118.552	1994-01-24T04:15:18.820Z	4.59	ml	9km SSW of Santa Clarita, California
34.393	-118.568	1994-01-22T22:54:10.660Z	4.64	mc	6km WSW of Santa Clarita, California
34.301	-118.466	1994-01-21T18:39:15.260Z	4.53	ml	3km NW of Pacoima, California
34.378	-118.619	1994-01-19T21:11:44.900Z	5.07	ml	10km SSW of Valencia, California
34.379	-118.712	1994-01-19T21:09:28.610Z	5.06	ml	8km ESE of Piru, California
34.215	-118.51	1994-01-19T14:09:14.830Z	4.52	ml	3km NE of Reseda, California
34.379	-118.561	1994-01-18T15:23:46.890Z	4.84	ml	6km SW of Santa Clarita, California
34.377	-118.698	1994-01-18T00:43:08.890Z	5.24	ml	10km ESE of Piru, California
34.326	-118.698	1994-01-17T23:33:30.690Z	5.58	ml	7km NNE of Simi Valley, California
34.302	-118.565	1994-01-17T20:46:02.400Z	4.85	ml	6km NE of Chatsworth, California
34.228	-118.572	1994-01-17T17:56:08.210Z	4.63	ml	4km WSW of Northridge, California
34.376	-118.627	1994-01-17T15:54:10.760Z	4.85	ml	10km SSW of Valencia, California
34.318	-118.456	1994-01-17T13:26:45.010Z	4.68	ml	4km NNW of Pacoima, California
34.251	-118.55	1994-01-17T13:06:28.340Z	4.62	ml	2km NW of Northridge, California
34.34	-118.614	1994-01-17T12:40:36.120Z	5.20	ml	9km N of Chatsworth, California
34.32	-118.507	1994-01-17T12:40:09.520Z	4.82	ml	5km N of Granada Hills, California
34.265	-118.54	1994-01-17T12:39:39.800Z	4.89	ml	3km N of Northridge, California
34.275	-118.493	1994-01-17T12:31:58.120Z	5.89	ml	1km ENE of Granada Hills, California
34.213	-118.537	1994-01-17T12:30:55.390Z	6.70	mw	1km NNW of Reseda, CA
34.028	-118.18	1989-06-12T16:57:18.490Z	4.82	ml	1km WSW of East Los Angeles, CA
33.919	-118.627	1989-01-19T06:53:28.840Z	4.96	ml	13km S of Las Flores, CA
34.151	-118.13	1988-12-03T11:38:26.450Z	5.02	ml	1km SSE of Pasadena, CA
34.943	-118.743	1988-06-10T23:06:43.050Z	5.37	ml	16km NE of Lebec, CA
34.074	-118.098	1987-10-04T10:59:38.190Z	5.25	ml	2km WSW of Rosemead, CA
34.052	-118.091	1987-10-01T15:12:31.760Z	4.62	ml	3km ESE of Monterey Park, CA
34.06	-118.1	1987-10-01T14:49:05.920Z	4.75	ml	2km E of Monterey Park, CA
34.049	-118.1	1987-10-01T14:45:41.450Z	4.70	ml	3km SE of Monterey Park, CA
34.016	-118.988	1984-10-26T17:20:43.540Z	4.56	ml	16km W of Malibu, CA
35.0106667	-119.1335	1981-11-10T22:34:35.730Z	4.71	ml	18km N of Pine Mountain Club, CA
33.618	-119.017	1981-10-23T19:15:52.170Z	4.61	ml	17km NNE of Santa Barbara Is., CA
33.5898333	-119.0041667	1981-10-23T17:28:16.440Z	4.76	ml	14km NNE of Santa Barbara Is., CA
33.5575	-119.1195	1981-09-04T15:50:48.700Z	5.45	ml	11km NNW of Santa Barbara Is., CA
33.9165	-118.6871667	1979-01-01T23:14:38.620Z	5.21	ml	13km S of Malibu Beach, CA
34.3136667	-119.706	1978-08-13T22:54:52.910Z	5.08	ml	12km S of Santa Barbara, CA
35.007	-119.097	1975-05-13T00:21:35.600Z	4.56	ml	17km WNW of Grapevine, CA
33.9568333	-119.4748333	1973-08-06T23:29:16.660Z	5.14	ml	9km SSE of Santa Cruz Is. (E end), CA
33.979	-119.0501667	1973-02-21T14:45:56.140Z	5.30	mw	22km W of Malibu, CA
34.3501667	-118.3388333	1971-02-09T15:58:20.880Z	4.59	ml	9km NNE of Lake View Terrace, CA
34.3096667	-118.414	1971-02-09T14:34:39.350Z	4.83	ml	4km NE of Pacoima, CA
34.416	-118.37	1971-02-09T14:10:29.040Z	5.30	mh	10km SSW of Agua Dulce, CA
34.2463333	-118.3961667	1971-02-09T14:10:21.330Z	4.64	ml	4km SW of Lake View Terrace, CA
34.416	-118.37	1971-02-09T14:08:53.720Z	4.60	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:08:34.040Z	4.50	mh	10km SSW of Agua Dulce, CA

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Magnitude	Location
Latitude North	Longitude West	Date and Time[a]	Magnitude	Type	
34.416	-118.37	1971-02-09T14:07:43.970Z	4.50	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:02:45.740Z	5.80	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:02:29.940Z	4.70	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:01:53.040Z	4.50	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:01:12.450Z	5.80	mh	10km SSW of Agua Dulce, CA
34.416	-118.37	1971-02-09T14:00:41.920Z	6.60	mw	10km SSW of Agua Dulce, CA
33.4605	-119.1321667	1969-10-31T10:39:30.490Z	4.60	ml	7km W of Santa Barbara Is., CA
33.343	-119.1331667	1969-10-24T20:26:44.380Z	4.63	ml	16km SSW of Santa Barbara Is., CA
33.3363333	-119.1613333	1969-10-24T08:29:13.580Z	4.85	ml	18km SSW of Santa Barbara Is., CA
34.2068333	-119.802	1968-07-07T14:33:32.770Z	4.56	ml	19km NE of Santa Cruz Is. (NW end), CA
34.1385	-119.7228333	1968-07-05T00:45:17.260Z	5.05	ml	20km ENE of Santa Cruz Is. (NW end), CA
34.9563333	-118.971	1963-03-01T00:25:58.070Z	4.64	ml	4km WNW of Grapevine, CA
34.9463333	-118.9871667	1961-11-15T05:38:56.380Z	4.97	ml	5km W of Grapevine, CA
34.1461667	-119.203	1957-03-18T18:56:29.820Z	4.82	ml	1km WSW of Port Hueneme, CA
33.87	-119.5406667	1954-08-26T13:48:02.390Z	4.76	ml	18km S of Santa Cruz Is. (E end), CA
34.9681667	-119.0023333	1954-05-23T23:52:44.870Z	5.03	ml	7km WNW of Grapevine, CA
35.0596667	-119.049	1954-02-24T22:30:23.450Z	4.67	ml	17km NW of Grapevine, CA
34.9296667	-119.0988333	1954-02-10T23:58:39.720Z	4.61	ml	10km NNE of Pine Mountain Club, CA
35.0446667	-119.082	1954-02-07T00:09:54.770Z	4.56	ml	18km NW of Grapevine, CA
35.0365	-119.0866667	1954-01-13T01:45:32.900Z	4.60	ml	18km NW of Grapevine, CA
34.9823333	-119.0613333	1954-01-12T23:33:49.720Z	5.40	ml	13km WNW of Grapevine, CA
34.9961667	-118.8283333	1953-10-07T14:59:22.720Z	4.70	ml	11km ENE of Grapevine, CA
34.9708333	-119.0485	1953-05-25T03:24:01.530Z	4.77	ml	11km WNW of Grapevine, CA
34.9901667	-118.7198333	1953-04-29T12:47:46.980Z	4.69	ml	20km ENE of Grapevine, CA
34.9641667	-119.0995	1952-11-07T08:55:36.990Z	4.53	ml	14km NNE of Pine Mountain Club, CA
34.9086667	-118.989	1952-09-02T20:45:57.170Z	4.70	ml	7km SW of Grapevine, CA
35.0575	-118.9516667	1952-08-25T06:20:27.900Z	4.66	ml	13km N of Grapevine, CA
34.5081667	-118.1741667	1952-08-23T10:09:07.180Z	4.75	ml	5km NNE of Acton, CA
35.0353333	-119.0768333	1952-08-18T04:40:11.960Z	4.70	ml	17km NW of Grapevine, CA
35.045	-119.0936667	1952-08-07T16:31:51.390Z	5.03	ml	19km NW of Grapevine, CA
34.9045	-118.9963333	1952-08-01T13:04:30.820Z	4.92	ml	7km SW of Grapevine, CA
34.996	-118.9301667	1952-07-23T18:13:51.830Z	5.13	ml	6km N of Grapevine, CA
34.9881667	-118.8031667	1952-07-23T07:53:19.870Z	5.55	ml	13km ENE of Grapevine, CA
34.9618333	-118.9083333	1952-07-22T22:31:34.380Z	4.64	ml	3km NE of Grapevine, CA
34.926	-118.9803333	1952-07-22T13:31:43.260Z	4.71	ml	5km WSW of Grapevine, CA
34.974	-118.9135	1952-07-21T16:38:41.990Z	4.52	ml	4km NNE of Grapevine, CA
35.069	-118.85	1952-07-21T13:59:56.430Z	4.88	ml	16km S of Arvin, CA
34.997	-118.981	1952-07-21T13:13:06.090Z	4.51	ml	8km NW of Grapevine, CA
34.8536667	-118.879	1952-07-21T12:25:20.440Z	4.73	mh	2km NW of Lebec, CA
35.0198333	-118.8301667	1952-07-21T12:19:37.810Z	5.20	ml	12km NE of Grapevine, CA
35	-119	1952-07-21T12:07:00.000Z	5.18	mh	9km NW of Grapevine, CA
35	-119	1952-07-21T12:06:00.000Z	5.40	mh	9km NW of Grapevine, CA
34.9731667	-119.0661667	1952-07-21T12:05:32.760Z	5.80	mh	13km WNW of Grapevine, CA
35	-119.0333333	1952-07-21T11:59:00.000Z	4.50	mh	11km NW of Grapevine, CA
35	-119.0333333	1952-07-21T11:58:00.000Z	4.60	mh	11km NW of Grapevine, CA
35	-119.0333333	1952-07-21T11:57:00.000Z	4.50	mh	11km NW of Grapevine, CA
35	-119.0333333	1952-07-21T11:54:00.000Z	4.50	mh	11km NW of Grapevine, CA
34.9581667	-118.998	1952-07-21T11:52:15.460Z	7.50	mw	6km WNW of Grapevine, CA
33.9	-118.9846667	1948-04-16T22:26:26.700Z	4.55	ml	20km SW of Malibu, CA
34.1266667	-119.8231667	1945-04-01T23:43:46.570Z	4.94	ml	12km ENE of Santa Cruz Is. (NW end), CA
34.6643333	-118.983	1942-09-04T06:34:33.030Z	4.53	ml	18km S of Frazier Park, CA
33.7906667	-118.2636667	1941-11-14T08:41:38.350Z	5.12	ml	5km E of Lomita, CA
33.811	-118.3013333	1941-10-22T06:57:19.040Z	4.69	ml	2km NNE of Lomita, CA
34.8381667	-118.9335	1941-09-21T19:53:09.170Z	5.10	ml	2km NNE of Frazier Park, CA
34.1731667	-119.591	1941-07-12T16:18:54.960Z	4.68	ml	17km NNW of Santa Cruz Is. (E end), CA
34.2543333	-119.6643333	1941-07-01T23:53:43.630Z	4.54	ml	19km S of Santa Barbara, CA
34.3291667	-119.5641667	1941-07-01T07:50:57.040Z	5.47	ml	9km SSW of Carpinteria, CA

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location			Earthquake	Earthquake	Magnitude	Location
Latitude North		Longitude West	Date and Time[a]	Magnitude	Type	
33.7781667		-118.4721667	1940-10-11T05:57:14.490Z	4.70	ml	8km WSW of Palos Verdes Estates, CA
33.7436667		-118.3283333	1939-12-27T19:28:49.410Z	4.51	ml	3km ESE of Rolling Hills, CA
34.9016667		-119.0118333	1939-02-23T09:18:47.250Z	4.63	ml	9km WSW of Grapevine, CA
34.3		-119.8	1925-06-29T14:42:16.000Z	6.82	mw	14km SSE of Isla Vista, CA
34.243		-119.097	1922-03-10T11:21:04.000Z	6.50	mw	Greater Los Angeles area, California

Summary

Earthquake Magnitude Range:	
Minimum	4.50
Maximum	7.50
Site Coordinates:	
Latitude:	34.2077
Longitude:	-119.1554
Search Time Period (years):	1900 - 2018
Approx. Search Radius in km:	100
Largest Earthquake Magnitude:	7.5

Table 3
Historic Earthquake Catalogue Data Summary

Notes: - **Red Bold** text indicates the maximum magnitude (7.5 mw from the 1952 White Wolf Earthquake).
a - All times use ISO8601 Date/Time format. Unless a timezone is specified, UTC is assumed.
- The data presented in this table are from the U.S. Geological Survey Earthquake Hazards Program Search Earthquake Catalogue website at https://earthquake.usgs.gov/earthquakes/search/. The ATLAS, CI, DUPTRL, GCMT, ISCGEM, LD, NM, SE, US, and UW catalogues were searched.
g - Standard acceleration of gravity where g = 9.81 meters/second as estimated using a deterministic method.
km - kilometer

Magnitude Type	Magnitude Range	Distance Range	Equation	Comments
Mww (Moment W-phase) (generic notation Mw)	~5.0 and larger	1 - 90 degrees	MW = 2/3 * (log10(MO) - 16.1), where MO is the seismic moment. Note this is also unit-dependent; the formula above is for moment in dyne-cm. If using metric units (N.m), the constant is 9.1.	Derived from a centroid moment tensor inversion of the W-phase (~50-2000 s; pass band based on size of EQ). Computed for all M5.0 or larger earthquakes worldwide, but generally robust for all M5.5 worldwide. Provides consistent results to M~4.5 within a regional network of high-quality broadband stations. Authoritative USGS magnitude if computed.
Mwc (centroid)	~5.5 and larger	20 - 180 degrees	MW = 2/3 * (log10(MO) - 16.1), where MO is the seismic moment.	Derived from a centroid moment tensor inversion of the long-period surface waves (~100-2000 s; pass band based on size of EQ). Generally computable for all M6.0 worldwide using primarily the Global Seismograph Network. Only authoritative if Mww is not computed, not published otherwise.
Mwb (body wave)	~5.5 to ~7.0	30 - 90 degrees	M_W = 2/3 * ($\log_{10}(M_O)$ - 16.1), where MO is the seismic moment.	Derived from moment tensor inversion of long-period (~20-200 s; pass band based on size of EQ) body-waves (P- and SH). Generally computable for all M5.5 or larger events worldwide. Source complexity at larger magnitudes (~M7.5 or greater) generally limits applicability. Only authoritative if Mww and Mwc are not computed.
Mwr (regional)	~4.0 to ~6.5	0 - 10 degrees	M_W = 2/3 * ($\log_{10}(M_O)$ - 16.1), where MO is the seismic moment.	Based on the scalar seismic-moment of the earthquake, derived from moment tensor inversion of the whole seismogram at regional distances (~10-100 s; pass band based on size of EQ). Source complexity and dimensions at larger magnitudes (~M7.0 or greater) generally limits applicability. Authoritative for <M5.0. Within the continental US and south-central Alaska where we have a large number of high quality broadband stations we expect we can compute an Mwr consistently for events as small as M4.0. In some areas of the country, with relatively dense broadband coverage, we can compute Mwr consistently to as small as M3.5.
Ms20 or Ms (20sec surface wave)	~5.0 to ~8.5	20 - 160 degree	MS = log10 (A/T) + 1.66 log10 (D) + 3.30 .	A magnitude based on the amplitude of Rayleigh surface waves measured at a period near 20 sec. Waveforms are shaped to the WWSSN LP response. Reported by NEIC, but rarely used as authoritative, since at these magnitudes there is almost always an Mw available. Ms is primarily valuable for large (>6), shallow events, providing secondary confirmation on their size. Ms_20 tends to saturate at about M8.3 or larger.
mb (short-period body wave)	~4.0 to ~6.5	15 - 100 degrees	mb = log10(A/T) + Q(D,h), where A is the amplitude of ground motion (in microns); T is the corresponding period (in seconds); and Q(D,h) is a correction factor that is a function of distance, D (degrees), between epicenter and station and focal depth, h (in kilometers), of the earthquake.	Based on the amplitude of 1st arriving P-waves at periods of about 1 s. Waveforms are shaped to the WWSSN SP response. Reported for most M4.0-4.5 to 6.5 EQs that are observed teleseismically. Only authoritative for global seismicity for which there is no Mww, Mwc, Mwb or Mwr, typically 4.0-5.5 range. Mb tends to saturate at about M 6.5 or larger.
ML Ml, or ml (local)	~2.0 to ~6.5	0 - 600 km		The original magnitude relationship defined by Richter and Gutenberg in 1935 for local earthquakes. It is based on the maximum amplitude of a seismogram recorded on a Wood-Anderson torsion seismograph. Although these instruments are no longer widely in use, ML values are calculated using modern instrumentation with appropriate adjustments. Reported by NEIC for all earthquakes in the US and Canada. Only authoritative for smaller events, typically M<4.0 for which there is no mb or moment magnitude. In the central and eastern United States, NEIC also computes ML, but restricts the distance range to 0-150 km. In that area it is only authoritative if there is no mb_Lg as well as no mb or moment magnitude.
mb_Lg, mb_lg, or MLg (hort-period surface wave)	~3.5 to ~7.0	150 – 1110 km (10 degres)		A magnitude for regional earthquakes based on the amplitude of the Lg surface waves as recorded on short-period instruments. Only authoritative for smaller events in the central and eastern United States, typically <4.0 for which there is no mb or moment magnitude.
Md or md (duration)	~4 or smaller	0 - 400 km		Based on the duration of shaking as measured by the time decay of the amplitude of the seismogram. Sometimes the only magnitude available for very small events, but often used (especially in the past) to compute magnitude from seismograms with "clipped" waveforms due to limited dynamic recording range of analog instrumentation, which makes it impossible to measure peak amplitudes. Computed by NEIC but only published when there is no other magnitude available.

Magnitude Type	Magnitude Range	Distance Range	Equation	Comments
Mi or Mwp (integrated p-wave)	~5.0 to ~8.0	all		Based on an estimate of moment calculated from the integral of the displacement of the P wave recorded on broadband instruments.
Me (energy)	~3.5 and larger		Me = 2/3 log10E - 2.9, where E is the energy calculated by log10E = 11.8 + 1.5MS where energy, E, is expressed in ergs.	Based on the seismic energy radiated by the earthquake as estimated by integration of digital waveforms.
Finite Fault Modeling	~7.0 and larger	30 - 90 degrees		FFM modeling provides a kinematic description of faulting including estimates of maximum slip, area of rupture and moment release as a function of time. Results are used to provide constraints on fault dimensions and slip used in damage assessment modeling (ShakeMap, PAGER) and to model stress changes (Coulomb stress modeling) on the active fault and/or adjacent faults.

A 2018 EARTH SYSTEMS PACIFIC GEOTECHNICAL ENGINEERING REPORT

GEOTECHNICAL ENGINEERING REPORT
OXNARD HIGH SCHOOL NO. 8
NORTHEAST OF CAMINO DEL SOL AND NORTH ROSE AVENUE
OXNARD, CALIFORNIA

August 31, 2018

Prepared for

Mr. James R. Steele
Tetra Tech, Inc.

Prepared by

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August 31, 2018

File No.: 301953-002

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PROJECT: OXNARD HIGH SCHOOL NO. 8
NORTHEAST OF CAMINO DEL SOL AND NORTH ROSE AVENUE
OXNARD, CALIFORNIA

SUBJECT: Geotechnical Engineering Report

REF: Proposal to Provide a Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California by Earth Systems Pacific, dated June 27, 2018, Doc. No. 1806-063.PRP

Dear Mr. Steele:

In accordance with the authorization of the above-referenced proposal, this geotechnical engineering report has been prepared for use in the development of plans and specifications for the Oxnard High School No. 8 project. The school campus is located northeast of Camino Del Sol and North Rose Avenue in the City of Oxnard, California. Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, retaining walls, slabs-on-grade and exterior flatwork, pavement sections, drainage and maintenance, and construction observation and testing are presented herein. Two bound copies and an electronic copy of this report are being furnished for your use.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Earth Systems Pacific



Doug Dunham

Doug Dunham, GE
Associate Engineer

Doc. No. 1808-091.SER/ln

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1.0 INTRODUCTION

Oxnard High School No. 8 is planned northeast of Camino Del Sol and North Rose Avenue in the City of Oxnard, California. The school campus is referred to herein as "the site." The site is shown on the Exploration Location Map presented in Appendix A.

We understand it is planned to construct the following buildings/structures, athletic facilities, and surface improvements.

Buildings/Structures

Buildings/Structures	Building/Structure Footprint (feet^2)	Number of Stories
Locker Room/Gymnasium	45,730	2
Performing Arts	26,500	2
Media/Administration	14,575	1
Shops 1	14,025	2
Shops 2	11,160	1
Academic Labs	17,400	2
Kitchen/Multipurpose Room	17,770	1
Academic Classroom 1	5,380	2
Academic Classroom 2	5,690	2
Academic Classroom 3	14,470	2
Daycare	2,900	1
Stadium Restroom 1	1,600	1
Stadium Restroom 2	1,600	1
Home Bleachers	15,175	n/a
Visitor Bleachers	7,500	n/a

Athletic Facilities

Sports Facilities	Facility Footprint (feet^2)	Surface Covering
Track/Football Field	159,031	Turf
Varsity Baseball Field	135,347	Turf
Junior Varsity Baseball Field	113,034	Turf
Varsity Softball Field	55,259	Turf
Junior Varsity Softball Field	53,695	Turf
Soccer Field	182,831	Turf
Basketball Courts	52,960	Paved
Tennis Courts	43,590	Paved

Surface Improvements

Parking Lots	Parking Lot Footprint (feet^2)	Number of Parking Spaces
Staff	180,088	318
Student	123,300	305
Visitor	3,230	18
Northeast Joint Use	33,115	89
Northwest Joint Use	46,810	76

As the project is in its preliminary design stages, we have assumed that: 1) the buildings/structures depending on size and usage will be of wood-frame, of steel-frame, of masonry, of Portland cement concrete (PCC) construction materials, or combinations thereof; 2) the buildings/structures will utilize PCC slabs-on-grade; 3) masonry or PCC retaining walls for site work but not forming part of a building and less than 6 feet in height may also be constructed; and 4) maximum line and point loads will be on the order of 4 kips/foot and 60 kips, respectively.

We have assumed surface improvements will consist of hot mix asphalt (HMA) and/or PCC pavement placed on aggregate base (AB) for vehicle use, and PCC flatwork placed on AB or compacted soils for pedestrian use. Subsurface improvements are assumed to be the underground municipal sewer, water, storm drain, power, and communication conduits that will provide utility service to the project. No on-site effluent disposal systems for sewage or Low Impact Development (LID) drainage improvements for runoff infiltration and/or filtering have been identified as part of the project; therefore, these items are not addressed within this report.

We have assumed the site will be mass graded to develop the building and surface improvement areas, to improve access, and to improve drainage. Due to the relatively level to very gently sloping topography at the site, grading cuts and fills are anticipated to be minimal to develop final grades; no slopes are anticipated.

2.0 SCOPE OF SERVICES

The scope of work for the geotechnical engineering report included a general site reconnaissance, subsurface exploration, laboratory testing of selected soil samples, geotechnical analysis of data, and preparation of this report. The analysis and subsequent recommendations were based, in part, upon information provided by the client.

This report and preliminary geotechnical recommendations are intended to comply with the considerations of the California Building Code (CBC) Sections 1803A.1 through 1803A.6, J104.3 and J104.4 (CBSCa, 2016), as applicable; the California Geological Survey (CGS) Note 48 (CGS, 2013); the California Code of Regulations Title 24 (CBSCb, 2016); and common geotechnical engineering practice in this area under similar conditions at this time. The test procedures were accomplished in general conformance with the standards noted, as modified by common geotechnical engineering practice in this area under similar conditions at this time.

Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, retaining walls, slabs-on-grade and exterior flatwork, pavement sections, drainage and maintenance, and construction observation and testing are presented to guide the development of project plans and specifications. It is our intent that this report be used exclusively by the client to form the geotechnical basis of the design of the project and in the preparation of plans and specifications. Application beyond this intent is strictly at the user's risk. If future parties wish to use this report, such use may be allowed to the extent the report is applicable, only if the user agrees to be bound by the same contractual conditions as the original client, or contractual conditions that may be applicable at the time of the report use.

This report does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, dewatering, temporary slope angles, construction means and methods, etc. Analyses of the

soil for asbestos (either man-made or naturally occurring), radioisotopes, mold or other microbial content, hydrocarbons, lead, and/or other chemical properties (except for geotechnical corrosivity) are beyond the scope of this report. Ancillary features such as temporary access roads, fencing, flag and light poles, signage, LID drainage improvements, effluent disposal systems; and nonstructural fills and slopes are not within our scope and are also not addressed.

As there may be unresolved geotechnical issues with respect to this project, the geotechnical engineer should be retained to provide consultation as the design progresses, and to review project plans as they near completion to assist in verifying that pertinent geotechnical issues have been addressed and to aid in conformance with the intent of this report. In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified or modified by the geotechnical engineer in writing. The criteria presented in this report are considered preliminary until such time as any peer review or review by any jurisdiction has been completed, conditions are observed by the geotechnical engineer in the field during construction, and the recommendations have been verified as appropriate or are modified by the geotechnical engineer in writing.

3.0 SITE SETTING

The site is located northeast of the intersection of Camino Del Sol and North Rose Avenue within the northeast sector of the City of Oxnard, California. The site is currently accessed off of Camino Del Sol. The approximate central coordinates and elevation from the Google Earth website (Google, 2018) where a majority of the campus buildings are currently planned are latitude 34.2077 degrees north, longitude 119.1554 degrees west, and 56 feet.

At the writing of this report, the site is being utilized for agriculture purposes; however, it was temporarily devoid of vegetation during our subsurface exploration program due to the crop rotation process. Surface and subsurface improvements associated with the agriculture operations exist within the site. Topographically, the site is relatively level to very gently sloping. Drainage is by sheet flow to south-southwest.

4.0 FIELD INVESTIGATION AND LABORATORY ANALYSIS

On April 10, 2018 and between July 16 to 26, 2018, fifty-three exploratory borings were drilled at the site to depths ranging from approximately 10 to 51.5 feet below the existing ground surface. The borings were drilled with a Mobile Drill Model B-53 drill rig, equipped with 6-inch outside diameter hollow stem auger and an automatic trip hammer for sampling. On April 20, 2018 and July 16, 2018, ten cone penetrometer test (CPT) soundings were also performed at the site. The CPT soundings were advanced to depths ranging from approximately 11 to 60 feet below the existing ground surface. Three of the CPT soundings met refusal at relatively shallow depths; therefore, those soundings are not included within this report. We have only included and analyzed the CPT soundings that extend to depths of approximately 45 feet or deeper below the existing ground surface. The approximate locations of the borings and CPT soundings are shown on the Exploration Location Map presented in Appendix A.

Soils encountered in the exploratory borings were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D2488-17. Copies of the boring logs and a Boring Log Legend are included in Appendix A. In reviewing the boring logs and legend, the reader should recognize that the legend is intended as a guideline only, and there are a number of conditions that may influence the soil characteristics as observed during drilling. These include, but are not limited to, the presence of cobbles or boulders, cementation, variations in soil moisture, presence of groundwater, and other factors.

Consequently, the logger must exercise judgment in interpreting the subsurface characteristics, possibly resulting in descriptions that vary somewhat from the legend.

The CPT soundings were conducted in general accordance with ASTM D5778-12 and D3441-16 using an electric cone penetrometer. Copies of the graphical CPT data can also be found in Appendix A.

As the exploratory borings were drilled, soil samples were obtained using a ring-lined barrel sampler (ASTM D3550-17, with shoe similar to D2937-17) and Standard Penetration Tests (SPT) were conducted at selected depths within the borings (ASTM D1586-11). Bulk soil samples were also obtained from the auger cuttings.

Ring samples were tested for bulk density per ASTM D2937-17 (modified for ring liners). Four bulk samples were tested for maximum density and optimum moisture content (ASTM D1557-12). Direct shear tests (ASTM D3080/D3080M-11) were conducted on the same four bulk samples after they were remolded to approximately 90 percent of maximum dry density. Six one-dimensional consolidation tests (ASTM D2435/D2435M-11) were performed on ring samples. Particle size tests (ASTM D422-63/07 and D1140-17) were conducted on fourteen bulk and ring samples. The expansion index (ASTM D4829-11) was determined for one bulk sample. For use in the development of pavement design criteria, two bulk samples were tested for R-value (ASTM D2844/D2844M-13). Four bulk samples were also sent to Cerco Analytical of Concord, California for use in preparing a corrosion evaluation report. The evaluation and associated test results are for use by the architect/engineer in determining appropriate corrosion mitigation measures. The laboratory test results and the corrosion evaluation report prepared by Cerco Analytical are presented in Appendices B and C, respectively.

Sampler Blow Counts in Granular Alluvial Soils

The majority of the alluvial soils observed in the borings were generally classified as sands, and some of the sand layers had variable amounts of rocks (from 0 to approximately 17 percent) that ranged from fine gravel to cobble in size. Where these sand soils were below the existing groundwater elevations, flow sands were encountered at isolated depths in some of the deeper borings. These conditions can have an influence on the sampler blow counts.

Using our knowledge of the subsurface conditions in Oxnard, we implemented a drilling and sample acquisition monitoring program with respect to addressing the influence that rocks and flow sands could have on the sampler blow counts. All drilling and sampling operations were closely monitored. We further utilized drilling fluid in the deeper borings below the groundwater surface to reduce the potential for flow sands to intrude into the bottom of the hollow stem drill auger. The specific depths where the sampler blow counts appeared to be comprised by rocks or by flow sands are noted within the boring logs. Because of the potential uncertainties of some of the sampler blow counts, we exclusively used the CPT data for estimating the magnitude of liquefaction and seismically induced settlement of dry sand presented later in this report.

5.0 GENERAL SUBSURFACE PROFILE

The general subsurface profile observed in the borings consisted of layered alluvial sand soils with varying amounts of silt and clay. The only exceptions were relatively thin isolated silt and clay soil layers encountered at various elevations within several of the borings. The sand soils were in a slightly moist to wet condition with a loose to dense consistency. The silt and clay soils were moist to wet and very soft to very stiff. Several of the sand soil layers also had varying amounts of fine to coarse gravel and cobbles. Subsurface water was encountered between the depths of approximately 20 to 25 feet below the existing ground surface in the deeper borings. Please refer to the boring logs and graphical CPT data for a more complete description of the subsurface conditions. It should be noted that the CPT soil behavior data

correlated fairly well to the soil conditions observed in the deeper borings drilled in close proximity to each of the CPT Soundings. Based on the subsurface soil profile described above, the Site Class per Chapter 20 Table 20.3-1 (ASCE, 2013) is "D", a "Stiff Soil Profile".

6.0 CONCLUSIONS

In our opinion, the site is suitable, from a geotechnical engineering standpoint, for the planned buildings/structures and improvements as described in the "Introduction" section of this report, provided the recommendations contained herein are implemented in the design and construction. The upper site soils were tested and found to be generally nonexpansive; therefore, no special measures with respect to expansive soils are considered necessary. Assuming the site is designed and prepared in accordance with the "Preliminary Geotechnical Recommendations" section of this report, the buildings and other ancillary structures may be supported by shallow conventional continuous and spread (pad) footings, and structures such as stadium light standards, scoreboards, etc. may alternatively be supported by deeper cast-in-drilled-hole (CIDH) piles.

The primary geotechnical engineering concerns at the site are the potential for settlement, the excavation characteristics of the soils, the suitability of the soils for use as fill and backfill, the stability of the soils during grading, the corrosive nature of the soils, the erodible nature of the soils, and the potential for liquefaction and seismically induced settlement of dry sand.

Settlement Potential

Settlement (total and differential) can occur when foundations and surface improvements span soil materials having variable moisture and density characteristics. Such a situation could stress and possibly damage foundations and surface improvements, often resulting in severe cracks and displacement. To reduce this settlement potential, it is necessary for all foundations and surface improvements to bear on material that is as uniform as practicable. A program of overexcavation, scarification, moisture conditioning, and compaction of the

upper soils in the building and the surface improvement areas is recommended to provide more uniform soil moisture and density, and appropriate support.

Excavation Characteristics

The site soils are anticipated to be readily excavatable with conventional earthmoving equipment; however, the stability of excavations is a concern. Additionally, various size rocks were noted within some of the soil layers. Based on our preliminary testing, the soils are considered to be "Type C" per the 2007 Cal/OSHA classification system. This classification should be verified by the contractor's "Competent Person" at the time of construction. Excavation sloping and shoring will be needed to safely work in and to restrict the size of the excavations, and to reduce the potential for falling rock hazards. As with all construction safety issues, the methods of excavation stabilization, sloping, and/or shoring are ultimately the responsibility of the contractor.

Suitability of the Soils for Use as Fill and Backfill

We anticipate that the majority, if not all, of the soils excavated at the site will be acceptable from a geotechnical viewpoint for reuse as compacted fill and backfill. However, special requirements for utility trench bedding and shading per the specifications of the City of Oxnard, the conduit manufacturer, and the utility companies should be anticipated.

Stability of the Soils During Grading

The site soils may be susceptible to temporary high soil moisture contents, especially during or soon after the rainy season. Attempting to compact the soils in an overly moist condition may create unstable conditions in the form of pumping, yielding, shearing, and/or rutting. These conditions will not allow proper compaction and are inappropriate for continued fill placement. Therefore, the construction schedule should allow adequate time during grading for aerating and drying the soils to near optimum moisture content prior to compaction. If

unstable conditions occur, the geotechnical engineer should be consulted to provide recommendations for correction of the conditions.

Corrosive Soils

Based on the testing performed by Cerco Analytical, the upper site soils were classified as "corrosive" to certain construction materials that will be in contact with the soils. The architect/engineer should refer to the Cerco Analytical report presented in Appendix C for use in determining appropriate mitigation measures for the soil's corrosivity.

Soil Erosion

The site soils are considered to be highly erodible. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means *during* and *following* construction is essential to reduce the potential of erosion damage. Care should be taken to establish and maintain proper drainage around the structures and improvements.

Liquefaction and Seismically Induced Settlement of Dry Sand

Liquefaction is the loss of soil strength caused by a significant seismic event. It occurs primarily in loose, fine to medium-grained sands, and in very soft to medium stiff silts that are saturated by groundwater. During a major earthquake, the saturated sands and silts tend to compress and the void spaces between the soil particles that are filled with water decrease in volume. This causes the pore water pressure to build up in the soils. Then if the water does drain away rapidly, the soils may lose their strength and transition into a liquefied state.

Seismically induced settlement of dry sand is also caused by a significant seismic event which could occur in lower density sand and silt soils that are not saturated by groundwater. During a major earthquake, the air void spaces between the unsaturated soil particles tend to compress which translates to a decrease in volume or settlement.

In order to assess the potential for liquefaction and seismically induced settlement of dry sand to occur at the site, we reviewed the boring data and utilized methods suggested by the Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117a (CDMG, 2008). Considering the presence of groundwater in the upper 50 feet of soil (measured at 20 to 25 feet below the existing ground surface) and the density of sand and silt soils, there appears to be a potential for both liquefaction and seismically induced settlement of dry sand to occur at the site.

To further understand the effects of liquefaction, we performed analyses of the CPT data using the site-specific PGA of 0.969g (provided by the client from their site specific ground motion analysis), an earthquake modal magnitude of 6.77 (USGS, 2018), an assumed historical high groundwater depth of 8 feet below the existing ground surface (provided by the client), and the approximate existing groundwater depth of approximately 20 feet below the existing ground surface. Based on the analyses presented in Appendix D, it appears liquefaction occurs in relatively thin discontinuous soil layers. Total liquefaction induced dynamic settlement assuming a groundwater depth of 8 feet ranged between 0.2 to 1.2 inches, and 0.1 to 0.6 inches for a groundwater depth of 20 feet. The summary of the liquefaction induced dynamic settlement is shown on the Tables below.

As part of the liquefaction evaluation, seismically induced settlement of dry sand was also analyzed. To perform those analyses, we utilized a reduced or modified PGA value of 2/3 (0.969g) = 0.646g. Additionally, the upper 30 inches of soil were neglected in the analyses. The reasoning being that the upper 2 to 3 feet of the surface soils had been recently ripped and plowed as part of the on-going agriculture operations at the site, and these soils will ultimately be removed and replaced as moisture conditioned compacted fill as part of future site development as recommended later in the “Grading” section of this report. Total seismically induced settlement of dry sand assuming a groundwater depth of 8 feet ranged between 0 to 0.2 inches, and 0.1 to 0.2 inches for a groundwater depth of 20 feet. The

summary of seismically induced settlement of dry sand calculated is shown on the Tables below.

Groundwater at 8 feet

CPT Number	Total Liquefiable Thickness (feet)	Dynamic Settlement (inches)	Dry Sand Settlement (inches)	Total Seismic Settlement (inches)
1	1.6	0.2	0.1	0.3
2A	3.8	0.6	0.1	0.7
3	2.3	0.3	0	0.3
4	7.2	1.2	0	1.2
5	5.7	0.8	0.1	0.9
6A	2.1	0.3	0.1	0.4
7	3.1	0.4	0.2	0.6

Groundwater at 20 feet

CPT Number	Total Liquefiable Thickness (feet)	Dynamic Settlement (inches)	Dry Sand Settlement (inches)	Total Seismic Settlement (inches)
1	1.1	0.1	0.1	0.2
2A	3.8	0.6	0.2	0.8
3	2.3	0.3	0.1	0.4
4	3.8	0.5	0.2	0.7
5	1.8	0.2	0.2	0.4
6A	2.1	0.3	0.1	0.4
7	1.3	0.1	0.2	0.3

In summary, total and differential settlement attributed to liquefaction induced dynamic settlement in conjunction with seismically induced settlement of dry sand is not anticipated to exceed 1.5 inches and 0.75 inches, respectively.

Based on the results of the liquefaction analysis, the potential for loss of soil bearing strength and lateral spreading was determined to be very low. The assessment for loss of soil bearing strength was developed by comparing the thickness of the overlying non-liquefiable soils with respect to the depth, the relatively thin thickness, and the discontinuous nature of the

underlying liquefiable soils. Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on sloping ground. Since a free slope face does not exist within or near the site, we focused on the sloping ground aspect of lateral spreading. Based on the Google Earth website (Google, 2018), the site slopes at approximately 0.35 percent from the north to the south. The assessment for lateral spreading was developed by considering the relatively flat to very gently sloping ground surface with respect to the discontinuous nature of the underlying liquefiable soils. The conditions needed for lateral spreading to occur do not appear to exist at the site.

Based on the information presented above, it is our opinion that no special measures will be needed to protect the structures and improvements from either liquefaction or seismically induced settlement of dry sand.

7.0 PRELIMINARY GEOTECHNICAL RECOMMENDATIONS

The following preliminary geotechnical recommendations are applicable to the planned buildings/structures and improvements as described in the "Introduction" section of this report and assume that all floors will be above grade. If taller buildings, basements, or other features are incorporated into site development, this firm should be contacted for individual assessment.

Definitions

Unless otherwise noted, the following definitions are used in these recommendations. Where specific terms are not defined, common definitions used in the construction industry are intended.

- **Building Area:** The area within and extending a minimum of 5 feet beyond the perimeter of the foundations for a structure. The building area also includes the

foundation areas (plus 5 feet to each side) of any ancillary structure that will be rigidly attached to the main structure and is expected to perform in the same manner as the main structure. Such structures could include staircases, covered walkways, covered work areas, patio covers, arbors, etc.

- **Surface Improvement Area:** The area within and extending a minimum of 2 feet beyond the perimeter of the surface improvement.

- **Scarified**: Ripping the exposed soil surface in two orthogonal directions to a minimum depth of 12 inches.

- **Moisture Conditioning:** Adjusting the soil moisture to optimum moisture content or slightly above, prior to the application of compaction effort.

- **Compacted or Recompacted:** Soils placed in level lifts not exceeding 8 inches in loose thickness, and compacted to a minimum of 90 percent of maximum dry density. A minimum of 95 percent will be required in the upper 1-foot of subgrade below vehicle pavement and in all AB. The standard tests used to define maximum dry density and field density should be ASTM D1557-12 and ASTM D6938-17a, respectively, or by other methods acceptable to the geotechnical engineer and the governing jurisdiction.

Site Preparation

1. The existing ground surface in the building and surface improvements areas should be prepared for construction by removing existing improvements, vegetation, large roots, debris, and other deleterious material. *Any existing fill soils should be completely removed and replaced as compacted fill.* Any existing utilities that will not remain in service should be removed or properly abandoned. The appropriate

method of utility abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.

2. Voids created by the removal of materials or utilities, and extending below the recommended overexcavation depth, should be immediately called to the attention of the geotechnical engineer. No fill should be placed unless the geotechnical engineer has observed the underlying soil.

Grading

1. Following site preparation, the soils in the building area should be removed on a level plane to a depth of 4 feet below the bottom of the deepest foundation element or 6 feet below existing grade, *whichever is deeper*. During construction, locally deeper removals may be recommended based on field conditions. The resulting soil surface should then be scarified, moisture conditioned, and compacted prior to placing any fill soil.

2. Following site preparation, the soils in the surface improvement area should be removed to a minimum depth of 2 feet below subgrade or 3 feet below existing grade, *whichever is deeper*. During construction, locally deeper removals may be recommended based on field conditions. The resulting soil surface should then be scarified, moisture conditioned, and compacted prior to placing any fill soil.

3. Following site preparation, the soils in fill areas beyond the building and surface improvement areas should be removed to a depth of 3 feet below existing grade. During construction, locally deeper removals may be recommended based on field conditions. The resulting soil surface should then be scarified, moisture conditioned, and compacted prior to placing any fill soil.

4. Voids created by dislodging cobbles and/or debris during scarification should be backfilled and compacted, and the dislodged materials should be removed from the area of work.

5. On-site material and approved import materials may be used as general fill. All imported soil should be nonexpansive. Nonexpansive material is defined as being a coarse-grained soil (ASTM D2487-17) and having an expansion index of 10 or less (ASTM D4829-11). The proposed imported soils should be evaluated by the geotechnical engineer before being used, and on an intermittent basis during placement on the site.

6. All materials used as fill should be cleaned of any debris and rocks larger than 6 inches in diameter. No rocks larger than 3 inches in diameter should be used within the upper 3 feet of finish grade. When fill material includes rocks, the rocks should be placed in a sufficient soil matrix to ensure that voids caused by nesting of the rocks will not occur and that the fill can be properly compacted.

7. The on-site soils are estimated to shrink by approximately 15 to 20 percent when prepared and graded as recommended above.

Utility Trenches

1. Unless otherwise recommended, utility trenches adjacent to foundations should not be excavated within the zone of foundation influence, as shown on Typical Detail A presented in Appendix E.

2. Utilities that must pass beneath foundations should be placed with properly compacted utility trench backfill and the foundation should be designed to span the trench.

3. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. Generally, the soil found at the site may be used for trench backfill above the select material.

4. Utility trench backfill should be moisture conditioned and compacted; however, a minimum compaction of 95 percent of maximum dry density in trench backfill in existing or future public roadway areas. A minimum of 95 percent of maximum dry density should also be obtained where trench backfill comprises the upper 1-foot of subgrade beneath vehicle pavement, and in all AB. A minimum of 85 percent of maximum dry density will generally be sufficient where trench backfill is located in landscaped or other unimproved areas where settlement of trench backfill would not be detrimental.

5. Jetting of trench backfill should generally not be allowed as a means of backfill densification. However, to aid in *encasing* utility conduits, particularly corrugated conduits and multiple closely spaced conduits in a single trench, jetting or flooding may be useful. Jetting or flooding should only be attempted with extreme caution, and any jetting or flooding operation should be subject to review by the geotechnical engineer.

6. The Corrosion Evaluation Report prepared by CERCO Analytical and presented in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for the utility improvements.

7. The recommendations of this section are minimums only and may be superseded by the architect/engineer based upon the soil corrosivity, or the requirements of the pipe manufacturer, the utility companies, or the governing jurisdiction.

Foundations

Shallow Foundations

1. Shallow conventional continuous and spread footings bearing on soil compacted per the "Grading" section of this report may be used to support the buildings/structures. Grade beams should also be placed across all large entrances into the buildings/structures. Footings and grade beams should have a minimum depth of 18 inches below lowest adjacent grade, and footing and grade beam dimensions should also conform to the applicable requirements of CBC Section 1809A (CBSCa, 2016). All spread footings should be a minimum of 2 feet square. Grade beams should also interconnect with spread footings that are less than 3 feet by 3 feet in size on at least two sides. Footing and grade beamreinforcement should be in accordance with the requirements of the architect/engineer; minimum continuous footing and grade beam reinforcement should consist of two No. 4 rebar, one near the top and one near the bottom of the footing or grade beam.

2. Footings should be designed using a maximum allowable bearing capacity of 2,000 psf dead plus live load. The allowable bearing capacity may be increased by 200 psf for each additional 6 inches of embedment below a depth of 18 inches below lowest adjacent grade. The allowable bearing capacity should not exceed 3,000 psf dead plus live loads.

3. Rigid mat foundations should be designed using an allowable bearing capacity of 400 psf dead plus live load for loads distributed over the foundation footprint. They may also be designed using a modulus of subgrade reaction of 50 psi/inch.

4. Using the criteria in the previous two paragraphs, maximum total and differential settlement under static conditions are expected to be on the order of 0.75 inches and 0.25 inches in 40 feet, respectively. Foundations should also be designed to accommodate total and differential settlement due to liquefaction and seismically

induced settlement of dry sand of 1.5 inches and 0.75 inches across the largest building footprint dimension, respectively.

5. Lateral loads may be resisted by soil friction and by passive resistance of the soil acting on foundations. Lateral capacity is based on the assumption that backfill adjacent to foundations is properly compacted. A passive equivalent fluid pressure of 300 pcf and a coefficient of friction of 0.35 may be used in design. These are ultimate values as no factors of safety, load factors, and/or other factors have been applied to any of the values.

Deep Foundations

6. CIDH piles should have a minimum diameter of 24 inches, should have a minimum depth of 10 feet below lowest adjacent grade, and should not be constructed closer than three pile diameters (clear span) to each other without approval from the geotechnical engineer.

7. Allowable skin friction values for compression are shown on the Allowable Axial Capacity for CIDH Piles in Compression Chart presented in Appendix F and should be used for the soil; all end bearing capacity should be neglected. The allowable tension values may be determined using two-thirds of the compression values. Using these criteria, individual pile settlement should not exceed 0.5 inches, and differential settlement between the piles should not exceed 0.125 inches.

8. An ultimate passive equivalent fluid pressure of 300 pcf for soil should be used to determine the lateral capacity of the piles. This ultimate value may require application of appropriate factors of safety, load factors, and/or other factors as deemed appropriate by the architect/engineer.

9. The upper soils may not stand vertically during pile construction. Casing, drill fluid, or other means of keeping the holes open could be necessary.

10. Depending on the location and depth of the piles and the weather conditions at and preceding the time of construction, subsurface water could be encountered during pile drilling operations. Therefore, pile reinforcing should be designed to accommodate a minimum 5-inch diameter tremie pipe. Any water encountered should be removed from the hole prior to placing PCC, or the PCC should be tremied. The recommended Tremie Method is presented in Appendix F.

11. As the piles will utilize skin friction for support, it is not necessary to thoroughly clean the bottoms of the excavations, although excessive loose debris and slough material should be removed. As stated earlier, use of any end bearing capacity is not recommended.

12. PCC used in the piles should be placed at a slump between 4 and 6 inches in dry excavations and between 7 and 9 inches when placed under water.

13. The piles should not deviate from a plumb line taken from the center of the pile by more than 2 percent of the pile length, from the top to the point of interest. Adequate pile oversize may be assumed to provide required tolerance.

General Recommendations and Comments for Shallow and Deep Foundations

14. The allowable bearing and friction capacities may be increased by one-third when transient loads such as wind or seismicity are included. The foundations should be designed using the seismic parameters presented within the Tetra Tech, Inc. Engineering Geology report.

15. Due to the sandy soil conditions at the site, settlement is expected to occur over a very short period of time after the loads on the foundations are applied; long term settlements are not anticipated to be significant.

16. Foundation excavations should be observed by the geotechnical engineer prior to placement of reinforcing steel or any formwork. Foundation excavations should be thoroughly moistened prior to PCC placement and no desiccation cracks should be present.

17. The Corrosion Evaluation Report prepared by CERCO Analytical and presented in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for all foundation elements.

Retaining Walls

1. All retaining wall foundations should be founded in soil compacted as recommended in the "Grading" section of this report and should be designed per the recommendations presented in the "Foundation" section of this report. It is assumed that retaining walls will not exceed 6 feet in height.

2. As we have assumed that retaining wall heights will not exceed a height of 6 feet, seismic design per CBC Section 1803A.5.12.1 (CBSCa, 2016) is not required. If retaining walls will retain more than 6 feet of soil, seismic design will be required by the geotechnical engineer.

3. Wall design should be based on the following parameters:

Active equivalent fluid pressure (native soils or imported sand or gravel backfill)	35 pcf
At-rest equivalent fluid pressure (native soils or imported sand or gravel backfill)	50 pcf
Passive equivalent fluid pressure (compacted fill)	300 pcf
Maximum toe pressure (compacted fill)	2,000 psf
Coefficient of sliding friction (compacted fill)	0.35

4. No surcharges are taken into consideration in the above values. The maximum toe pressure is an *allowable* value to which a factor of safety has been applied. No factors of safety, load factors, and/or other factors have been applied to any of the remaining values.

5. The above pressures are applicable to a horizontal retained surface behind the wall. Walls having a retained surface that slopes upward from the wall should be designed for an additional equivalent fluid pressure of 1 pcf for the active case and 1.5 pcf for the at-rest case, for every degree of slope inclination.

6. The active and at-rest values presented above are for drained conditions. Consequently, retaining walls should be drained with rigid perforated pipe encased in a free draining gravel blanket. The pipe should be placed perforations downward and should discharge in a nonerosive manner away from foundations and other improvements. The gravel blanket should have a width of approximately 1-foot and should extend upward to approximately 1-foot from the top of the wall. The upper foot should be backfilled with on-site soil, except in areas where a slab or pavement will abut the top of the wall. In such cases, the gravel backfill should extend up to the material that supports the slab or pavement. To reduce infiltration of the soil into the gravel, a permeable synthetic fabric conforming to the Standard Specifications Section 96-1.02B – Class "C," (Caltrans, 2015) should be placed between the two. Manufactured geocomposite wall drains conforming to the Standard Specifications Section 96-1.02C (Caltrans, 2015) are acceptable alternatives to the use of gravel, provided that they are installed in accordance with the recommendations of the manufacturer. Where drainage can be properly controlled, weep holes on maximum 4-foot centers may be used in lieu of perforated pipe. A filter fabric as described above should be placed between the weep holes and the drain gravel.

7. Retaining walls where moisture transmission through the wall would be undesirable should be *thoroughly* waterproofed in accordance with the specifications of the architect/engineer.

8. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures, and that surface treatments on walls often crack. Where walls are to be plastered or otherwise have a finish applied, the flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical control joints, etc. The flexibility should also be considered where a retaining wall will abut or be connected to a rigid structure, and where the geometry of the wall is such that its flexibility will vary along its length.

Slabs-on-Grade and Exterior Flatwork

1. Conventional interior light duty PCC slabs-on-grade and exterior flatwork should have a minimum thickness of 4 full inches; however, the thickness of heavy duty slabs and flatwork should be specified by the architect/engineer. Conventional foundation slabs-on-grade should be doweled to footings and grade beams with dowels.

2. Reinforcement size, placement, and dowels should be as directed by the architect/engineer. Light duty exterior flatwork should be reinforced, at a minimum, with No. 3 rebar at 24 inches on-center each way. Heavy duty exterior flatwork should have minimum rebar sizing and spacing that meets the criteria of American Concrete Institute (ACI) 318, Section 7.12.2 (ACI, 2014). A modulus of subgrade reaction (K_{30}) of 50 psi/inch may be used in the design of heavy duty slabs-on-grade founded on compacted native soil. The modulus of subgrade reaction (K_{30}) may be increased to 150 psi/inch if the slab is underlain with a minimum of 6 inches of compacted Class 2 AB (Caltrans, 2015), and to 250 psi/inch if the slab is underlain with a minimum of 12 inches of compacted Class 2 AB.

3. Due to the current use of impermeable floor coverings, water-soluble flooring adhesives, and the speed at which buildings are now constructed, moisture vapor transmission through slabs is a much more common problem than in past years. Where moisture vapor transmitted from the underlying soil would be undesirable, the slabs should be protected from subsurface moisture vapor. A number of options for vapor protection are discussed below; however, the means of vapor protection, including the type and thickness of the vapor retarder, if specified, are left to the discretion of the architect/engineer.

4. Where specified, vapor retarders should conform to ASTM E1745-17. This standard specifies properties for three performance classes, Class "A", "B" and "C". The appropriate class should be selected based on the sensitivity of floor coverings to moisture intrusion and the potential for damage to the vapor retarder during placement of slab reinforcement and concrete.

5. Several recent studies, including those of ACI Document 302.1R-15 (ACI, 2015), have concluded that excess water above the vapor retarder increases the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. The studies also concluded that it is preferable to eliminate the typical sand layer beneath the slab and place the slab concrete in direct contact with a Class "A" vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder requires special attention to using the proper vapor retarder, a very low water-cement ratio in the concrete mix, and special finishing and curing techniques.

6. Probably the next most effective option would be the use of vapor-inhibiting admixtures in the slab concrete mix and/or application of a sealer to the surface of the slab. This would also require special concrete mixes and placement procedures, depending upon the recommendations of the admixture or sealer manufacturer.

7. Another option that may be a reasonable compromise between effectiveness and cost considerations is the use of a subslab vapor retarder protected by a sand layer, however this would increase the potential for moisture damage to floor coverings and for mold growth or other microbiological contamination. If a Class "A" vapor retarder is specified, the retarder can be placed directly on the material at pad grade. The retarder should be covered with a minimum 2 inches of clean sand. If a less durable vapor retarder is specified (Class "B" or "C"), a minimum of 4 inches of clean sand should be provided on top of the material at pad grade, and the retarder should be placed in the center of the clean sand layer. Clean sand is defined as well or poorly graded sand (ASTM D2487-17) of which less than 3 percent passes the No. 200 sieve. The site soils do not fulfill the criteria to be considered "clean" sand.

8. Regardless of the underslab vapor retarder selected, proper installation of the retarder is critical for optimum performance. All seams must be properly lapped, and all seams and utility penetrations properly sealed in accordance with the vapor retarder manufacturer's recommendations. Installation should conform to ASTM E1643-18a.

9. If sand is used between the vapor retarder and the slab, it should be moistened only as necessary to promote concrete curing; saturation of the sand should be avoided, as the excess moisture would be on top of the vapor retarder, potentially resulting in vapor transmission through the slab for months or years.

10. In conventional construction, it is common to use four to six inches of sand beneath exterior flatwork. Another measure that can be taken to reduce the risk of movement of flatwork is to provide thickened edges or grade beams around the perimeters of the flatwork. The thickened edges or grade beams could be up to 12 inches deep, with the deeper edges or grade beams providing better protection. At a minimum,

the thickened edge or grade beam should be reinforced by two No. 4 rebar, one near the top and one near the bottom.

11. Flatwork should be constructed with frequent joints to allow articulation as flatwork moves in response to seasonal moisture and/or temperature variations causing minor expansion and contraction of the soil, or variable bearing conditions. The soil in the subgrade should be moistened to at least optimum moisture content and no desiccation cracks should be present prior to casting the flatwork.

12. Where maintaining the elevation of the flatwork is desired, the flatwork should be doweled to the perimeter foundation as specified by the architect/engineer. In other areas, the flatwork may be doweled to the foundation or the flatwork may be allowed to "float free," at the discretion of the architect/engineer. Flatwork that is intended to float free should be separated from foundations by a felt joint or other means.

13. To reduce shrinkage cracks in PCC, the PCC aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the PCC should be properly placed and finished, contraction joints should be installed, and the PCC should be properly cured. PCC materials, placement, and curing specifications should be at the direction of the architect/engineer. The Guide for Concrete Floor and Slab Construction (ACI, 2015) is suggested as a resource for the architect/engineer in preparing such specifications.

Pavement Sections

Two bulk samples were tested for R-value per ASTM D2488/D2488M-13. The two tests yielded R-values of 9 and 12. These R-value test results indicate that the upper site soils have a very low resistance to the types of loads imposed by traffic.

The following preliminary pavement structural sections are based on an average R-value of 10, and should be used for preliminary cost estimating purposes only. After the site soils are graded and placed up to near the subgrade elevation, the upper soils exposed within the access driveways and parking areas should then be tested for R-value to verify that these preliminary pavement structural sections are appropriate; otherwise, revised pavement sections should be prepared. Preliminary pavement structural sections are provided for Traffic Indices (TI) of 4.5, 5.0, 5.5, 6.0, 6.5, and 7.0. Determination of the appropriate TI for specific areas is left to others. The pavement sections were calculated in accordance with the Highway Design Manual (Caltrans, 2016). The calculated AB and HMA thickness are for compacted material. Normal Caltrans construction tolerances should apply.

Preliminary Pavement Structural Sections

R-value	TI	HMA (inches)	Class 2 AB (inches)
10	4.5	2.50	8.50
10	5.0	2.75	9.50
10	5.5	3.00	11.00
10	6.0	3.25	12.00
10	6.5	3.75	13.50
10	7.0	4.00	14.50

1. The upper 12 inches of subgrade and all AB should be compacted to a minimum of 95 percent of maximum dry density.

2. Subgrade and AB should be firm and unyielding when proof-rolled by heavy rubber-tired equipment prior to paving.

3. Where HMA will lie within 5 feet of landscape or drainage improvements, the HMA should be separated from these improvements by deepened curbs or other means that will reduce the potential for moisture fluctuations in the soils beneath the HMA and improve the stability of the curbs.

4. Finished HMA surfaces should slope toward drainage facilities such that rapid runoff will occur and no ponding is allowed on or adjacent to the HMA.

Drainage and Maintenance

1. Per CBC Section 1804A.4 (CBSCa, 2016) unpaved ground surfaces should be *finish graded* to direct surface runoff away from foundations and other improvements at a minimum 5 percent grade for a minimum distance of 10 feet. The site should be similarly sloped to drain away from foundations, and other improvements during construction. Where this is not practicable due to property lines, other structures or improvements, etc., swales with improved surfaces, area drains, or other drainage facilities, should be used to collect and discharge runoff.

2. The eaves of the new building/structure roofs should be fitted with gutters. Runoff from flatwork, roof gutters, downspouts, planter drains, area drains, etc. should discharge in a nonerosive manner away from foundations and other improvements in accordance with the requirements of the governing agencies. Erosion protection should be placed at all discharge points unless the discharge is on a pavement surface.

3. To reduce the potential for planter drainage gaining access to subslab areas, any raised planter boxes adjacent to foundations should be installed with drains and sealed sides and bottoms. Drains should also be provided for areas adjacent to the structure and in landscape areas that would not otherwise freely drain.

4. The site soils are highly erodible. If the soils are disturbed during construction, stabilization of the soils by vegetation or other means, *during* and *following* construction, is essential to reduce erosion damage. Care should be taken to establish and maintain vegetation. The landscaping should be planned and installed to maintain the surface drainage recommended above. Surface drainage should also be maintained during construction.

5. Maintenance of drainage improvements and other surface improvements is critical to the long-term stability of the site and the integrity of the buildings/structures. Site improvements should be maintained on a regular basis.

6. Finished flatwork surfaces should be sloped to freely drain toward appropriate drainage facilities. Water should not be allowed to stand or pond on or adjacent to exterior pedestrian flatwork, or other improvements as it could infiltrate into the AB and/or the subgrade soils, causing premature deterioration of pavement, flatwork, or other improvements. Any cracks that develop in the pavement and flatwork should be promptly sealed.

7. All exterior drains and drain outlets should be maintained to be free-flowing. Care should be taken to establish and maintain vegetation. Vegetation and erosion matting (if utilized) should be maintained or augmented as needed. Irrigation systems should be maintained so that soils around structures are maintained at a relatively uniform year-round moisture content, and are neither over-watered nor allowed to dry and desiccate.

8. The owner or site maintenance personnel should periodically observe the areas within and around the site for indications of rodent activity and soil instability. The owner or site maintenance personnel should also implement an aggressive program for controlling the rodent activity in the general area.

Construction Observation and Testing

1. It must be recognized that the recommendations contained in this report are based on a limited number of borings and CPT soundings, and rely on continuity of the subsurface conditions encountered. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to review final plans once

they are available, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

2. At a minimum, the geotechnical engineer should be retained to provide:
    - Review of final grading, utility, and foundation plans
    - Professional observation during grading, foundation excavations, and trench backfill
    - Oversight of compaction testing during grading
    - Oversight of special inspection during grading

3. Special inspection of grading should be provided as per CBC Section 1705A.6 and CBC Table 1705A.6 (CBSCa, 2016). Deep foundation construction should be considered to fall under CBC Section 1705A.8 (CBSCa, 2016) "Cast-in-Place Deep Foundations." Special inspection of the installation of CIDH piles should be provided as per CBC Table 1705A.8 (CBSCa, 2016). The special inspector should be under the direction of the geotechnical engineer. In our opinion, all construction associated with the deep foundations should be subject to continuous special inspection. It is our opinion that none of the grading construction is of a nature that should warrant continuous special inspection; periodic special inspection should suffice. Subject to approval by the Building Official, the exception to continuous special inspection is described in CBC Section 1704A.2 (CBSCa, 2016) and should be specified by the architect/engineer and periodic special inspection of the following items should be provided by the special inspector.
    - Stripping and clearing of vegetation
    - Overexcavation to the recommended depths
    - Scarification, moisture conditioning, and compaction of the soil
    - Fill quality, placement, and compaction
    - Utility trench backfill
    - Retaining wall drains and backfill

- Foundation excavations
- Subgrade and AB compaction and proofrolling

4. A program of quality control should be developed prior to beginning grading. The contractor or project manager should determine any additional inspection items required by the architect/engineer or the governing jurisdiction.

5. Locations and frequency of compaction tests should be as per the recommendation of the geotechnical engineer at the time of construction. The recommended test location and frequency may be subject to modification by the geotechnical engineer, based upon soil and moisture conditions encountered, size and type of equipment used by the contractor, the general trend of the results of compaction tests, or other factors.

6. A preconstruction conference among the school district, the DSA project inspector, the geotechnical engineer, the City of Oxnard, the special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements.

7. The geotechnical engineer should be notified at least 48 hours prior to beginning construction operations. If Earth Systems Pacific is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

8.0 CLOSURE

Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either

expressed or implied. This report is intended for the exclusive use by the client as discussed in the “Scope of Services” section. Application beyond the stated intent is strictly at the user's risk.

This report is valid for conditions as they exist at this time for the type of project described herein. The conclusions and recommendations contained in this report could be rendered invalid, either in whole or in part, due to changes in building codes, regulations, standards of geotechnical or construction practice, changes in physical conditions, or the broadening of knowledge.

If changes with respect to the project become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions used in the preparation of this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report should comply with the CBC of other applicable standards, and the requirements of the governing jurisdiction.

The preliminary recommendations presented in this report are based upon the geotechnical conditions encountered at the site, and may be augmented by additional requirements of the client, or by additional recommendations provided by the geotechnical engineer based on peer or jurisdiction reviews, or conditions exposed at the time of construction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and the client’s authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text

TECHINICAL REFERENCES

ACI (American Concrete Institute). 2015. "Guide for Concrete Floor and Slab Construction." Documents 302.1R-15, ACI.

ACI (American Concrete Institute). 2014. "Building Code Requirements for Structural Concrete." Document 318, ACI.

ASCE (American Society of Civil Engineers). 2013. *Minimum Design Loads for Buildings and other Structures (7-10, third printing).* Standards ASCE/SEI 7-10, ASCE.

ASTM (American Society for Testing Materials). 2018. *Annual Book of Standards*. ASTM.

California Division of Mines and Geology. [1997] 2008. *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication* 117a. California Division of Mines and Geology.

California Geologic Survey. 2013 October. "Checklist for Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings." Note 48, California Geologic Survey.

Cal/OSHA. 2007 *"Pocket Guide for the Construction Industry - Excavation, Trenches, and Earthwork."*

Caltrans (California Department of Transportation). 2016. "Flexible Pavement, Chapter 630." *Highway Design Manual.*

Caltrans (California Department of Transportation). 2015. "Standard Specifications." Caltrans.

CBSCa (California Building Standards Commission). 2016. *California Building Code (CBC).* CBSC.

CBSCb (California Building Standards Commission). 2016. "Title 24." *California Code of Regulations*. CBSC.

Google Earth. 2018. U.S. Department of State Geographer. *Google Earth Website*. Retrieved from: http://www.google.com/earth/index.html

USGS (United States Geological Survey). 2018. "Unified Hazard Tool." United States Geological Survey. Retrieved from: http://earthquake.usgs.gov/hazards/interactive/

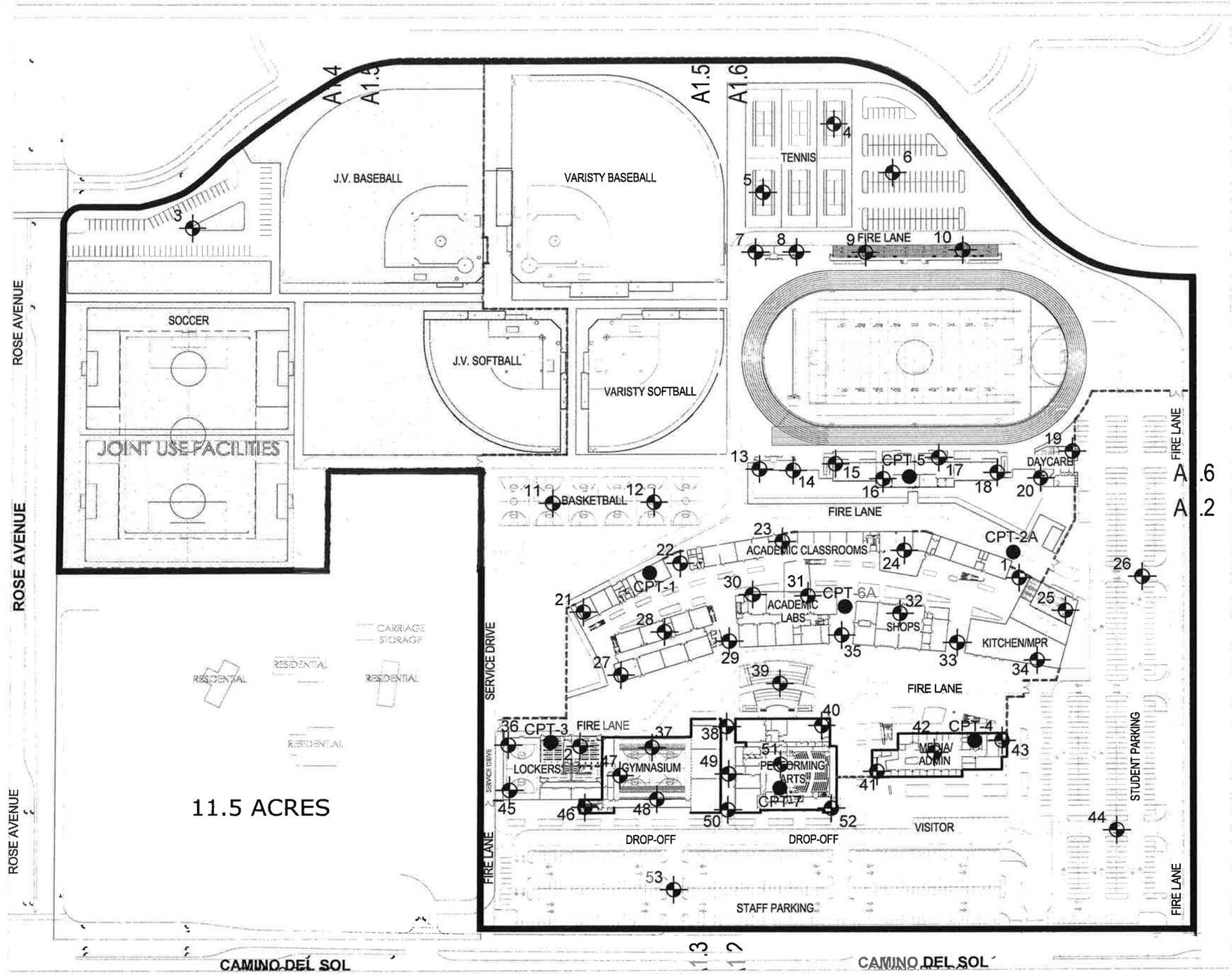
APPENDIX A

Exploration Location Map

Boring Log Legend

Boring Logs

Graphical CPT Data



LEGEND

53 **Boring Location (Approx.)**

CPT-7 **CPT Test Location (Approx.)**

N

NOT TO SCALE

BASE MAP PROVIDED BY: THE CLIENT

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EXPLORATION LOCATION MAP

OXNARD HIGH SCHOOL NO. 8

Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

Date
August 31, 2018

Project No.
301953-002

Oxnard Union High School No. 8 ELM 10-5-18 Revised.dwg

Earth Systems Pacific

BORING LOG LEGEND

SAMPLE / SUBSURFACE WATER SYMBOLS	GRAPH. SYMBOL
CALIFORNIA MODIFIED	
STANDARD PENETRATION TEST (SPT)	
SHELBY TUBE	
BULK	
SUBSURFACE WATER DURING DRILLING	
SUBSURFACE WATER AFTER DRILLING	

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

MAJOR DIVISIONS	GROUP SYMBOL	TYPICAL DESCRIPTIONS	GRAPH. SYMBOL
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GP	POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES	
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES	
	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	
	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES	
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES	
FINE GRAINED SOILS (HALF OR MORE OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE)	ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	

OBSERVED MOISTURE CONDITION

DRY	SLIGHTLY MOIST	MOIST	VERY MOIST	WET (SATURATED)

CONSISTENCY

COARSE GRAINED SOILS			FINE GRAINED SOILS		
BLOWS/FOOT		DESCRIPTIVE TERM	BLOWS/FOOT		DESCRIPTIVE TERM
SPT	CA SAMPLER		SPT	CA SAMPLER	
0-10	0-16	LOOSE	0-2	0-3	VERY SOFT
11-30	17-50	MEDIUM DENSE	3-4	4-7	SOFT
31-50	51-83	DENSE	5-8	8-13	MEDIUM STIFF
OVER 50	OVER 83	VERY DENSE	9-15	14-25	STIFF
			16-30	26-50	VERY STIFF
			OVER 30	OVER 50	HARD

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENING		
# 200	# 40	# 10	# 4	3/4"	3"	12"

SILT & CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

TYPICAL BEDROCK HARDNESS

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
EXTREMELY HARD	CORE, FRAGMENT, OR EXPOSURE CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS
VERY HARD	CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CORE OR FRAGMENT BREAKS WITH REPEATED HEAVY HAMMER BLOWS
HARD	CAN BE SCRATCHED WITH KNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE); HEAVY HAMMER BLOW REQUIRED TO BREAK SPECIMEN
MODERATELY HARD	CAN BE GROOVED 1/16 INCH DEEP BY KNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE; CORE OR FRAGMENT BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE
SOFT	CAN BE GROOVED OR GOUGED EASILY BY KNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL; BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE
VERY SOFT	CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH KNIFE; BREAKS WITH LIGHT MANUAL PRESSURE

TYPICAL BEDROCK WEATHERING

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
FRESH	NO DISCOLORATION, NOT OXIDIZED
SLIGHTLY WEATHERED	DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES: SOME FELDSPAR CRYSTALS ARE DULL
MODERATELY WEATHERED	DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES, USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "RUSTY", FELDSPAR CRYSTALS ARE "CLOUDY"
INTENSELY WEATHERED	DISCOLORATION OR OXIDATION THROUGHOUT; FELDSPAR AND Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT, OR CHEMICAL ALTERATION PRODUCES IN SITU DISAGGREGATION
DECOMPOSED	DISCOLORATION OR OXIDATION THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; FELDSPAR AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY

drafting/masters/Boring Log Legend121714.dwg

Earth Systems Pacific

Boring No. 1
PAGE 1 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04-10-2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, moist (Alluvium)	0-4	○			
4		thin lens of sandy silt					
4	SP	POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	■	98.0	3.5	2 4 6
10	SW	WELL GRADED SAND: gray brown, medium dense, moist	10.0-11.5	■	108.6	3.1	5 10 15
13		trace fine to coarse gravel					
15			15.0-16.5	■	115.0	3.5	9 20 24
20			20.0-21.5	●			9 16 21
25		wet ▼					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 1
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 04/10/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30	SW-SM		WELL GRADED SAND WITH SILT AND GRAVEL: gray brown, dense, wet, fine to coarse gravel	30.0-31.5	●			6, 17, 20
40			medium dense, thin discontinuous lenses of fine to very fine grained silty sand	40.0-41.5	●			3, 4, 12
50			dense	50.0-51.5	●			8, 15, 21
53			End of Boring @ 51.5' Subsurface water encountered @ 24.5'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04-10-2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, moist (Alluvium)	0-2.5	○			
3	ML		SANDY SILT: gray brown, medium stiff, moist, trace clay	2.5-5	○			
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	■	99.5	7.3	4 5 9
6				5-9	○			
9			gray brown, medium dense	10.0-11.5	■	110.6	4.9	7 14 21
12	SW		WELL GRADED SAND: gray brown, medium dense, moist, trace fine to coarse gravel	15.0-16.5	■	106.2	3.9	9 16 25
20				20.0-21.5	●			3 5 6
21			wet ▼					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04/10/2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SP		POORLY GRADED SAND: brown, medium dense, wet, medium grained, trace fine to coarse gravel, thin lenses of sandy silt					
30				30.0-31.5	●			4 7 9
32			some gravel					
34	SW-SM		WELL GRADED SAND WITH SILT: gray brown, medium dense, wet, trace fine to coarse gravel					
39			gray					
40				40.0-41.5	●			7 9 11
48	SM		SILTY SAND: gray, medium dense, wet, fine grained					
50				50.0-51.5	●			5 7 12
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 3
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)	0-4	○			2
2			moist	2.0-3.5	■	101.5	7.3	4 4
4	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	97.0	7.8	3 6 9
10				10.0-11.5	●			2 6 9
11			medium dense					
12			End of Boring @ 11.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 4
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, moist (Alluvium)	2.0-3.5	Ring	98.8	11.9	1, 2, 3
5	SP	POORLY GRADED SAND: light brown, loose, moist, trace gravel	5.0-6.5	Ring	94.1	5.8	3, 6, 7
8	SW	WELL GRADED SAND: light brown, loose, moist	8.5-10.0	SPT			3, 3, 6
10		End of Boring @ 10.0' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 5

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown, loose, slightly moist (Alluvium)					
2			very moist, trace clay, decreasing silt content	2.0-3.5	■	95.4	17.0	1, 2, 2
3				2-5	○			
5	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	96.0	10.0	2, 4, 8
8	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	8.5-10.0	●			4, 6, 7
10			End of Boring @ 10.0' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 6

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown, loose, slightly moist (Alluvium)					
1			moist					2
2				2.0-3.5	■	97.9	9.3	2
3								3
4	ML		SANDY SILT: brown to light brown, soft, very moist					1
5				5.0-6.5	■	89.3	30.5	3
6				4-7	○			4
7	SP		POORLY GRADED SAND: light brown, loose, moist					
8								4
9				8.5-10.0	●			5
10			medium dense					6
11			End of Boring @ 10.0'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 7
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown to brown, loose, slightly moist (Alluvium)					
2			moist					
5	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel	5.0-6.5	■	90.9	5.4	2 3 6
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.8	4.2	4 10 11
15				15.0-16.5	●			4 8 10
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 8
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist, trace clay					
4	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel	5.0-6.5	■	95.8	5.9	2, 5, 7
9			medium dense	10.0-11.5	■	101.2	7.4	7, 12, 12
12	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel, trace clay	15.0-16.5	●			5, 9, 10
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 9
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist, trace clay					
4	SP		POORLY GRADED SAND: light brown, loose, very moist, trace fine gravel	5.0-6.5	■	96.2	16.3	2, 4, 5
10			medium dense, moist	10.0-11.5	■	98.9	3.6	7, 11, 13
12	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine to coarse gravel, trace clay					
15				15.0-16.5	■	116.1	3.9	5, 9, 16
18			trace cobbles					
20			dense	20.0-21.5	●			7, 14, 18
24	CL		LEAN CLAY: brown to gray brown, very soft, very moist, trace silt	25.0-26.5	●			0, 1, 1
26			End of Boring @ 26.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 10
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
5				5.0-6.5	■	87.0	31.2	1, 2, 2
7			very moist					
7	SP		POORLY GRADED SAND: light brown, loose, moist					
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.7	3.5	6, 17, 22
15	SC		CLAYEY SAND: brown, loose, very moist, trace fine gravel	15.0-16.5	●			4, 5, 6
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 11

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0 - 2	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
			moist	2.0-3.5	■	97.6	11.9	2, 3, 4
4 - 5	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	101.9	6.6	2, 5, 9
9 - 10	SW		WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	●			6, 9, 12
11 - 12			End of Boring @ 11.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 12

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			very moist					1
2				2.0-3.5	■	94.0	17.7	3
3								4
4	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel					4
5				5.0-6.5	■	98.4	4.2	8
6								10
7								
8								3
9				8.5-10.0	●			4
10								8
11			End of Boring @ 10.0'					
12			No Subsurface Water Encountered					
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 13
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-19-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SW		WELL GRADED SAND: light brown, medium dense, moist	5.0-6.5	■	97.3	3.9	4 6 11
10			thin lense of very moist silty sand ~ 2" to 3" thick	10.0-11.5	■	106.4	4.5	2 7 17
15				15.0-16.5	●			7 15 18
16			dense					
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 14

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-23-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SW		WELL GRADED SAND: light brown, loose, moist					
5				5.0-6.5	■	100.1	3.7	4 7 8
6			trace fine gravel					
9			lense of poorly graded sand					
10				10.0-11.5	■	89.6	15.7	0 2 7
14			trace cobbles					
15			dense	15.0-16.5	■	105.1	9.4	8 21 28
20				20.0-21.5	●			7 17 16
22			wet, flow sands ▼					
25			blow count from 26.0' to 26.5' not reliable due to flow sands	25.0-26.5	●			10 17 22
26			End of Boring @ 26.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 15

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-19-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
2								
3			increasing silt content					
4	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	5.0-6.5	■	109.4	6.3	3 8 10
5								
6								
7								
8								
9								
10				10.0-11.5	■	98.4	6.2	7 10 17
11								
12								
13								
14								
15				15.0-16.5	●			1 4 9
16								
17			End of Boring @ 16.5' No Subsurface Water Encountered					
18								
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 16

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-23-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, slightly moist (Alluvium)					
2		moist					
4	SP	POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	92.5	5.5	3, 5, 8
8	SW	WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	■	98.6	4.4	5, 11, 23
15		dense	15.0-16.5	■	112.6	4.7	11, 24, 36
17		trace fine gravel					
20		medium dense	20.0-21.5	●			8, 11, 14
21		very moist					
22		wet, flow sands ▼					
24							7, 14, 17
25		dense	25.0-26.5	●			

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 16
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07/23/2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30				30.0-31.5	●			10 17 23
31			trace fine to coarse gravel and cobbles, blow count from 31.0' to 31.5' not reliable due to rocks					
34								15
35			cobbles end	35.0-36.5	●			15 18
40				40.0-41.5	●			5 20 23
43			trace cobbles					
45				45.0-46.0	●			18 50/6.0"
46			End of Boring @ 46.0' Due to Refusal Subsurface water encountered @ 22.5'					
53								

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 17
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-23-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3			increasing silt content					
5				5.0-6.5	■	103.3	7.6	1, 4, 7
7	SW		WELL GRADED SAND: light brown, loose, moist, trace fine to coarse gravel and cobbles					
10			medium dense	10.0-11.5	■	104.7	3.4	5, 15, 20
15				15.0-16.5	●			8, 11, 8
16			thin silt lense ~2" thick					
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 18

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-24-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	ML		SANDY SILT: brown, very soft, very moist	5.0-6.5	■	80.5	36.1	1 1 2
7	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel					
10	SW		WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	■	117.5	3.2	6 11 15
14			trace fine gravel	15.0-16.5	●			2 5 7
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 19
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-20-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4			very moist, increasing silt content	5.0-6.5	■	93.4	25.6	1, 2, 2
7	SW		WELL GRADED SAND: light brown, loose, moist					
10			medium dense, slightly moist, trace fine gravel	10.0-11.5	■	103.5	2.8	5, 10, 15
15			moist	15.0-16.5	●			6, 11, 12
16			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 20
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-20-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4			increasing silt content					1
5				5.0-6.5	■	90.8	26.2	1 2
5			very moist					
6				4-7	○			
9	SW		WELL GRADED SAND: light brown, loose, moist					1
10				10.0-11.5	■	109.7	4.3	1 1
12			thin ~2" thick lense of sandy silt					
14			medium dense					10
15				15.0-16.5	■	108.8	3.9	23 27
15			dense, trace fine to coarse gravel					
19			trace cobbles					1
20				20.0-21.5	●			1 3
20			loose, very moist, thin lense of silty sand ~1" to 2" thick					
25			wet, medium dense ▼	25.0-26.5	●			5
25								12 16
26			End of Boring @ 26.5'					
			Subsurface Water Encountered at 25.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 21

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4			increasing silt content					
5				5.0-6.5	■	99.8	9.2	2, 3, 7
6			decreasing silt content					
7	SP		POORLY GRADED SAND: light brown, loose, moist					
10			medium dense	10.0-11.5	■	111.2	4.8	6, 12, 29
12	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel					
15			thin lense of silt and clay ~4" thick	15.0-16.5	●			4, 12, 13
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 22

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-18-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	SP		POORLY GRADED SAND: light brown, loose, very moist	5.0-6.5	■	95.1	16.5	4, 6, 8
10			medium dense, moist	10.0-11.5	■	104.5	8.6	7, 11, 13
14	SW		WELL GRADED SAND: light brown, loose, very moist, trace fine to coarse gravel	15.0-16.5	■	83.5	36.5	5, 6, 8
18			trace fine to coarse gravel and cobbles					
20				20.0-21.5	●			8, 12, 14
21			medium dense, wet ▼					
24								11, 11, 16
25			trace fine gravel, flow sands	25.0-26.5	●			
26								

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 22
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07/18/2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30				30.0-31.5	●			1 7 12
35				35.0-36.5	●			5 10 15
36	SP		POORLY GRADED SAND: light brown, medium dense, wet					
40			thin lenses of very fine grained silty sand	40.0-41.5	●			0 5 16
41	SW		WELL GRADED SAND: light brown, medium dense, wet, trace fine gravel					
45				45.0-46.5	●			3 10 22
47			dense					
50			medium dense	50.0-51.5	●			6 13 13
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 23

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

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JOB NO.: 301953-002
DATE: 07-18-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
5			very moist	5.0-6.5	■	83.1	23.4	1, 1, 3
9	SW		WELL GRADED SAND WITH GRAVEL: light brown, loose, moist	10.0-11.5	■	85.9	35.2	3, 1, 5
10			thin lense of very moist sandy silt					
12			decreasing gravel content					
14			medium dense	15.0-16.5	●			8, 11, 15
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 24

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-24-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, slightly moist (Alluvium)					
1		moist					
3		thin lense of sandy silt					
4	SP	POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	91.2	5.5	3 4 6
7	SW	WELL GRADED SAND: light brown, loose, moist, trace fine gravel					
10			10.0-11.5	■	101.0	4.4	3 5 8
15		medium dense, slightly moist	15.0-16.5	■	103.0	2.4	6 14 18
20		dense, moist	20.0-21.5	●			8 14 18
24		wet, medium dense	25.0-26.5	●			6 11 15
26		End of Boring @ 26.5' Subsurface Water Encountered at 24.5'					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 25

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-20-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
2								2
3								
4								
5				5.0-6.5	■	87.5	18.9	2
6			thin lense of very moist sandy silt					4
7	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel					
8								
9								4
10				10.0-11.5	■	103.6	5.8	8
11								14
12								
13								
14								16
15			dense	15.0-16.5	●			17
16								21
17			End of Boring @ 16.5'					
18			No Subsurface Water Encountered					
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 26

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, moist (Alluvium)					0
2			very moist	2.0-3.5	■	93.1	21.8	2 3
4	SP		POORLY GRADED SAND: light brown, loose, moist					2
5				5.0-6.5	■	98.6	3.7	7 7
8								3
9			medium dense	8.5-10.0	●			6 8
10			End of Boring @ 10.0' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 27

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3			gray brown, increasing silt content					
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist	5.0-6.5	■	101.9	8.2	3, 5, 7
9			medium dense					
10	SW		WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	■	112.0	5.8	8, 16, 23
14			trace fine gravel					
15				15.0-16.5	■	98.7	4.0	9, 21, 27
20			▼	20.0-21.5	●			2, 3, 4
21			wet, loose, thin lenses ~2" thick of sandy silt					
25			dense	25.0-26.5	●			13, 14, 21
26			End of Boring @ 26.5' Subsurface Water Encountered at 20.5'					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 28

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

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JOB NO.: 301953-002
DATE: 07-17-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist	5.0-6.5	■	98.0	7.9	3, 5, 5
10			medium dense	10.0-11.5	■	108.0	6.6	7, 15, 20
15	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel, trace clay	15.0-16.5	●			7, 10, 8
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 29

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-18-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3			increasing silt					
4	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist	5.0-6.5	Ring	96.9	8.1	3, 6, 8
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	Ring	107.4	3.9	6, 10, 13
15				15.0-16.5	SPT			6, 13, 11
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 30
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
5	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel	5.0-6.5	■	95.4	5.2	3, 6, 7
6	SW		WELL GRADED SAND: light brown, loose, moist, trace fine gravel					
10			medium dense	10.0-11.5	■	105.9	5.8	6, 13, 18
15				15.0-16.5	●			12, 13, 17
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 31
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-24-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	SW		WELL GRADED SAND: light brown, medium dense, slightly moist, trace fine to coarse gravel and cobbles	5.0-6.5	■	125.5	2.5	4 7 11
10			moist	10.0-11.5	■	103.2	4.1	4 9 15
14			interbedded with thin lenses of poorly graded sand	15.0-16.5	●			6 9 13
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 32

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-24-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3	ML		SANDY SILT: light brown, soft, moist					
4	SP		POORLY GRADED SAND: light brown, loose, moist					3
5				5.0-6.5	■	90.3	4.0	6
6			medium dense					11
8	SW		WELL GRADED SAND: light brown, loose, moist, trace fine gravel					
9								3
10				10.0-11.5	■	97.8	3.2	5
13								8
14			trace cobbles					5
15				15.0-16.5	●			10
16			medium dense					11
17			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 33

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	110.3	4.6	3, 4, 6
8			trace fine gravel and cobbles					
9	SW		WELL GRADED SAND: light brown, loose, slightly moist, trace fine gravel and cobbles	10.0-11.5	■	96.1	2.6	2, 5, 8
15			medium dense, moist	15.0-16.5	●			3, 6, 9
16			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 34
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, slightly moist (Alluvium)					
2		moist					
4	ML	SANDY SILT: light brown, soft, moist	5.0-6.5	■	113.6	6.5	1, 4, 7
6	SM	SILTY SAND: light brown, loose, moist	6-8	○			
10	SW	WELL GRADED SAND: light brown, medium dense, very moist, trace fine to coarse gravel	10.0-11.5	■	86.9	24.6	8, 12, 19
14		moist, trace cobbles, blow counts from 15.5' to 16.5' not reliable due to rocks	15.0-16.5	■	95.2	7.0	10, 21, 25
20		thin ~2" thick lense of sandy silt	20.0-21.5	●			5, 8, 11
25		wet, thin ~6" thick lense of poorly graded sand	25.0-26.5	●			6, 10, 12
26		End of Boring @ 26.5' Subsurface Water Encountered at 24.5'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 35

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-24-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3	SP		POORLY GRADED SAND: light brown, slightly loose, moist, trace fine to coarse gravel and cobbles					
5				5.0-6.5	■	102.4	2.8	9 9 10
6			medium dense					
9	SW		WELL GRADED SAND: light brown, loose, slightly moist, trace fine gravel					
10				10.0-11.5	■	109.4	2.9	5 8 8
13			medium dense, moist					
15				15.0-16.5	■	104.2	4.0	8 15 18
17			trace cobbles					
20				20.0-21.5	●			8 14 16
21			very moist					
22			wet, flow sands					
24								10 15 19
25				25.0-26.5	●			
26			dense					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 35
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/24/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30			thin lense of clayey sand ~3" to 4" thick	30.0-31.5	●			10, 15, 19
35			gray	35.0-36.5	●			10, 14, 27
40			blow count from 41.0' to 41.5' not reliable due to flow sands	40.0-41.5	●			7, 21, 30
44			SANDY SILT: gray brown, very soft, wet	45.0-46.5	●			0, 0, 6
46	SP-SM		POORLY GRADED SAND WITH SILT: light brown, loose, wet					
52			End of Boring @ 50.0' Subsurface water encountered @ 21.5'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 36
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3	ML		SANDY SILT: gray brown, soft, moist					
5	SP		POORLY GRADED SAND: light brown, medium dense, moist, trace fine gravel, trace silt	5.0-6.5	■	92.6	9.4	3 6 11
8	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel and cobbles					
10				10.0-11.5	■	114.0	5.2	7 22 31
11			blow counts from 10.5' to 11.5' not reliable due to rocks					
15			dense	15.0-16.5	●			6 13 18
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 37
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3	ML		SANDY SILT: brown, soft, moist, trace clay					
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, medium dense, moist	5.0-6.5	■	93.9	10.6	4, 8, 10
7			trace clay					
10				10.0-11.5	■	111.2	6.6	6, 10, 17
11	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel					
14			trace cobbles					
15			dense	15.0-16.5	●			7, 14, 18
16			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 38
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-18-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist	5.0-6.5	■	101.9	10.9	3, 5, 8
10			medium dense, light brown	10.0-11.5	■	106.1	6.2	7, 13, 16
14	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	15.0-16.5	●			6, 9, 7
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 39
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-19-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	ML		SANDY SILT: brown, soft, moist					1
5	SM		SILTY SAND: gray brown, loose, moist	5.0-6.5	■	103.5	15.1	4 6
7	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel					
10				10.0-11.5	■	121.2	4.6	8 12 15
13			trace cobbles					
15				15.0-16.5	●			6 9 12
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 40
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	ML		SANDY SILT: brown, medium stiff, moist					2
5				5.0-6.5	■	99.0	6.7	3 4
6	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel					
9								6
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	106.9	3.6	10 15
14								6
15				15.0-16.5	●			11 14
17			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 41

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SW		WELL GRADED SAND: light brown, loose, moist, trace fine to coarse gravel	5.0-6.5	■	100.2	3.0	4 7 9
10			medium dense	10.0-11.5	■	102.8	3.5	7 12 10
13			trace cobbles					
15				15.0-16.5	■	95.1	16.3	5 11 22
16			thin clay lense					
20				20.0-21.5	●			10 14 16
22			wet					
25				25.0-26.5	●			5 10 16
26			End of Boring @ 26.5' Subsurface Water Encountered at 21.5'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 42

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel					
5				5.0-6.5	■	98.0	8.6	2, 3, 5
8	SW		WELL GRADED SAND: light brown, loose, moist, trace fine gravel					
10				10.0-11.5	■	102.9	5.8	4, 10, 22
11			medium dense					
15				15.0-16.5	●			5, 8, 13
16			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 43

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-25-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4			increasing silt content					2
5	ML		SANDY SILT: light brown, stiff, moist	5.0-6.5	■	96.5	6.9	5 9
7	SP		POORLY GRADED SAND: light brown, loose, moist					
9	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.5	4.6	8 11 19
15				15.0-16.5	■	114.4	4.0	7 19 22
17			trace fine to coarse gravel and cobbles					
20			thin lense of soft clay ~ 4" thick	20.0-21.5	●			0 5 10
21			very moist, cobbles end					
24			gray brown, dense, wet ▼					8
25				25.0-26.5	●			15 23

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 43
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07/25/2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30			gray, medium dense, thick silt/clay lense ~8" to 10"	30.0-31.5	●			2 8 14
35			no sampling at 35.0' due to flow sands					
40	SW-SM		WELL GRADED SAND WITH SILT: gray brown, dense, wet	40.0-41.5	●			6 14 17
45				45.0-46.5	●			5 9 12
46	SW		WELL GRADED SAND: gray brown, medium dense, wet					
50			no sampling at 50.0' due to flow sands					
52			End of Boring @ 50.0' Subsurface water encountered @ 24.0'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 44

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	ML		SANDY SILT: light brown, soft, slightly moist, trace clay (Alluvium)	0-4	○			1
2			moist	2.0-3.5	■	104.6	15.8	2 2
4	SW		WELL GRADED SAND: light brown, loose, slightly moist, trace fine gravel	5.0-6.5	■	99.6	2.4	3 6 9
8			medium dense, moist	8.5-10.0	●			4 7 12
10			End of Boring @ 10.0 No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 45
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, slightly moist (Alluvium)					
2		moist	0-5	○			
4		increasing silt content					5
5	SP	POORLY GRADED SAND: light brown, medium dense, moist	5.0-6.5	■	99.1	8.3	6 13
9	SW	WELL GRADED SAND: light brown, medium dense, moist, trace silt, trace coarse gravel and cobbles					6
10			10.0-11.5	■	118.1	5.1	18 24
14							10
15		dense	15.0-16.5	■	121.4	4.5	27 34
20		▼ silt ends, wet, medium dense	20.0-21.5	●			6 13 15
24	CL	SANDY LEAN CLAY: gray, very soft, moist, trace silt					
25			25.0-26.5	●			0 1 1
26		End of Boring @ 26.5' Subsurface Water Encountered Between 20.0' and 24.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 46
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3	ML		SANDY SILT: brown, soft, moist					
4	SP		POORLY GRADED SAND: light brown, medium dense, moist	5.0-6.5	■	101.6	11.4	4 18 25
7			trace fine to medium gravel and cobbles					
10				10.0-11.5	■	103.3	18.1	5 10 17
11			very moist, trace silt					
13	SW		WELL GRADED SAND: brown, medium dense, moist, trace fine gravel, trace silt					
15				15.0-16.5	●			8 11 17
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 47

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist, increasing silt content					
3	ML		SANDY SILT: brown, soft, moist, trace clay					
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, medium dense, moist	5.0-6.5	■	103.0	9.4	3, 9, 12
10				10.0-11.5	■	107.0	6.3	10, 16, 24
12			trace fine to coarse gravel					
14			trace cobbles, dense					
15				15.0-16.5	●			15, 18, 19
16			blow counts from 15.5' to 16.5' not reliable due to rocks					
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 48

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
2								
3			increasing silt content					
4								3
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist	5.0-6.5	■	100.7	8.6	4 7
6								
7								
8			trace fine gravel					
9								7
10			medium dense	10.0-11.5	■	110.1	6.0	16 22
11								
12								
13								
14	SW		WELL GRADED SAND: light brown, dense, moist, trace fine to coarse gravel					9
15				15.0-16.5	●			13 19
16								
17			End of Boring @ 16.5'					
18			No Subsurface Water Encountered					
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 49

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-18-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			gray brown, moist					
5			thin sandy silt lense	5.0-6.5	■	98.1	15.5	3, 4, 7
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine to coarse gravel	10.0-11.5	■	No Return		7, 16, 19
15				15.0-16.5	●			5, 12, 20
16			blow counts from 16.0' to 16.5' not reliable due to rocks					
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 50

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-18-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	ML		SANDY SILT: brown, soft, moist					2
5				5.0-6.5	■	98.9	8.0	7
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist					9
10			medium dense, trace silt	10.0-11.5	■	116.1	11.7	8 18 24
14	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine to coarse gravel and cobbles					12
15				15.0-16.0	■	109.5	5.5	50/5.0"
16			blow counts from 15.5' to 16.0' not reliable due to rocks					
20			wet	20.0-21.5	●			8 13 18
25				25.0-26.5	●			5 16 32
26			End of Boring @ 26.5' Subsurface Water Encountered Between 20.0' and 24.0'					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 51

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-19-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3			increasing silt content					
5	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	122.4	12.4	3, 6, 10
9			medium dense					
10				10.0-11.5	■	94.9	7.9	6, 17, 24
14	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel and cobbles	15.0-16.5	■	109.5	5.0	7, 19, 21
20			cobbles end	20.0-21.5	●			7, 11, 14
21			wet ▼					
25				25.0-26.5	●			7, 8, 4
26	SP		POORLY GRADED SAND: gray brown, medium dense, wet, thin lense of silty sand					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 51
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07/19/2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SP		POORLY GRADED SAND: as above					
30				30.0-31.5	●			8 16 32
31			trace fine gravel and cobbles, flow sands, blow count from 31.0' to 31.5' not reliable due to flow sands					
34								8 12 14
35	SW-SM		WELL GRADED SAND WITH SILT AND GRAVEL: light brown, medium dense, wet	35.0-36.5	●			
40				40.0-41.5	●			6 5 7
43	SW		WELL GRADED SAND: light brown, dense, wet, flow sands end					
45				45.0-46.5	●			5 10 21
49			thin lenses of poorly graded sand					
50				50.0-51.5	●			11 16 24
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 52

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-25-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3	ML		SANDY SILT: light gray brown, soft, moist					
5				5.0-6.5	■	108.9	19.4	1 3 3
7	SW		WELL GRADED SAND: light brown, loose, moist					
10			medium dense, slightly moist, trace fine to coarse gravel	10.0-11.5	■	107.6	2.8	5 11 11
13			moist, trace cobbles					
15				15.0-16.5	●			9 12 13
16			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 53
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-17-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown, loose, slightly moist (Alluvium)	0-3	○			1
1			moist, trace roots, increasing silt content					
2				2.0-3.5	▬	94.2	25.1	2
3	ML		SANDY SILT: brown, soft, moist, trace roots					3
4								2
5				5.0-6.5	▬	88.9	9.7	4
6	SP		POORLY GRADED SAND: light brown/gray mottled, loose, moist					7
7								
8								3
9			medium dense	8.5-10.0	●			5
10								6
11			End of Boring @ 10.0 No Subsurface Water Encountered					
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ▬ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

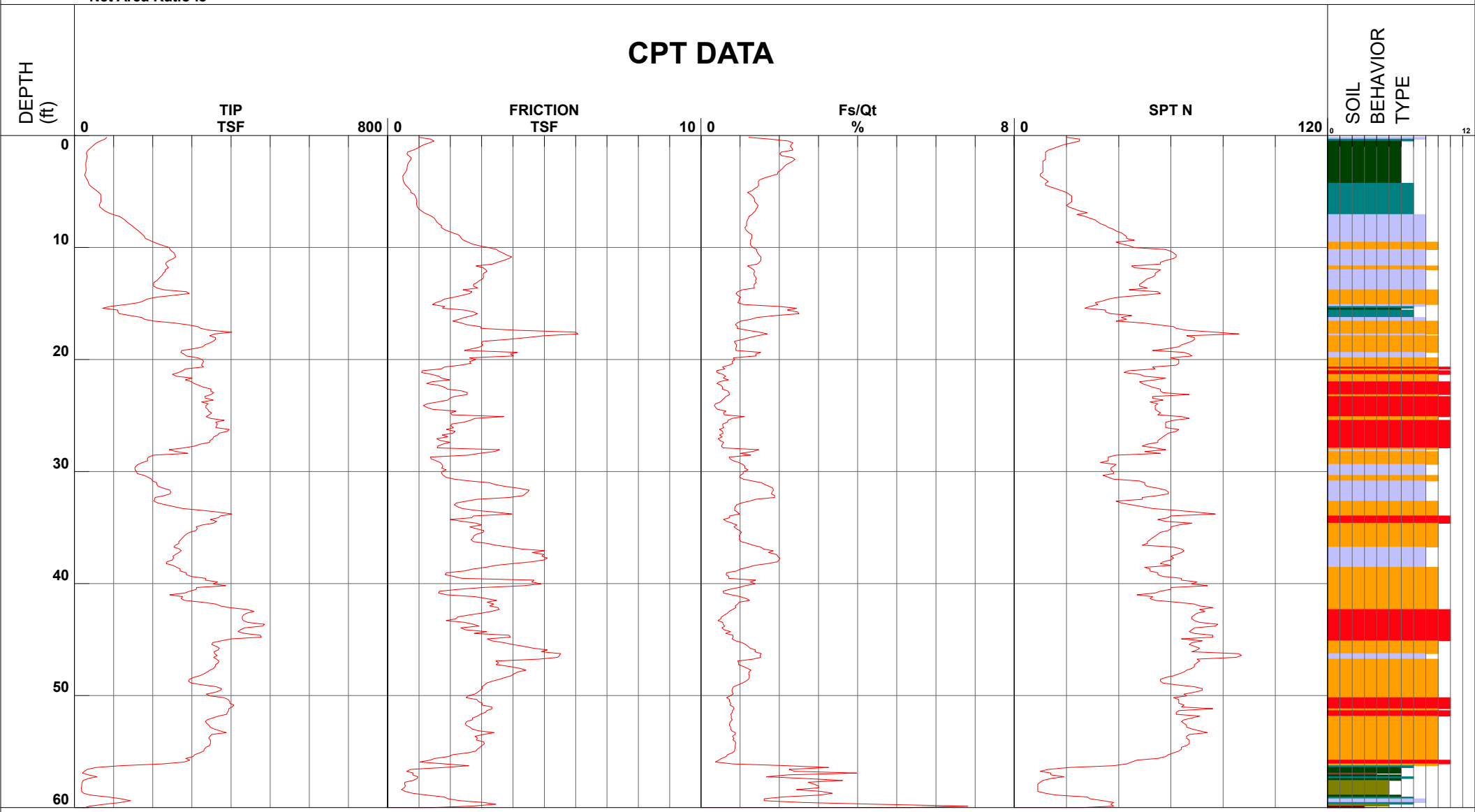
NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems

Project	Oxnard Union HS No.8	Operator	RC AS	Filename	SDF(701).cpt
Job Number	301953-001	Cone Number	DDG1379	GPS	
Hole Number	CPT-01	Date and Time	4/20/2018 10:08:51 AM	Maximum Depth	60.53 ft
EST GW Depth During Test		24.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

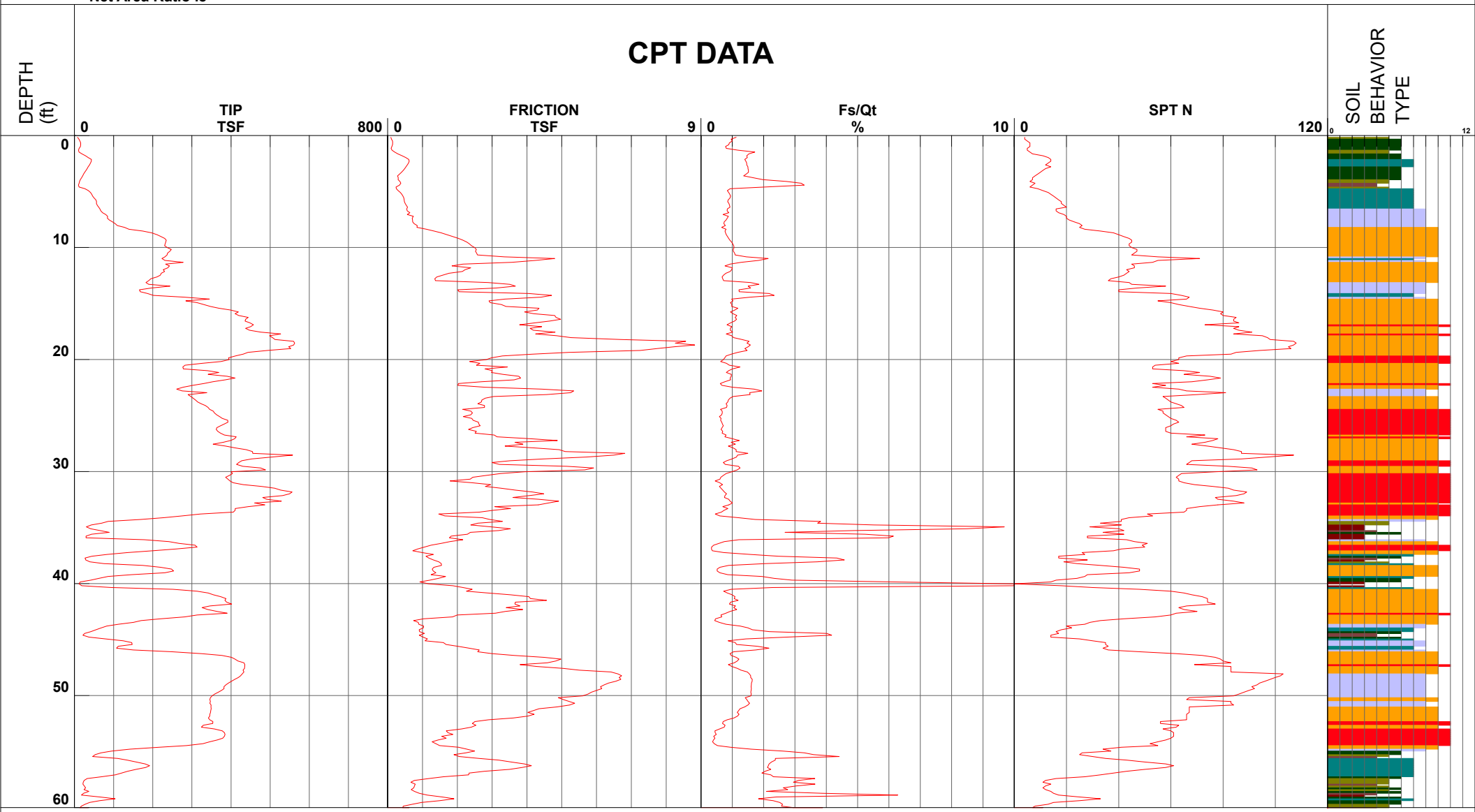
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(037).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-02A	Date and Time	7/16/2018 3:49:22 PM	Maximum Depth	61.02 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

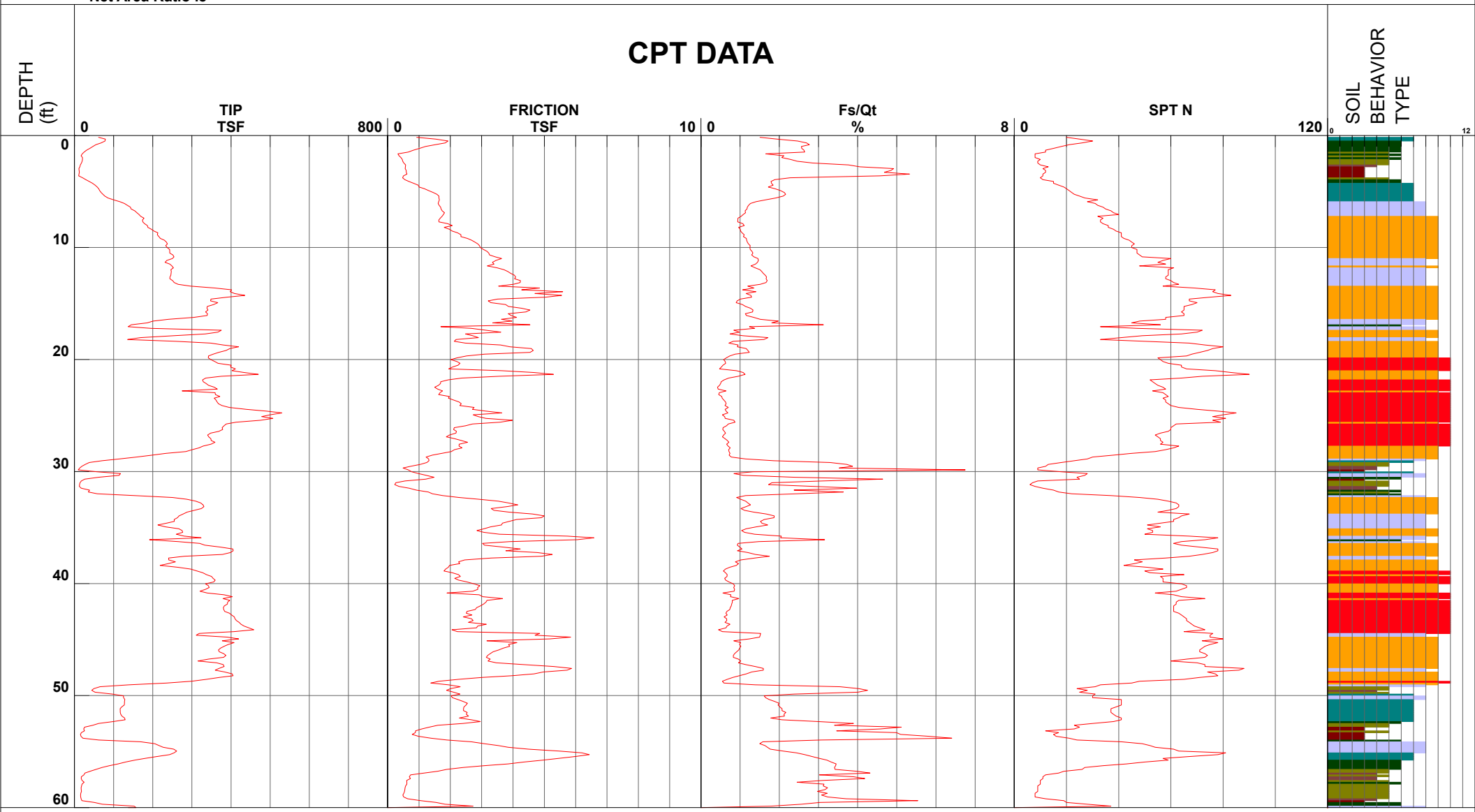
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union HS No.8	Operator	RC AS	Filename	SDF(702).cpt
Job Number	301953-001	Cone Number	DDG1379	GPS	
Hole Number	CPT-03	Date and Time	4/20/2018 11:12:25 AM	Maximum Depth	60.20 ft
EST GW Depth During Test		24.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

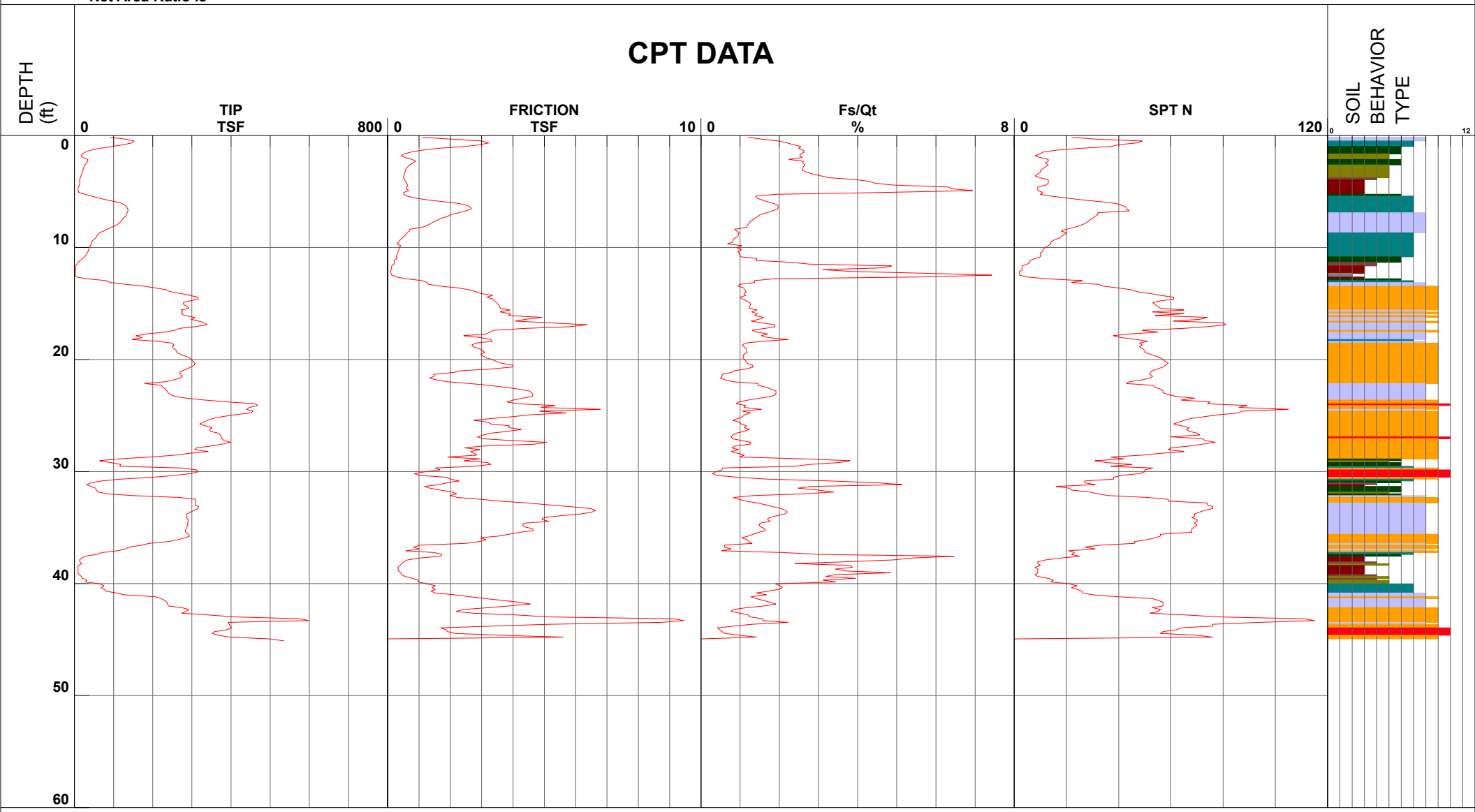
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union HS No.8	Operator	RC AS	Filename	SDF(703).cpt
Job Number	301953-001	Cone Number	DDG1379	GPS	
Hole Number	CPT-04	Date and Time	4/20/2018 11:57:08 AM	Maximum Depth	45.11 ft
EST GW Depth During Test		24.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

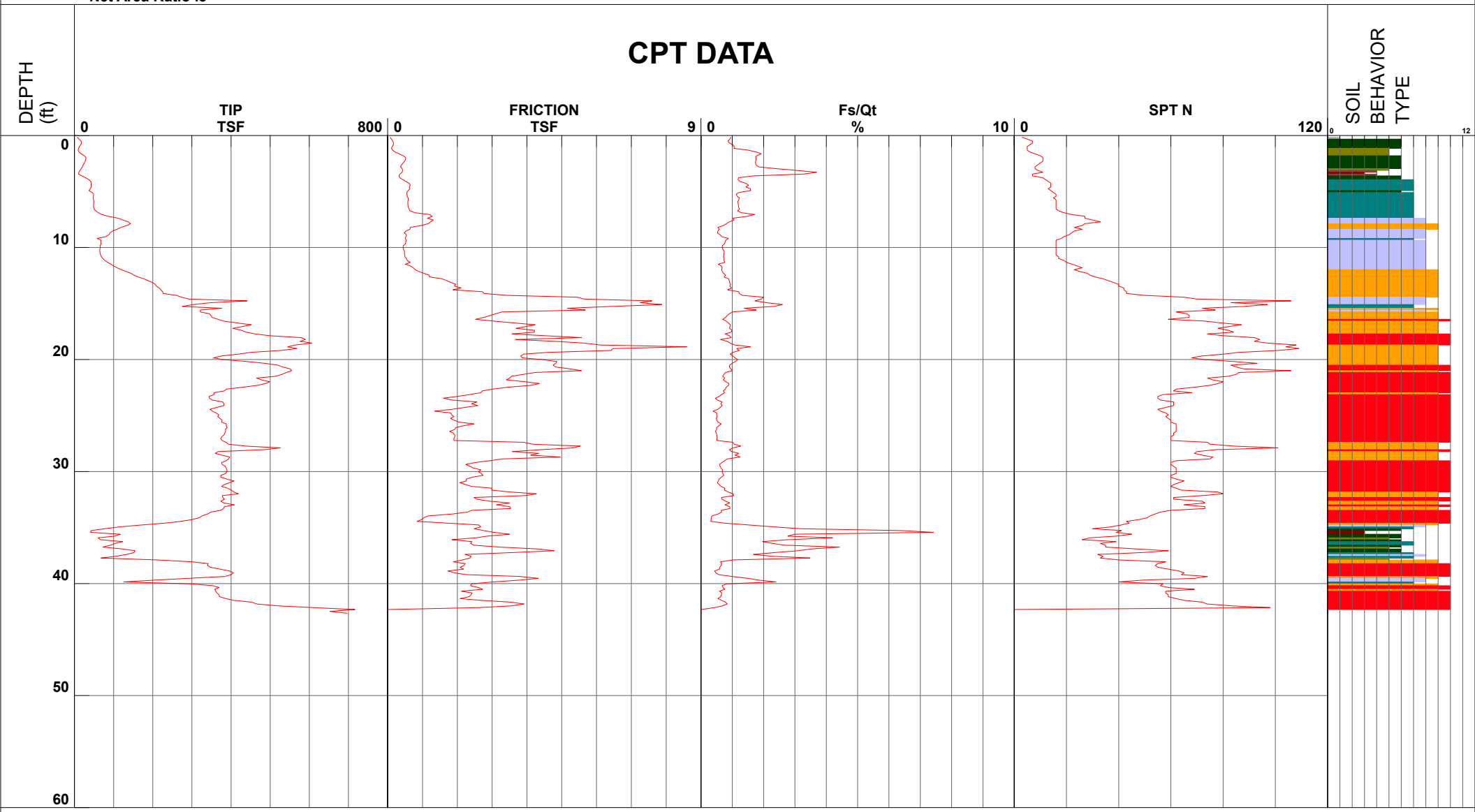
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(036).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-05	Date and Time	7/16/2018 3:07:16 PM	Maximum Depth	42.65 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

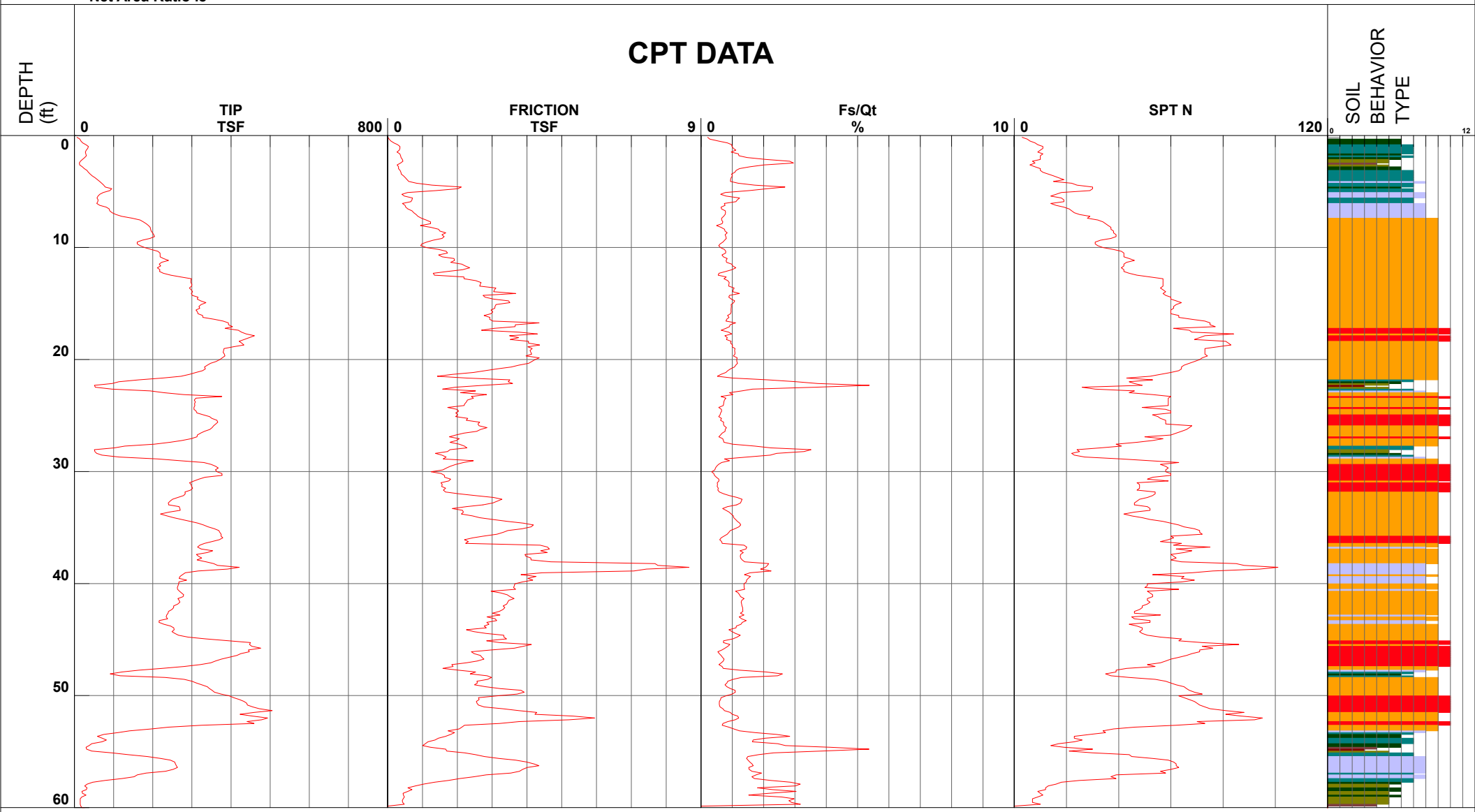
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(034).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-06A	Date and Time	7/16/2018 2:15:03 PM	Maximum Depth	60.20 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

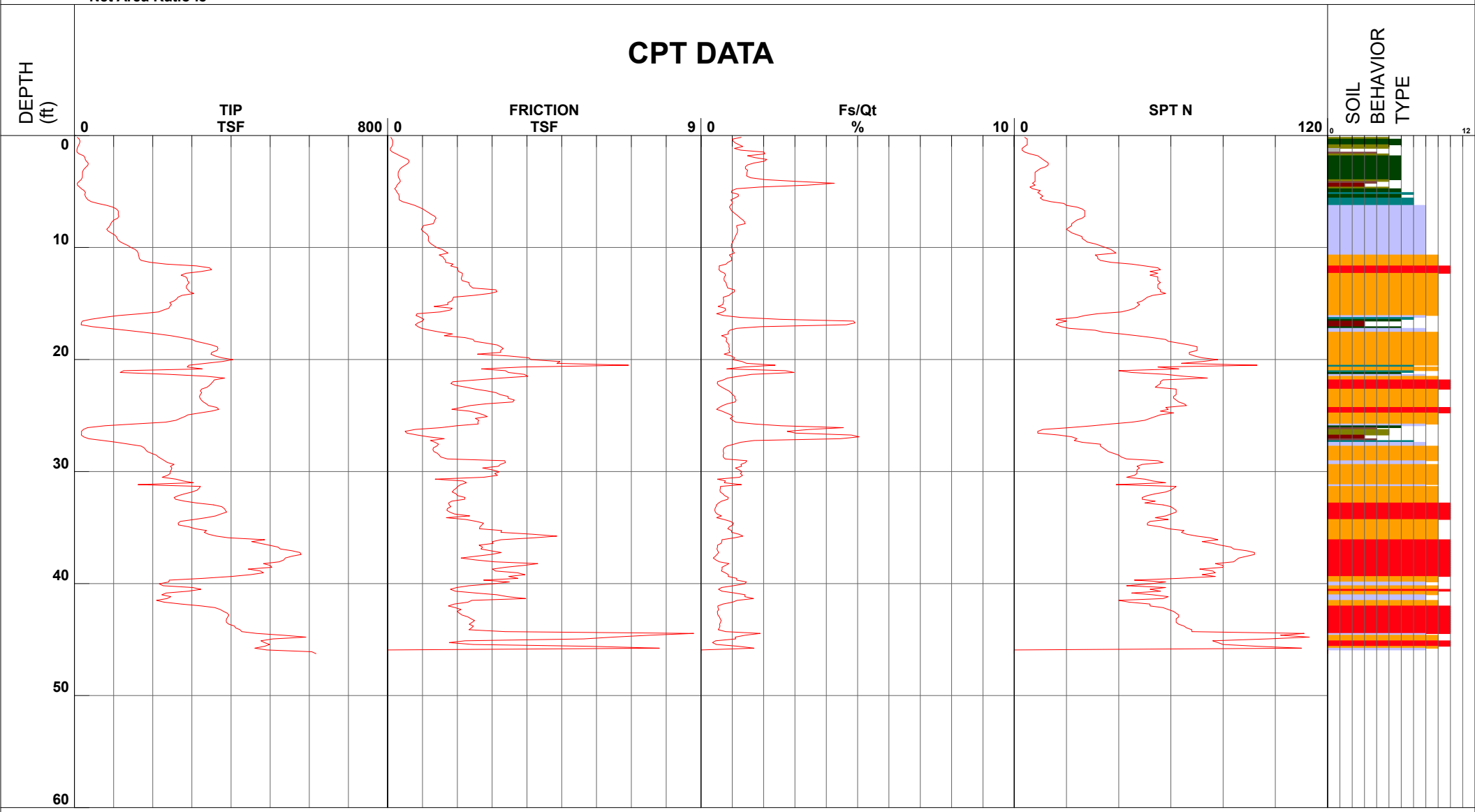
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(032).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-07	Date and Time	7/16/2018 1:22:10 PM	Maximum Depth	46.26 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX B

Laboratory Test Results

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

August 20, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1	6.0 - 6.5	3.5	101.4	98.0
1	11.0 - 11.5	3.1	112.0	108.6
1	16.0 - 16.5	3.5	119.1	115.0
2	6.0 - 6.5	7.3	106.7	99.5
2	11.0 - 11.5	4.9	116.0	110.6
2	16.0 - 16.5	3.9	110.3	106.2
3	3.0 - 3.5	7.3	108.9	101.5
3	6.0 - 6.5	7.8	104.6	97.0
4	3.0 - 3.5	11.9	110.5	98.8
4	6.0 - 6.5	5.8	99.5	94.1
5	3.0 - 3.5	17.0	111.6	95.4
5	6.0 - 6.5	10.0	105.5	96.0
6	3.0 - 3.5	9.3	107.0	97.9
6	6.0 - 6.5	30.5	116.5	89.3
7	6.0 - 6.5	5.4	95.8	90.9
7	11.0 - 11.5	4.2	110.2	105.8
8	6.0 - 6.5	5.9	101.4	95.8
8	11.0 - 11.5	7.4	108.7	101.2
9	6.0 - 6.5	16.3	111.9	96.2
9	11.0 - 11.5	3.6	102.5	98.9
9	16.0 - 16.5	3.9	120.7	116.1
10	6.0 - 6.5	31.2	114.1	87.0
10	11.0 - 11.5	3.5	109.4	105.7
11	3.0 - 3.5	11.9	109.2	97.6
11	6.0 - 6.5	6.6	108.7	101.9
12	3.0 - 3.5	17.7	110.7	94.0
12	6.0 - 6.5	4.2	102.5	98.4
13	6.0 - 6.5	3.9	101.1	97.3
13	11.0 - 11.5	4.5	111.1	106.4
14	6.0 - 6.5	3.7	103.8	100.1
14	11.0 - 11.5	15.7	103.6	89.6
14	16.0 - 16.5	9.4	115.0	105.1
15	6.0 - 6.5	6.3	116.3	109.4
15	11.0 - 11.5	6.2	104.5	98.4
16	6.0 - 6.5	5.5	97.6	92.5
16	11.0 - 11.5	4.4	103.0	98.6

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

August 20, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
16	16.0 - 16.5	4.7	117.9	112.6
17	6.0 - 6.5	7.6	111.2	103.3
17	11.0 - 11.5	3.4	108.2	104.7
18	6.0 - 6.5	36.1	109.6	80.5
18	11.0 - 11.5	3.2	121.3	117.5
19	6.0 - 6.5	25.6	117.3	93.4
19	11.0 - 11.5	2.8	106.4	103.5
20	6.0 - 6.5	26.2	114.6	90.8
20	11.0 - 11.5	4.3	114.4	109.7
20	16.0 - 16.5	3.9	113.1	108.8
21	6.0 - 6.5	9.2	109.0	99.8
21	11.0 - 11.5	4.8	116.5	111.2
22	6.0 - 6.5	16.5	110.9	95.1
22	11.0 - 11.5	8.6	113.5	104.5
22	16.0 - 16.5	36.5	113.9	83.5
23	6.0 - 6.5	23.4	102.6	83.1
23	11.0 - 11.5	35.2	116.1	85.9
24	6.0 - 6.5	5.5	96.2	91.2
24	11.0 - 11.5	4.4	105.4	101.0
24	16.0 - 16.5	2.4	105.5	103.0
25	6.0 - 6.5	18.9	104.1	87.5
25	11.0 - 11.5	5.8	109.6	103.6
26	3.0 - 3.5	21.8	113.5	93.1
26	6.0 - 6.5	3.7	102.2	98.6
27	6.0 - 6.5	8.2	110.2	101.9
27	11.0 - 11.5	5.8	118.5	112.0
27	16.0 - 16.5	4.0	102.7	98.7
28	6.0 - 6.5	7.9	105.8	98.0
28	11.0 - 11.5	6.6	115.1	108.0
29	6.0 - 6.5	8.1	104.8	96.9
29	11.0 - 11.5	3.9	111.6	107.4
30	6.0 - 6.5	5.2	100.4	95.4
30	11.0 - 11.5	5.8	112.0	105.9
31	6.0 - 6.5	2.5	128.6	125.5
31	11.0 - 11.5	4.1	107.5	103.2
32	6.0 - 6.5	4.0	93.8	90.3

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

August 20, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
32	11.0 - 11.5	3.2	101.0	97.8
33	6.0 - 6.5	4.6	115.3	110.3
33	11.0 - 11.5	2.6	98.6	96.1
34	6.0 - 6.5	6.5	121.0	113.6
34	11.0 - 11.5	24.6	108.3	86.9
34	15.5 - 16.0	7.0	101.9	95.2
35	6.0 - 6.5	2.8	105.3	102.4
35	11.0 - 11.5	2.9	112.6	109.4
35	16.0 - 16.5	4.0	108.4	104.2
36	6.0 - 6.5	9.4	101.2	92.6
36	11.0 - 11.5	5.2	120.0	114.0
37	6.0 - 6.5	10.6	103.9	93.9
37	11.0 - 11.5	6.6	118.6	111.2
38	6.0 - 6.5	10.9	113.0	101.9
38	11.0 - 11.5	6.2	112.7	106.1
39	6.0 - 6.5	15.1	119.1	103.5
39	11.0 - 11.5	4.6	126.8	121.2
40	6.0 - 6.5	6.7	105.6	99.0
40	11.0 - 11.5	3.6	110.7	106.9
41	6.0 - 6.5	3.0	103.2	100.2
41	11.0 - 11.5	3.5	106.5	102.8
41	16.0 - 16.5	16.3	110.6	95.1
42	6.0 - 6.5	8.6	106.5	98.0
42	11.0 - 11.5	5.8	108.9	102.9
43	6.0 - 6.5	6.9	103.2	96.5
43	11.0 - 11.5	4.6	110.3	105.5
43	16.0 - 16.5	4.0	119.0	114.4
44	3.0 - 3.5	15.8	121.1	104.6
44	6.0 - 6.5	2.4	101.9	99.6
45	6.0 - 6.5	8.3	107.3	99.1
45	11.0 - 11.5	5.1	124.1	118.1
45	16.0 - 16.5	4.5	126.9	121.4
46	6.0 - 6.5	11.4	113.3	101.6
46	11.0 - 11.5	18.1	122.1	103.3
47	6.0 - 6.5	9.4	112.7	103.0
47	11.0 - 11.5	6.3	113.7	107.0

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

August 20, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
48	6.0 - 6.5	8.6	109.3	100.7
48	11.0 - 11.5	6.0	116.7	110.1
49	6.0 - 6.5	15.5	113.4	98.1
50	6.0 - 6.5	8.0	106.8	98.9
50	11.0 - 11.5	11.7	129.7	116.1
50	16.0 - 16.5	5.5	115.5	109.5
51	6.0 - 6.5	12.4	137.5	122.4
51	11.0 - 11.5	7.9	102.4	94.9
51	16.0 - 16.5	5.0	114.9	109.5
52	6.0 - 6.5	19.4	130.1	108.9
52	11.0 - 11.5	2.8	110.6	107.6
53	3.0 - 3.5	25.1	117.9	94.2
53	6.0 - 6.5	9.7	97.5	88.9

EXPANSION INDEX TEST RESULTS

ASTM D 4829-11

BORING NO.	DEPTH feet	EXPANSION INDEX
45	0.0 - 5.0	5

Oxnard High School No. 8 301953-002

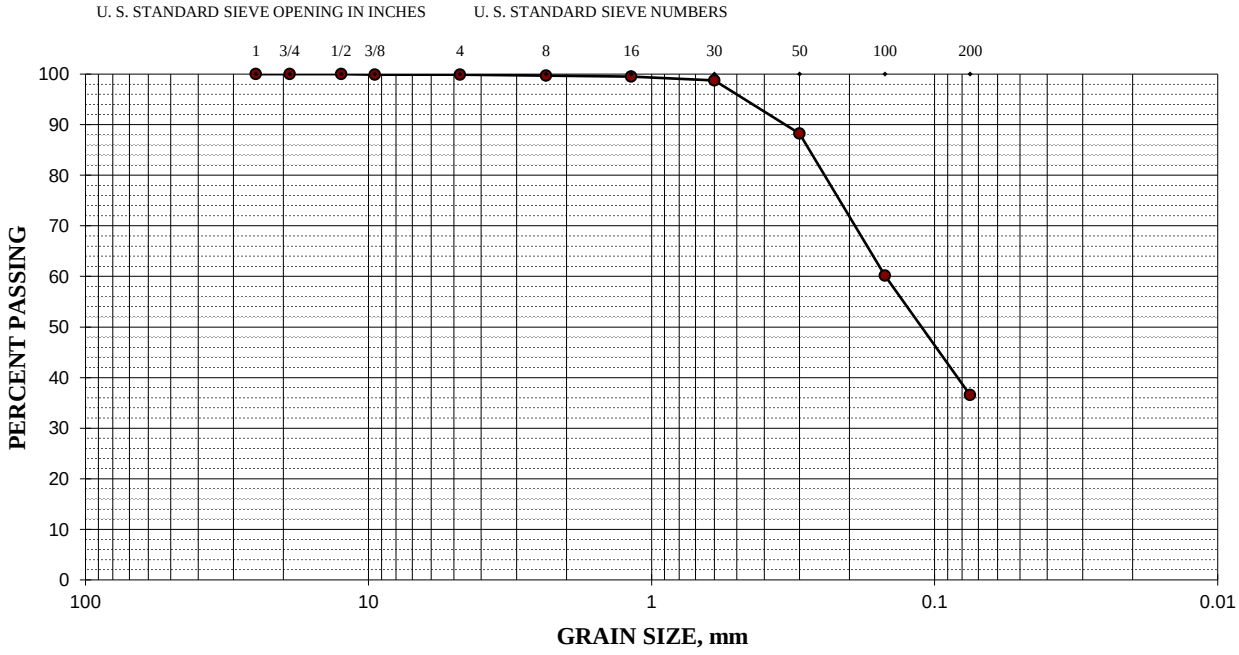
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #5 @ 2.0 - 5.0' August 20, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600-µm)	1	99
#50 (300-µm)	12	88
#100 (150-µm)	40	60
#200 (75-µm)	63	37



Oxnard High School No. 8 301953-002

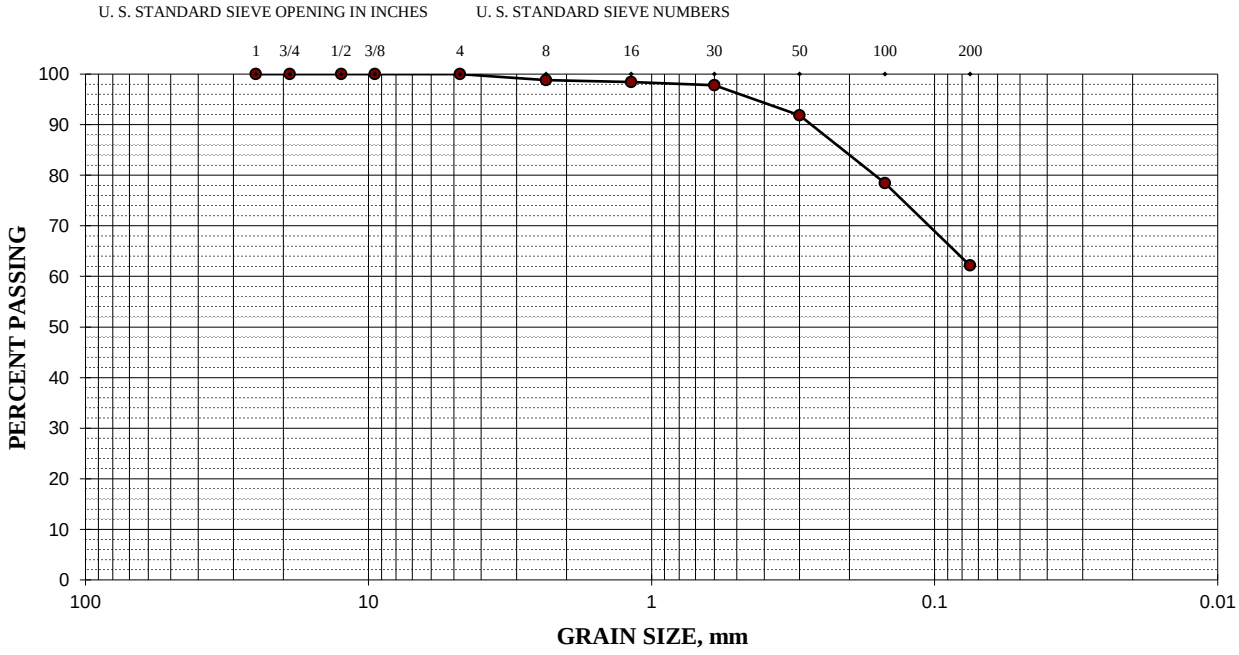
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #6 @ 4.0 - 7.0' August 20, 2018

Sandy Silt (ML)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	1	99
#16 (1.18-mm)	2	98
#30 (600-µm)	2	98
#50 (300-µm)	8	92
#100 (150-µm)	22	78
#200 (75-µm)	38	62



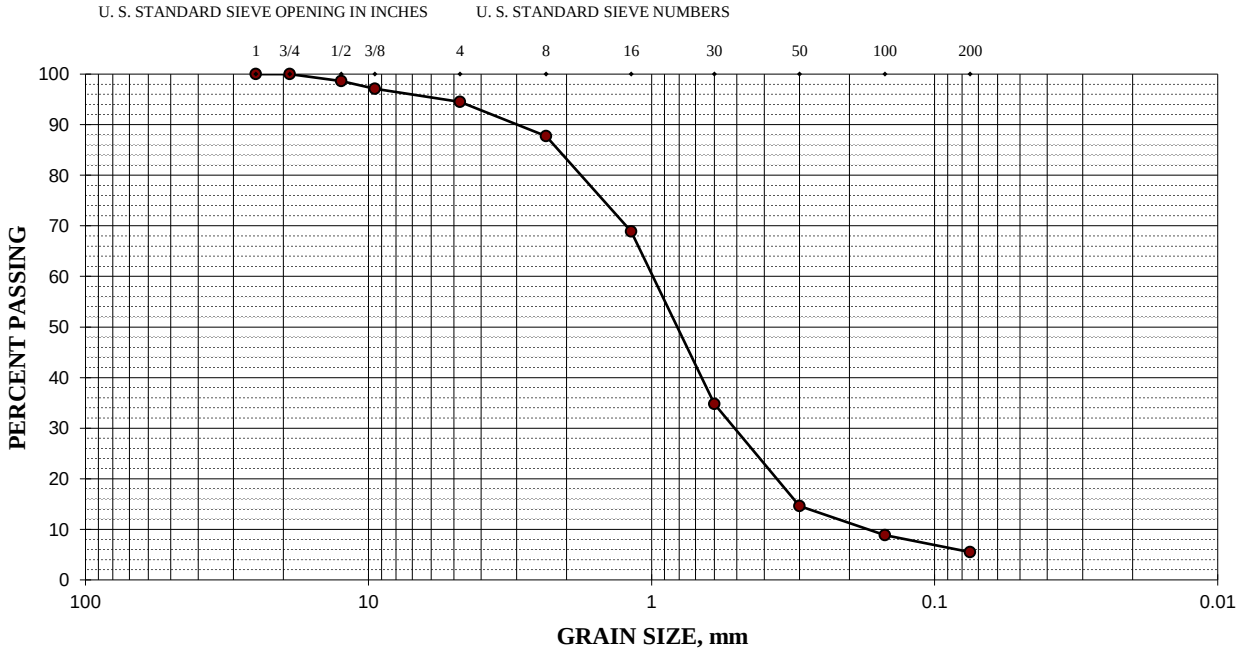
Oxnard High School No. 8 301953-002

PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #16 @ 30.0 - 31.5' August 20, 2018
Well Graded Sand (SW)
Cu = 5.7; Cc = 1.5

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	1	99
3/8" (9.5-mm)	3	97
#4 (4.75-mm)	5	95
#8 (2.36-mm)	12	88
#16 (1.18-mm)	31	69
#30 (600-µm)	65	35
#50 (300-µm)	85	15
#100 (150-µm)	91	9
#200 (75-µm)	95	5



Oxnard High School No. 8 301953-002

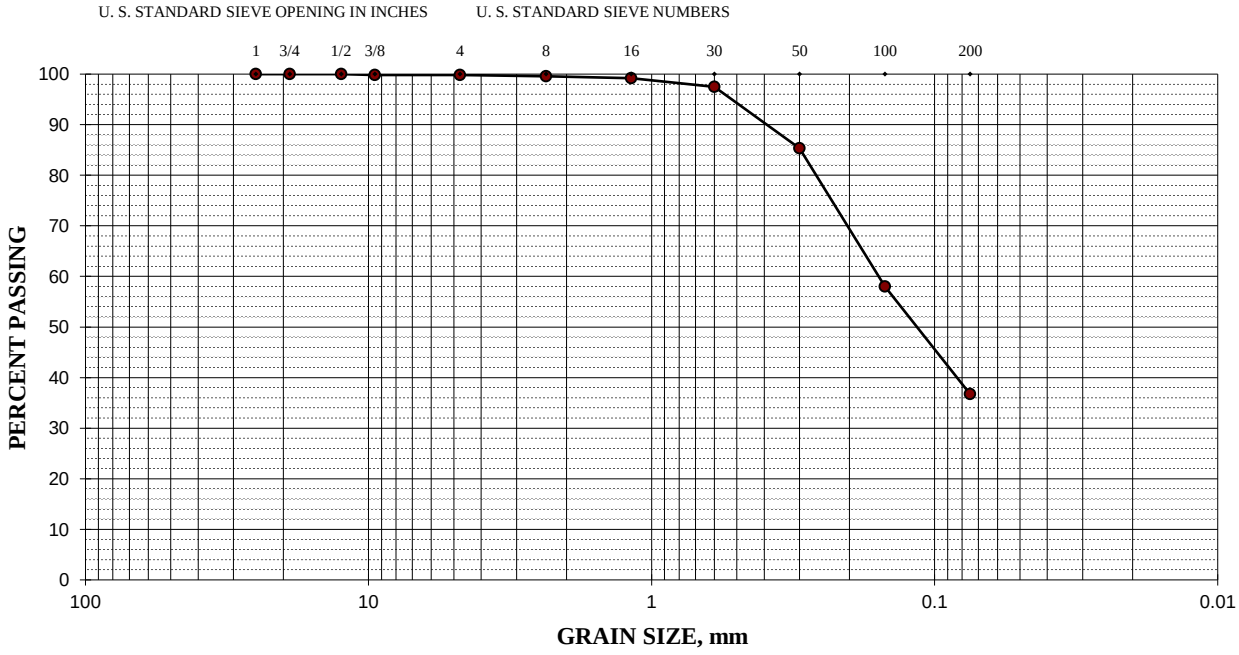
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #20 @ 4.0 - 7.0' August 20, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	1	99
#30 (600-µm)	3	97
#50 (300-µm)	15	85
#100 (150-µm)	42	58
#200 (75-µm)	63	37



Oxnard High School No. 8 301953-002

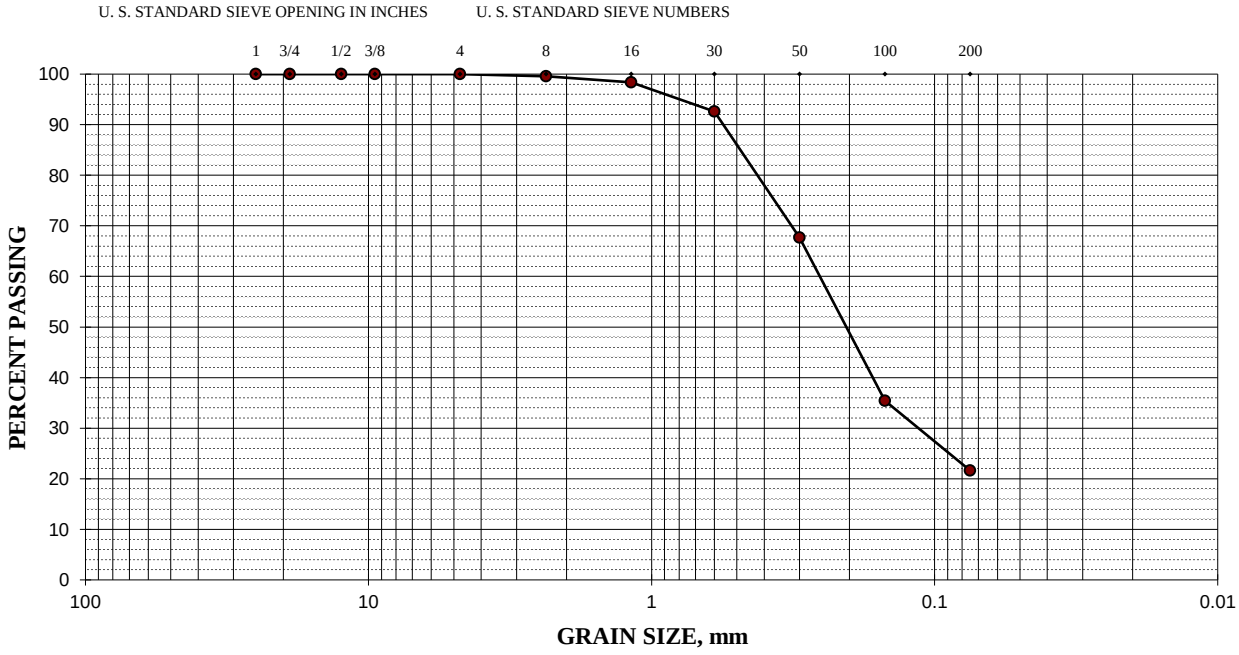
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #34 @ 6.0 - 8.0' August 20, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	2	98
#30 (600-µm)	7	93
#50 (300-µm)	32	68
#100 (150-µm)	65	35
#200 (75-µm)	78	22



Oxnard High School No. 8 301953-002

PARTICLE SIZE ANALYSIS

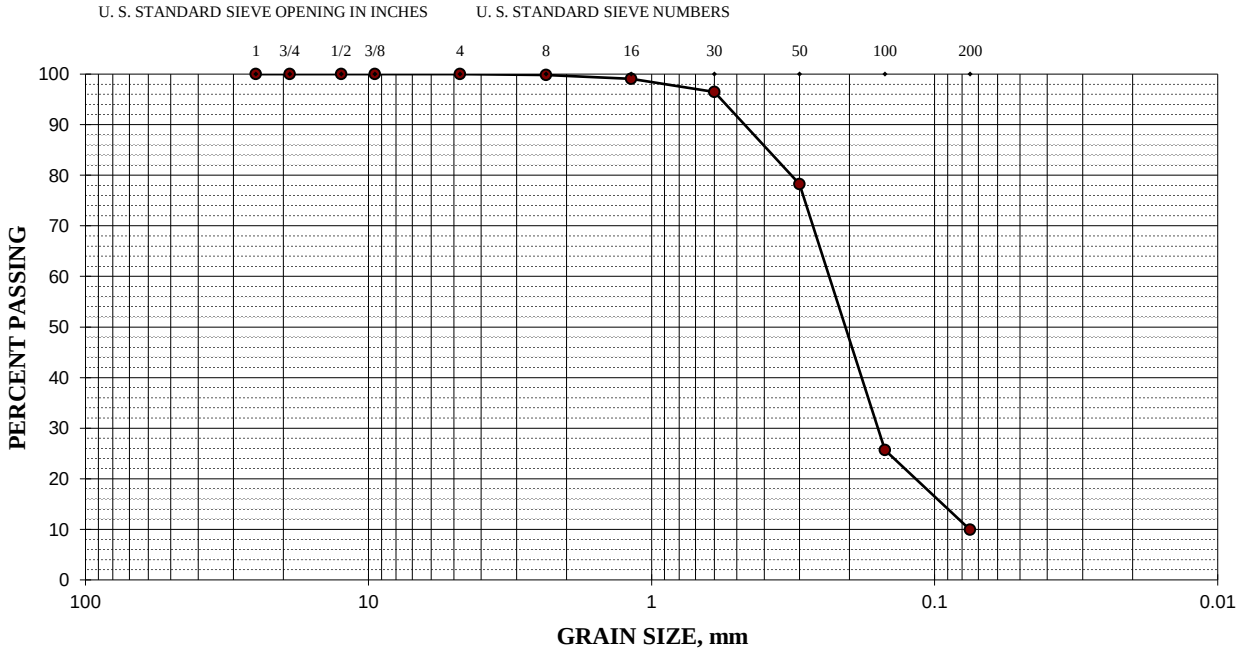
ASTM D 422-63/07; D 1140-17

Boring #35 @ 45.0 - 46.5' August 20, 2018

Poorly Graded Sand with Silt (SP-SM)

Cu = 3.1; Cc = 1.4

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	1	99
#30 (600-µm)	4	96
#50 (300-µm)	22	78
#100 (150-µm)	74	26
#200 (75-µm)	90	10



Oxnard High School No. 8 301953-002

PARTICLE SIZE ANALYSIS

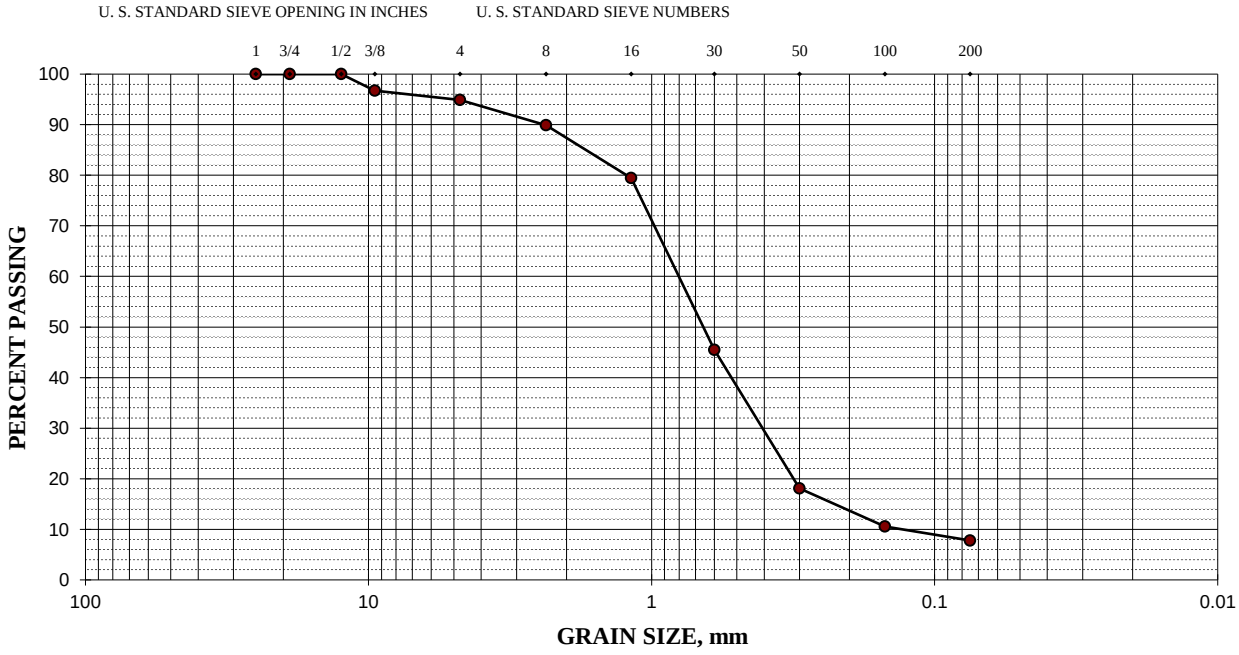
ASTM D 422-63/07; D 1140-17

Boring #43 @ 40.0 - 41.5' August 20, 2018

Well Graded Sand with Silt (SW-SM)

Cu = 6.2; Cc = 1.6

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	3	97
#4 (4.75-mm)	5	95
#8 (2.36-mm)	10	90
#16 (1.18-mm)	21	79
#30 (600-µm)	55	45
#50 (300-µm)	82	18
#100 (150-µm)	89	11
#200 (75-µm)	92	8



Oxnard High School No. 8 301953-002

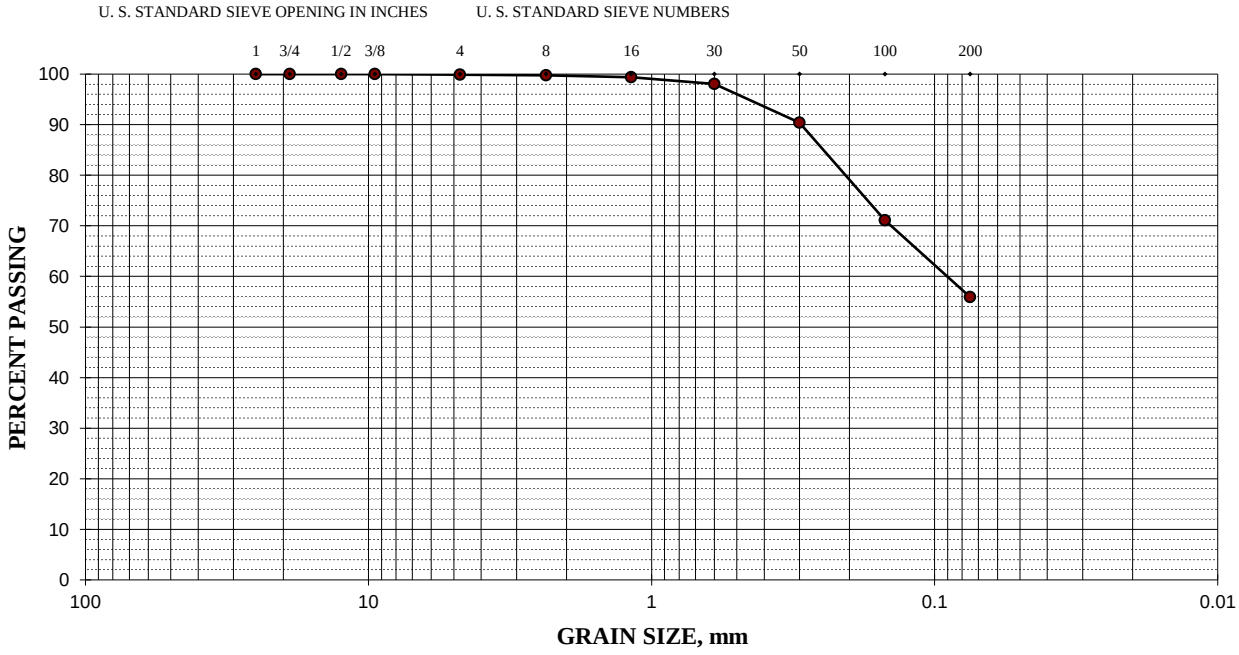
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #44 @ 0.0 - 4.0' August 20, 2018

Sandy Silt (ML)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	1	99
#30 (600-µm)	2	98
#50 (300-µm)	10	90
#100 (150-µm)	29	71
#200 (75-µm)	44	56



Oxnard High School No. 8 301953-002

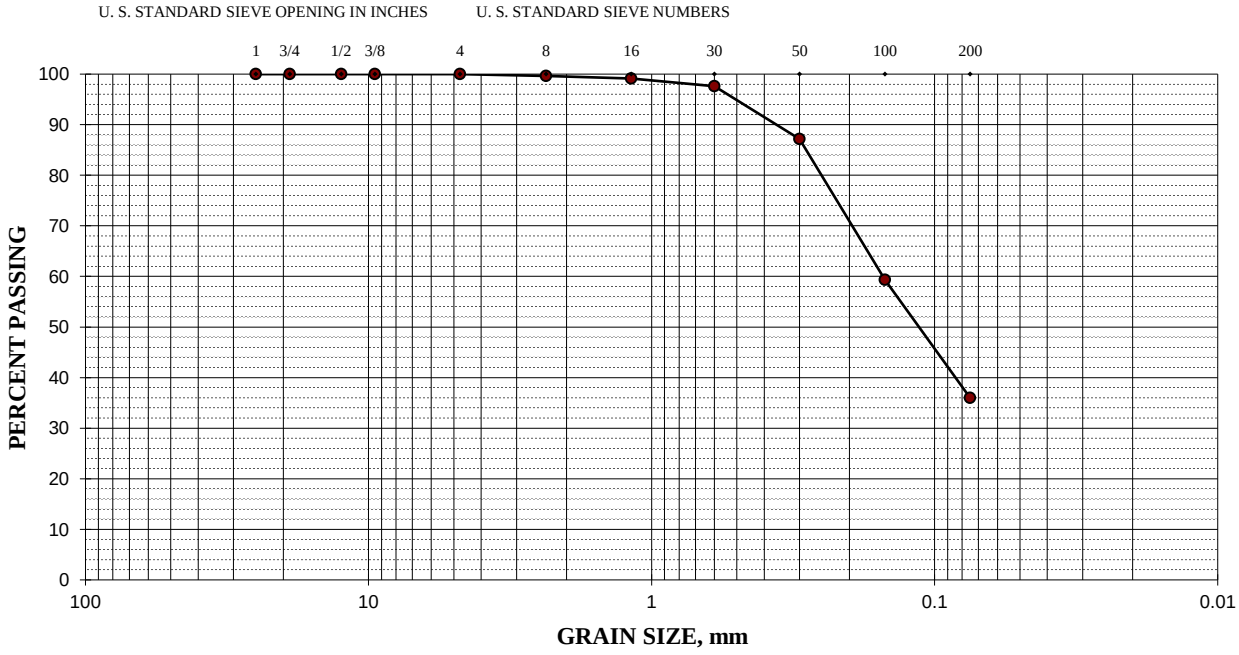
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #45 @ 0.0 - 5.0' August 20, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	1	99
#30 (600-µm)	2	98
#50 (300-µm)	13	87
#100 (150-µm)	41	59
#200 (75-µm)	64	36



Oxnard High School No. 8 301953-002

PARTICLE SIZE ANALYSIS

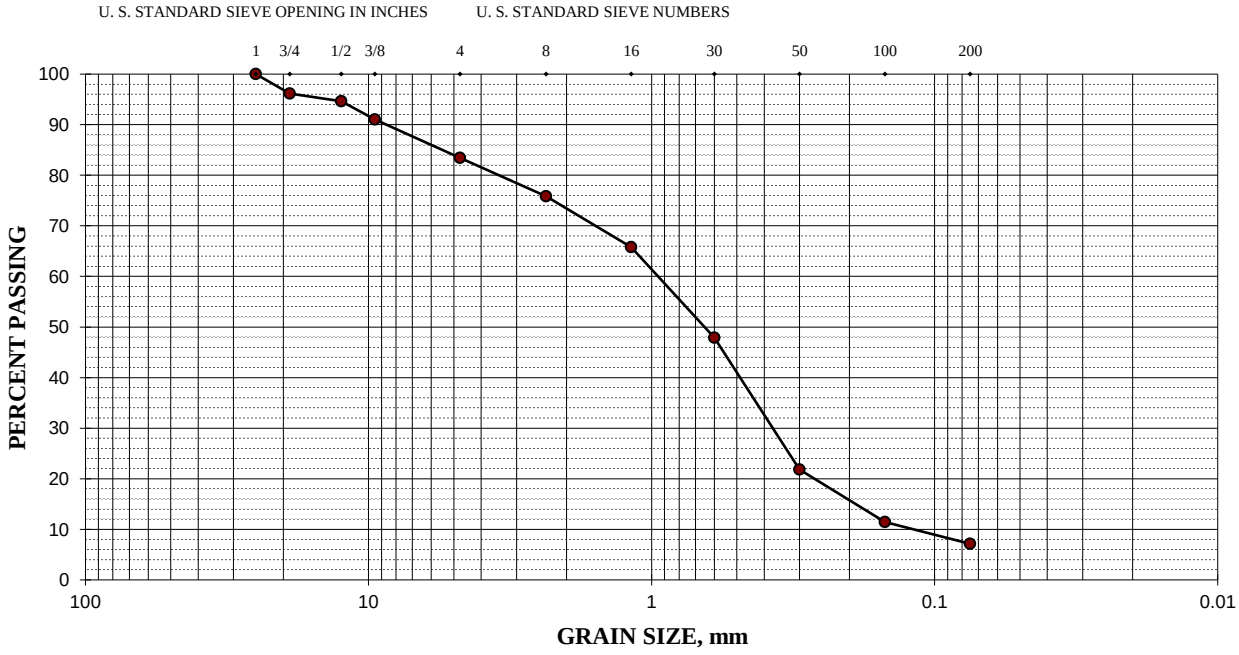
ASTM D 422-63/07; D 1140-17

Boring #51 @ 35.0 - 36.5' August 20, 2018

Well Graded Sand with Silt and Gravel (SW-SM)

Cu = 8.0; Cc = 1.2

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	4	96
1/2" (12.5-mm)	5	95
3/8" (9.5-mm)	9	91
#4 (4.75-mm)	17	83
#8 (2.36-mm)	24	76
#16 (1.18-mm)	34	66
#30 (600-µm)	52	48
#50 (300-µm)	78	22
#100 (150-µm)	89	11
#200 (75-µm)	93	7



Oxnard High School No. 8 301953-002

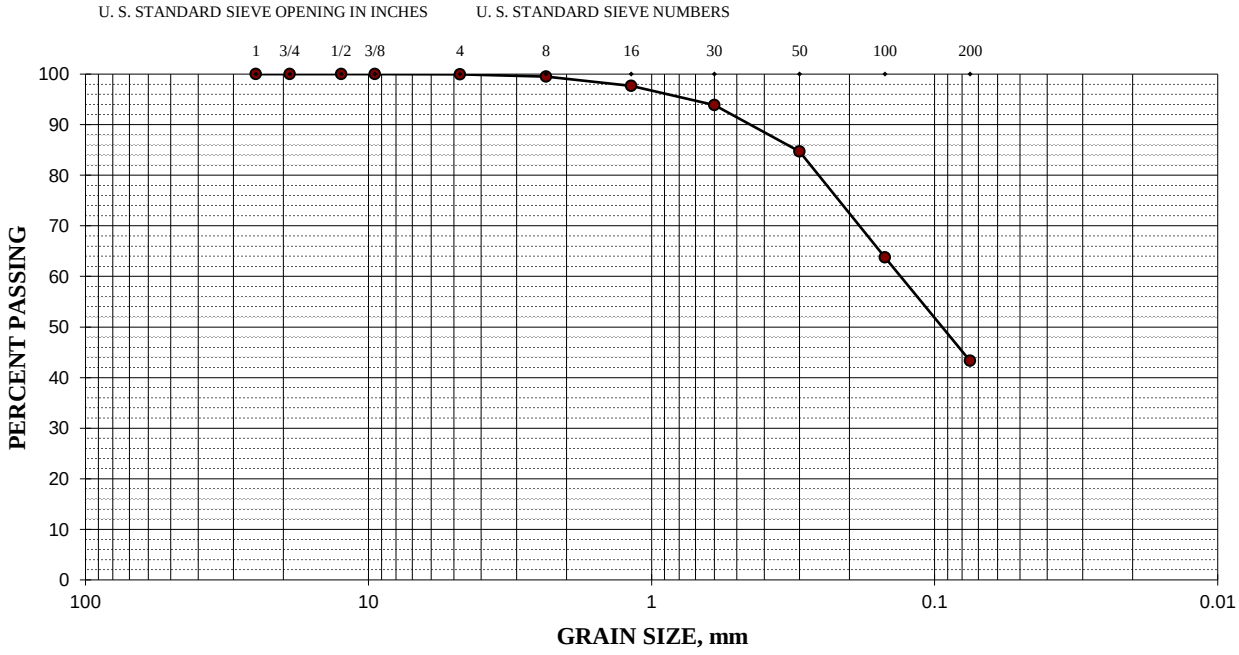
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #53 @ 0.0 - 4.0' August 20, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	1	99
#16 (1.18-mm)	2	98
#30 (600-µm)	6	94
#50 (300-µm)	15	85
#100 (150-µm)	36	64
#200 (75-µm)	57	43



Oxnard High School No. 8 301953-002

MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.65 (assumed)

August 20, 2018

Boring #5 @ 2.0 - 5.0'

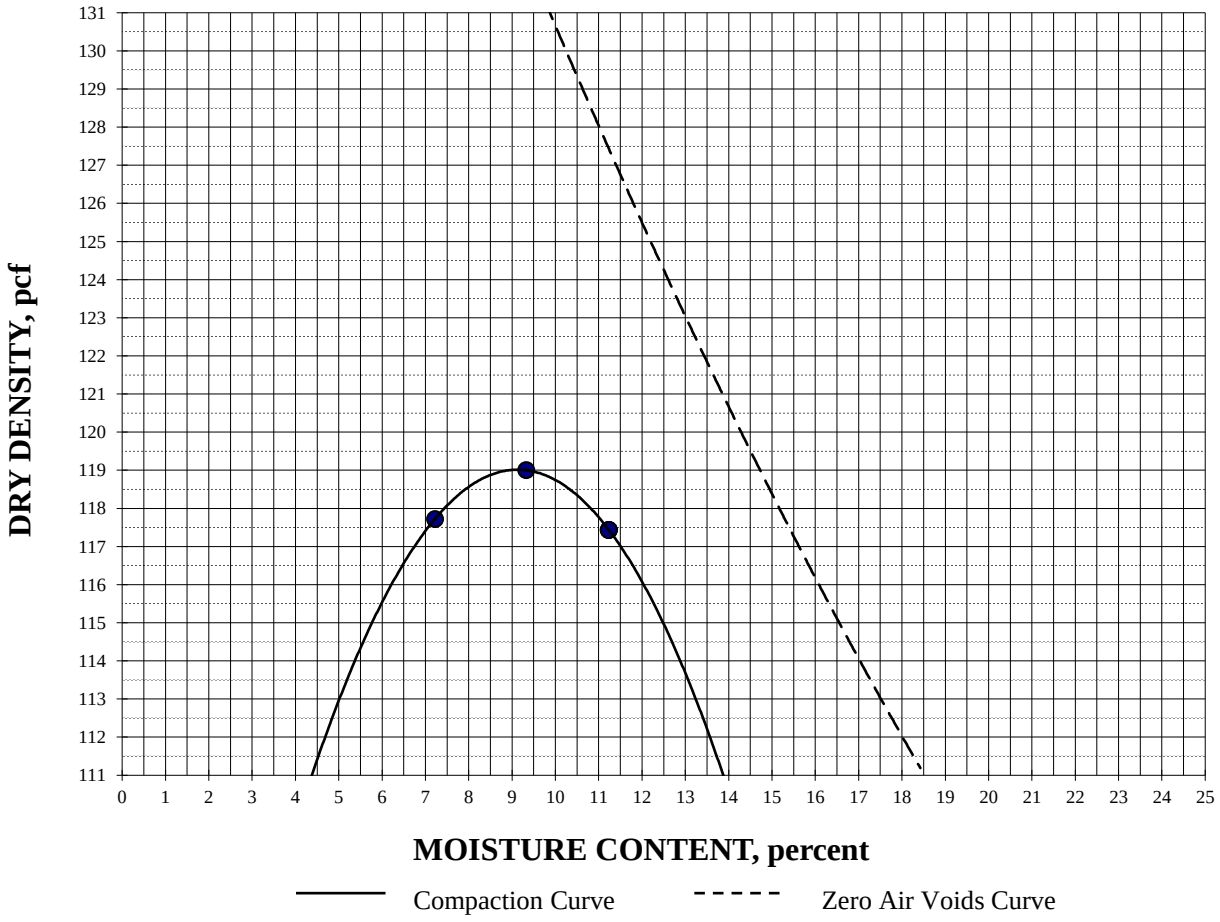
Light Brown Silty Sand (SM)

SIEVE DATA:

Sieve Size	% Retained (Cumulative)
3/4"	0
3/8"	0
#4	0

MAXIMUM DRY DENSITY: 119.0 pcf

OPTIMUM MOISTURE: 9.1%



Oxnard High School No. 8 301953-002

DIRECT SHEAR

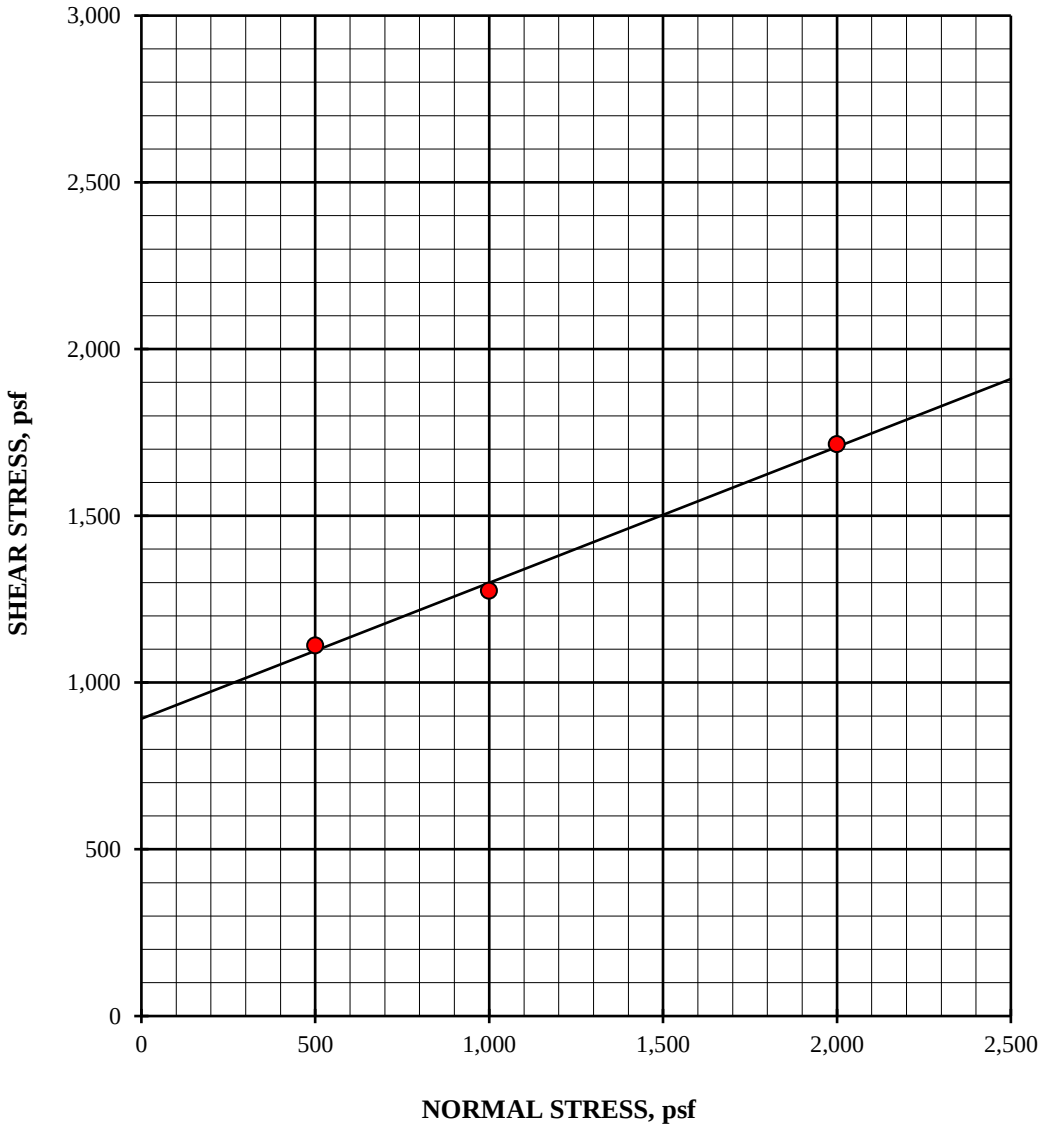
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

August 20, 2018

Boring #5 @ 2.0 - 5.0'
Silty Sand (SM)
Compacted to 90% RC, saturated

INITIAL DRY DENSITY: 107.1 pcf
INITIAL MOISTURE CONTENT: 9.1 %
PEAK SHEAR ANGLE (Ø): 22°
COHESION (C): 892 psf

SHEAR vs. NORMAL STRESS



DIRECT SHEAR continued

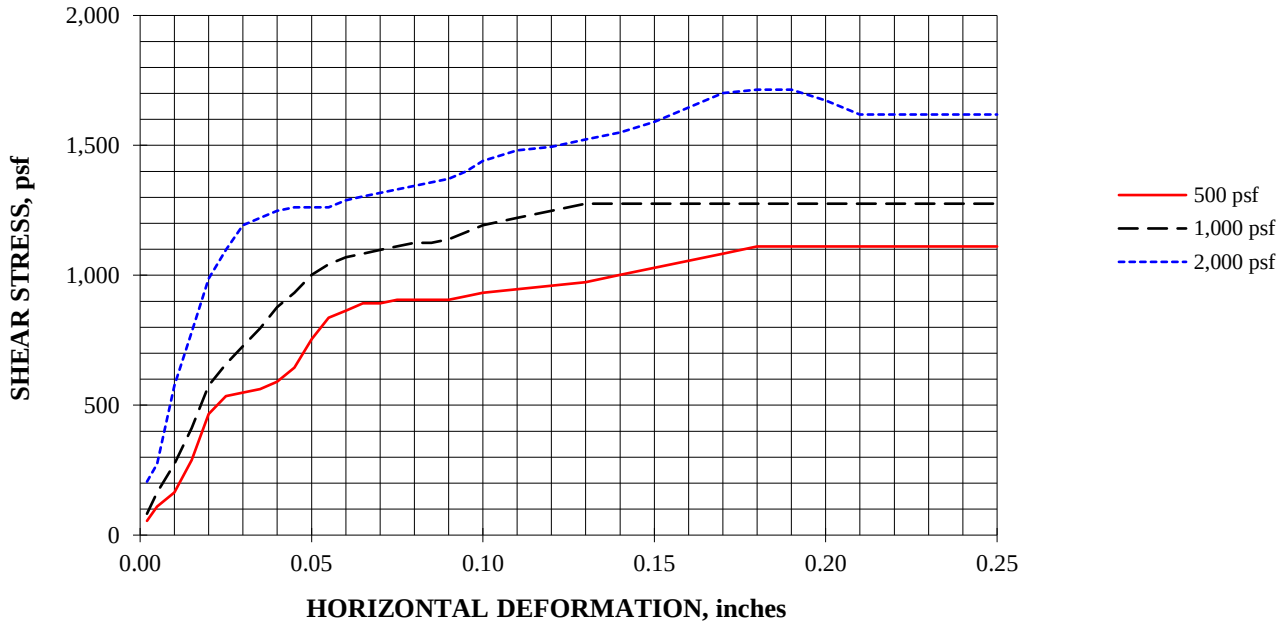
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

Boring #5 @ 2.0 - 5.0' August 20, 2018

Silty Sand (SM)

Compacted to 90% RC, saturated SPECIFIC GRAVITY: 2.65 (assumed)

SAMPLE NO.:	1	2	3	AVERAGE
INITIAL				
WATER CONTENT, %	9.1	9.1	9.1	9.1
DRY DENSITY, pcf	107.1	107.1	107.1	107.1
SATURATION, %	44.3	44.3	44.3	44.3
VOID RATIO	0.544	0.544	0.544	0.544
DIAMETER, inches	2.375	2.375	2.375	
HEIGHT, inches	1.00	1.00	1.00	
AT TEST				
WATER CONTENT, %	19.8	19.5	17.4	
DRY DENSITY, pcf	108.5	109.2	113.1	
SATURATION, %	100.0	100.0	100.0	
VOID RATIO	0.524	0.514	0.462	
HEIGHT, inches	0.99	0.98	0.95	



Oxnard High School No. 8 301953-002

MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.70 (assumed)

August 20, 2018

Boring #44 @ 4.0 - 5.0'

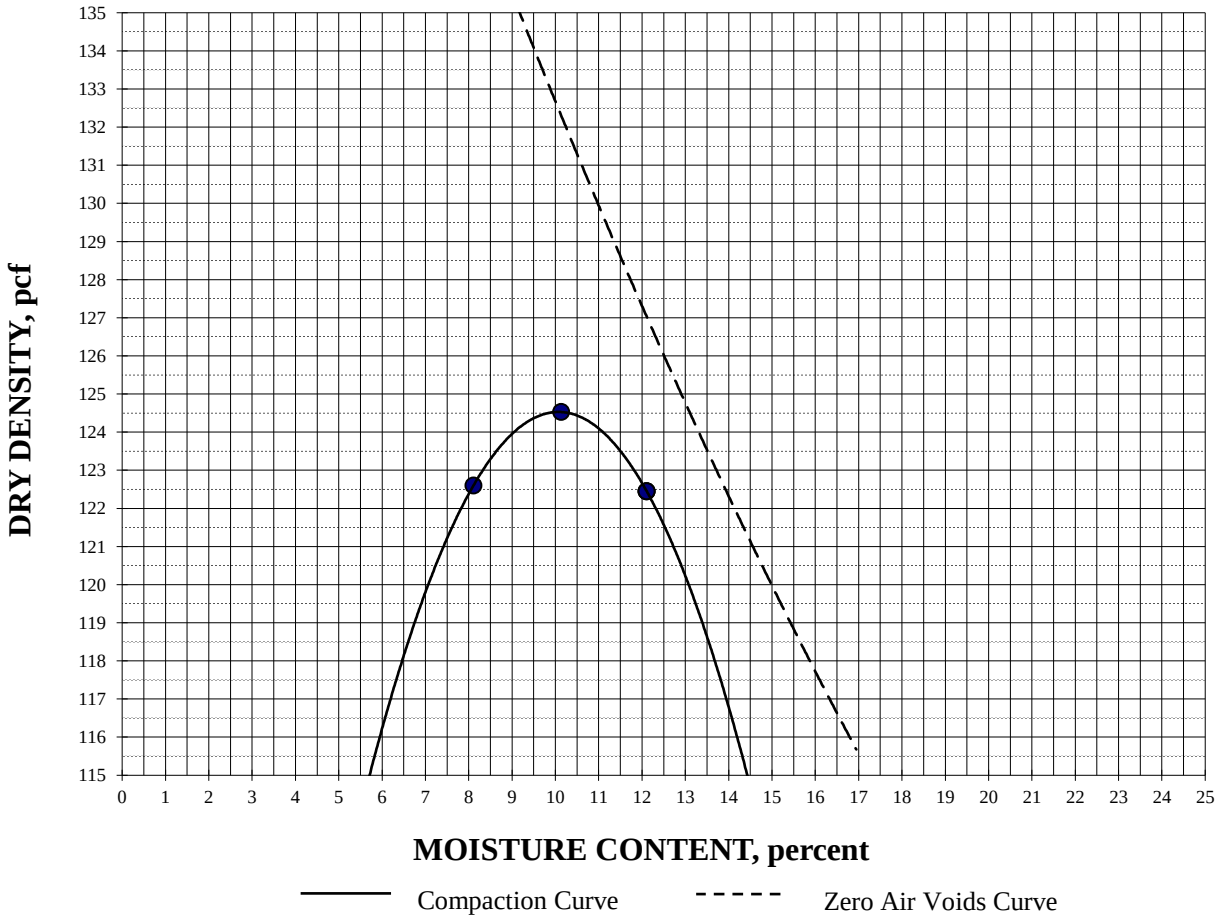
Light Brown Sandy Silt (ML)

SIEVE DATA:

Sieve Size	% Retained (Cumulative)
3/4"	0
3/8"	0
#4	0

MAXIMUM DRY DENSITY: 124.5 pcf

OPTIMUM MOISTURE: 10.1%



Oxnard High School No. 8 301953-002

DIRECT SHEAR

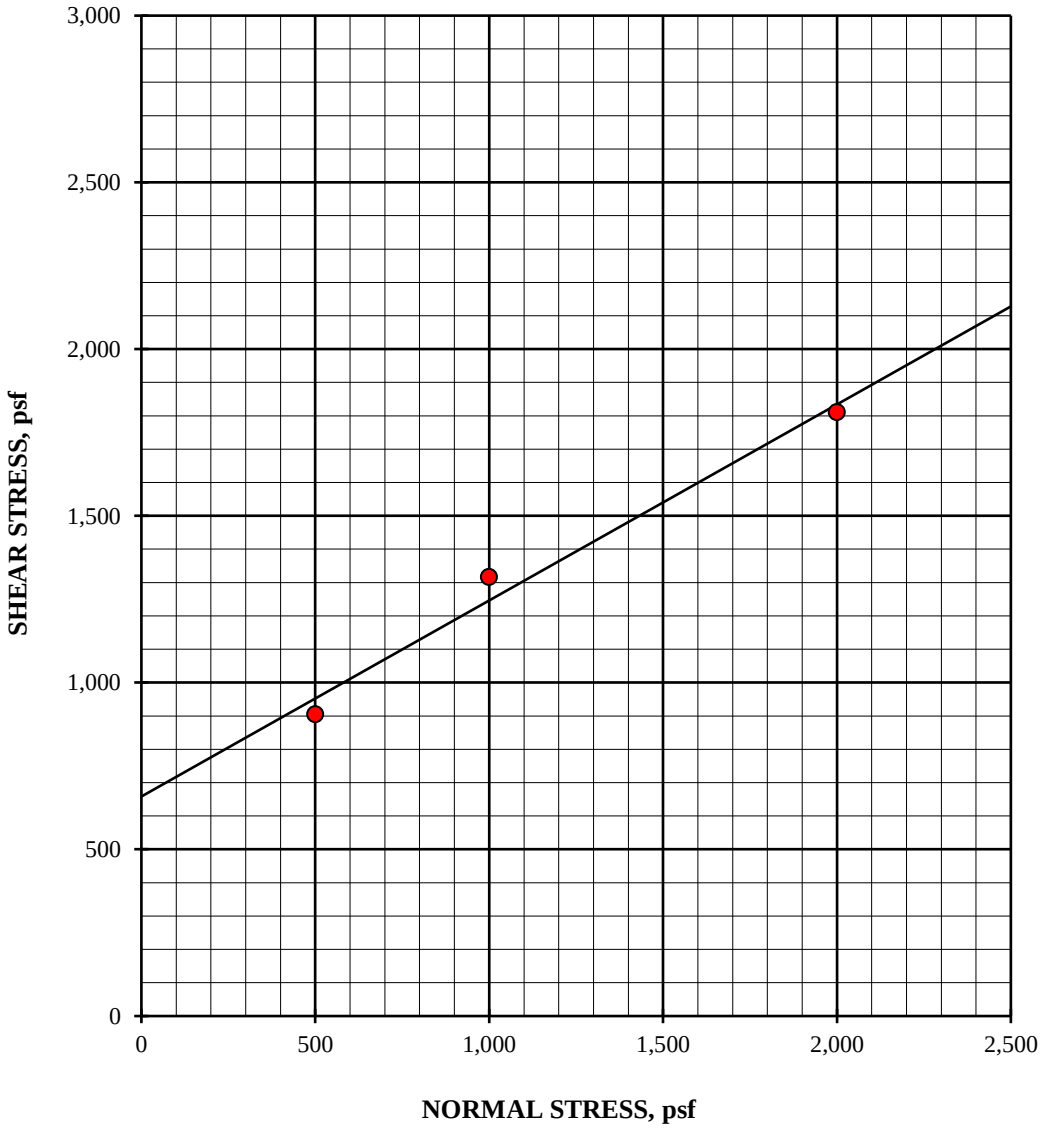
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

August 20, 2018

Boring #44 @ 4.0 - 5.0'
Sandy Silt (ML)
Compacted to 90% RC, saturated

INITIAL DRY DENSITY: 112.1 pcf
INITIAL MOISTURE CONTENT: 10.1 %
PEAK SHEAR ANGLE (Ø): 30°
COHESION (C): 658 psf

SHEAR vs. NORMAL STRESS



DIRECT SHEAR continued

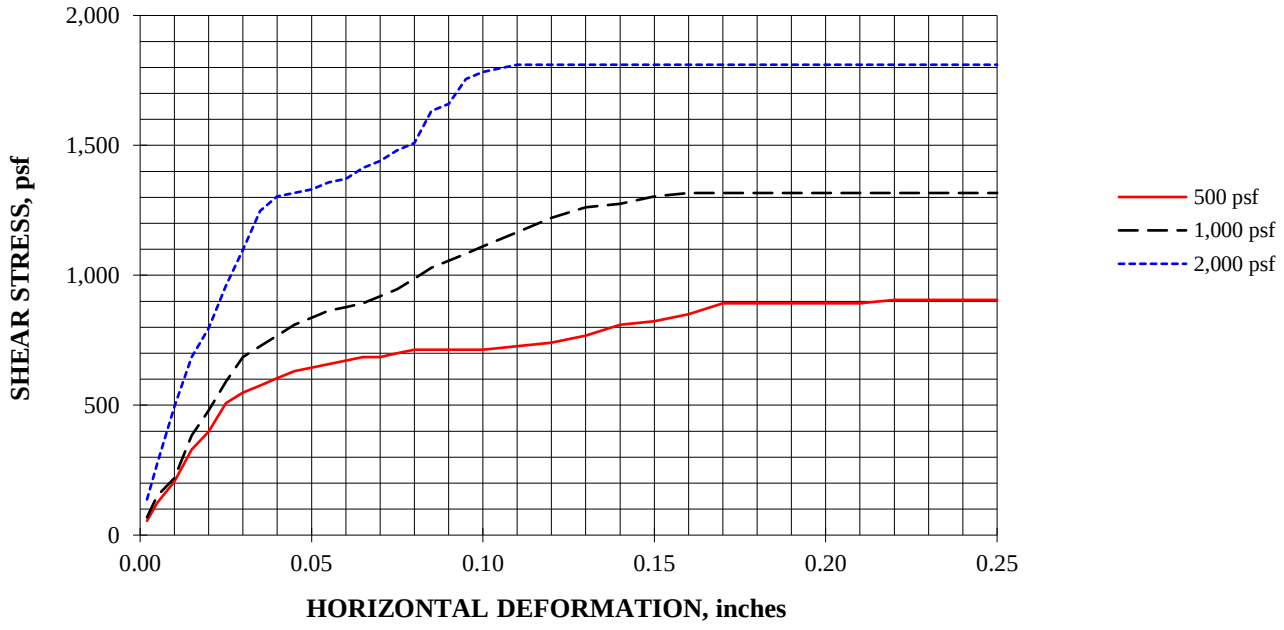
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

Boring #44 @ 4.0 - 5.0' August 20, 2018

Sandy Silt (ML)

Compacted to 90% RC, saturated SPECIFIC GRAVITY: 2.70 (assumed)

SAMPLE NO.:	1	2	3	AVERAGE
INITIAL				
WATER CONTENT, %	10.1	10.1	10.1	10.1
DRY DENSITY, pcf	112.1	112.1	112.1	112.1
SATURATION, %	54.2	54.2	54.2	54.2
VOID RATIO	0.503	0.503	0.503	0.503
DIAMETER, inches	2.375	2.375	2.375	
HEIGHT, inches	1.00	1.00	1.00	
AT TEST				
WATER CONTENT, %	21.4	22.0	22.4	
DRY DENSITY, pcf	113.0	115.2	115.7	
SATURATION, %	100.0	100.0	100.0	
VOID RATIO	0.491	0.463	0.457	
HEIGHT, inches	0.99	0.97	0.97	



Oxnard High School No. 8 301953-002

RESISTANCE '*R* ' VALUE AND EXPANSION PRESSURE

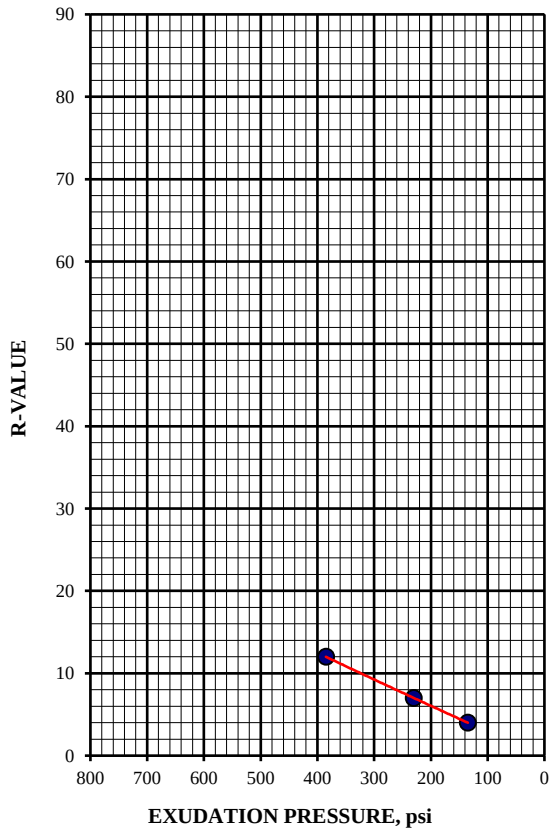
ASTM D 2844/D2844M-13

August 20, 2018

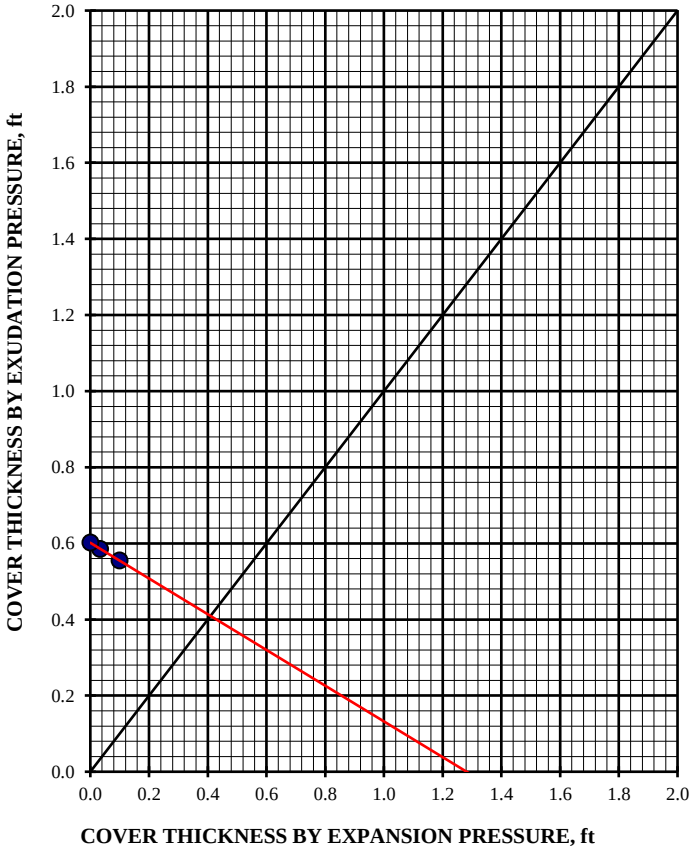
Boring #6 @ 4.0 - 7.0'
Brown to Light Brown Sandy Silt (ML)
Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 111.7-pcf
%Moisture @ 300 psi Exudation Pressure: 20.7%
R-Value - Exudation Pressure: 9
R-Value - Expansion Pressure: 35
R-Value @ Equilibrium: 9

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



Oxnard High School No. 8 301953-002

RESISTANCE '*R* ' VALUE AND EXPANSION PRESSURE

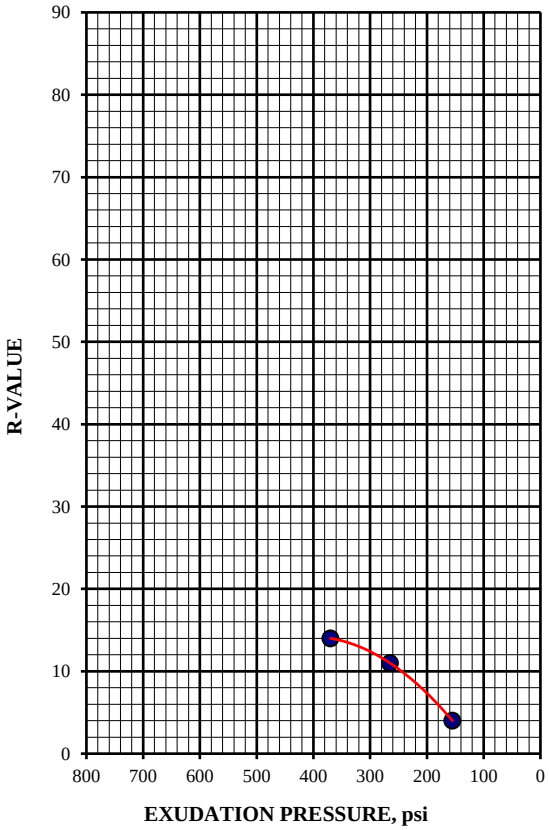
ASTM D 2844/D2844M-13

August 20, 2018

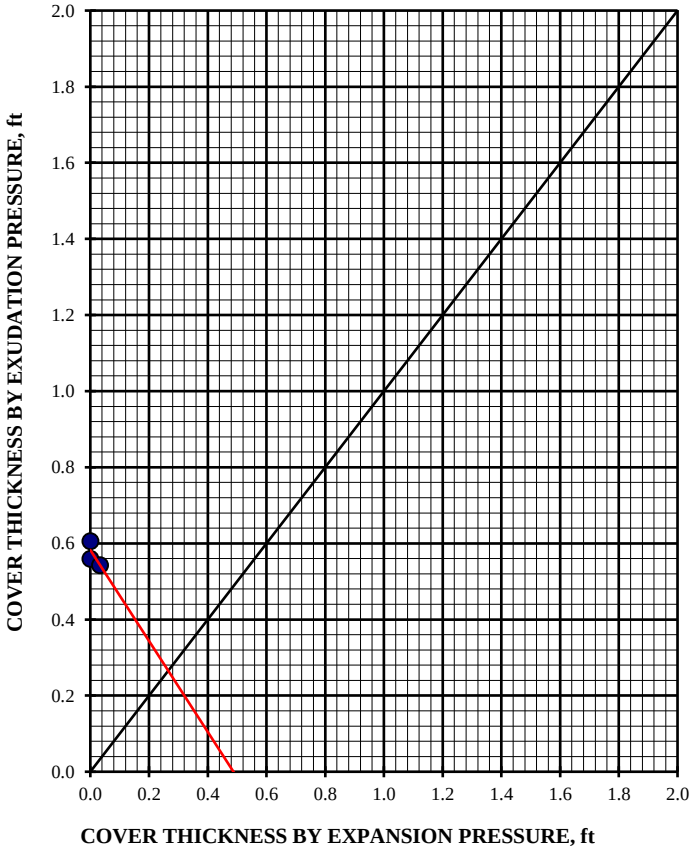
Boring #53 @ 0.0 - 3.0'
Light Brown Silty Sand (SM)
Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 107.6-pcf
%Moisture @ 300 psi Exudation Pressure: 20.2%
R-Value - Exudation Pressure: 12
R-Value - Expansion Pressure: 58
R-Value @ Equilibrium: 12

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



Oxnard High School No. 8 301953-002

CONSOLIDATION TEST

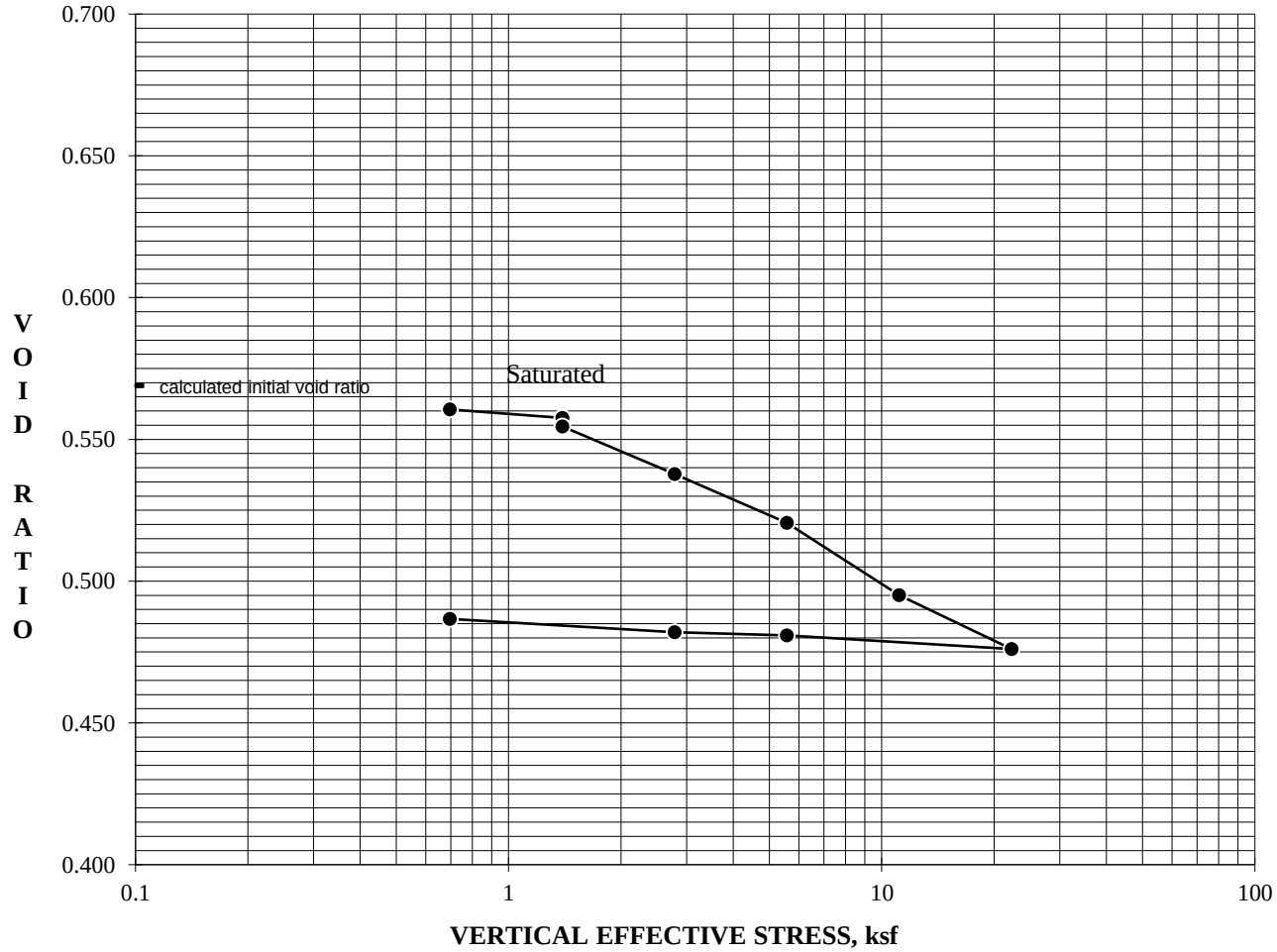
ASTM D 2435/D2435M-11

August 20, 2018

Boring #10 @ 11.0 - 11.5'
Well-Graded Sand (SW)
Ring Sample

DRY DENSITY: 105.5 pcf
MOISTURE CONTENT: 3.5%
SPECIFIC GRAVITY: 2.65 (assumed)
INITIAL VOID RATIO: 0.569

VOID RATIO vs. NORMAL PRESSURE DIAGRAM



Oxnard High School No. 8 301953-002

CONSOLIDATION TEST

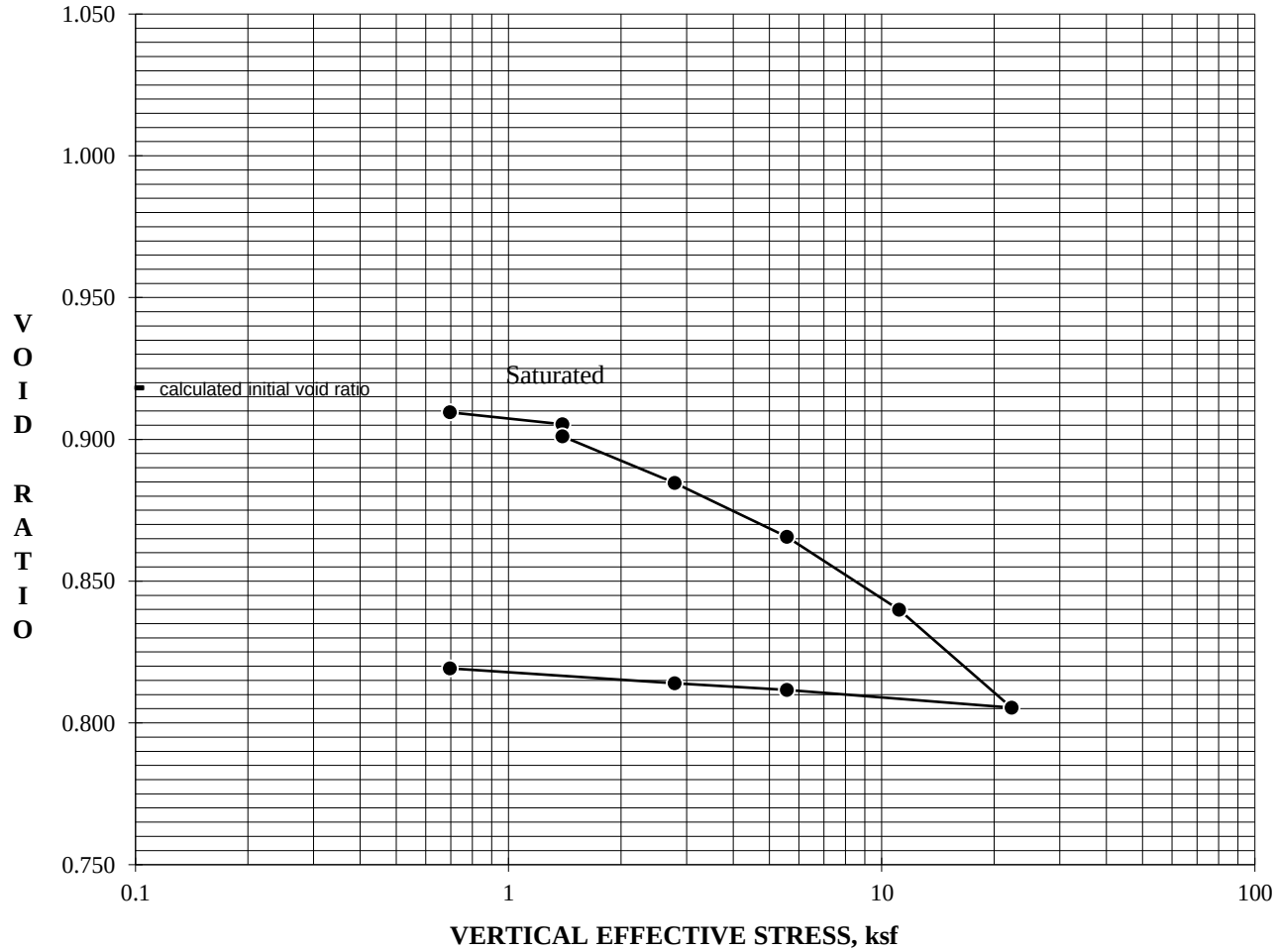
ASTM D 2435/D2435M-11

August 20, 2018

Boring #14 @ 11.0 - 11.5'
Well-Graded Sand (SW)
Ring Sample

DRY DENSITY: 86.3 pcf
MOISTURE CONTENT: 15.7%
SPECIFIC GRAVITY: 2.65 (assumed)
INITIAL VOID RATIO: 0.918

VOID RATIO vs. NORMAL PRESSURE DIAGRAM



Oxnard High School No. 8 301953-002

CONSOLIDATION TEST

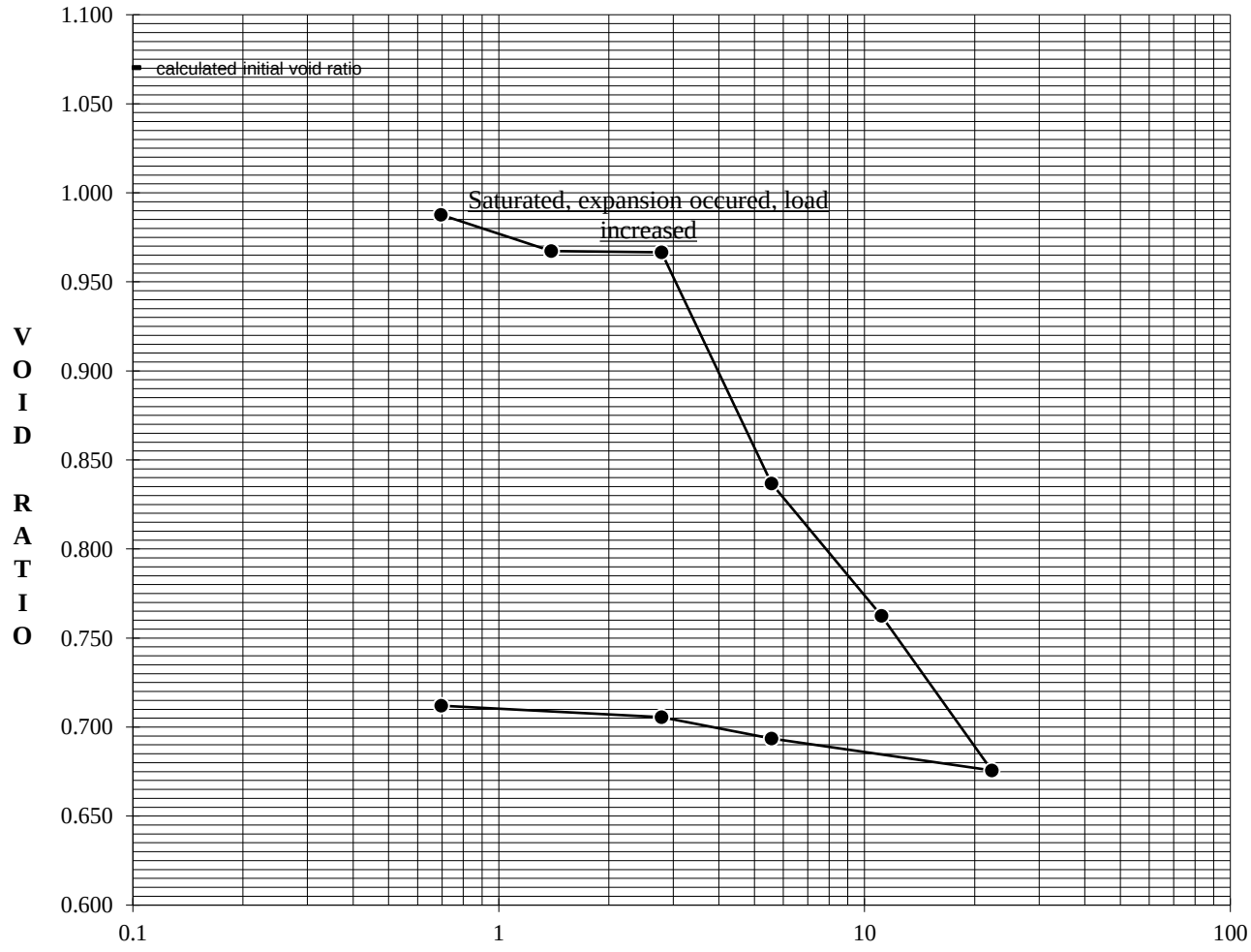
ASTM D 2435/D2435M-11

August 20, 2018

Boring #18 @ 6.0 - 6.5'
Sandy Silt (ML)
Ring Sample

DRY DENSITY: 81.4 pcf
MOISTURE CONTENT: 36.1%
SPECIFIC GRAVITY: 2.70 (assumed)
INITIAL VOID RATIO: 1.070

VOID RATIO vs. NORMAL PRESSURE DIAGRAM



Oxnard High School No. 8 301953-002

CONSOLIDATION TEST

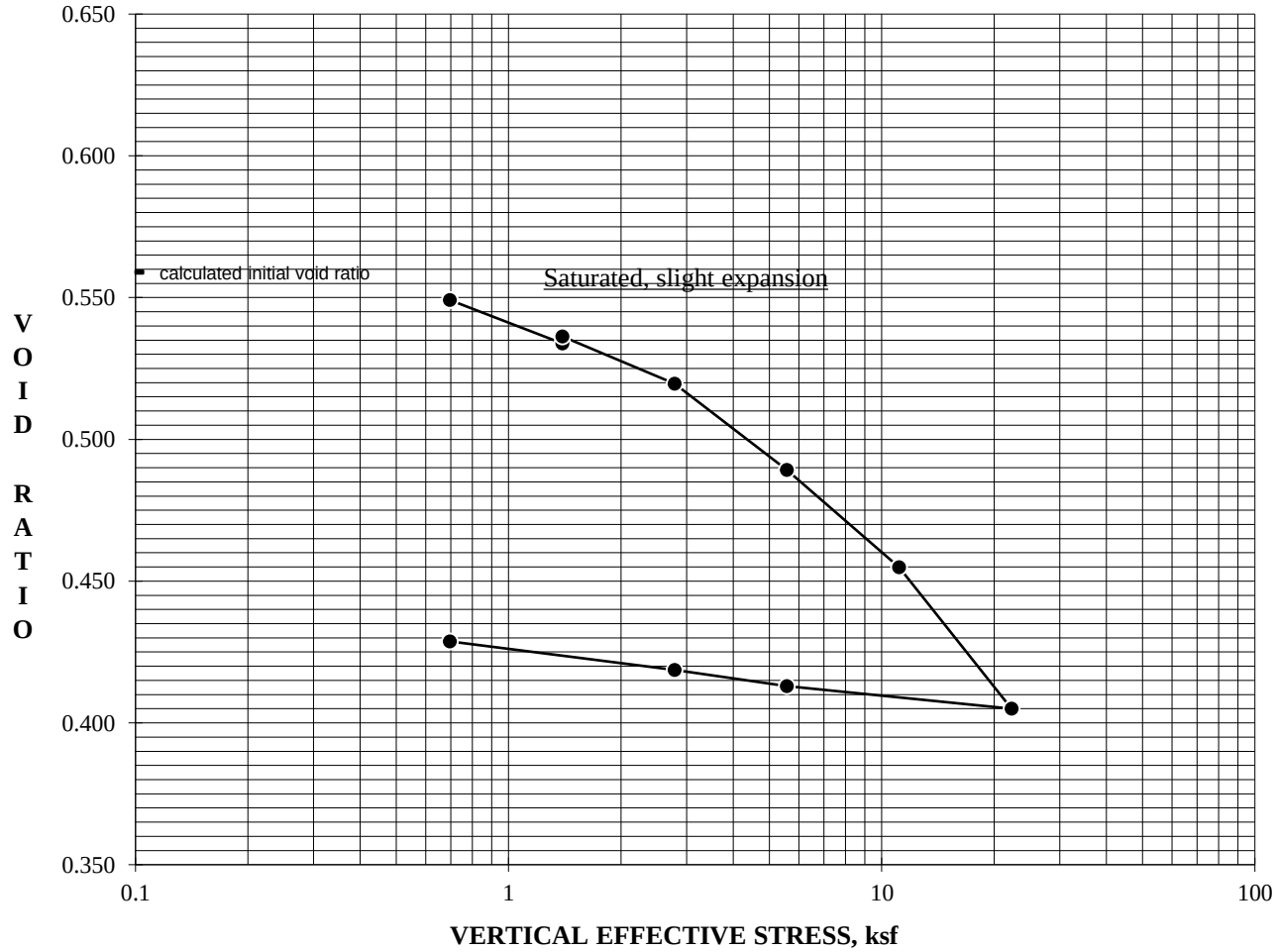
ASTM D 2435/D2435M-11

August 20, 2018

Boring #52 @ 6.0 - 6.5'
Sandy Silt (ML)
Ring Sample

DRY DENSITY: 108.1 pcf
MOISTURE CONTENT: 19.4%
SPECIFIC GRAVITY: 2.70 (assumed)
INITIAL VOID RATIO: 0.559

VOID RATIO vs. NORMAL PRESSURE DIAGRAM



APPENDIX C

Corrosion Evaluation Report

prepared by CERCO Analytical

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

23 August, 2018

Job No. 1808074
Cust. No.12651

Mr. Doug Dunham, PE
Earth Systems Pacific
2049 Preisker Lane, Suite E
Santa Maria, CA 93454

Subject: Project No.: 301953-002
Project Name: Oxnard High School No.8, Oxnard, CA
Corrosivity Analysis – CalTrans Test Methods

Dear Mr. Dunham:

Pursuant to your request, CERCO Analytical has analyzed the soil samples submitted on August 08, 2018. Based on the analytical results, a brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurements, all samples are classified as "corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentrations ranged 23 to 47 mg/kg, and are determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentrations ranged from 340 to 1,500 mg/kg and are determined to be sufficient to damage reinforced concrete structures and cement mortar-coated steel at these locations. Therefore, concrete that comes into contact with this soil should use sulfate resistant cement such as Type II, in accordance with the California Building Code requirements with a maximum water-to-cement ratio of 0.50.

The pH of the soils ranged from 7.73 to 7.99, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client:	Earth Systems Pacific
Client's Project No.:	301953-002
Client's Project Name:	Oxnard High School No.8, Oxnard, CA
Date Sampled:	07/20 - 26/18
Date Received:	8-Aug-18
Matrix:	Soil
Authorization:	Letter dated July 19, 2018

Date of Report: 23-Aug-2018

Job/Sample No.	Sample I.D.	Moisture (%)	pH	Min.Resistivity (ohms-cm)**	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
1808074-001	B-6 @ 4-7'	-	7.81	740	-	47	450
1808074-002	B-20 @ 4-7'	-	7.73	800	-	42	610
1808074-003	B-34 @ 6-8'	-	7.99	1,500	-	23	340
1808074-004	B-45 @ 0-5'	-	7.83	1,000	-	36	1,500

Method:		CT 226 [a]	CT 643 [b]	CT 643 [b]	-	CT 422 [c]	CT 417 [c]
Reporting Limit:		-	-	-	50	15	15
Date Analyzed:		-	17-Aug-2018	22-Aug-2018	-	17-Aug-2018	17-Aug-2018

Cheryl McMillen
Laboratory Director

* Results Reported on an "As Received" Basis

(a) Rev. July 2010 (b) Rev. June 2007 (c) Rev. November 2006

Quality Control Summary - **All laboratory quality control parameters were found to be within established limits**

APPENDIX D

Liquefaction and Seismically Induced Settlement of Dry Sand Analyses

Liquefaction Analysis – Groundwater at 8 feet

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-1
Plot: 1

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
1.6

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.50
Avg SF of Liquefiable Layers: 0.02

Probab	Total Induced Subsidence (inches)
Avg	
2%	
Max	
100%	0.2

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	82.43	1.01	1.22	110	0.009	1.000	1.22	0.57	1.70	132.43	1.88		1	88	1.17	0.05	1.00	154.7	1.00	0.424	0.424	0.485	Non-Liq.	Non-Liq.	0.00
0.33	77.94	1.37	1.76	110	0.018	1.000	1.76	0.61	1.70	125.21	2.01		1	86	1.31		1.00	164.0	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.49	66.43	1.48	2.23	110	0.027	1.000	2.23	0.65	1.70	106.70	2.13		1	80	1.51		1.00	161.4	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.66	56.46	1.33	2.35	110	0.036	1.000	2.35	0.67	1.70	90.66	2.20		1	73	1.65		1.00	150.0	1.00	0.394	0.394	0.485	Non-Liq.	Non-Liq.	0.00
0.82	50.54	1.16	2.30	110	0.045	1.000	2.30	0.67	1.70	81.14	2.22		1	68	1.72		1.00	139.9	1.00	0.334	0.334	0.485	Non-Liq.	Non-Liq.	0.00
0.98	45.66	1.04	2.28	110	0.054	1.000	2.28	0.68	1.70	73.28	2.25		1	64	1.80		1.00	132.1	1.00	0.294	0.294	0.485	Non-Liq.	Non-Liq.	0.00
1.15	40.24	0.94	2.33	110	0.063	0.999	2.33	0.70	1.70	64.56	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.484	Non-Liq.	Non-Liq.	0.00
1.31	40.24	0.94	2.33	110	0.072	0.999	2.33	0.70	1.70	64.54	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.484	Non-Liq.	Non-Liq.	0.00
1.48	34.62	0.81	2.34	110	0.081	0.999	2.35	0.71	1.70	55.50	2.35		1	52	2.11		1.00	117.0	1.00	0.229	0.229	0.484	Non-Liq.	Non-Liq.	0.00
1.64	31.09	0.64	2.05	110	0.090	0.998	2.06	0.71	1.70	49.81	2.34		1	48	2.10		1.00	104.5	1.00	0.186	0.186	0.484	Non-Liq.	Non-Liq.	0.00
1.80	30.58	0.62	2.01	110	0.099	0.998	2.02	0.71	1.70	48.98	2.34		1	47	2.10		1.00	102.7	1.00	0.181	0.181	0.484	Non-Liq.	Non-Liq.	0.00
1.97	32.03	0.75	2.33	110	0.108	0.998	2.34	0.72	1.70	51.29	2.37		1	49	2.20		1.00	112.8	1.00	0.213	0.213	0.484	Non-Liq.	Non-Liq.	0.00
2.13	31.02	0.74	2.40	110	0.117	0.997	2.41	0.73	1.70	49.65	2.39		1	48	2.27		1.00	112.8	1.00	0.214	0.214	0.483	Non-Liq.	Non-Liq.	0.00
2.30	29.95	0.70	2.34	110	0.126	0.997	2.35	0.73	1.70	47.92	2.39		1	46	2.29		1.00	109.8	1.00	0.203	0.203	0.483	Non-Liq.	Non-Liq.	0.00
2.46	29.19	0.66	2.26	110	0.135	0.996	2.27	0.73	1.70	46.69	2.39		1	45	2.29		1.00	106.7	1.00	0.193	0.193	0.483	Non-Liq.	Non-Liq.	0.00
2.62	29.17	0.63	2.17	110	0.144	0.996	2.18	0.72	1.70	46.64	2.38		1	45	2.24		1.00	104.4	1.00	0.186	0.186	0.483	Non-Liq.	Non-Liq.	0.00
2.79	29.42	0.62	2.12	110	0.153	0.996	2.13	0.72	1.70	47.03	2.37		1	46	2.20		1.00	103.6	1.00	0.183	0.183	0.483	Non-Liq.	Non-Liq.	0.00
2.95	29.77	0.62	2.08	110	0.162	0.995	2.09	0.72	1.70	47.57	2.36		1	46	2.17		1.00	103.3	1.00	0.182	0.182	0.482	Non-Liq.	Non-Liq.	0.00
3.12	29.70	0.60	2.02	110	0.171	0.995	2.04	0.72	1.70	47.45	2.36		1	46	2.14		1.00	101.7	1.00	0.178	0.178	0.482	Non-Liq.	Non-Liq.	0.00
3.28	28.88	0.57	1.96	110	0.180	0.994	1.98	0.72	1.70	46.11	2.36		1	45	2.15		1.00	99.1	1.00	0.170	0.170	0.482	Non-Liq.	Non-Liq.	0.00
3.44	26.80	0.52	1.95	110	0.189	0.994	1.97	0.72	1.70	42.76	2.38		1	42	2.24		1.00	95.7	1.00	0.162	0.162	0.482	Non-Liq.	Non-Liq.	0.00
3.61	26.96	0.49	1.80	110	0.198	0.994	1.81	0.72	1.70	43.00	2.36		1	42	2.15		1.00	92.3	1.00	0.153	0.153	0.482	Non-Liq.	Non-Liq.	0.00
3.77	29.75	0.49	1.63	110	0.208	0.993	1.65	0.70	1.70	47.47	2.30		1	46	1.94		1.00	92.2	1.00	0.153	0.153	0.482	Non-Liq.	Non-Liq.	0.00
3.94	32.57	0.49	1.50	110	0.217	0.993	1.51	0.68	1.70	51.99	2.24		1	50	1.78		1.00	92.7	1.00	0.154	0.154	0.481	Non-Liq.	Non-Liq.	0.00
4.10	34.78	0.51	1.46	110	0.226	0.993	1.47	0.67	1.70	55.52	2.21		1	52	1.70		1.00	94.6	1.00	0.159	0.159	0.481	Non-Liq.	Non-Liq.	0.00
4.27	36.24	0.53	1.47	110	0.235	0.992	1.48	0.67	1.70	57.85	2.20		1	54	1.67		1.00	96.7	1.00	0.164	0.164	0.481	Non-Liq.	Non-Liq.	0.00
4.43	38.86	0.57	1.47	110	0.244	0.992	1.48	0.66	1.70	62.05	2.18		1	57	1.62		1.00	100.3	1.00	0.174	0.174	0.481	Non-Liq.	Non-Liq.	0.00
4.59	44.03	0.63	1.44	110	0.253	0.991	1.45	0.65	1.70	70.34	2.13		1	62	1.51		1.00	106.4	1.00	0.192	0.192	0.481	Non-Liq.	Non-Liq.	0.00
4.76	50.25	0.69	1.36	110	0.262	0.991	1.37	0.63	1.70	80.32	2.07		1	68	1.41		1.00	112.9	1.00	0.214	0.214	0.480	Non-Liq.	Non-Liq.	0.00
4.92	56.32	0.74	1.31	110	0.271	0.991	1.31	0.61	1.70	90.06	2.02		1	72	1.33		1.00	119.7	1.00	0.239	0.239	0.480	Non-Liq.	Non-Liq.	0.00
5.09	62.37	0.74	1.19	110	0.280	0.990	1.19	0.60	1.70	99.77	1.96		1	77	1.25	0.55	1.19	148.2	1.00	0.383	0.383	0.480	Non-Liq.	Non-Liq.	0.00
5.25	67.00	0.84	1.26	110	0.289	0.990	1.27	0.59	1.70	107.19	1.95		1	80	1.25	0.60	1.19	158.4	1.00	0.449	0.449	0.480	Non-Liq.	Non-Liq.	0.00
5.41	67.37	0.89	1.32	110	0.298	0.989	1.32	0.60	1.70	107.77	1.97		1	80	1.26	0.65	1.19	160.8	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.58	67.34	0.91	1.35	110	0.307	0.989	1.36	0.60	1.70	107.71	1.97		1	80	1.27	0.70	1.19	162.0	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.74	67.46	0.93	1.37	110	0.316	0.989	1.38	0.60	1.70	107.89	1.98		1	80	1.27	0.75	1.19	162.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.91	67.82	0.93	1.37	110	0.325	0.988	1.38	0.60	1.70	108.45	1.98		1	80	1.27	0.80	1.19	163.5	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.07	65.23	0.93	1.42	110	0.334	0.988	1.43	0.61	1.70	104.28	2.00		1	79	1.30	0.85	1.19	160.7	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.23	63.78	0.93	1.46	110	0.343	0.988	1.47	0.61	1.70	101.93	2.01		1	78	1.32		1.00	134.5	1.00	0.306	0.306	0.479	Non-Liq.	Non-Liq.	0.00
6.40	65.72	0.95	1.45	110	0.352	0.987	1.45	0.61	1.70	105.03	2.00		1	79	1.30		1.00	136.9	1.00	0.319	0.319	0.479	Non-Liq.	Non-Liq.	0.00
6.56	71.05	1.00	1.40	110	0.361	0.987	1.41	0.60	1.70	113.58	1.97		1	82	1.26	1.00	1.00	143.8	1.00	0.357	0.357	0.478	Non-Liq.	Non-Liq.	0.00
6.73	77.49	1.08	1.39	110	0.370	0.986	1.40	0.59	1.70	123.92	1.94		1	86	1.23	1.05	1.00	152.7	1.00	0.411	0.411	0.478	Non-Liq.	Non-Liq.	0.00
6.89	86.69	1.16	1.34	110	0.379	0.986	1.34	0.58	1.70	138.69	1.89		1	90	1.18	1.10	1.00	164.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	98.48	1.28	1.30	110	0.388	0.986	1.31	0.56	1.70	157.61	1.85		1	96	1.14	1.15	1.00	180.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	114.53	1.41	1.23	110	0.397	0.985	1.23	0.54	1.70	183.39	1.78		1	100	1.09	1.20	1.00	201.2	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	122.82	1.49	1.21	110	0.406	0.985	1.21	0.54	1.67	193.40	1.76		1	100	1.08	1.25	1.00	209.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	128.68	1.53	1.19	110	0.415	0.985	1.19	0.53	1.65	199.45	1.75		1	100	1.07	1.30	1.00	214.1	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	128.68	1.53	1.19	110	0.424	0.984	1.19	0.53	1.63	197.34	1.75		1	100	1.07	1.35	1.00	212.2	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	134.06	1.56	1.17	110	0.433	0.984	1.17	0.53	1.60	202.54	1.74		1	100	1.06	1.40	1.00	215.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	139.69	1.63	1.16	110	0.442	0.984	1.17	0.53	1.58	208.28	1.73		1	100	1.06	1.45	1.00	220.8	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	147.04	1.72	1.17	110	0.451	0.983	1.17	0.52	1.56	216.44	1.72		1	100	1.05	1.50	1.00	228.1	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
8.37	151.94	1.71	1.12	110	0.460	0.983	1.13	0.52	1.54	220.33	1.70		1	100	1.04	1.55	1.00	229.4	1.00	Infin.	0.000	0.486	Non-Liq.	Non-Liq.	0.00
8.53	158.05	1.80	1.14	110	0.469	0.982	1.14	0.52	1.52	226.66	1.69		1	100	1.03	1.60	1.00	235.3	1.00	Infin.	0.000	0.491	Non-Liq.	Non-Liq.	0.00
8.69	163.87	1.92	1.17	110	0.478	0.982	1.18	0.52	1.51	232.90	1.70		1	100	1.04	1.65	1.00	242.3	1.00	Infin.	0.000	0.496	Non-Liq.	Non-Liq.	0.00
8.86	169.68	2.08	1.22	110	0.487	0.982	1.23	0.52	1.50	239.19	1.70		1	100	1.04	1.70	1.00	249.8	1.00	Infin.	0.000	0.501	Non-Liq.	Non-Liq.	0.00
9.02	174.27	2.26	1.30	110	0.496	0.981	1.30	0.52	1.49	244.08	1.72		1	100	1.05	1.75	1.00	257.2	1.00	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
9.19	179.31	2.32	1.29	110	0.505	0.981	1.30	0.52	1.47	248.52	1.71		1	100	1.05	1.80	1.00	261.0	1.00	Infin.	0.000	0.510	Non-Liq.	Non-Liq.	0.00
9.35	181.08	2.35	1.30	110	0.514	0.981	1.30	0.52	1.46	248.69	1.71		1	100	1.05	1.85	1.00	261.3	1.00	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
9.51	191.53	2.42	1.26	110	0.523	0.980	1.27	0.52	1.44	259.55	1.69		1	100	1.03	1.90	1.00	269.1	1.00	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
9.68	202.38	2.57	1.27	110	0.532	0.980	1.27	0.51	1.42	271.29	1.68		1	100	1.03	1.95	1.00	279.3	1.00	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
9.84	214.08	2.69	1.26	110	0.541	0.980	1.26	0.51	1.41	283.70	1.67		1	100	1.02	2.00	1.00	289.1	1.00	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
10.01	227.79	2.91	1.28	110	0.550	0.979	1.28	0.51	1.39	298.89	1.66		1	100	1.01	2.05	1.00	302.9	1.00	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
10.17	242.24	3.22	1.33	110	0.559	0.979	1.33	0.51	1.38	315.27	1.66		1	100	1.01	2.10	1.00	319.4	1.00	Infin.	0.000	0.537	Non-Liq.	Non-Liq.	0.00
10.33	244.06	3.47	1.42	110	0.568	0.979	1.43	0.51	1.37	316.43	1.68		1	100	1.03	2.15	1.00	325.7	1.00	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
10.50	249.05	3.55	1.43	110	0.577	0.978	1.43	0.51	1.36	320.21	1.68		1	100	1.02	2.20	1.00	329.2	1.00	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
10.66	254.87	3.69	1.45	110	0.586	0.978	1.45	0.51	1.35	325.19	1.68		1	100	1.03	2.25	1.00	334.7	1.00	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
10.83	256.89	3.79	1.48	110	0.595	0.978	1.48	0.51	1.34	325.57	1.69		1	100	1.03	2.30	1.00	336.5	1.00	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
10.99	258.54	3.96	1.53	110	0.604	0.977	1.53	0.52	1.34	325.83	1.70		1	100	1.04	2.35	1.00	339.6	1.00	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
11.15	252.91	3.87	1.53	110	0.614	0.977	1.53	0.52	1.33	316.61	1.71		1	100	1.04	2.40	1.00	331.4	1.00	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
11.32	241.86	3.70	1.53	110	0.623	0.977	1.53	0.52	1.32	301.06	1.72		1	100	1.05	2.45	1.00	317.7	1.00	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
11.48	235.08	3.50	1.49	110	0.632	0.976	1.49	0.52	1.31	290.38	1.72		1	100	1.05	2.50	1.00	306.4	1.00	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
11.65	233.08	3.34	1.43	110	0.641	0.976	1.44	0.52	1.30	285.38	1.71		1	100	1.05	2.55	1.00	299.4	1.00	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
11.81	236.89	2.82	1.19	110	0.650	0.975	1.19	0.50	1.28	285.24	1.65		1	100	1.00	2.60	1.00	286.6	1.00	Infin.	0.000	0.576	Non-Liq.	Non-Liq.	0.00
11.98	239.86	3.05	1.27	110	0.659	0.975	1.27	0.51	1.27	287.65	1.67		1	100	1.02	2.65	1.00	293.1	1.00	Infin.	0.000	0.580	Non-Liq.	Non-Liq.	0.00
12.14	232.44	3.13	1.35	110	0.668	0.975	1.35	0.52	1.27	277.93	1.70		1	100	1.04	2.70	1.00	288.9	1.00	Infin.	0.000	0.583	Non-Liq.	Non-Liq.	0.00
12.30	231.56	3.17	1.37	110	0.677	0.974	1.37	0.52	1.26	275.23	1.70		1	100	1.04	2.70	1.00	287.5	1.00	Infin.	0.000	0.587	Non-Liq.	Non-Liq.	0.00
12.47	226.67	3.06	1.35	110	0.686	0.974	1.35	0.52	1.25	267.63	1.71		1	100	1.04	2.70	1.00	280.0	1.00	Infin.	0.000	0.590	Non-Liq.	Non-Liq.	0.00
12.63	224.32	3.05	1.36	110	0.695	0.974	1.36	0.52	1.25	263.26	1.71		1	100	1.05	2.70	1.00	276.6	1.00	Infin.	0.000	0.593	Non-Liq.	Non-Liq.	0.00
12.80	219.31	3.06	1.39	110	0.704	0.973	1.40	0.53	1.24	256.14	1.73		1	100	1.06	2.70	1.00	272.0	1.00	Infin.	0.000	0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	214.97	3.04	1.41	110	0.713	0.973	1.42	0.53	1.23	249.70	1.74		1	100	1.07	2.70	1.00	267.1	1.00	Infin.	0.000	0.600	**Non-Liq.**	Non-Liq.	**0.00**
13.12	210.39	2.92	1.39	110	0.722	0.973	1.39	0.53	1.23	242.78	1.74		1	100	1.07	2.70	1.00	260.0	1.00	Infin.	0.000	0.603	**Non-Liq.**	Non-Liq.	**0.00**
13.29	202.73	2.85	1.41	110	0.731	0.972	1.41	0.54	1.22	232.77	1.76		1	100	1.08	2.70	1.00	251.7	1.00	Infin.	0.000	0.606	**Non-Liq.**	Non-Liq.	**0.00**
13.45	202.03	2.75	1.36	110	0.740	0.972	1.36	0.53	1.21	230.22	1.75		1	100	1.07	2.70	1.00	247.7	1.00	Infin.	0.000	0.609	**Non-Liq.**	Non-Liq.	**0.00**
13.62	202.36	2.74	1.36	110	0.749	0.972	1.36	0.53	1.20	229.11	1.75		1	100	1.07	2.70	1.00	246.5	1.00	Infin.	0.000	0.612	**Non-Liq.**	Non-Liq.	**0.00**
13.78	210.84	2.87	1.36	110	0.758	0.971	1.37	0.53	1.19	237.04	1.74		1	100	1.07	2.70	1.00	253.8	1.00	Infin.	0.000	0.615	**Non-Liq.**	Non-Liq.	**0.00**
13.94	228.51	2.41	1.05	110	0.767	0.971	1.06	0.50	1.17	252.83	1.64		1	100	1.00	2.70	1.00	253.8	1.00	Infin.	0.000	0.618	**Non-Liq.**	Non-Liq.	**0.00**
14.11	285.52	2.69	0.94	110	0.776	0.971	0.94	0.50	1.17	314.27	1.54		1	100	1.00	2.70	1.00	315.4	1.00	Infin.	0.000	0.621	**Non-Liq.**	Non-Liq.	**0.00**
14.27	292.87	2.62	0.89	110	0.785	0.970	0.90	0.50	1.16	320.51	1.52		1	100	1.00	2.70	1.00	321.7	1.00	Infin.	0.000	0.624	**Non-Liq.**	Non-Liq.	**0.00**
14.44	251.89	2.37	0.94	110	0.794	0.970	0.94	0.50	1.15	273.97	1.58		1	100	1.00	2.70	1.00	275.0	1.00	Infin.	0.000	0.627	**Non-Liq.**	Non-Liq.	**0.00**
14.60	209.49	2.12	1.01	110	0.803	0.970	1.02	0.51	1.15	226.74	1.66		1	100	1.01	2.70	1.00	229.5	1.00	Infin.	0.000	0.629	**Non-Liq.**	Non-Liq.	**0.00**
14.76	185.30	1.81	0.97	110	0.812	0.969	0.98	0.51	1.15	199.73	1.68		1	100	1.03	2.70	1.00	205.8	1.00	Infin.	0.000	0.632	**Non-Liq.**	Non-Liq.	**0.00**
14.93	177.04	1.72	0.97	110	0.821	0.969	0.97	0.52	1.14	189.90	1.70		1	100	1.04	2.70	1.00	197.4	1.00	Infin.	0.000	0.635	**Non-Liq.**	Non-Liq.	**0.00**
15.09	163.66	1.53	0.94	110	0.830	0.969	0.94	0.52	1.13	174.67	1.71		1	100	1.05	2.70	1.00	183.4	1.00	Infin.	0.000	0.637	**Non-Liq.**	Non-Liq.	**0.00**
15.26	131.77	1.43	1.09	110	0.839	0.968	1.10	0.56	1.14	140.77	1.83		1	91	1.13	2.70	1.00	159.1	1.00	0.454	0.454	0.640	**0.71**	76%	**0.58**
15.42	90.92	1.82	2.00	110	0.848	0.968	2.02	0.64	1.15	98.18	2.12		1	76	1.50		1.00	147.1	1.00	0.376	0.376	0.643	**0.59**	85%	**0.86**
15.58	71.71	1.75	2.45	110	0.857	0.967	2.48	0.69	1.16	77.37	2.26		1	66	1.82		1.00	141.2	1.00	0.342	0.342	0.645	**0.53**	89%	**1.00**
15.75	110.76	2.45	2.21	110	0.866	0.967	2.22	0.64	1.14	118.01	2.10		1	84	1.46		1.00	171.7	1.00	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	**0.00**
15.91	111.12	2.74	2.46	110	0.875	0.967	2.48	0.65	1.13	117.85	2.14		1	84	1.52		1.00	179.7	1.00	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	**0.00**
16.08	114.52	2.87	2.51	110	0.884	0.966	2.52	0.65	1.12	120.66	2.14		1	85	1.52		1.00	183.7	1.00	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
16.24	142.13	2.72	1.91	110	0.893	0.966	1.92	0.60	1.11	147.88	1.99		1	93	1.28	1.00	1.00	190.7	1.00	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
16.40	171.27	2.46	1.44	110	0.902	0.966	1.45	0.56	1.09	176.09	1.84		1	100	1.14	1.05	1.00	201.7	1.00	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
16.57	179.24	2.28	1.27	110	0.911	0.965	1.28	0.55	1.08	182.87	1.79		1	100	1.10	1.10	1.00	202.3	1.00	Infin.	0.000	0.660	**Non-Liq.**	Non-Liq.	**0.00**
16.73	203.64	2.08	1.02	110	0.920	0.965	1.03	0.51	1.07	205.87	1.69		1	100	1.03	1.15	1.00	213.0	1.00	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	**0.00**
16.90	253.20	2.34	0.92	110	0.929	0.965	0.93	0.50	1.07	254.42	1.59		1	100	1.00	1.20	1.00	255.4	1.00	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	**0.00**
17.06	288.82	2.54	0.88	110	0.938	0.964	0.88	0.50	1.06	288.93	1.54		1	100	1.00	1.25	1.00	290.0	1.00	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
17.22	315.97	2.96	0.94	110	0.947	0.964	0.94	0.50	1.06	314.66	1.54		1	100	1.00	1.30	1.00	315.8	1.00	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	**0.00**
17.39	322.57	2.98	0.92	110	0.956	0.963	0.93	0.50	1.05	319.73	1.53		1	100	1.00	1.35	1.00	320.9	1.00	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	**0.00**
17.55	346.12	4.11	1.19	110	0.965	0.963	1.19	0.50	1.05	341.52	1.60		1	100	1.00	1.40	1.00	342.8	1.00	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	**0.00**
17.72	402.20	6.00	1.49	110	0.974	0.963	1.50	0.50	1.04	395.22	1.65		1	100	1.00	1.45	1.00	396.7	1.00	Infin.	0.000	0.675	**Non-Liq.**	Non-Liq.	**0.00**
17.88	358.55	6.07	1.69	110	0.983	0.962	1.70	0.52	1.04	351.16	1.72		1	100	1.05	1.50	1.00	370.5	1.00	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
18.04	345.21	4.98	1.44	110	0.992	0.962	1.45	0.51	1.03	336.13	1.67		1	100	1.02	1.55	1.00	343.7	1.00	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
18.21	360.17	4.43	1.23	110	1.001	0.962	1.23	0.50	1.03	348.93	1.61		1	100	1.00	1.60	1.00	350.2	1.00	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
18.37	359.99	3.79	1.05	110	1.010	0.961	1.06	0.50	1.02	347.18	1.55		1	100	1.00	1.65	1.00	348.5	1.00	Infin.	0.000	0.683	**Non-Liq.**	Non-Liq.	**0.00**
18.54	354.62	3.03	0.86	110	1.020	0.961	0.86	0.50	1.02	340.46	1.49		1	100	1.00	1.70	1.00	341.7	1.00	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
18.70	344.24	2.99	0.87	110	1.029	0.960	0.87	0.50	1.01	329.01	1.50		1	100	1.00	1.75	1.00	330.2	1.00	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
18.86	332.45	3.04	0.91	110	1.038	0.960	0.92	0.50	1.01	316.31	1.53		1	100	1.00	1.80	1.00	317.5	1.00	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
19.03	327.71	2.96	0.90	110	1.047	0.960	0.91	0.50	1.01	310.43	1.53		1	100	1.00	1.85	1.00	311.6	1.00	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
19.19	307.45	2.73	0.89	110	1.056	0.959	0.89	0.50	1.00	289.93	1.54		1	100	1.00	1.90	1.00	291.0	1.00	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
19.36	274.72	2.45	0.89	110	1.065	0.959	0.89	0.50	1.00	257.85	1.58		1	100	1.00	1.95	1.00	258.8	1.00	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
19.52	271.54	4.15	1.53	110	1.074	0.958	1.53	0.54	0.99	253.63	1.76		1	100	1.08	2.00	1.00	275.2	1.00	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
19.69	279.83	3.92	1.40	110	1.083	0.958	1.41	0.53	0.99	260.29	1.73		1	100	1.06	2.05	1.00	276.0	1.00	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
19.85	285.99	4.02	1.41	110	1.092	0.957	1.41	0.53	0.98	264.88	1.72		1	100	1.05	2.10	1.00	280.2	1.00	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
20.01	315.42	2.61	0.83	110	1.101	0.957	0.83	0.50	0.98	291.27	1.52		1	100	1.00	2.15	1.00	292.4	1.00	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
20.18	326.56	2.81	0.86	110	1.107	0.957	0.86	0.50	0.98	300.76	1.52		1	100	1.00	2.20	1.00	301.9	1.00	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
20.34	329.89	2.62	0.79	110	1.111	0.956	0.80	0.50	0.98	303.30	1.49		1	100	1.00	2.25	1.00	304.4	1.00	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
20.51	327.47	2.66	0.81	110	1.115	0.956	0.82	0.50	0.97	300.53	1.50		1	100	1.00	2.30	1.00	301.7	1.00	Infin.	0.000	0.706	**Non-Liq.**	Non-Liq.	**0.00**
20.67	324.48	2.31	0.71	110	1.118	0.955	0.71	0.50	0.97	297.26	1.47		1	100	1.00	2.35	1.00	298.4	1.00	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
20.83	329.51	1.82	0.55	110	1.122	0.955	0.55	0.50	0.97	301.35	1.38		1	100	1.00	2.40	1.00	302.5	1.00	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
21.00	283.15	1.71	0.61	110	1.126	0.954	0.61	0.50	0.97	258.35	1.46		1	100	1.00	2.45	1.00	259.3	1.00	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
21.16	276.58	1.11	0.40	110	1.130	0.954	0.40	0.50	0.97	251.90	1.35		1	100	1.00	2.50	1.00	252.8	1.00	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
21.33	265.97	1.09	0.41	110	1.134	0.954	0.41	0.50	0.97	241.77	1.37		1	100	1.00	2.55	1.00	242.7	1.00	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
21.49	250.21	1.40	0.56	110	1.138	0.953	0.56	0.50	0.96	226.99	1.48		1	100	1.00	2.60	1.00	227.8	1.00	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
21.65	261.15	1.64	0.63	110	1.142	0.953	0.63	0.50	0.96	236.55	1.50		1	100	1.00	2.65	1.00	237.4	1.00	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
21.82	300.85	1.72	0.57	110	1.146	0.952	0.57	0.50	0.96	272.20	1.42		1	100	1.00	2.70	1.00	273.2	1.00	Infin.	0.000	0.718	**Non-Liq.**	Non-Liq.	**0.00**
21.98	283.46	1.98	0.70	110	1.150	0.952	0.70	0.50	0.96	255.97	1.50		1	100	1.00	2.75	1.00	256.9	1.00	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
22.15	299.30	1.41	0.47	110	1.154	0.951	0.47	0.50	0.96	269.87	1.37		1	100	1.00	2.80	1.00	270.9	1.00	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
22.31	305.84	1.24	0.41	110	1.158	0.951	0.41	0.50	0.96	275.32	1.32		1	100	1.00	2.85	1.00	276.3	1.00	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
22.47	317.96	1.63	0.51	110	1.161	0.950	0.51	0.50	0.95	285.79	1.38		1	100	1.00	2.90	1.00	286.9	1.00	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
22.64	329.92	1.81	0.55	110	1.165	0.950	0.55	0.50	0.95	296.08	1.39		1	100	1.00	2.95	1.00	297.2	1.00	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
22.80	349.36	1.91	0.55	110	1.169	0.949	0.55	0.50	0.95	313.06	1.37		1	100	1.00	3.00	1.00	314.2	1.00	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
22.97	347.80	2.37	0.68	110	1.173	0.949	0.68	0.50	0.95	311.13	1.44		1	100	1.00	3.05	1.00	312.3	1.00	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
23.13	355.41	2.55	0.72	110	1.177	0.948	0.72	0.50	0.95	317.43	1.45		1	100	1.00	3.10	1.00	318.6	1.00	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
23.29	348.90	2.53	0.73	110	1.181	0.948	0.73	0.50	0.95	311.08	1.46		1	100	1.00	3.15	1.00	312.2	1.00	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
23.46	332.91	2.12	0.64	110	1.185	0.947	0.64	0.50	0.94	296.28	1.43		1	100	1.00	3.20	1.00	297.4	1.00	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
23.62	334.85	1.98	0.59	110	1.189	0.947	0.59	0.50	0.94	297.52	1.41		1	100	1.00	3.25	1.00	298.6	1.00	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
23.79	354.63	1.92	0.54	110	1.193	0.946	0.54	0.50	0.94	314.64	1.36		1	100	1.00	3.30	1.00	315.8	1.00	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
23.95	324.76	1.60	0.49	110	1.197	0.946	0.49	0.50	0.94	287.57	1.36		1	100	1.00	3.35	1.00	288.6	1.00	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
24.11	341.67	1.26	0.37	110	1.200	0.945	0.37	0.50	0.94	302.11	1.27		1	100	1.00	3.40	1.00	303.2	1.00	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
24.28	335.98	1.14	0.34	110	1.204	0.945	0.34	0.50	0.94	296.57	1.25		1	100	1.00	3.45	1.00	297.7	1.00	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
24.44	335.54	1.25	0.37	110	1.208	0.944	0.38	0.50	0.94	295.70	1.28		1	100	1.00	3.50	1.00	296.8	1.00	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
24.61	340.03	1.44	0.42	110	1.212	0.943	0.42	0.50	0.93	299.18	1.31		1	100	1.00	3.55	1.00	300.3	1.00	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
24.77	343.51	2.18	0.64	110	1.216	0.943	0.64	0.50	0.93	301.77	1.42		1	100	1.00	3.60	1.00	302.9	1.00	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
24.93	350.49	2.01	0.57	110	1.220	0.942	0.58	0.50	0.93	307.42	1.39		1	100	1.00	3.65	1.00	308.6	1.00	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**
25.10	344.14	2.05	0.60	110	1.224	0.942	0.60	0.50	0.93	301.35	1.41		1	100	1.00	3.70	1.00	302.5	1.00	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
25.26	336.49	3.71	1.10	110	1.228	0.941	1.11	0.50	0.93	294.16	1.61		1	100	1.00	3.75	1.00	295.3	1.00	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
25.43	347.63	2.78	0.80	110	1.232	0.941	0.80	0.50	0.93	303.44	1.50		1	100	1.00	3.80	1.00	304.6	1.00	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
25.59	382.52	2.64	0.69	110	1.236	0.940	0.69	0.50	0.93	333.48	1.42		1	100	1.00	3.85	1.00	334.7	1.00	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
25.75	360.83	2.44	0.68	110	1.240	0.939	0.68	0.50	0.92	314.01	1.43		1	100	1.00	3.90	1.00	315.2	1.00	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
25.92	365.07	2.04	0.56	110	1.243	0.939	0.56	0.50	0.92	317.21	1.37		1	100	1.00	3.95	1.00	318.4	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.08	363.26	2.01	0.55	110	1.247	0.938	0.56	0.50	0.92	315.13	1.37		1	100	1.00	4.00	1.00	316.3	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.25	360.99	2.10	0.58	110	1.251	0.938	0.58	0.50	0.92	312.66	1.39		1	100	1.00	4.05	1.00	313.8	1.00	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
26.41	395.59	1.87	0.47	110	1.255	0.937	0.48	0.50	0.92	342.20	1.30		1	100	1.00	4.10	1.00	343.5	1.00	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
26.57	390.21	2.16	0.55	110	1.259	0.936	0.55	0.50	0.92	337.00	1.35		1	100	1.00	4.15	1.00	338.3	1.00	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
26.74	369.74	2.08	0.56	110	1.263	0.936	0.57	0.50	0.92	318.77	1.37		1	100	1.00	4.20	1.00	320.0	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
26.90	365.49	1.74	0.48	110	1.267	0.935	0.48	0.50	0.91	314.60	1.32		1	100	1.00	4.25	1.00	315.8	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
27.07	355.65	1.92	0.54	110	1.271	0.934	0.54	0.50	0.91	305.63	1.37		1	100	1.00	4.30	1.00	306.8	1.00	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
27.23	353.49	1.57	0.44	110	1.275	0.934	0.44	0.50	0.91	303.30	1.32		1	100	1.00	4.35	1.00	304.4	1.00	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
27.40	346.49	1.68	0.48	110	1.279	0.933	0.49	0.50	0.91	296.81	1.35		1	100	1.00	4.40	1.00	297.9	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.56	345.45	1.99	0.58	110	1.282	0.932	0.58	0.50	0.91	295.46	1.40		1	100	1.00	4.45	1.00	296.6	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.72	320.92	1.75	0.55	110	1.286	0.932	0.55	0.50	0.91	273.99	1.41		1	100	1.00	4.50	1.00	275.0	1.00	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
27.89	307.08	1.60	0.52	110	1.290	0.931	0.52	0.50	0.91	261.72	1.41		1	100	1.00	4.55	1.00	262.7	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	279.88	1.58	0.56	110	1.294	0.930	0.57	0.50	0.90	238.08	1.46		1	100	1.00	4.60	1.00	239.0	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
28.22	242.13	3.57	1.47	110	1.298	0.929	1.48	0.55	0.89	203.34	1.81		1	100	1.12	4.65	1.00	227.7	1.00	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
28.38	259.83	3.41	1.31	110	1.302	0.929	1.32	0.53	0.90	218.73	1.75		1	100	1.07	4.70	1.00	235.7	1.00	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
28.54	290.00	2.93	1.01	110	1.306	0.928	1.01	0.50	0.90	245.61	1.63		1	100	1.00	4.75	1.00	246.5	1.00	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
28.71	202.32	2.56	1.27	110	1.310	0.927	1.28	0.55	0.89	168.83	1.82		1	99	1.12	4.80	1.00	189.7	1.00	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
28.87	189.41	1.37	0.72	110	1.314	0.926	0.73	0.51	0.90	159.28	1.67		1	96	1.01	4.85	1.00	162.2	1.00	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
29.04	186.12	1.39	0.74	110	1.318	0.926	0.75	0.51	0.89	156.09	1.68		1	95	1.03	4.90	1.00	160.7	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.20	187.42	1.54	0.82	110	1.322	0.925	0.83	0.52	0.89	156.67	1.71		1	95	1.04	4.95	1.00	164.1	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.36	174.10	1.68	0.96	110	1.325	0.924	0.97	0.54	0.88	144.51	1.78		1	92	1.09	5.00	1.00	158.6	1.00	0.451	0.451	0.761	**0.59**	85%	**0.61**
29.53	162.50	1.73	1.07	110	1.329	0.923	1.07	0.56	0.88	134.10	1.84		1	89	1.13	5.05	1.00	152.5	1.00	0.410	0.410	0.761	**0.54**	89%	**0.75**
29.69	156.88	1.76	1.12	110	1.333	0.923	1.13	0.57	0.88	128.96	1.86		1	87	1.16	5.10	1.00	149.6	1.00	0.391	0.391	0.762	**0.51**	90%	**0.83**
29.86	154.45	1.73	1.12	110	1.337	0.922	1.13	0.57	0.88	126.69	1.87		1	87	1.16	5.15	1.00	147.5	1.00	0.378	0.378	0.762	**0.50**	91%	**0.88**
30.02	155.22	1.86	1.20	110	1.341	0.921	1.21	0.57	0.87	126.93	1.89		1	87	1.18	5.20	1.00	150.1	1.00	0.394	0.394	0.763	**0.52**	90%	**0.81**
30.18	159.05	1.71	1.08	110	1.345	0.920	1.09	0.56	0.87	130.24	1.85		1	88	1.14	5.25	1.00	149.5	1.00	0.391	0.391	0.763	**0.51**	90%	**0.83**
30.35	160.50	1.73	1.08	110	1.349	0.919	1.09	0.56	0.87	131.25	1.85		1	88	1.14	5.30	1.00	150.4	1.00	0.396	0.396	0.763	**0.52**	90%	**0.81**
30.51	177.29	1.78	1.00	110	1.353	0.918	1.01	0.55	0.87	145.44	1.79		1	92	1.10	5.35	1.00	160.6	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.68	188.18	1.86	0.99	110	1.357	0.918	1.00	0.54	0.87	154.46	1.77		1	95	1.08	5.40	1.00	168.0	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.84	196.86	2.12	1.08	110	1.361	0.917	1.09	0.54	0.87	161.22	1.78		1	97	1.09	5.45	1.00	176.9	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
31.00	210.21	3.25	1.55	110	1.364	0.916	1.56	0.57	0.86	170.70	1.88		1	99	1.17	5.50	1.00	200.2	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.17	210.66	3.44	1.63	110	1.368	0.915	1.64	0.58	0.86	170.54	1.90		1	99	1.19	5.55	1.00	202.9	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.33	214.79	3.75	1.75	110	1.372	0.914	1.76	0.58	0.86	173.38	1.91		1	100	1.20	5.60	1.00	209.2	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.50	227.93	4.18	1.83	110	1.376	0.913	1.84	0.58	0.86	183.75	1.91		1	100	1.20	5.65	1.00	221.6	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.66	244.07	4.52	1.85	110	1.380	0.912	1.86	0.58	0.86	196.76	1.90		1	100	1.19	5.70	1.00	234.4	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.82	246.01	4.47	1.82	110	1.384	0.911	1.83	0.57	0.86	198.13	1.89		1	100	1.18	5.75	1.00	234.6	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.99	244.38	4.40	1.80	110	1.388	0.910	1.81	0.57	0.86	196.51	1.89		1	100	1.18	5.80	1.00	232.4	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.15	229.90	4.32	1.88	110	1.392	0.909	1.89	0.58	0.85	184.00	1.92		1	100	1.21	5.85	1.00	223.5	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.32	206.06	3.87	1.88	110	1.396	0.908	1.89	0.59	0.85	164.10	1.95		1	97	1.24	5.90	1.00	204.8	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.48	204.67	2.85	1.39	110	1.400	0.907	1.40	0.56	0.85	164.05	1.86		1	97	1.15	5.95	1.00	189.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.64	203.20	2.51	1.24	110	1.403	0.906	1.25	0.55	0.86	163.10	1.82		1	97	1.12	6.00	1.00	183.6	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.81	212.73	2.19	1.03	110	1.407	0.905	1.04	0.53	0.86	171.59	1.75		1	99	1.07	6.05	1.00	184.3	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.97	233.49	2.13	0.91	110	1.411	0.904	0.92	0.51	0.86	189.28	1.68		1	100	1.02	6.10	1.00	194.5	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.14	254.97	2.22	0.87	110	1.415	0.903	0.88	0.50	0.86	207.21	1.64		1	100	1.00	6.15	1.00	208.0	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.30	276.58	2.38	0.86	110	1.419	0.902	0.87	0.50	0.86	224.56	1.61		1	100	1.00	6.20	1.00	225.4	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.46	326.02	2.80	0.86	110	1.423	0.901	0.86	0.50	0.86	264.54	1.56		1	100	1.00	6.25	1.00	265.5	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.63	367.65	3.43	0.93	110	1.427	0.900	0.94	0.50	0.86	298.06	1.55		1	100	1.00	6.30	1.00	299.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.79	402.25	3.96	0.99	110	1.431	0.899	0.99	0.50	0.86	325.77	1.55		1	100	1.00	6.35	1.00	327.0	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.96	373.21	2.74	0.73	110	1.435	0.898	0.74	0.50	0.86	301.75	1.47		1	100	1.00	6.40	1.00	302.9	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.12	367.69	2.68	0.73	110	1.439	0.897	0.73	0.50	0.86	296.87	1.47		1	100	1.00	6.45	1.00	298.0	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.28	347.49	2.00	0.58	110	1.443	0.896	0.58	0.50	0.86	280.11	1.42		1	100	1.00	6.50	1.00	281.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.45	363.15	2.39	0.66	110	1.446	0.895	0.66	0.50	0.86	292.39	1.45		1	100	1.00	6.55	1.00	293.5	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.61	354.73	2.83	0.80	110	1.450	0.894	0.80	0.50	0.85	285.19	1.51		1	100	1.00	6.60	1.00	286.3	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.78	326.42	3.00	0.92	110	1.454	0.893	0.92	0.50	0.85	261.98	1.58		1	100	1.00	6.65	1.00	263.0	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.94	311.03	2.62	0.84	110	1.458	0.892	0.85	0.50	0.85	249.24	1.57		1	100	1.00	6.70	1.00	250.2	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.10	313.61	2.84	0.90	110	1.462	0.890	0.91	0.50	0.85	250.98	1.59		1	100	1.00	6.75	1.00	251.9	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.27	310.40	3.07	0.99	110	1.466	0.889	0.99	0.50	0.85	248.06	1.62		1	100	1.00	6.80	1.00	249.0	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.43	294.50	3.05	1.03	110	1.470	0.888	1.04	0.50	0.85	234.64	1.65		1	100	1.01	6.85	1.00	237.1	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.60	285.50	2.83	0.99	110	1.474	0.887	1.00	0.50	0.85	227.21	1.65		1	100	1.00	6.90	1.00	228.9	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.76	280.39	2.74	0.98	110	1.478	0.886	0.98	0.50	0.85	222.80	1.65		1	100	1.00	6.95	1.00	224.7	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.93	276.31	2.73	0.99	110	1.482	0.885	0.99	0.51	0.84	219.05	1.66		1	100	1.01	7.00	1.00	222.3	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.09	271.84	2.66	0.98	110	1.485	0.883	0.99	0.51	0.84	215.14	1.66		1	100	1.01	7.05	1.00	218.7	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.25	266.67	2.73	1.02	110	1.489	0.882	1.03	0.51	0.84	210.29	1.68		1	100	1.03	7.10	1.00	216.8	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.42	266.74	3.17	1.19	110	1.493	0.881	1.19	0.53	0.83	209.00	1.73		1	100	1.06	7.15	1.00	222.4	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.58	258.25	3.44	1.33	110	1.497	0.880	1.34	0.54	0.83	201.01	1.78		1	100	1.09	7.20	1.00	220.6	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.75	253.87	3.88	1.53	110	1.501	0.878	1.54	0.56	0.82	196.21	1.83		1	100	1.13	7.25	1.00	223.1	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.91	268.14	4.26	1.59	110	1.505	0.877	1.60	0.56	0.82	207.04	1.83		1	100	1.13	7.30	1.00	235.1	0.97	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
37.07	272.86	5.01	1.84	110	1.509	0.876	1.85	0.57	0.82	209.36	1.88		1	100	1.17	7.35	1.00	245.8	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.24	267.15	4.61	1.73	110	1.513	0.875	1.74	0.57	0.82	205.00	1.86		1	100	1.16	7.40	1.00	237.9	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.40	258.14	4.98	1.93	110	1.517	0.873	1.94	0.58	0.81	196.71	1.91		1	100	1.20	7.45	1.00	237.1	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.57	251.61	4.92	1.96	110	1.521	0.872	1.97	0.59	0.81	191.15	1.92		1	100	1.21	7.50	1.00	232.8	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.73	253.20	5.10	2.01	110	1.525	0.871	2.02	0.59	0.81	191.89	1.93		1	100	1.22	7.55	1.00	235.4	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.89	250.10	4.99	1.99	110	1.528	0.869	2.01	0.59	0.81	189.23	1.93		1	100	1.22	7.60	1.00	232.3	0.97	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.06	236.10	4.60	1.95	110	1.532	0.868	1.96	0.59	0.80	178.13	1.94		1	100	1.23	7.65	1.00	220.2	0.96	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.22	234.67	4.00	1.70	110	1.536	0.867	1.71	0.58	0.81	177.66	1.90		1	100	1.19	7.70	1.00	211.7	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.39	251.51	3.44	1.37	110	1.540	0.865	1.38	0.55	0.81	192.25	1.80		1	100	1.11	7.75	1.00	214.0	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.55	261.62	3.13	1.20	110	1.544	0.864	1.20	0.53	0.82	201.02	1.75		1	100	1.07	7.80	1.00	215.9	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.71	270.23	2.71	1.00	110	1.548	0.863	1.01	0.51	0.82	209.01	1.68		1	100	1.02	7.85	1.00	214.8	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.88	270.03	2.45	0.91	110	1.552	0.861	0.91	0.50	0.83	209.36	1.65		1	100	1.00	7.90	1.00	210.4	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.04	285.58	1.88	0.66	110	1.556	0.860	0.66	0.50	0.82	221.38	1.53		1	100	1.00	7.95	1.00	222.2	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.21	285.94	1.84	0.64	110	1.560	0.859	0.65	0.50	0.82	221.38	1.53		1	100	1.00	8.00	1.00	222.2	0.96	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.37	298.71	2.11	0.71	110	1.564	0.857	0.71	0.50	0.82	231.03	1.54		1	100	1.00	8.05	1.00	231.9	0.95	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.53	335.11	2.36	0.71	110	1.567	0.856	0.71	0.50	0.82	259.01	1.50		1	100	1.00	8.10	1.00	260.0	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.70	334.95	4.67	1.39	110	1.571	0.854	1.40	0.53	0.81	255.80	1.73		1	100	1.06	8.15	1.00	271.7	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.86	365.36	4.60	1.26	110	1.575	0.853	1.26	0.51	0.82	280.75	1.67		1	100	1.02	8.20	1.00	286.9	0.95	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
40.03	354.98	4.90	1.38	110	1.579	0.852	1.39	0.52	0.81	271.07	1.71		1	100	1.05	8.25	1.00	284.5	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.19	386.31	4.35	1.13	110	1.583	0.850	1.13	0.50	0.82	297.27	1.62		1	100	1.00	8.30	1.00	298.4	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.35	312.02	3.03	0.97	110	1.587	0.849	0.98	0.50	0.82	239.57	1.63		1	100	1.00	8.35	1.00	240.5	0.95	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
40.52	311.39	2.28	0.73	110	1.591	0.847	0.74	0.50	0.82	238.79	1.54		1	100	1.00	8.40	1.00	239.7	0.95	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.68	294.45	1.66	0.56	110	1.595	0.846	0.57	0.50	0.81	225.45	1.48		1	100	1.00	8.45	1.00	226.3	0.94	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.85	281.98	1.62	0.58	110	1.599	0.844	0.58	0.50	0.81	215.59	1.50		1	100	1.00	8.50	1.00	216.4	0.94	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
41.01	243.47	1.88	0.77	110	1.603	0.843	0.78	0.50	0.81	185.75	1.64		1	100	1.00	8.55	1.00	186.4	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.17	276.31	2.79	1.01	110	1.607	0.841	1.01	0.51	0.81	209.65	1.68		1	100	1.02	8.60	1.00	215.6	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.34	272.69	3.15	1.16	110	1.610	0.840	1.16	0.53	0.80	205.34	1.73		1	100	1.06	8.65	1.00	218.0	0.94	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
41.50	280.76	3.48	1.24	110	1.614	0.838	1.25	0.53	0.80	210.77	1.74		1	100	1.07	8.70	1.00	226.0	0.94	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
41.67	325.03	3.18	0.98	110	1.618	0.837	0.98	0.50	0.81	247.17	1.62		1	100	1.00	8.75	1.00	248.1	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.83	361.66	3.38	0.94	110	1.622	0.835	0.94	0.50	0.81	274.83	1.58		1	100	1.00	8.80	1.00	275.9	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.99	372.69	3.26	0.87	110	1.626	0.834	0.88	0.50	0.81	282.91	1.55		1	100	1.00	8.85	1.00	284.0	0.93	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
42.16	396.43	3.53	0.89	110	1.630	0.832	0.89	0.50	0.81	300.64	1.53		1	100	1.00	8.90	1.00	301.8	0.93	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
42.32	442.33	3.55	0.80	110	1.634	0.831	0.81	0.50	0.80	335.19	1.47		1	100	1.00	8.95	1.00	336.4	0.93	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
42.49	458.56	3.30	0.72	110	1.638	0.829	0.72	0.50	0.80	347.12	1.42		1	100	1.00	9.00	1.00	348.4	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.65	440.28	2.98	0.68	110	1.642	0.827	0.68	0.50	0.80	332.83	1.42		1	100	1.00	9.05	1.00	334.1	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.81	431.91	2.59	0.60	110	1.646	0.826	0.60	0.50	0.80	326.09	1.38		1	100	1.00	9.10	1.00	327.3	0.93	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
42.98	428.57	2.24	0.52	110	1.649	0.824	0.52	0.50	0.80	323.17	1.34		1	100	1.00	9.15	1.00	324.4	0.93	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor		Probab. P_L	Volumetric Strain (%)
43.14	428.50	2.17	0.51	110	1.653	0.823	0.51	0.50	0.80	322.73	1.33		1	100	1.00	9.20	1.00	323.9	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.		**0.00**
43.31	431.32	1.87	0.43	110	1.657	0.821	0.43	0.50	0.80	324.48	1.29		1	100	1.00	9.25	1.00	325.7	0.93	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.		**0.00**
43.47	442.46	2.46	0.56	110	1.661	0.820	0.56	0.50	0.80	332.50	1.35		1	100	1.00	9.30	1.00	333.7	0.92	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.		**0.00**
43.64	485.55	2.74	0.56	110	1.665	0.818	0.57	0.50	0.80	364.57	1.33		1	100	1.00	9.35	1.00	365.9	0.92	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.		**0.00**
43.80	480.46	2.91	0.61	110	1.669	0.816	0.61	0.50	0.80	360.31	1.36		1	100	1.00	9.40	1.00	361.7	0.92	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.		**0.00**
43.96	434.40	2.34	0.54	110	1.673	0.815	0.54	0.50	0.80	325.27	1.35		1	100	1.00	9.45	1.00	326.5	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.		**0.00**
44.13	424.26	2.47	0.58	110	1.677	0.813	0.58	0.50	0.79	317.27	1.38		1	100	1.00	9.50	1.00	318.5	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.		**0.00**
44.29	417.78	3.15	0.75	110	1.681	0.811	0.76	0.50	0.79	312.04	1.47		1	100	1.00	9.55	1.00	313.2	0.92	Infin.	0.000	0.734	**Non-Liq.**	Non-Liq.		**0.00**
44.46	434.65	2.76	0.64	110	1.685	0.810	0.64	0.50	0.79	324.31	1.40		1	100	1.00	9.60	1.00	325.5	0.92	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.		**0.00**
44.62	474.92	3.88	0.82	110	1.689	0.808	0.82	0.50	0.79	354.06	1.46		1	100	1.00	9.65	1.00	355.4	0.92	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.		**0.00**
44.78	477.42	3.92	0.82	110	1.692	0.807	0.82	0.50	0.79	355.52	1.46		1	100	1.00	9.70	1.00	356.8	0.92	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.		**0.00**
44.95	400.75	3.18	0.79	110	1.696	0.805	0.80	0.50	0.79	297.88	1.50		1	100	1.00	9.75	1.00	299.0	0.91	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.		**0.00**
45.11	375.01	3.32	0.89	110	1.700	0.803	0.89	0.50	0.79	278.34	1.56		1	100	1.00	9.80	1.00	279.4	0.91	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.		**0.00**
45.28	353.62	3.70	1.05	110	1.704	0.802	1.05	0.50	0.79	262.09	1.63		1	100	1.00	9.85	1.00	263.1	0.91	Infin.	0.000	0.728	**Non-Liq.**	Non-Liq.		**0.00**
45.44	350.76	3.99	1.14	110	1.708	0.800	1.14	0.51	0.78	258.98	1.66		1	100	1.01	9.90	1.00	262.3	0.91	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.		**0.00**
45.60	361.90	4.33	1.20	110	1.712	0.798	1.20	0.51	0.78	266.57	1.67		1	100	1.02	9.95	1.00	271.8	0.91	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.		**0.00**
45.77	370.34	4.64	1.25	110	1.716	0.797	1.26	0.51	0.78	272.10	1.68		1	100	1.02	####	1.00	279.3	0.91	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.		**0.00**
45.93	366.89	5.10	1.39	110	1.720	0.795	1.40	0.52	0.78	267.69	1.72		1	100	1.05	####	1.00	282.0	0.91	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.		**0.00**
46.10	356.56	4.91	1.38	110	1.724	0.793	1.38	0.52	0.77	259.60	1.72		1	100	1.05	####	1.00	274.4	0.91	Infin.	0.000	0.723	**Non-Liq.**	Non-Liq.		**0.00**
46.26	358.23	5.52	1.54	110	1.728	0.792	1.55	0.54	0.77	259.00	1.76		1	100	1.08	####	1.00	280.7	0.91	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.		**0.00**
46.42	364.21	5.48	1.51	110	1.731	0.790	1.51	0.53	0.77	263.52	1.75		1	100	1.07	####	1.00	283.3	0.91	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.		**0.00**
46.59	355.49	5.43	1.53	110	1.735	0.788	1.53	0.54	0.77	256.41	1.76		1	100	1.08	####	1.00	277.8	0.90	Infin.	0.000	0.720	**Non-Liq.**	Non-Liq.		**0.00**
46.75	363.06	4.83	1.33	110	1.739	0.787	1.34	0.52	0.77	263.74	1.71		1	100	1.04	####	1.00	275.9	0.90	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.		**0.00**
46.92	369.03	3.46	0.94	110	1.743	0.785	0.94	0.50	0.78	270.45	1.58		1	100	1.00	####	1.00	271.5	0.90	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.		**0.00**
47.08	367.25	3.54	0.96	110	1.747	0.783	0.97	0.50	0.78	268.84	1.59		1	100	1.00	####	1.00	269.8	0.90	Infin.	0.000	0.716	**Non-Liq.**	Non-Liq.		**0.00**
47.24	360.71	3.46	0.96	110	1.751	0.782	0.96	0.50	0.78	263.73	1.60		1	100	1.00	####	1.00	264.7	0.90	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.		**0.00**
47.41	359.57	3.90	1.08	110	1.755	0.780	1.09	0.50	0.78	262.60	1.64		1	100	1.00	####	1.00	263.6	0.90	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.		**0.00**
47.57	355.34	4.23	1.19	110	1.759	0.778	1.20	0.51	0.77	257.82	1.67		1	100	1.02	####	1.00	264.2	0.90	Infin.	0.000	0.713	**Non-Liq.**	Non-Liq.		**0.00**
47.74	345.82	4.41	1.28	110	1.763	0.777	1.28	0.52	0.77	249.35	1.71		1	100	1.04	####	1.00	261.0	0.90	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.		**0.00**
47.90	339.06	4.15	1.22	110	1.767	0.775	1.23	0.52	0.77	244.49	1.70		1	100	1.04	####	1.00	254.5	0.90	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.		**0.00**
48.06	331.05	4.03	1.22	110	1.770	0.773	1.23	0.52	0.77	238.19	1.70		1	100	1.04	####	1.00	248.9	0.90	Infin.	0.000	0.710	**Non-Liq.**	Non-Liq.		**0.00**
48.23	319.37	3.94	1.23	110	1.774	0.772	1.24	0.52	0.76	228.93	1.72		1	100	1.05	####	1.00	241.6	0.89	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.		**0.00**
48.39	303.85	3.75	1.23	110	1.778	0.770	1.24	0.53	0.76	216.98	1.74		1	100	1.06	####	1.00	231.2	0.89	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.		**0.00**
48.56	293.74	3.57	1.21	110	1.782	0.768	1.22	0.53	0.76	209.31	1.74		1	100	1.06	####	1.00	223.7	0.89	Infin.	0.000	0.707	**Non-Liq.**	Non-Liq.		**0.00**
48.72	291.29	3.33	1.14	110	1.786	0.767	1.15	0.52	0.76	207.88	1.72		1	100	1.05	####	1.00	219.7	0.89	Infin.	0.000	0.705	**Non-Liq.**	Non-Liq.		**0.00**
48.88	298.38	3.16	1.06	110	1.790	0.765	1.06	0.51	0.76	213.83	1.69		1	100	1.03	####	1.00	221.3	0.89	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.		**0.00**
49.05	325.89	3.09	0.95	110	1.794	0.763	0.95	0.50	0.77	235.25	1.63		1	100	1.00	####	1.00	236.1	0.89	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.		**0.00**
49.21	362.41	3.01	0.83	110	1.798	0.762	0.84	0.50	0.77	261.47	1.55		1	100	1.00	####	1.00	262.4	0.89	Infin.	0.000	0.702	**Non-Liq.**	Non-Liq.		**0.00**
49.38	375.59	3.02	0.80	110	1.802	0.760	0.81	0.50	0.77	270.73	1.53		1	100	1.00	####	1.00	271.7	0.89	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.		**0.00**
49.54	373.37	2.95	0.79	110	1.806	0.758	0.79	0.50	0.77	268.83	1.53		1	100	1.00	####	1.00	269.8	0.89	Infin.	0.000	0.700	**Non-Liq.**	Non-Liq.		**0.00**
49.70	359.81	2.88	0.80	110	1.810	0.757	0.80	0.50	0.76	258.74	1.54		1	100	1.00	####	1.00	259.7	0.89	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.		**0.00**
49.87	336.99	2.78	0.82	110	1.813	0.755	0.83	0.50	0.76	241.98	1.57		1	100	1.00	####	1.00	242.9	0.88	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.		**0.00**
50.03	346.15	2.56	0.74	110	1.817	0.753	0.74	0.50	0.76	248.32	1.53		1	100	1.00	####	1.00	249.3	0.88	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.		**0.00**
50.20	381.96	2.51	0.66	110	1.821	0.752	0.66	0.50	0.76	273.85	1.46		1	100	1.00	####	1.00	274.9	0.88	Infin.	0.000	0.695	**Non-Liq.**	Non-Liq.		**0.00**
50.36	392.72	2.85	0.73	110	1.825	0.750	0.73	0.50	0.76	281.30	1.49		1	100	1.00	####	1.00	282.4	0.88	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.		**0.00**
50.52	396.83	2.89	0.73	110	1.829	0.748	0.73	0.50	0.76	283.95	1.49		1	100	1.00	####	1.00	285.0	0.88	Infin.	0.000	0.693	**Non-Liq.**	Non-Liq.		**0.00**
50.69	396.75	3.02	0.76	110	1.833	0.747	0.76	0.50	0.76	283.59	1.50		1	100	1.00	####	1.00	284.6	0.88	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.		**0.00**
50.85	407.28	3.00	0.74	110	1.837	0.745	0.74	0.50	0.76	290.84	1.48		1	100	1.00	####	1.00	291.9	0.88	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.		**0.00**
51.02	402.29	3.32	0.83	110	1.841	0.743	0.83	0.50	0.76	286.95	1.52		1	100	1.00	####	1.00	288.0	0.88	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.		**0.00**
51.18	394.50	3.33	0.84	110	1.845	0.742	0.85	0.50	0.76	281.07	1.54		1	100	1.00	####	1.00	282.1	0.88	Infin.	0.000	0.688	**Non-Liq.**	Non-Liq.		**0.00**
51.35	393.59	3.17	0.80	110	1.849	0.740	0.81	0.50	0.76	280.12	1.52		1	100	1.00	####	1.00	281.2	0.88	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.		**0.00**
51.51	390.67	3.12	0.80	110	1.852	0.738	0.80	0.50	0.76	277.73	1.52		1	100	1.00	####	1.00	278.8	0.87	Infin.	0.000	0.686	**Non-Liq.**	Non-Liq.		**0.00**
51.67	388.71	2.96	0.76	110	1.856	0.737	0.76	0.50	0.75	276.04	1.51		1	100	1.00	####	1.00	277.1	0.87	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.		**0.00**
51.84	368.01	2.86	0.78	110	1.860	0.735	0.78	0.50	0.75	260.99	1.53		1	100	1.00	####	1.00	262.0	0.87	Infin.	0.000	0.684	**Non-Liq.**	Non-Liq.		**0.00**
52.00	352.83	2.71	0.77	110	1.864	0.733	0.77	0.50	0.75	249.91	1.54		1	100	1.00	####	1.00	250.8	0.87	Infin.	0.000	0.682	**Non-Liq.**	Non-Liq.		**0.00**
52.17	339.28	2.70	0.80	110	1.868	0.732	0.80	0.50	0.75	240.00	1.57		1	100	1.00	####	1.00	240.9	0.87	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.		**0.00**
52.33	334.38	2.52	0.75	110	1.872	0.730	0.76	0.50	0.75	236.27	1.55		1	100	1.00	####	1.00	237.2	0.87	Infin.	0.000	0.680	**Non-Liq.**	Non-Liq.		**0.00**
52.49	338.19	2.48	0.73	110	1.876	0.728	0.74	0.50	0.75	238.72	1.54		1	100	1.00	####	1.00	239.6	0.87	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.		**0.00**
52.66	343.61	2.50	0.73	110	1.880	0.727	0.73	0.50	0.75	242.32	1.53		1	100	1.00	####	1.00	243.2	0.87	Infin.	0.000	0.678	**Non-Liq.**	Non-Liq.		**0.00**
52.82	346.70	2.63	0.76	110	1.884	0.725	0.76	0.50	0.75	244.25	1.54		1	100	1.00	####	1.00	245.2	0.87	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.		**0.00**
52.99	356.95	2.69	0.75	110	1.888	0.724	0.76	0.50	0.75	251.25	1.53		1	100	1.00	####	1.00	252.2	0.87	Infin.	0.000	0.676	**Non-Liq.**	Non-Liq.		**0.00**
53.15	371.38	2.91	0.78	110	1.892	0.722	0.79	0.50	0.75	261.19	1.53		1	100	1.00	####	1.00	262.2	0.87	Infin.	0.000	0.674	**Non-Liq.**	Non-Liq.		**0.00**
53.31	388.05	3.41	0.88	110	1.895	0.720	0.88	0.50	0.75	272.69	1.56		1	100	1.00	####	1.00	273.7	0.86	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.		**0.00**
53.48	350.81	3.06	0.87	110	1.899	0.719	0.88	0.50	0.75	246.13	1.59		1	100	1.00	####	1.00	247.1	0.86	Infin.	0.000	0.672	**Non-Liq.**	Non-Liq.		**0.00**
53.64	345.68	2.79	0.81	110	1.903	0.717	0.81	0.50	0.75	242.26	1.57		1	100	1.00	####	1.00	243.2	0.86	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.		**0.00**
53.81	342.94	2.87	0.84	110	1.907	0.716	0.84	0.50	0.74	240.08	1.58		1	100	1.00	####	1.00	241.0	0.86	Infin.	0.000	0.670	**Non-Liq.**	Non-Liq.		**0.00**
53.97	347.41	2.83	0.81	110	1.911	0.714	0.82	0.50	0.74	242.98	1.57		1	100	1.00	####	1.00	243.9	0.86	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.		**0.00**
54.13	347.69	3.06	0.88	110	1.915	0.712	0.88	0.50	0.74	242.93	1.59		1	100	1.00	####	1.00	243.8	0.86	Infin.	0.000	0.667	**Non-Liq.**	Non-Liq.		**0.00**
54.30	347.55	3.09	0.89	110	1.919	0.711	0.89	0.50	0.74	242.58	1.60		1	100	1.00	####	1.00	243.5	0.86	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.		**0.00**
54.46	345.11	3.01	0.87	110	1.923	0.709	0.88	0.50	0.74	240.62	1.59		1	100	1.00	####	1.00	241.5	0.86	Infin.	0.000	0.665	**Non-Liq.**	Non-Liq.		**0.00**
54.63	336.26	2.94	0.87	110	1.927	0.708	0.88	0.50	0.74	234.17	1.60		1	100	1.00	####	1.00	235.0	0.86	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.		**0.00**
54.79	331.85	2.87	0.86	110	1.931	0.706	0.87	0.50	0.74	230.85	1.60		1	100	1.00	####	1.00	231.7	0.86	Infin.	0.000	0.663	**Non-Liq.**	Non-Liq.		**0.00**
54.95	330.23	2.82	0.85	110	1.934	0.705	0.86	0.50	0.74	229.48	1.60		1	100	1.00	####	1.00	230.3	0.86	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.		**0.00**
55.12	319.45	2.55	0.80	110	1.938	0.703	0.80	0.50	0.74	221.72	1.59		1	100	1.00	####	1.00	222.5	0.86	Infin.	0.000	0.661	**Non-Liq.**	Non-Liq.		**0.00**
55.28	307.70	2.09	0.68	110	1.942	0.701	0.68	0.50	0.74	213.29	1.55		1	100	1.00	####	1.00	214.1	0.85	Infin.	0.000	0.659	**Non-Liq.**	Non-Liq.		**0.00**
55.45	302.76	1.94	0.64	110	1.946	0.700	0.64	0.50	0.74	209.63	1.54		1	100	1.00	####	1.00	210.4	0.86	Infin.	0.000	0.658	**Non-Liq.**	Non-Liq.		**0.00**
55.61	284.61	1.51	0.53	110	1.950	0.698	0.53	0.50	0.74	196.79	1.51		1	100	1.00	####	1.00	197.5	0.85	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.		**0.00**
55.77	294.51	1.35	0.46	110	1.954	0.697	0.46	0.50	0.74	203.47	1.46		1	100	1.00	####	1.00	204.2	0.85	Infin.	0.000	0.656	**Non-Liq.**	Non-Liq.		**0.00**
55.94	280.07	1.03	0.37	110	1.958	0.695	0.37	0.50	0.74	193.23	1.42		1	100	1.00	####	1.00	194.0	0.85	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.		**0.00**
56.10	225.15	1.83	0.81	110	1.962	0.694	0.82	0.52	0.72	152.78	1.71		1	94	1.05	####	1.00	160.7	0.85	Infin.	0.000	0.654	**Non-Liq.**	Non-Liq.		**0.00**
56.27	117.85	2.59	2.20	110	1.966	0.692	2.23	0.68	0.65	71.73	2.25		1	63	1.80		1.00	129.2	0.88	0.281	0.248	0.653	**0.38**	96%		**1.14**
56.43	54.87	1.79	3.26	110	1.970	0.691	3.38	0.80	0.61	30.37	2.65		0						0.92			0.652	**Non-Liq.**	Non-Liq.		**0.00**
56.59	32.82	0.74	2.25	110	1.974	0.689	2.40	0.83	0.60	17.36	2.74		0						0.92			0.650	**Non-Liq.**	Non-Liq.		**0.00**
56.76	25.50	0.61	2.38	110	1.977	0.688	2.58	0.87	0.58	12.91	2.87		0						0.92			0.649	**Non-Liq.**	Non-Liq.		**0.00**
56.92	20.56	0.82	3.98	110	1.981	0.686	4.40	0.94	0.55	9.74	3.10		0						0.92			0.648	**Non-Liq.**	Non-Liq.		**0.00**
57.09	35.90	0.80	2.22	110	1.985	0.685	2.35	0.82	0.60	19.14	2.71		0						0.92			0.647	**Non-Liq.**	Non-Liq.		**0.00**
57.25	57.52	0.96	1.67	110	1.989	0.683	1.73	0.74	0.63	32.91	2.44		1	31	2.47		1.00	81.4	0.92	0.130	0.120	0.646	**0.19**	100%		**1.81**
57.41	35.14	0.94	2.68	110	1.993	0.682	2.84	0.84	0.59	18.42	2.77		0						0.92			0.645	**Non-Liq.**	Non-Liq.		**0.00**
57.58	22.41	0.81	3.61	110	1.997	0.680	3.97	0.92	0.56	10.75	3.04		0						0.92			0.644	**Non-Liq.**	Non-Liq.		**0.00**
57.74	20.05	0.55	2.73	110	2.001	0.679	3.04	0.91	0.56	9.53	3.02		0						0.92			0.643	**Non-Liq.**	Non-Liq.		**0.00**
57.91	18.79	0.54	2.88	110	2.005	0.678	3.23	0.93	0.55	8.78	3.06		0						0.92			0.642	**Non-Liq.**	Non-Liq.		**0.00**
58.07	18.85	0.57	3.00	110	2.009	0.676	3.36	0.93	0.55	8.77	3.07		0						0.92			0.641	**Non-Liq.**	Non-Liq.		**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
58.23	17.52	0.53	3.01	110	2.013	0.675	3.40	0.94	0.55	8.01	3.11		0						0.92			0.640	**Non-Liq.**	Non-Liq.	**0.00**
58.40	18.20	0.44	2.44	110	2.016	0.673	2.74	0.92	0.55	8.46	3.04		0						0.92			0.638	**Non-Liq.**	Non-Liq.	**0.00**
58.56	18.28	0.56	3.06	110	2.020	0.672	3.44	0.94	0.55	8.39	3.09		0						0.92			0.637	**Non-Liq.**	Non-Liq.	**0.00**
58.73	23.81	0.80	3.36	110	2.024	0.671	3.67	0.91	0.55	11.42	3.00		0						0.91			0.636	**Non-Liq.**	Non-Liq.	**0.00**
58.89	41.12	1.24	3.02	110	2.028	0.669	3.18	0.83	0.58	21.51	2.75		0						0.91			0.635	**Non-Liq.**	Non-Liq.	**0.00**
59.06	86.65	1.81	2.08	110	2.032	0.668	2.13	0.71	0.63	50.20	2.35		1	48	2.13		1.00	106.7	0.91	0.193	0.176	0.634	**0.28**	99%	**1.41**
59.22	119.37	1.93	1.62	110	2.036	0.666	1.64	0.66	0.65	72.21	2.16		1	63	1.57		1.00	113.4	0.87	0.216	0.188	0.633	**0.30**	98%	**1.32**
59.38	142.80	2.30	1.61	110	2.040	0.665	1.63	0.64	0.66	87.60	2.09		1	71	1.45		1.00	126.6	0.83	0.269	0.224	0.632	**0.35**	97%	**1.16**
59.55	118.50	3.06	2.58	110	2.044	0.664	2.62	0.70	0.63	69.37	2.31		1	62	1.98		1.00	137.6	0.87	0.322	0.281	0.631	**0.45**	94%	**1.04**
59.71	77.32	3.45	4.46	110	2.048	0.662	4.58	0.80	0.59	41.98	2.64		0						0.91			0.630	**Non-Liq.**	Non-Liq.	**0.00**
59.88	39.16	2.67	6.81	110	2.052	0.661	7.19	0.91	0.55	19.16	3.02		0						0.91			0.629	**Non-Liq.**	Non-Liq.	**0.00**
60.04	26.72	1.42	5.31	110	2.055	0.660	5.75	0.93	0.54	12.53	3.09		0						0.91			0.628	**Non-Liq.**	Non-Liq.	**0.00**
60.20	20.01	0.81	4.05	110	2.059	0.658	4.51	0.95	0.53	9.02	3.14		0						0.91			0.627	**Non-Liq.**	Non-Liq.	**0.00**
60.37	19.72	0.00	0.01	110	2.063	0.657	0.01	0.81	0.58	9.69	2.69		0		1.00				0.91			0.626	**Non-Liq.**	Non-Liq.	**0.00**
60.53	22.97	0.00	0.00	110	2.067	0.656	0.00	0.80	0.58	11.54	2.65		0		1.00				0.91			0.625	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-2A
Plot: 2

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
3.8

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.17
Avg SF of Liquefiable Layers: 0.03

Probab	Total Induced Subsidence (inches)
Avg	
5%	
Max	
100%	0.6

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	8.00	0.09	1.13	110	0.009	1.000	1.13	0.81	1.70	12.84	2.68		0						1.00			0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.33	11.37	0.11	0.97	110	0.018	1.000	0.97	0.76	1.70	18.24	2.52		1	6	2.86		1.00	52.1	1.00	0.093	0.093	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.49	14.06	0.14	1.00	110	0.027	1.000	1.00	0.74	1.70	22.55	2.44		1	15	2.50		1.00	56.3	1.00	0.097	0.097	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.66	15.85	0.14	0.90	110	0.036	1.000	0.90	0.72	1.70	25.41	2.38		1	20	2.22		1.00	56.4	1.00	0.097	0.097	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.82	15.82	0.14	0.88	110	0.045	1.000	0.89	0.72	1.70	25.35	2.37		1	20	2.21		1.00	55.9	1.00	0.096	0.096	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.98	15.42	0.12	0.78	110	0.054	1.000	0.79	0.72	1.70	24.69	2.36		1	19	2.15		1.00	53.1	1.00	0.094	0.094	0.485	**Non-Liq.**	Non-Liq.	**0.00**
1.15	12.24	0.10	0.81	110	0.063	0.999	0.81	0.74	1.70	19.57	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.31	12.24	0.10	0.81	110	0.072	0.999	0.81	0.74	1.70	19.55	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.48	10.64	0.13	1.17	110	0.081	0.999	1.18	0.78	1.70	16.97	2.59		1	3	3.25		1.00	55.1	1.00	0.096	0.096	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.64	11.63	0.20	1.72	110	0.090	0.998	1.73	0.80	1.70	18.54	2.64		0						1.00			0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.80	19.13	0.29	1.53	110	0.099	0.998	1.53	0.74	1.70	30.58	2.43		1	28	2.45		1.00	74.9	1.00	0.119	0.119	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.97	35.11	0.52	1.48	110	0.108	0.998	1.48	0.67	1.70	56.24	2.21		1	53	1.70		1.00	95.4	1.00	0.161	0.161	0.484	**Non-Liq.**	Non-Liq.	**0.00**
2.13	43.24	0.60	1.40	110	0.117	0.997	1.40	0.65	1.70	69.29	2.13		1	62	1.50		1.00	104.3	1.00	0.185	0.185	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.30	43.08	0.62	1.43	110	0.126	0.997	1.44	0.65	1.70	69.02	2.13		1	61	1.52		1.00	105.0	1.00	0.188	0.188	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.46	41.08	0.60	1.46	110	0.135	0.996	1.46	0.65	1.70	65.79	2.16		1	59	1.56		1.00	102.9	1.00	0.181	0.181	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.62	38.58	0.56	1.46	110	0.144	0.996	1.46	0.66	1.70	61.76	2.18		1	57	1.61		1.00	99.6	1.00	0.172	0.172	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.79	35.25	0.53	1.50	110	0.153	0.996	1.50	0.67	1.70	56.39	2.22		1	53	1.70		1.00	96.1	1.00	0.163	0.163	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.95	32.60	0.49	1.50	110	0.162	0.995	1.51	0.68	1.70	52.12	2.24		1	50	1.78		1.00	92.6	1.00	0.154	0.154	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.12	29.61	0.45	1.52	110	0.171	0.995	1.53	0.69	1.70	47.30	2.28		1	46	1.88		1.00	89.0	1.00	0.146	0.146	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.28	26.41	0.40	1.51	110	0.180	0.994	1.52	0.70	1.70	42.15	2.32		1	41	2.01		1.00	84.6	1.00	0.136	0.136	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.44	23.64	0.34	1.44	110	0.189	0.994	1.45	0.71	1.70	37.68	2.34		1	36	2.10		1.00	79.2	1.00	0.126	0.126	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.61	21.08	0.29	1.36	110	0.198	0.994	1.37	0.72	1.70	33.55	2.37		1	32	2.20		1.00	73.8	1.00	0.117	0.117	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.77	18.23	0.30	1.67	110	0.208	0.993	1.69	0.75	1.70	28.96	2.48		1	25	2.65		1.00	76.6	1.00	0.122	0.122	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.94	15.34	0.30	1.98	110	0.217	0.993	2.00	0.78	1.70	24.30	2.58		1	18	3.21		1.00	78.0	1.00	0.124	0.124	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.10	12.99	0.35	2.73	110	0.226	0.993	2.77	0.83	1.70	20.51	2.72		0						1.00			0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.27	11.82	0.38	3.20	110	0.235	0.992	3.26	0.85	1.70	18.62	2.80		0						1.00			0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.43	10.34	0.34	3.30	110	0.244	0.992	3.38	0.87	1.70	16.22	2.86		0						1.00			0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.59	11.89	0.24	2.04	110	0.253	0.991	2.08	0.81	1.70	18.70	2.68		0						1.00			0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.76	26.79	0.25	0.93	110	0.262	0.991	0.94	0.67	1.70	42.63	2.19		1	41	1.65		1.00	70.3	1.00	0.112	0.112	0.480	**Non-Liq.**	Non-Liq.	**0.00**
4.92	35.67	0.30	0.84	110	0.271	0.991	0.85	0.63	1.70	56.88	2.06		1	53	1.39		1.00	79.2	1.00	0.126	0.126	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.09	41.25	0.36	0.88	110	0.280	0.990	0.89	0.61	1.70	65.83	2.02		1	59	1.33		1.00	87.7	1.00	0.143	0.143	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.25	44.28	0.41	0.92	110	0.289	0.990	0.93	0.61	1.70	70.69	2.01		1	62	1.31		1.00	92.7	1.00	0.154	0.154	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.41	46.60	0.44	0.94	110	0.298	0.989	0.95	0.61	1.70	74.40	2.00		1	65	1.30	1.00	1.00	96.8	1.00	0.164	0.164	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.58	50.22	0.47	0.93	110	0.307	0.989	0.94	0.60	1.70	80.20	1.97		1	68	1.26	1.05	1.00	101.4	1.00	0.177	0.177	0.479	**Non-Liq.**	Non-Liq.	**0.00**
5.74	54.67	0.47	0.87	110	0.316	0.989	0.87	0.58	1.70	87.34	1.92		1	71	1.21	1.10	1.00	105.9	1.00	0.190	0.190	0.479	**Non-Liq.**	Non-Liq.	**0.00**
5.91	56.65	0.48	0.85	110	0.325	0.988	0.86	0.58	1.70	90.50	1.90		1	73	1.19	1.15	1.00	108.2	1.00	0.198	0.198	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.07	56.48	0.50	0.89	110	0.334	0.988	0.90	0.58	1.70	90.22	1.92		1	73	1.20	1.20	1.00	109.0	1.00	0.201	0.201	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.23	58.52	0.53	0.91	110	0.343	0.988	0.92	0.58	1.70	93.48	1.91		1	74	1.20	1.25	1.00	112.4	1.00	0.212	0.212	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.40	61.73	0.57	0.92	110	0.352	0.987	0.93	0.58	1.70	98.62	1.90		1	76	1.18	1.30	1.00	117.2	1.00	0.230	0.230	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.56	65.05	0.55	0.84	110	0.361	0.987	0.85	0.56	1.70	103.94	1.85		1	78	1.15	1.35	1.00	119.6	1.00	0.239	0.239	0.478	**Non-Liq.**	Non-Liq.	**0.00**
6.73	67.42	0.56	0.83	110	0.370	0.986	0.84	0.56	1.70	107.74	1.84		1	80	1.13	1.40	1.00	122.6	1.00	0.251	0.251	0.478	**Non-Liq.**	Non-Liq.	**0.00**
6.89	72.04	0.64	0.89	110	0.379	0.986	0.89	0.56	1.70	115.15	1.83		1	83	1.13	1.45	1.00	130.6	1.00	0.287	0.287	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.05	79.98	0.56	0.70	110	0.388	0.986	0.71	0.53	1.70	127.76	1.73		1	87	1.06	1.50	1.00	135.9	1.00	0.314	0.314	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.22	84.69	0.74	0.87	110	0.397	0.985	0.88	0.54	1.70	135.25	1.77		1	89	1.09	1.55	1.00	147.6	1.00	0.379	0.379	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.38	84.27	0.71	0.84	110	0.406	0.985	0.84	0.54	1.67	132.75	1.77		1	89	1.08	1.60	1.00	144.4	1.00	0.360	0.360	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.55	88.99	0.71	0.80	110	0.415	0.985	0.81	0.53	1.64	137.62	1.74		1	90	1.07	1.65	1.00	147.5	1.00	0.378	0.378	0.477	**Non-Liq.**	Non-Liq.	**0.00**
7.71	88.99	0.71	0.80	110	0.424	0.984	0.81	0.53	1.63	136.17	1.75		1	90	1.07	1.70	1.00	146.2	1.00	0.371	0.371	0.477	**Non-Liq.**	Non-Liq.	**0.00**
7.87	97.16	0.72	0.74	110	0.433	0.984	0.74	0.52	1.59	145.34	1.70		1	92	1.04	1.75	1.00	151.8	1.00	0.405	0.405	0.477	**Non-Liq.**	Non-Liq.	**0.00**
8.04	104.13	0.76	0.73	110	0.442	0.984	0.73	0.51	1.56	153.24	1.68		1	95	1.03	1.80	1.00	157.7	1.00	0.445	0.445	0.477	**Non-Liq.**	Non-Liq.	**0.00**
8.20	109.72	0.85	0.77	110	0.451	0.983	0.78	0.51	1.55	159.96	1.68		1	96	1.03	1.85	1.00	164.9	1.00	Infin.	0.000	0.481	**Non-Liq.**	Non-Liq.	**0.00**
8.37	127.90	0.84	0.66	110	0.460	0.983	0.66	0.50	1.52	182.65	1.59		1	100	1.00	1.90	1.00	183.3	1.00	Infin.	0.000	0.486	**Non-Liq.**	Non-Liq.	**0.00**
8.53	139.29	1.12	0.80	110	0.469	0.982	0.80	0.50	1.50	197.04	1.63		1	100	1.00	1.95	1.00	197.8	1.00	Infin.	0.000	0.491	**Non-Liq.**	Non-Liq.	**0.00**
8.69	174.32	1.33	0.76	110	0.478	0.982	0.77	0.50	1.49	244.41	1.55		1	100	1.00	2.00	1.00	245.3	1.00	Infin.	0.000	0.496	**Non-Liq.**	Non-Liq.	**0.00**
8.86	197.20	1.54	0.78	110	0.487	0.982	0.78	0.50	1.47	273.99	1.52		1	100	1.00	2.05	1.00	275.0	1.00	Infin.	0.000	0.501	**Non-Liq.**	Non-Liq.	**0.00**
9.02	211.19	1.71	0.81	110	0.496	0.981	0.81	0.50	1.46	290.78	1.51		1	100	1.00	2.10	1.00	291.9	1.00	Infin.	0.000	0.506	**Non-Liq.**	Non-Liq.	**0.00**
9.19	221.47	1.88	0.85	110	0.505	0.981	0.85	0.50	1.45	302.22	1.52		1	100	1.00	2.15	1.00	303.4	1.00	Infin.	0.000	0.510	**Non-Liq.**	Non-Liq.	**0.00**
9.35	230.78	2.04	0.88	110	0.514	0.981	0.88	0.50	1.43	312.17	1.52		1	100	1.00	2.20	1.00	313.3	1.00	Infin.	0.000	0.515	**Non-Liq.**	Non-Liq.	**0.00**
9.51	234.50	2.16	0.92	110	0.523	0.980	0.92	0.50	1.42	314.45	1.53		1	100	1.00	2.25	1.00	315.6	1.00	Infin.	0.000	0.520	**Non-Liq.**	Non-Liq.	**0.00**
9.68	232.94	2.27	0.98	110	0.532	0.980	0.98	0.50	1.41	309.69	1.56		1	100	1.00	2.30	1.00	310.8	1.00	Infin.	0.000	0.524	**Non-Liq.**	Non-Liq.	**0.00**
9.84	231.57	2.35	1.01	110	0.541	0.980	1.02	0.50	1.40	305.27	1.57		1	100	1.00	2.35	1.00	306.4	1.00	Infin.	0.000	0.529	**Non-Liq.**	Non-Liq.	**0.00**
10.01	230.54	2.41	1.04	110	0.550	0.979	1.05	0.50	1.39	301.40	1.59		1	100	1.00	2.40	1.00	302.5	1.00	Infin.	0.000	0.533	**Non-Liq.**	Non-Liq.	**0.00**
10.17	237.18	2.50	1.05	110	0.559	0.979	1.06	0.50	1.38	307.58	1.58		1	100	1.00	2.45	1.00	308.7	1.00	Infin.	0.000	0.537	**Non-Liq.**	Non-Liq.	**0.00**
10.33	247.31	2.55	1.03	110	0.568	0.979	1.03	0.50	1.36	318.18	1.57		1	100	1.00	2.50	1.00	319.4	1.00	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
10.50	243.77	2.52	1.03	110	0.577	0.978	1.04	0.50	1.35	311.14	1.58		1	100	1.00	2.55	1.00	312.3	1.00	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
10.66	237.97	2.56	1.07	110	0.586	0.978	1.08	0.50	1.34	301.36	1.60		1	100	1.00	2.60	1.00	302.5	1.00	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
10.83	236.70	2.58	1.09	110	0.595	0.978	1.09	0.50	1.33	297.46	1.61		1	100	1.00	2.65	1.00	298.6	1.00	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
10.99	231.19	3.35	1.45	110	0.604	0.977	1.45	0.52	1.34	291.69	1.71		1	100	1.04	2.70	1.00	305.6	1.00	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
11.15	223.52	4.80	2.15	110	0.614	0.977	2.15	0.56	1.36	286.52	1.85		1	100	1.15	2.75	1.00	330.3	1.00	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
11.32	231.18	4.24	1.83	110	0.623	0.977	1.84	0.55	1.34	291.09	1.79		1	100	1.10	2.80	1.00	321.9	1.00	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
11.48	277.74	3.56	1.28	110	0.632	0.976	1.29	0.50	1.29	339.00	1.63		1	100	1.00	2.85	1.00	340.3	1.00	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
11.65	232.79	2.16	0.93	110	0.641	0.976	0.93	0.50	1.29	281.99	1.57		1	100	1.00	2.90	1.00	283.0	1.00	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
11.81	242.50	1.85	0.76	110	0.650	0.975	0.76	0.50	1.28	291.73	1.49		1	100	1.00	2.95	1.00	292.8	1.00	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
11.98	238.61	2.39	1.00	110	0.659	0.975	1.00	0.50	1.27	285.05	1.59		1	100	1.00	3.00	1.00	286.1	1.00	Infin.	0.000	0.580	**Non-Liq.**	Non-Liq.	**0.00**
12.14	226.91	2.22	0.98	110	0.668	0.975	0.98	0.50	1.26	269.19	1.60		1	100	1.00	3.05	1.00	270.2	1.00	Infin.	0.000	0.583	**Non-Liq.**	Non-Liq.	**0.00**
12.30	230.52	2.15	0.93	110	0.677	0.974	0.93	0.50	1.25	271.64	1.58		1	100	1.00	3.10	1.00	272.7	1.00	Infin.	0.000	0.587	**Non-Liq.**	Non-Liq.	**0.00**
12.47	221.89	1.76	0.79	110	0.686	0.974	0.80	0.50	1.24	259.71	1.54		1	100	1.00	3.15	1.00	260.7	1.00	Infin.	0.000	0.590	**Non-Liq.**	Non-Liq.	**0.00**
12.63	219.46	1.58	0.72	110	0.695	0.974	0.72	0.50	1.23	255.17	1.51		1	100	1.00	3.20	1.00	256.1	1.00	Infin.	0.000	0.593	**Non-Liq.**	Non-Liq.	**0.00**
12.80	210.68	1.41	0.67	110	0.704	0.973	0.67	0.50	1.23	243.34	1.51		1	100	1.00	3.25	1.00	244.3	1.00	Infin.	0.000	0.597	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	195.33	1.35	0.69	110	0.713	0.973	0.70	0.50	1.22	224.11	1.54		1	100	1.00	3.30	1.00	225.0	1.00	Infin.	0.000	0.600	**Non-Liq.**	Non-Liq.	0.00
13.12	189.89	1.37	0.72	110	0.722	0.973	0.72	0.50	1.21	216.47	1.57		1	100	1.00	3.35	1.00	217.3	1.00	Infin.	0.000	0.603	**Non-Liq.**	Non-Liq.	0.00
13.29	182.75	2.89	1.58	110	0.731	0.972	1.59	0.56	1.23	211.28	1.82		1	100	1.13	3.40	1.00	238.6	1.00	Infin.	0.000	0.606	**Non-Liq.**	Non-Liq.	0.00
13.45	189.66	3.51	1.85	110	0.740	0.972	1.86	0.57	1.23	218.84	1.87		1	100	1.16	3.45	1.00	255.0	1.00	Infin.	0.000	0.609	**Non-Liq.**	Non-Liq.	0.00
13.62	243.92	3.67	1.50	110	0.749	0.972	1.51	0.53	1.20	275.93	1.74		1	100	1.06	3.50	1.00	294.2	1.00	Infin.	0.000	0.612	**Non-Liq.**	Non-Liq.	0.00
13.78	196.55	3.12	1.59	110	0.758	0.971	1.59	0.55	1.20	222.44	1.81		1	100	1.12	3.55	1.00	249.0	1.00	Infin.	0.000	0.615	**Non-Liq.**	Non-Liq.	0.00
13.94	166.33	2.01	1.21	110	0.767	0.971	1.22	0.54	1.19	186.17	1.77		1	100	1.09	3.60	1.00	203.2	1.00	Infin.	0.000	0.618	**Non-Liq.**	Non-Liq.	0.00
14.11	168.09	2.05	1.22	110	0.776	0.971	1.22	0.54	1.18	186.97	1.77		1	100	1.09	3.65	1.00	204.2	1.00	Infin.	0.000	0.621	**Non-Liq.**	Non-Liq.	0.00
14.27	186.64	4.05	2.17	110	0.785	0.970	2.18	0.59	1.19	209.42	1.94		1	100	1.22	3.70	1.00	257.4	1.00	Infin.	0.000	0.624	**Non-Liq.**	Non-Liq.	0.00
14.44	201.80	4.71	2.33	110	0.794	0.970	2.34	0.59	1.18	225.11	1.94		1	100	1.23	3.75	1.00	278.4	1.00	Infin.	0.000	0.627	**Non-Liq.**	Non-Liq.	0.00
14.60	281.02	4.40	1.57	110	0.803	0.970	1.57	0.53	1.16	306.15	1.72		1	100	1.05	3.80	1.00	324.0	1.00	Infin.	0.000	0.629	**Non-Liq.**	Non-Liq.	0.00
14.76	344.71	3.37	0.98	110	0.812	0.969	0.98	0.50	1.14	371.03	1.51		1	100	1.00	3.85	1.00	372.4	1.00	Infin.	0.000	0.632	**Non-Liq.**	Non-Liq.	0.00
14.93	284.50	2.91	1.02	110	0.821	0.969	1.03	0.50	1.14	304.37	1.58		1	100	1.00	3.90	1.00	305.5	1.00	Infin.	0.000	0.635	**Non-Liq.**	Non-Liq.	0.00
15.09	313.45	2.95	0.94	110	0.830	0.969	0.94	0.50	1.13	333.60	1.52		1	100	1.00	3.95	1.00	334.8	1.00	Infin.	0.000	0.637	**Non-Liq.**	Non-Liq.	0.00
15.26	330.55	3.27	0.99	110	0.839	0.968	0.99	0.50	1.12	349.94	1.53		1	100	1.00	4.00	1.00	351.2	1.00	Infin.	0.000	0.640	**Non-Liq.**	Non-Liq.	0.00
15.42	347.21	3.40	0.98	110	0.848	0.968	0.98	0.50	1.12	365.65	1.51		1	100	1.00	4.05	1.00	367.0	1.00	Infin.	0.000	0.643	**Non-Liq.**	Non-Liq.	0.00
15.58	369.08	4.35	1.18	110	0.857	0.967	1.18	0.50	1.11	386.68	1.56		1	100	1.00	4.10	1.00	388.1	1.00	Infin.	0.000	0.645	**Non-Liq.**	Non-Liq.	0.00
15.75	398.50	4.30	1.08	110	0.866	0.967	1.08	0.50	1.11	415.38	1.52		1	100	1.00	4.15	1.00	416.9	1.00	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	0.00
15.91	418.82	3.93	0.94	110	0.875	0.967	0.94	0.50	1.10	434.34	1.46		1	100	1.00	4.20	1.00	436.0	1.00	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	0.00
16.08	410.39	4.19	1.02	110	0.884	0.966	1.02	0.50	1.09	423.39	1.49		1	100	1.00	4.25	1.00	425.0	1.00	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	0.00
16.24	419.61	4.80	1.14	110	0.893	0.966	1.15	0.50	1.09	430.73	1.53		1	100	1.00	4.30	1.00	432.3	1.00	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	0.00
16.40	443.67	4.84	1.09	110	0.902	0.966	1.09	0.50	1.08	453.18	1.50		1	100	1.00	4.35	1.00	454.9	1.00	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	0.00
16.57	437.41	4.97	1.14	110	0.911	0.965	1.14	0.50	1.08	444.55	1.52		1	100	1.00	4.40	1.00	446.2	1.00	Infin.	0.000	0.660	**Non-Liq.**	Non-Liq.	0.00
16.73	435.84	4.65	1.07	110	0.920	0.965	1.07	0.50	1.07	440.77	1.50		1	100	1.00	4.45	1.00	442.4	1.00	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	0.00
16.90	448.38	4.22	0.94	110	0.929	0.965	0.94	0.50	1.07	451.26	1.45		1	100	1.00	4.50	1.00	452.9	1.00	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	0.00
17.06	457.41	3.79	0.83	110	0.938	0.964	0.83	0.50	1.06	458.14	1.40		1	100	1.00	4.55	1.00	459.8	1.00	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	0.00
17.22	450.04	4.42	0.98	110	0.947	0.964	0.99	0.50	1.06	448.58	1.46		1	100	1.00	4.60	1.00	450.3	1.00	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	0.00
17.39	437.15	4.09	0.94	110	0.956	0.963	0.94	0.50	1.05	433.64	1.45		1	100	1.00	4.65	1.00	435.3	1.00	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	0.00
17.55	447.32	4.19	0.94	110	0.965	0.963	0.94	0.50	1.05	441.66	1.45		1	100	1.00	4.70	1.00	443.3	1.00	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	0.00
17.72	476.04	4.81	1.01	110	0.974	0.963	1.01	0.50	1.04	467.89	1.46		1	100	1.00	4.75	1.00	469.6	1.00	Infin.	0.000	0.675	**Non-Liq.**	Non-Liq.	0.00
17.88	526.73	4.25	0.81	110	0.983	0.962	0.81	0.50	1.04	515.42	1.36		1	100	1.00	4.80	1.00	517.3	1.00	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	0.00
18.04	498.22	4.85	0.97	110	0.992	0.962	0.98	0.50	1.03	485.24	1.44		1	100	1.00	4.85	1.00	487.1	1.00	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	0.00
18.21	506.10	5.27	1.04	110	1.001	0.962	1.04	0.50	1.03	490.70	1.46		1	100	1.00	4.90	1.00	492.5	1.00	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	0.00
18.37	512.17	6.70	1.31	110	1.010	0.961	1.31	0.50	1.02	494.36	1.55		1	100	1.00	4.95	1.00	496.2	1.00	Infin.	0.000	0.683	**Non-Liq.**	Non-Liq.	0.00
18.54	559.50	8.56	1.53	110	1.020	0.961	1.53	0.50	1.02	537.73	1.59		1	100	1.00	5.00	1.00	539.7	1.00	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	0.00
18.70	562.50	8.26	1.47	110	1.029	0.960	1.47	0.50	1.01	538.24	1.57		1	100	1.00	5.05	1.00	540.2	1.00	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	0.00
18.86	559.79	8.82	1.58	110	1.038	0.960	1.58	0.50	1.01	533.30	1.60		1	100	1.00	5.10	1.00	535.3	1.00	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	0.00
19.03	547.34	8.23	1.50	110	1.047	0.960	1.51	0.50	1.01	519.15	1.59		1	100	1.00	5.15	1.00	521.1	1.00	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	0.00
19.19	552.34	7.74	1.40	110	1.056	0.959	1.40	0.50	1.00	521.65	1.56		1	100	1.00	5.20	1.00	523.6	1.00	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	0.00
19.36	492.99	7.25	1.47	110	1.065	0.959	1.47	0.50	1.00	463.51	1.60		1	100	1.00	5.25	1.00	465.2	1.00	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	0.00
19.52	443.38	5.21	1.18	110	1.074	0.958	1.18	0.50	0.99	415.00	1.55		1	100	1.00	5.30	1.00	416.6	1.00	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	0.00
19.69	430.83	4.17	0.97	110	1.083	0.958	0.97	0.50	0.99	401.53	1.49		1	100	1.00	5.35	1.00	403.0	1.00	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	0.00
19.85	411.08	3.30	0.80	110	1.092	0.957	0.80	0.50	0.98	381.48	1.43		1	100	1.00	5.40	1.00	382.9	1.00	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	0.00
20.01	393.49	2.98	0.76	110	1.101	0.957	0.76	0.50	0.98	363.61	1.43		1	100	1.00	5.45	1.00	365.0	1.00	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	0.00
20.18	395.26	2.83	0.72	110	1.107	0.957	0.72	0.50	0.98	364.24	1.41		1	100	1.00	5.50	1.00	365.6	1.00	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	0.00
20.34	374.51	2.35	0.63	110	1.111	0.956	0.63	0.50	0.98	344.46	1.38		1	100	1.00	5.55	1.00	345.7	1.00	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	0.00
20.51	326.62	2.65	0.81	110	1.115	0.956	0.81	0.50	0.97	299.75	1.51		1	100	1.00	5.60	1.00	300.9	1.00	Infin.	0.000	0.706	**Non-Liq.**	Non-Liq.	0.00
20.67	282.57	2.55	0.90	110	1.118	0.955	0.91	0.50	0.97	258.73	1.58		1	100	1.00	5.65	1.00	259.7	1.00	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	0.00
20.83	276.78	3.44	1.24	110	1.122	0.955	1.25	0.52	0.97	252.72	1.69		1	100	1.03	5.70	1.00	262.3	1.00	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	0.00
21.00	278.21	2.80	1.01	110	1.126	0.954	1.01	0.50	0.97	253.83	1.62		1	100	1.00	5.75	1.00	254.8	1.00	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	0.00
21.16	340.07	3.01	0.88	110	1.130	0.954	0.89	0.50	0.97	309.96	1.52		1	100	1.00	5.80	1.00	311.1	1.00	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	0.00
21.33	368.76	2.98	0.81	110	1.134	0.954	0.81	0.50	0.97	335.61	1.47		1	100	1.00	5.85	1.00	336.9	1.00	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	0.00
21.49	341.22	3.31	0.97	110	1.138	0.953	0.97	0.50	0.96	309.93	1.55		1	100	1.00	5.90	1.00	311.1	1.00	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	0.00
21.65	390.12	3.77	0.97	110	1.142	0.953	0.97	0.50	0.96	353.89	1.52		1	100	1.00	5.95	1.00	355.2	1.00	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	0.00
21.82	410.04	3.82	0.93	110	1.146	0.952	0.93	0.50	0.96	371.37	1.49		1	100	1.00	6.00	1.00	372.8	1.00	Infin.	0.000	0.718	**Non-Liq.**	Non-Liq.	0.00
21.98	384.92	3.63	0.94	110	1.150	0.952	0.95	0.50	0.96	347.96	1.51		1	100	1.00	6.05	1.00	349.3	1.00	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	0.00
22.15	353.56	2.69	0.76	110	1.154	0.951	0.76	0.50	0.96	318.98	1.47		1	100	1.00	6.10	1.00	320.2	1.00	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	0.00
22.31	330.47	2.03	0.62	110	1.158	0.951	0.62	0.50	0.96	297.58	1.42		1	100	1.00	6.15	1.00	298.7	1.00	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	0.00
22.47	302.85	2.02	0.67	110	1.161	0.950	0.67	0.50	0.95	272.16	1.47		1	100	1.00	6.20	1.00	273.2	1.00	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	0.00
22.64	277.81	2.78	1.00	110	1.165	0.950	1.01	0.50	0.95	249.15	1.63		1	100	1.00	6.25	1.00	250.1	1.00	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	0.00
22.80	261.06	4.42	1.69	110	1.169	0.949	1.70	0.55	0.95	232.39	1.82		1	100	1.12	6.30	1.00	262.1	1.00	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	0.00
22.97	275.05	5.35	1.94	110	1.173	0.949	1.95	0.57	0.94	244.17	1.86		1	100	1.15	6.35	1.00	282.3	1.00	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	0.00
23.13	338.08	5.26	1.55	110	1.177	0.948	1.56	0.53	0.95	301.07	1.73		1	100	1.06	6.40	1.00	319.0	1.00	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	0.00
23.29	290.23	4.56	1.57	110	1.181	0.948	1.58	0.54	0.94	257.48	1.77		1	100	1.09	6.45	1.00	280.5	1.00	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	0.00
23.46	297.08	3.04	1.02	110	1.185	0.947	1.03	0.50	0.94	264.28	1.62		1	100	1.00	6.50	1.00	265.3	1.00	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	0.00
23.62	303.30	2.81	0.92	110	1.189	0.947	0.93	0.50	0.94	269.39	1.58		1	100	1.00	6.55	1.00	270.4	1.00	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	0.00
23.79	309.47	2.71	0.87	110	1.193	0.946	0.88	0.50	0.94	274.43	1.55		1	100	1.00	6.60	1.00	275.5	1.00	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	0.00
23.95	314.79	2.69	0.86	110	1.197	0.946	0.86	0.50	0.94	278.71	1.54		1	100	1.00	6.65	1.00	279.8	1.00	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	0.00
24.11	323.75	2.59	0.80	110	1.200	0.945	0.80	0.50	0.94	286.20	1.51		1	100	1.00	6.70	1.00	287.3	1.00	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	0.00
24.28	334.53	2.78	0.83	110	1.204	0.945	0.83	0.50	0.94	295.29	1.52		1	100	1.00	6.75	1.00	296.4	1.00	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	0.00
24.44	341.22	2.78	0.82	110	1.208	0.944	0.82	0.50	0.94	300.72	1.51		1	100	1.00	6.80	1.00	301.8	1.00	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	0.00
24.61	345.28	2.16	0.62	110	1.212	0.943	0.63	0.50	0.93	303.82	1.42		1	100	1.00	6.85	1.00	305.0	1.00	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	0.00
24.77	354.45	2.39	0.67	110	1.216	0.943	0.68	0.50	0.93	311.41	1.43		1	100	1.00	6.90	1.00	312.6	1.00	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	0.00
24.93	357.66	2.44	0.68	110	1.220	0.942	0.68	0.50	0.93	313.74	1.44		1	100	1.00	6.95	1.00	314.9	1.00	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	0.00
25.10	363.46	2.39	0.66	110	1.224	0.942	0.66	0.50	0.93	318.33	1.42		1	100	1.00	7.00	1.00	319.5	1.00	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	0.00
25.26	370.76	2.17	0.59	110	1.228	0.941	0.59	0.50	0.93	324.22	1.38		1	100	1.00	7.05	1.00	325.4	1.00	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	0.00
25.43	377.75	2.41	0.64	110	1.232	0.941	0.64	0.50	0.93	329.83	1.40		1	100	1.00	7.10	1.00	331.1	1.00	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	0.00
25.59	391.33	2.46	0.63	110	1.236	0.940	0.63	0.50	0.93	341.18	1.38		1	100	1.00	7.15	1.00	342.5	1.00	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	0.00
25.75	392.15	2.61	0.66	110	1.240	0.939	0.67	0.50	0.92	341.36	1.40		1	100	1.00	7.20	1.00	342.6	1.00	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	0.00
25.92	382.77	2.62	0.68	110	1.243	0.939	0.69	0.50	0.92	332.64	1.42		1	100	1.00	7.25	1.00	333.9	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	0.00
26.08	373.25	2.66	0.71	110	1.247	0.938	0.71	0.50	0.92	323.83	1.44		1	100	1.00	7.30	1.00	325.0	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	0.00
26.25	363.79	2.44	0.67	110	1.251	0.938	0.67	0.50	0.92	315.10	1.43		1	100	1.00	7.35	1.00	316.3	1.00	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	0.00
26.41	362.15	2.32	0.64	110	1.255	0.937	0.64	0.50	0.92	313.18	1.42		1	100	1.00	7.40	1.00	314.3	1.00	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	0.00
26.57	366.11	2.55	0.70	110	1.259	0.936	0.70	0.50	0.92	316.12	1.44		1	100	1.00	7.45	1.00	317.3	1.00	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	0.00
26.74	372.93	2.51	0.67	110	1.263	0.936	0.68	0.50	0.92	321.53	1.42		1	100	1.00	7.50	1.00	322.7	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	0.00
26.90	383.15	3.06	0.80	110	1.267	0.935	0.80	0.50	0.91	329.86	1.47		1	100	1.00	7.55	1.00	331.1	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	0.00
27.07	413.34	3.14	0.76	110	1.271	0.934	0.76	0.50	0.91	355.38	1.44		1	100	1.00	7.60	1.00	356.7	1.00	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	0.00
27.23	409.32	4.09	1.00	110	1.275	0.934	1.00	0.50	0.91	351.37	1.53		1	100	1.00	7.65	1.00	352.7	1.00	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	0.00
27.40	399.12	4.88	1.22	110	1.279	0.933	1.23	0.50	0.91	342.06	1.61		1	100	1.00	7.70	1.00	343.3	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	0.00
27.56	379.94	3.65	0.96	110	1.282	0.932	0.96	0.50	0.91	325.07	1.54		1	100	1.00	7.75	1.00	326.3	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	0.00
27.72	353.99	3.89	1.10	110	1.286	0.932	1.10	0.50	0.91	302.33	1.60		1	100	1.00	7.80	1.00	303.5	1.00	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	0.00
27.89	386.19	3.37	0.87	110	1.290	0.931	0.88	0.50	0.91	329.43	1.50		1	100	1.00	7.85	1.00	330.7	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	410.07	4.19	1.02	110	1.294	0.930	1.03	0.50	0.90	349.34	1.54		1	100	1.00	7.90	1.00	350.6	1.00	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
28.22	438.73	4.93	1.12	110	1.298	0.929	1.13	0.50	0.90	373.26	1.56		1	100	1.00	7.95	1.00	374.7	1.00	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
28.38	454.65	5.10	1.12	110	1.302	0.929	1.13	0.50	0.90	386.27	1.55		1	100	1.00	8.00	1.00	387.7	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.54	455.41	6.81	1.50	110	1.306	0.928	1.50	0.50	0.90	386.04	1.65		1	100	1.00	8.05	1.00	389.3	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.71	557.48	6.50	1.17	110	1.310	0.927	1.17	0.50	0.90	472.46	1.51		1	100	1.00	8.10	1.00	474.2	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
28.87	504.25	5.71	1.13	110	1.314	0.926	1.14	0.50	0.90	426.60	1.53		1	100	1.00	8.15	1.00	428.2	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
29.04	452.21	4.48	0.99	110	1.318	0.926	0.99	0.50	0.90	381.89	1.51		1	100	1.00	8.20	1.00	383.3	1.00	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
29.20	427.62	3.52	0.82	110	1.322	0.925	0.83	0.50	0.89	360.53	1.46		1	100	1.00	8.25	1.00	361.9	1.00	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
29.36	419.70	3.00	0.71	110	1.325	0.924	0.72	0.50	0.89	353.30	1.42		1	100	1.00	8.30	1.00	354.6	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.53	414.05	3.21	0.78	110	1.329	0.923	0.78	0.50	0.89	348.02	1.45		1	100	1.00	8.35	1.00	349.3	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.69	430.08	5.15	1.20	110	1.333	0.923	1.20	0.50	0.89	361.00	1.59		1	100	1.00	8.40	1.00	362.3	1.00	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
29.86	475.65	5.92	1.24	110	1.337	0.922	1.25	0.50	0.89	398.78	1.58		1	100	1.00	8.45	1.00	400.3	1.00	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
30.02	487.87	5.66	1.16	110	1.341	0.921	1.16	0.50	0.89	408.46	1.55		1	100	1.00	8.50	1.00	410.0	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.18	400.37	3.93	0.98	110	1.345	0.920	0.98	0.50	0.89	334.51	1.54		1	100	1.00	8.55	1.00	335.8	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.35	403.47	3.24	0.80	110	1.349	0.919	0.80	0.50	0.89	336.62	1.47		1	100	1.00	8.60	1.00	337.9	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.51	396.31	2.84	0.72	110	1.353	0.918	0.72	0.50	0.88	330.14	1.44		1	100	1.00	8.65	1.00	331.4	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.68	386.15	2.45	0.63	110	1.357	0.918	0.64	0.50	0.88	321.18	1.41		1	100	1.00	8.70	1.00	322.4	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.84	392.22	2.37	0.61	110	1.361	0.917	0.61	0.50	0.88	325.78	1.39		1	100	1.00	8.75	1.00	327.0	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
31.00	405.26	2.42	0.60	110	1.364	0.916	0.60	0.50	0.88	336.16	1.37		1	100	1.00	8.80	1.00	337.4	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.17	430.96	2.96	0.69	110	1.368	0.915	0.69	0.50	0.88	357.04	1.40		1	100	1.00	8.85	1.00	358.4	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.33	477.81	2.81	0.59	110	1.372	0.914	0.59	0.50	0.88	395.41	1.32		1	100	1.00	8.85	1.00	396.9	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.50	511.39	3.25	0.64	110	1.376	0.913	0.64	0.50	0.88	422.67	1.33		1	100	1.00	8.85	1.00	424.3	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.66	526.85	3.67	0.70	110	1.380	0.912	0.70	0.50	0.88	434.87	1.35		1	100	1.00	8.85	1.00	436.5	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
31.82	556.04	4.16	0.75	110	1.384	0.911	0.75	0.50	0.87	458.37	1.36		1	100	1.00	8.85	1.00	460.1	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
31.99	549.66	4.48	0.82	110	1.388	0.910	0.82	0.50	0.87	452.46	1.39		1	100	1.00	8.85	1.00	454.1	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.15	532.09	4.07	0.77	110	1.392	0.909	0.77	0.50	0.87	437.34	1.38		1	100	1.00	8.85	1.00	439.0	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.32	480.94	3.60	0.75	110	1.396	0.908	0.75	0.50	0.87	394.63	1.40		1	100	1.00	8.85	1.00	396.1	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.48	490.89	4.33	0.88	110	1.400	0.907	0.88	0.50	0.87	402.25	1.45		1	100	1.00	8.85	1.00	403.8	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.64	528.43	4.91	0.93	110	1.403	0.906	0.93	0.50	0.87	432.50	1.45		1	100	1.00	8.85	1.00	434.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.81	460.35	4.63	1.00	110	1.407	0.905	1.01	0.50	0.87	376.10	1.52		1	100	1.00	8.85	1.00	377.5	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.97	486.15	4.33	0.89	110	1.411	0.904	0.89	0.50	0.87	396.69	1.46		1	100	1.00	8.85	1.00	398.2	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.14	443.98	3.08	0.69	110	1.415	0.903	0.70	0.50	0.86	361.68	1.40		1	100	1.00	8.85	1.00	363.0	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.30	410.68	3.53	0.86	110	1.419	0.902	0.86	0.50	0.86	334.00	1.49		1	100	1.00	8.85	1.00	335.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.46	410.45	3.02	0.74	110	1.423	0.901	0.74	0.50	0.86	333.35	1.44		1	100	1.00	8.85	1.00	334.6	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.63	405.83	2.64	0.65	110	1.427	0.900	0.65	0.50	0.86	329.13	1.41		1	100	1.00	8.85	1.00	330.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.79	322.06	1.47	0.46	110	1.431	0.899	0.46	0.50	0.86	260.60	1.37		1	100	1.00	8.85	1.00	261.6	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.96	275.23	1.64	0.60	110	1.435	0.898	0.60	0.50	0.86	222.23	1.50		1	100	1.00	8.85	1.00	223.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.12	227.81	2.72	1.19	110	1.439	0.897	1.20	0.54	0.85	181.18	1.78		1	100	1.09	8.85	1.00	198.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.28	169.10	2.93	1.74	110	1.443	0.896	1.75	0.61	0.83	131.34	1.99		1	88	1.29	8.85	1.00	170.0	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.45	86.25	3.30	3.82	110	1.446	0.895	3.89	0.75	0.79	63.47	2.46		1	58	2.58		1.00	163.6	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.61	69.63	2.59	3.72	110	1.450	0.894	3.80	0.76	0.79	50.64	2.52		1	49	2.88		1.00	145.8	1.00	0.368	0.367	0.767	**0.48**	92%	**0.92**
34.78	43.14	2.39	5.53	110	1.454	0.893	5.73	0.85	0.76	30.06	2.81		0						1.00			0.767	Non-Liq.	Non-Liq.	0.00
34.94	30.65	2.97	9.69	110	1.458	0.892	10.17	0.94	0.74	20.42	3.10		0						1.00			0.766	Non-Liq.	Non-Liq.	0.00
35.10	41.47	3.52	8.49	110	1.462	0.890	8.80	0.90	0.75	28.30	2.96		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.27	65.17	3.19	4.90	110	1.466	0.889	5.01	0.80	0.77	46.41	2.63		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.43	88.65	2.38	2.68	110	1.470	0.888	2.73	0.71	0.79	65.24	2.34		1	59	2.09		1.00	136.3	0.99	0.315	0.312	0.766	**0.41**	95%	**1.07**
35.60	43.77	2.29	5.24	110	1.474	0.887	5.42	0.84	0.76	30.22	2.79		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.76	29.66	1.82	6.14	110	1.478	0.886	6.46	0.90	0.74	19.72	2.98		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.93	29.62	1.77	5.98	110	1.482	0.885	6.30	0.90	0.74	19.65	2.97		0						0.99			0.765	Non-Liq.	Non-Liq.	0.00
36.09	178.35	2.16	1.21	110	1.485	0.883	1.22	0.57	0.82	137.89	1.86		1	90	1.16	0.40	1.31	208.8	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.25	241.23	1.79	0.74	110	1.489	0.882	0.75	0.50	0.84	190.98	1.62		1	100	1.00	0.40	1.31	249.9	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.42	267.52	1.54	0.57	110	1.493	0.881	0.58	0.50	0.84	211.65	1.51		1	100	1.00	0.40	1.31	276.9	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.58	307.90	1.25	0.41	110	1.497	0.880	0.41	0.50	0.84	243.45	1.36		1	100	1.00	0.40	1.31	318.6	0.98	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
36.75	313.53	1.06	0.34	110	1.501	0.878	0.34	0.50	0.84	247.60	1.31		1	100	1.00	0.40	1.31	324.0	0.98	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
36.91	259.68	0.86	0.33	110	1.505	0.877	0.33	0.50	0.84	204.60	1.38		1	100	1.00	0.40	1.31	267.7	0.97	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
37.07	199.86	0.72	0.36	110	1.509	0.876	0.36	0.50	0.84	156.99	1.49		1	96	1.00	0.40	1.31	205.4	0.97	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
37.24	136.61	0.99	0.72	110	1.513	0.875	0.73	0.55	0.82	104.86	1.81		1	79	1.11	0.40	1.31	152.8	0.97	0.412	0.400	0.763	**0.52**	89%	**0.75**
37.40	83.21	1.31	1.58	110	1.517	0.873	1.61	0.67	0.79	60.64	2.21		1	56	1.69		1.00	102.5	0.98	0.180	0.176	0.762	**0.23**	99%	**1.49**
37.57	44.38	1.10	2.47	110	1.521	0.872	2.56	0.78	0.75	30.55	2.57		1	28	3.13		1.00	95.7	0.98	0.162	0.159	0.762	**0.21**	99%	**1.59**
37.73	27.18	1.18	4.34	110	1.525	0.871	4.60	0.88	0.72	17.57	2.91		0						0.98			0.762	Non-Liq.	Non-Liq.	0.00
37.89	28.70	1.31	4.57	110	1.528	0.869	4.83	0.88	0.72	18.57	2.91		0						0.98			0.761	Non-Liq.	Non-Liq.	0.00
38.06	39.57	1.47	3.71	110	1.532	0.868	3.86	0.83	0.74	26.46	2.73		0						0.98			0.761	Non-Liq.	Non-Liq.	0.00
38.22	75.21	1.54	2.05	110	1.536	0.867	2.09	0.71	0.77	53.52	2.33		1	51	2.03		1.00	108.8	0.97	0.200	0.194	0.760	**0.26**	99%	**1.40**
38.39	174.70	1.55	0.88	110	1.540	0.865	0.89	0.54	0.82	133.49	1.78		1	89	1.09	0.35	1.36	198.1	0.96	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
38.55	220.50	1.33	0.60	110	1.544	0.864	0.61	0.50	0.83	171.31	1.59		1	99	1.00	0.40	1.36	232.3	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.71	247.95	1.28	0.52	110	1.548	0.863	0.52	0.50	0.83	192.54	1.51		1	100	1.00	0.45	1.36	261.1	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.88	252.96	1.31	0.52	110	1.552	0.861	0.52	0.50	0.83	196.21	1.50		1	100	1.00	0.50	1.36	266.1	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.04	230.96	1.38	0.60	110	1.556	0.860	0.60	0.50	0.82	178.81	1.58		1	100	1.00	0.55	1.36	242.5	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.21	145.79	1.25	0.86	110	1.560	0.859	0.87	0.56	0.80	109.70	1.84		1	81	1.14	0.60	1.36	169.1	0.96	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
39.37	85.88	1.67	1.94	110	1.564	0.857	1.98	0.69	0.76	60.91	2.27		1	56	1.85		1.00	112.5	0.97	0.212	0.205	0.757	**0.27**	99%	**1.35**
39.53	62.58	1.46	2.33	110	1.567	0.856	2.39	0.74	0.75	43.14	2.43		1	42	2.46		1.00	106.0	0.98	0.191	0.186	0.756	**0.25**	99%	**1.44**
39.70	41.74	1.21	2.90	110	1.571	0.854	3.01	0.80	0.73	27.65	2.65		0						0.98			0.756	Non-Liq.	Non-Liq.	0.00
39.86	15.02	0.92	6.14	110	1.575	0.853	6.86	0.99	0.67	8.58	3.27		0						0.97			0.755	Non-Liq.	Non-Liq.	0.00
40.03	11.69	1.18	10.11	110	1.579	0.852	11.69	1.00	0.67	6.40	3.51		0						0.97			0.754	Non-Liq.	Non-Liq.	0.00
40.19	18.75	1.87	9.99	110	1.583	0.850	10.91	1.00	0.67	10.84	3.32		0						0.97			0.754	Non-Liq.	Non-Liq.	0.00
40.36	94.45	2.16	2.29	110	1.587	0.849	2.33	0.69	0.75	66.23	2.29		1	60	1.91		1.00	126.7	0.98	0.269	0.258	0.753	**0.34**	97%	**1.18**
40.52	251.97	2.43	0.96	110	1.591	0.847	0.97	0.52	0.81	191.75	1.69		1	100	1.03	1.00	1.00	198.8	0.95	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.68	313.15	2.26	0.72	110	1.595	0.846	0.73	0.50	0.81	239.85	1.54		1	100	1.00	1.00	1.00	240.7	0.94	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.85	341.76	2.88	0.84	110	1.599	0.844	0.85	0.50	0.81	261.55	1.56		1	100	1.00	1.00	1.00	262.5	0.94	Infin.	0.000	0.751	Non-Liq.	Non-Liq.	0.00
41.01	354.79	3.52	0.99	110	1.603	0.843	1.00	0.50	0.81	271.24	1.60		1	100	1.00	1.00	1.00	272.3	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.17	373.62	4.05	1.09	110	1.607	0.841	1.09	0.50	0.81	285.35	1.62		1	100	1.00	1.00	1.00	286.4	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.34	386.97	4.10	1.06	110	1.610	0.840	1.06	0.50	0.81	295.23	1.60		1	100	1.00	1.00	1.00	296.3	0.94	Infin.	0.000	0.749	Non-Liq.	Non-Liq.	0.00
41.50	384.45	4.56	1.19	110	1.614	0.838	1.19	0.50	0.81	292.94	1.64		1	100	1.00	1.00	1.00	294.0	0.94	Infin.	0.000	0.748	Non-Liq.	Non-Liq.	0.00
41.67	388.83	3.67	0.94	110	1.618	0.837	0.95	0.50	0.81	295.93	1.56		1	100	1.00	1.00	1.00	297.0	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.83	401.57	3.65	0.91	110	1.622	0.835	0.91	0.50	0.81	305.29	1.54		1	100	1.00	1.00	1.00	306.4	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.99	345.90	3.80	1.10	110	1.626	0.834	1.10	0.50	0.81	262.37	1.64		1	100	1.00	1.00	1.00	262.9	0.93	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
42.16	326.26	3.40	1.04	110	1.630	0.832	1.05	0.50	0.81	247.11	1.64		1	100	1.00	1.00	1.00	247.6	0.93	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
42.32	340.48	3.88	1.14	110	1.634	0.831	1.14	0.51	0.80	257.02	1.66		1	100	1.01	1.00	1.00	260.8	0.93	Infin.	0.000	0.744	Non-Liq.	Non-Liq.	0.00
42.49	364.19	3.38	0.93	110	1.638	0.829	0.93	0.50	0.80	275.43	1.57		1	100	1.00	1.00	1.00	276.5	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.65	390.03	3.10	0.79	110	1.642	0.827	0.80	0.50	0.80	294.70	1.50		1	100	1.00	1.00	1.00	295.8	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.81	313.44	2.00	0.64	110	1.646	0.826	0.64	0.50	0.80	236.30	1.50		1	100	1.00	1.00	1.00	237.2	0.93	Infin.	0.000	0.742	Non-Liq.	Non-Liq.	0.00
42.98	261.49	1.86	0.66	110	1.649	0.824	0.67	0.50	0.80	211.83	1.55		1	100	1.00	1.00	1.00	212.6	0.93	Infin.	0.000	0.741	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	220.54	1.03	0.47	110	1.653	0.823	0.47	0.50	0.80	165.50	1.54		1	98	1.00	1.00	1.00	166.1	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
43.31	170.25	0.75	0.44	110	1.657	0.821	0.44	0.50	0.80	127.32	1.62		1	87	1.00	1.00	1.00	127.8	0.93	0.274	0.254	0.739	**0.34**	97%	**1.16**
43.47	150.87	0.88	0.58	110	1.661	0.820	0.59	0.53	0.79	111.11	1.73		1	81	1.06	1.00	1.00	118.4	0.92	0.234	0.217	0.738	**0.29**	98%	**1.27**
43.64	112.32	0.90	0.80	110	1.665	0.818	0.81	0.59	0.77	80.14	1.93		1	68	1.22	1.00	1.00	98.0	0.94	0.168	0.158	0.737	**0.21**	99%	**1.55**
43.80	82.53	1.03	1.25	110	1.669	0.816	1.28	0.66	0.74	56.60	2.17		1	53	1.60		1.00	90.3	0.94	0.148	0.140	0.736	**0.19**	100%	**1.68**
43.96	68.72	1.03	1.49	110	1.673	0.815	1.53	0.69	0.73	46.10	2.29		1	45	1.91		1.00	88.2	0.96	0.144	0.138	0.735	**0.19**	100%	**1.71**
44.13	55.11	0.91	1.64	110	1.677	0.813	1.69	0.73	0.72	36.12	2.40		1	35	2.31		1.00	83.4	0.96	0.134	0.128	0.735	**0.17**	100%	**1.79**
44.29	41.85	0.92	2.19	110	1.681	0.811	2.28	0.78	0.70	26.42	2.59		1	22	3.24		1.00	85.6	0.96	0.138	0.133	0.734	**0.18**	100%	**1.75**
44.46	26.31	1.06	4.02	110	1.685	0.810	4.29	0.89	0.66	15.39	2.94		0						0.96			0.733	**Non-Liq.**	Non-Liq.	**0.00**
44.62	21.72	0.91	4.17	110	1.689	0.808	4.52	0.92	0.65	12.33	3.03		0						0.96			0.732	**Non-Liq.**	Non-Liq.	**0.00**
44.78	37.10	1.02	2.74	110	1.692	0.807	2.87	0.82	0.68	22.80	2.70		0						0.96			0.731	**Non-Liq.**	Non-Liq.	**0.00**
44.95	79.45	1.14	1.44	110	1.696	0.805	1.47	0.68	0.73	53.41	2.23		1	51	1.73		1.00	92.7	0.94	0.154	0.144	0.730	**0.20**	100%	**1.64**
45.11	124.52	1.08	0.86	110	1.700	0.803	0.88	0.58	0.76	88.02	1.92		1	72	1.21	0.70	1.10	116.3	0.91	0.226	0.207	0.729	**0.28**	98%	**1.30**
45.28	146.40	1.60	1.09	110	1.704	0.802	1.11	0.59	0.76	103.42	1.93		1	78	1.22	0.75	1.10	137.7	0.91	0.323	0.295	0.728	**0.40**	95%	**1.05**
45.44	147.64	1.68	1.14	110	1.708	0.800	1.15	0.59	0.75	104.02	1.94		1	78	1.23	0.80	1.10	139.6	0.91	0.333	0.304	0.727	**0.42**	95%	**1.03**
45.60	111.81	2.01	1.80	110	1.712	0.798	1.83	0.66	0.73	75.74	2.17		1	65	1.61		1.00	121.6	0.93	0.247	0.230	0.726	**0.32**	98%	**1.23**
45.77	107.68	2.34	2.17	110	1.716	0.797	2.21	0.68	0.72	72.03	2.25		1	63	1.79		1.00	128.7	0.93	0.278	0.259	0.725	**0.36**	97%	**1.15**
45.93	150.61	2.63	1.75	110	1.720	0.795	1.77	0.63	0.74	103.74	2.07		1	78	1.40		1.00	144.8	0.91	0.363	0.329	0.724	**0.45**	93%	**1.00**
46.10	249.00	2.59	1.04	110	1.724	0.793	1.05	0.53	0.77	180.59	1.73		1	100	1.06	1.00	1.00	192.4	0.91	Infin.	0.000	0.723	**Non-Liq.**	Non-Liq.	**0.00**
46.26	324.42	3.00	0.93	110	1.728	0.792	0.93	0.50	0.78	238.69	1.61		1	100	1.00	1.05	1.00	239.6	0.91	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
46.42	376.79	3.64	0.96	110	1.731	0.790	0.97	0.50	0.78	277.11	1.58		1	100	1.00	1.10	1.00	278.1	0.91	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
46.59	401.24	4.49	1.12	110	1.735	0.788	1.12	0.50	0.78	294.84	1.62		1	100	1.00	1.15	1.00	295.9	0.90	Infin.	0.000	0.720	**Non-Liq.**	Non-Liq.	**0.00**
46.75	410.01	4.98	1.21	110	1.739	0.787	1.22	0.50	0.78	300.97	1.64		1	100	1.00	1.20	1.00	302.1	0.90	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
46.92	417.89	4.83	1.16	110	1.743	0.785	1.16	0.50	0.78	306.43	1.62		1	100	1.00	1.25	1.00	307.6	0.90	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
47.08	432.83	4.59	1.06	110	1.747	0.783	1.06	0.50	0.78	317.08	1.58		1	100	1.00	1.30	1.00	318.3	0.90	Infin.	0.000	0.716	**Non-Liq.**	Non-Liq.	**0.00**
47.24	435.16	3.80	0.87	110	1.751	0.782	0.88	0.50	0.78	318.43	1.51		1	100	1.00	1.35	1.00	319.6	0.90	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
47.41	434.87	4.29	0.99	110	1.755	0.780	0.99	0.50	0.78	317.86	1.55		1	100	1.00	1.40	1.00	319.0	0.90	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
47.57	434.40	5.04	1.16	110	1.759	0.778	1.17	0.50	0.78	317.16	1.61		1	100	1.00	1.45	1.00	318.3	0.90	Infin.	0.000	0.713	**Non-Liq.**	Non-Liq.	**0.00**
47.74	430.64	5.51	1.28	110	1.763	0.777	1.28	0.50	0.77	313.70	1.65		1	100	1.00	1.50	1.00	315.3	0.90	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
47.90	433.15	6.42	1.48	110	1.767	0.775	1.49	0.52	0.77	312.64	1.70		1	100	1.04	1.55	1.00	325.7	0.90	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
48.06	428.46	6.61	1.54	110	1.770	0.773	1.55	0.52	0.76	308.02	1.72		1	100	1.05	1.60	1.00	324.6	0.90	Infin.	0.000	0.710	**Non-Liq.**	Non-Liq.	**0.00**
48.23	424.25	6.72	1.58	110	1.774	0.772	1.59	0.53	0.76	304.04	1.73		1	100	1.06	1.65	1.00	323.0	0.89	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
48.39	419.06	6.65	1.59	110	1.778	0.770	1.59	0.53	0.76	299.75	1.73		1	100	1.06	1.70	1.00	319.3	0.89	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
48.56	409.58	6.70	1.64	110	1.782	0.768	1.64	0.53	0.76	291.80	1.75		1	100	1.07	1.75	1.00	314.3	0.89	Infin.	0.000	0.707	**Non-Liq.**	Non-Liq.	**0.00**
48.72	401.26	6.55	1.63	110	1.786	0.767	1.64	0.54	0.76	285.28	1.76		1	100	1.08	1.80	1.00	308.3	0.89	Infin.	0.000	0.705	**Non-Liq.**	Non-Liq.	**0.00**
48.88	393.67	6.35	1.61	110	1.790	0.765	1.62	0.54	0.75	279.50	1.76		1	100	1.08	1.85	1.00	302.2	0.89	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
49.05	386.90	6.22	1.61	110	1.794	0.763	1.62	0.54	0.75	274.18	1.76		1	100	1.08	1.90	1.00	297.2	0.89	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
49.21	381.95	6.11	1.60	110	1.798	0.762	1.61	0.54	0.75	270.24	1.76		1	100	1.08	1.95	1.00	293.3	0.89	Infin.	0.000	0.702	**Non-Liq.**	Non-Liq.	**0.00**
49.38	382.17	6.15	1.61	110	1.802	0.760	1.62	0.54	0.75	269.99	1.77		1	100	1.08	2.00	1.00	293.4	0.89	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
49.54	376.16	6.01	1.60	110	1.806	0.758	1.61	0.54	0.75	265.33	1.77		1	100	1.08	2.05	1.00	288.7	0.89	Infin.	0.000	0.700	**Non-Liq.**	Non-Liq.	**0.00**
49.70	367.77	5.85	1.59	110	1.810	0.757	1.60	0.54	0.75	258.87	1.77		1	100	1.09	2.10	1.00	282.6	0.89	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
49.87	358.21	5.75	1.61	110	1.813	0.755	1.61	0.54	0.75	251.37	1.78		1	100	1.10	2.15	1.00	276.4	0.88	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
50.03	351.53	5.60	1.59	110	1.817	0.753	1.60	0.54	0.75	246.26	1.79		1	100	1.10	2.20	1.00	271.2	0.88	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
50.20	347.31	4.90	1.41	110	1.821	0.752	1.42	0.53	0.75	244.59	1.75		1	100	1.07	2.25	1.00	262.5	0.88	Infin.	0.000	0.695	**Non-Liq.**	Non-Liq.	**0.00**
50.36	345.77	5.05	1.46	110	1.825	0.750	1.47	0.54	0.75	242.68	1.76		1	100	1.08	2.30	1.00	262.8	0.88	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
50.52	347.22	5.22	1.50	110	1.829	0.748	1.51	0.54	0.74	243.04	1.77		1	100	1.09	2.35	1.00	264.8	0.88	Infin.	0.000	0.693	**Non-Liq.**	Non-Liq.	**0.00**
50.69	346.06	5.37	1.55	110	1.833	0.747	1.56	0.54	0.74	241.42	1.78		1	100	1.09	2.40	1.00	265.2	0.88	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
50.85	349.13	5.22	1.50	110	1.837	0.745	1.50	0.54	0.74	243.91	1.77		1	100	1.08	2.45	1.00	265.3	0.88	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
51.02	348.56	4.86	1.39	110	1.841	0.743	1.40	0.53	0.75	244.21	1.74		1	100	1.07	2.50	1.00	261.6	0.88	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
51.18	349.29	4.35	1.25	110	1.845	0.742	1.25	0.52	0.75	246.10	1.70		1	100	1.04	2.55	1.00	256.9	0.88	Infin.	0.000	0.688	**Non-Liq.**	Non-Liq.	**0.00**
51.35	348.08	4.19	1.20	110	1.849	0.740	1.21	0.52	0.75	245.42	1.69		1	100	1.03	2.60	1.00	254.3	0.88	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
51.51	347.63	4.03	1.16	110	1.852	0.738	1.17	0.51	0.75	245.34	1.68		1	100	1.02	2.65	1.00	252.2	0.87	Infin.	0.000	0.686	**Non-Liq.**	Non-Liq.	**0.00**
51.67	345.96	4.21	1.22	110	1.856	0.737	1.22	0.52	0.75	243.12	1.70		1	100	1.04	2.65	1.00	253.0	0.87	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
51.84	345.46	4.03	1.17	110	1.860	0.735	1.17	0.51	0.75	243.07	1.68		1	100	1.03	2.65	1.00	250.7	0.87	Infin.	0.000	0.684	**Non-Liq.**	Non-Liq.	**0.00**
52.00	342.27	3.60	1.05	110	1.864	0.733	1.06	0.50	0.75	241.88	1.65		1	100	1.00	2.65	1.00	243.9	0.87	Infin.	0.000	0.682	**Non-Liq.**	Non-Liq.	**0.00**
52.17	345.47	2.90	0.84	110	1.868	0.732	0.84	0.50	0.75	244.41	1.58		1	100	1.00	2.65	1.00	245.3	0.87	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
52.33	353.60	2.51	0.71	110	1.872	0.730	0.71	0.50	0.75	249.93	1.52		1	100	1.00	2.65	1.00	250.9	0.87	Infin.	0.000	0.680	**Non-Liq.**	Non-Liq.	**0.00**
52.49	353.44	2.43	0.69	110	1.876	0.728	0.69	0.50	0.75	249.55	1.51		1	100	1.00	2.65	1.00	250.5	0.87	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
52.66	329.04	2.54	0.77	110	1.880	0.727	0.77	0.50	0.75	231.99	1.57		1	100	1.00	2.65	1.00	232.9	0.87	Infin.	0.000	0.678	**Non-Liq.**	Non-Liq.	**0.00**
52.82	324.06	2.40	0.74	110	1.884	0.725	0.75	0.50	0.75	228.21	1.56		1	100	1.00	2.65	1.00	229.1	0.87	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
52.99	357.49	2.12	0.59	110	1.888	0.724	0.60	0.50	0.75	251.63	1.46		1	100	1.00	2.65	1.00	252.6	0.87	Infin.	0.000	0.676	**Non-Liq.**	Non-Liq.	**0.00**
53.15	377.56	1.69	0.45	110	1.892	0.722	0.45	0.50	0.75	265.56	1.36		1	100	1.00	2.65	1.00	266.5	0.87	Infin.	0.000	0.674	**Non-Liq.**	Non-Liq.	**0.00**
53.31	383.09	1.73	0.45	110	1.895	0.720	0.45	0.50	0.75	269.18	1.36		1	100	1.00	2.65	1.00	270.2	0.86	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	**0.00**
53.48	384.71	1.88	0.49	110	1.899	0.719	0.49	0.50	0.75	270.05	1.38		1	100	1.00	2.65	1.00	271.1	0.86	Infin.	0.000	0.672	**Non-Liq.**	Non-Liq.	**0.00**
53.64	382.98	1.55	0.41	110	1.903	0.717	0.41	0.50	0.75	268.55	1.33		1	100	1.00	2.65	1.00	269.6	0.86	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	**0.00**
53.81	378.65	1.68	0.44	110	1.907	0.716	0.45	0.50	0.74	265.22	1.36		1	100	1.00	2.65	1.00	266.2	0.86	Infin.	0.000	0.670	**Non-Liq.**	Non-Liq.	**0.00**
53.97	364.32	1.45	0.40	110	1.911	0.714	0.40	0.50	0.74	254.87	1.34		1	100	1.00	2.65	1.00	255.8	0.86	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	**0.00**
54.13	345.61	1.28	0.37	110	1.915	0.712	0.37	0.50	0.74	241.46	1.34		1	100	1.00	2.65	1.00	242.4	0.86	Infin.	0.000	0.667	**Non-Liq.**	Non-Liq.	**0.00**
54.30	328.15	1.38	0.42	110	1.919	0.711	0.42	0.50	0.74	228.96	1.40		1	100	1.00	2.65	1.00	229.8	0.86	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
54.46	286.22	1.49	0.52	110	1.923	0.709	0.53	0.50	0.74	199.33	1.50		1	100	1.00	2.65	1.00	200.1	0.86	Infin.	0.000	0.665	**Non-Liq.**	Non-Liq.	**0.00**
54.63	215.92	2.04	0.94	110	1.927	0.708	0.95	0.54	0.72	146.37	1.77		1	93	1.09	2.65	1.00	159.6	0.86	0.458	0.393	0.664	**0.59**	85%	**0.57**
54.79	142.12	2.27	1.60	110	1.931	0.706	1.62	0.63	0.68	90.57	2.08		1	73	1.42		1.00	128.9	0.86	0.279	0.239	0.663	**0.36**	97%	**1.14**
54.95	95.61	2.50	2.61	110	1.934	0.705	2.66	0.72	0.65	57.33	2.37		1	54	2.21		1.00	126.7	0.89	0.269	0.240	0.662	**0.36**	97%	**1.16**
55.12	68.05	2.25	3.30	110	1.938	0.703	3.40	0.78	0.62	39.00	2.57		1	38	3.14		1.00	122.4	0.92	0.251	0.232	0.661	**0.35**	97%	**1.22**
55.28	52.93	1.90	3.59	110	1.942	0.701	3.73	0.81	0.61	29.39	2.69		0						0.92			0.659	**Non-Liq.**	Non-Liq.	**0.00**
55.45	46.61	2.06	4.41	110	1.946	0.700	4.61	0.85	0.60	25.19	2.80		0						0.92			0.658	**Non-Liq.**	Non-Liq.	**0.00**
55.61	110.59	2.63	2.38	110	1.950	0.698	2.42	0.70	0.65	67.05	2.30		1	60	1.94		1.00	129.9	0.89	0.284	0.252	0.657	**0.38**	96%	**1.13**
55.77	134.82	3.19	2.37	110	1.954	0.697	2.40	0.68	0.66	82.91	2.23		1	69	1.74		1.00	144.4	0.89	0.360	0.319	0.656	**0.49**	92%	**1.00**
55.94	157.81	3.55	2.25	110	1.958	0.695	2.28	0.66	0.67	98.35	2.16		1	76	1.58		1.00	155.1	0.85	0.427	0.363	0.655	**0.55**	87%	**0.67**
56.10	180.29	3.92	2.18	110	1.962	0.694	2.20	0.64	0.67	113.50	2.11		1	82	1.47		1.00	166.8	0.85	Infin.	0.000	0.654	**Non-Liq.**	Non-Liq.	**0.00**
56.27	192.22	4.13	2.15	110	1.966	0.692	2.17	0.63	0.68	121.48	2.08		1	85	1.43		1.00	173.3	0.85	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
56.43	181.99	3.86	2.12	110	1.970	0.691	2.14	0.64	0.67	114.52	2.10		1	82	1.45		1.00	166.0	0.85	Infin.	0.000	0.652	**Non-Liq.**	Non-Liq.	**0.00**
56.59	157.22	3.50	2.23	110	1.974	0.689	2.26	0.66	0.66	97.46	2.16		1	76	1.58		1.00	153.6	0.85	0.417	0.354	0.650	**0.54**	88%	**0.71**
56.76	135.91	2.78	2.04	110	1.977	0.688	2.07	0.66	0.66	83.65	2.18		1	69	1.62		1.00	135.7	0.88	0.312	0.276	0.649	**0.42**	94%	**1.06**
56.92	120.38	2.34	1.94	110	1.981	0.686	1.97	0.67	0.66	73.50	2.21		1	64	1.68		1.00	123.7	0.88	0.256	0.226	0.648	**0.35**	97%	**1.20**
57.09	104.50	2.33	2.23	110	1.985	0.685	2.27	0.70	0.64	62.45	2.30		1	57	1.95		1.00	121.6	0.88	0.247	0.218	0.647	**0.34**	97%	**1.22**
57.25	69.37	1.60	2.31	110	1.989	0.683	2.38	0.75	0.62	39.77	2.46		1	39	2.57		1.00	102.2	0.92	0.179	0.165	0.646	**0.26**	99%	**1.48**
57.41	32.64	1.19	3.63	110	1.993	0.682	3.87	0.87	0.58	16.66	2.88		0						0.92			0.645	**Non-Liq.**	Non-Liq.	**0.00**
57.58	24.63	0.77	3.11	110	1.997	0.680	3.38	0.90	0.57	12.11	2.96		0						0.92			0.644	**Non-Liq.**	Non-Liq.	**0.00**
57.74	22.59	0.67	2.95	110	2.001	0.679	3.23	0.90	0.56	10.95	2.98		0						0.92			0.643	**Non-Liq.**	Non-Liq.	**0.00**
57.91	21.75	0.79	3.64	110	2.005	0.678	4.01	0.93	0.55	10.33	3.06		0						0.92			0.642	**Non-Liq.**	Non-Liq.	**0.00**
58.07	25.26	0.77	3.05	110	2.009	0.676	3.31	0.89	0.56	12.41	2.95		0						0.92			0.641	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
58.23	28.61	0.75	2.63	110	2.013	0.675	2.83	0.86	0.57	14.43	2.85		0						0.92			0.640	**Non-Liq.**	Non-Liq.	**0.00**
58.40	24.43	0.68	2.77	110	2.016	0.673	3.02	0.89	0.56	11.94	2.94		0						0.92			0.638	**Non-Liq.**	Non-Liq.	**0.00**
58.56	36.91	0.77	2.09	110	2.020	0.672	2.21	0.81	0.59	19.49	2.68		0						0.92			0.637	**Non-Liq.**	Non-Liq.	**0.00**
58.73	23.45	0.91	3.86	110	2.024	0.671	4.23	0.92	0.55	11.13	3.05		0						0.91			0.636	**Non-Liq.**	Non-Liq.	**0.00**
58.89	18.11	1.14	6.28	110	2.028	0.669	7.07	1.00	0.52	7.93	3.30		0						0.91			0.635	**Non-Liq.**	Non-Liq.	**0.00**
59.06	65.03	1.57	2.41	110	2.032	0.668	2.48	0.76	0.61	36.29	2.50		1	35	2.78		1.00	100.8	0.91	0.175	0.160	0.634	**0.25**	99%	**1.50**
59.22	103.87	1.91	1.83	110	2.036	0.666	1.87	0.68	0.64	61.58	2.25		1	57	1.79		1.00	110.3	0.87	0.205	0.179	0.633	**0.28**	98%	**1.37**
59.38	65.03	1.50	2.30	110	2.040	0.665	2.38	0.75	0.61	36.27	2.49		1	35	2.72		1.00	98.5	0.91	0.169	0.154	0.632	**0.24**	99%	**1.53**
59.55	38.85	0.98	2.51	110	2.044	0.664	2.65	0.82	0.58	20.23	2.72		0						0.91			0.631	**Non-Liq.**	Non-Liq.	**0.00**
59.71	27.32	0.71	2.60	110	2.048	0.662	2.81	0.87	0.56	13.44	2.88		0						0.91			0.630	**Non-Liq.**	Non-Liq.	**0.00**
59.88	17.57	0.45	2.57	110	2.052	0.661	2.91	0.93	0.54	7.92	3.07		0						0.91			0.629	**Non-Liq.**	Non-Liq.	**0.00**
60.04	14.52	0.43	2.94	110	2.055	0.660	3.43	0.97	0.53	6.19	3.20		0						0.91			0.628	**Non-Liq.**	Non-Liq.	**0.00**
60.20	13.78	0.46	3.32	110	2.059	0.658	3.91	0.99	0.52	5.74	3.26		0						0.91			0.627	**Non-Liq.**	Non-Liq.	**0.00**
60.37	14.34	0.56	3.88	110	2.063	0.657	4.54	0.99	0.52	5.98	3.28		0						0.91			0.626	**Non-Liq.**	Non-Liq.	**0.00**
60.53	16.36	0.62	3.78	110	2.067	0.656	4.32	0.97	0.52	7.05	3.21		0						0.91			0.625	**Non-Liq.**	Non-Liq.	**0.00**
60.70	23.29	0.00	0.00	110	2.071	0.654	0.00	0.80	0.58	11.71	2.64		0		1.00				0.91			0.624	**Non-Liq.**	Non-Liq.	**0.00**
60.86	28.55	0.00	0.00	110	2.075	0.653	0.00	0.79	0.59	14.72	2.60		1	0	1.00		1.00	14.7	0.91	0.062	0.057	0.623	**0.09**	100%	**5.78**
61.02	34.53	0.00	0.00	110	2.079	0.652	0.00	0.78	0.59	18.16	2.56		1	6	1.00		1.00	18.2	0.91	0.065	0.059	0.622	**0.10**	100%	**5.00**

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-3 Plot: 3

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
2.3

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.17
Avg SF of Liquefiable Layers: 0.02

Probab	Total Induced Subsidence (inches)
Avg	
5%	
Max	
100%	0.3

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	61.63	0.93	1.50	110	0.009	1.000	1.50	0.62	1.70	99.01	2.03		1	76	1.34		1.00	133.0	1.00	0.299	0.299	0.485	Non-Liq.	Non-Liq.	0.00
0.33	79.05	1.53	1.94	110	0.018	1.000	1.94	0.62	1.70	126.99	2.03		1	87	1.35		1.00	171.2	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.49	78.13	1.93	2.46	110	0.027	1.000	2.46	0.64	1.70	125.50	2.12		1	86	1.48		1.00	186.4	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.66	68.31	1.84	2.70	110	0.036	1.000	2.70	0.66	1.70	109.70	2.18		1	81	1.63		1.00	178.6	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.82	54.87	1.52	2.77	110	0.045	1.000	2.77	0.68	1.70	88.09	2.26		1	72	1.82		1.00	159.9	1.00	0.460	0.460	0.485	Non-Liq.	Non-Liq.	0.00
0.98	47.14	1.21	2.56	110	0.054	1.000	2.57	0.69	1.70	75.66	2.28		1	65	1.88		1.00	142.1	1.00	0.347	0.347	0.485	Non-Liq.	Non-Liq.	0.00
1.15	39.47	1.02	2.57	110	0.063	0.999	2.58	0.71	1.70	63.32	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.484	Non-Liq.	Non-Liq.	0.00
1.31	39.47	1.02	2.57	110	0.072	0.999	2.58	0.71	1.70	63.30	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.484	Non-Liq.	Non-Liq.	0.00
1.48	31.24	0.82	2.63	110	0.081	0.999	2.64	0.73	1.70	50.07	2.41		1	48	2.37		1.00	118.7	1.00	0.236	0.236	0.484	Non-Liq.	Non-Liq.	0.00
1.64	24.89	0.66	2.65	110	0.090	0.998	2.66	0.75	1.70	39.85	2.49		1	39	2.72		1.00	108.3	1.00	0.198	0.198	0.484	Non-Liq.	Non-Liq.	0.00
1.80	19.86	0.33	1.65	110	0.099	0.998	1.66	0.74	1.70	31.75	2.44		1	29	2.48		1.00	78.7	1.00	0.125	0.125	0.484	Non-Liq.	Non-Liq.	0.00
1.97	20.55	0.42	2.06	110	0.108	0.998	2.07	0.75	1.70	32.85	2.49		1	31	2.70		1.00	88.6	1.00	0.145	0.145	0.484	Non-Liq.	Non-Liq.	0.00
2.13	20.42	0.47	2.29	110	0.117	0.997	2.30	0.76	1.70	32.62	2.52		1	30	2.85		1.00	93.0	1.00	0.155	0.155	0.483	Non-Liq.	Non-Liq.	0.00
2.30	19.65	0.48	2.45	110	0.126	0.997	2.46	0.77	1.70	31.37	2.55		1	29	3.02		1.00	94.8	1.00	0.159	0.159	0.483	Non-Liq.	Non-Liq.	0.00
2.46	18.16	0.52	2.85	110	0.135	0.996	2.87	0.79	1.70	28.96	2.62		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.62	15.20	0.57	3.77	110	0.144	0.996	3.81	0.83	1.70	24.19	2.76		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.79	13.95	0.57	4.06	110	0.153	0.996	4.10	0.85	1.70	22.17	2.81		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.95	11.38	0.56	4.92	110	0.162	0.995	4.99	0.89	1.70	18.02	2.93		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.12	12.18	0.59	4.85	110	0.171	0.995	4.92	0.88	1.70	19.30	2.90		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.28	12.71	0.60	4.68	110	0.180	0.994	4.75	0.87	1.70	20.13	2.88		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.44	11.57	0.62	5.32	110	0.189	0.994	5.41	0.89	1.70	18.29	2.95		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	11.06	0.51	4.57	110	0.198	0.994	4.65	0.88	1.70	17.45	2.92		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.77	20.97	0.48	2.28	110	0.208	0.993	2.30	0.76	1.70	33.36	2.51		1	31	2.81		1.00	93.8	1.00	0.157	0.157	0.482	Non-Liq.	Non-Liq.	0.00
3.94	29.22	0.55	1.88	110	0.217	0.993	1.90	0.71	1.70	46.60	2.34		1	45	2.09		1.00	97.6	1.00	0.166	0.166	0.481	Non-Liq.	Non-Liq.	0.00
4.10	37.87	0.68	1.79	110	0.226	0.993	1.80	0.68	1.70	60.49	2.24		1	56	1.78		1.00	107.4	1.00	0.195	0.195	0.481	Non-Liq.	Non-Liq.	0.00
4.27	45.79	0.82	1.80	110	0.235	0.992	1.81	0.66	1.70	73.20	2.18		1	64	1.62		1.00	118.8	1.00	0.236	0.236	0.481	Non-Liq.	Non-Liq.	0.00
4.43	52.76	0.97	1.84	110	0.244	0.992	1.85	0.65	1.70	84.38	2.14		1	70	1.54		1.00	129.9	1.00	0.284	0.284	0.481	Non-Liq.	Non-Liq.	0.00
4.59	58.36	1.00	1.72	110	0.253	0.991	1.73	0.64	1.70	93.37	2.09		1	74	1.44		1.00	134.3	1.00	0.305	0.305	0.481	Non-Liq.	Non-Liq.	0.00
4.76	62.10	1.17	1.89	110	0.262	0.991	1.90	0.64	1.70	99.36	2.10		1	77	1.46		1.00	144.7	1.00	0.362	0.362	0.480	Non-Liq.	Non-Liq.	0.00
4.92	64.35	1.31	2.03	110	0.271	0.991	2.04	0.64	1.70	102.96	2.11		1	78	1.48		1.00	152.2	1.00	0.408	0.408	0.480	Non-Liq.	Non-Liq.	0.00
5.09	68.21	1.45	2.13	110	0.280	0.990	2.14	0.64	1.70	109.15	2.11		1	80	1.47		1.00	160.8	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.25	72.78	1.57	2.16	110	0.289	0.990	2.17	0.64	1.70	116.48	2.10		1	83	1.45		1.00	168.6	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.41	77.81	1.63	2.10	110	0.298	0.989	2.11	0.63	1.70	124.55	2.07		1	86	1.40		1.00	174.2	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.58	85.70	1.64	1.91	110	0.307	0.989	1.92	0.61	1.70	137.21	2.01		1	90	1.31		1.00	179.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.74	100.29	1.65	1.65	110	0.316	0.989	1.65	0.58	1.70	160.64	1.91		1	96	1.20	1.00	1.00	193.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.91	115.78	1.63	1.41	110	0.325	0.988	1.41	0.55	1.70	185.51	1.82		1	100	1.12	1.05	1.00	209.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.07	127.60	1.61	1.26	110	0.334	0.988	1.27	0.54	1.70	204.49	1.76		1	100	1.08	1.10	1.00	221.2	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.23	135.25	1.64	1.21	110	0.343	0.988	1.22	0.53	1.70	216.77	1.73		1	100	1.06	1.15	1.00	230.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.40	142.84	1.69	1.18	110	0.352	0.987	1.19	0.52	1.70	228.95	1.71		1	100	1.04	1.20	1.00	239.3	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	144.87	1.70	1.18	110	0.361	0.987	1.18	0.52	1.70	232.20	1.70		1	100	1.04	1.25	1.00	241.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	154.10	1.74	1.13	110	0.370	0.986	1.13	0.51	1.70	247.01	1.67		1	100	1.02	1.30	1.00	251.8	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	159.66	1.81	1.14	110	0.379	0.986	1.14	0.51	1.68	253.36	1.66		1	100	1.01	1.35	1.00	257.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	165.12	1.78	1.08	110	0.388	0.986	1.08	0.50	1.65	257.24	1.64		1	100	1.00	1.40	1.00	257.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	169.35	1.74	1.02	110	0.397	0.985	1.03	0.50	1.63	260.70	1.62		1	100	1.00	1.45	1.00	261.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	177.82	1.68	0.94	110	0.406	0.985	0.95	0.50	1.61	270.69	1.58		1	100	1.00	1.50	1.00	271.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	173.84	1.63	0.94	110	0.415	0.985	0.94	0.50	1.60	261.72	1.59		1	100	1.00	1.55	1.00	262.7	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	173.84	1.63	0.94	110	0.424	0.984	0.94	0.50	1.58	258.90	1.59		1	100	1.00	1.60	1.00	259.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	174.47	1.63	0.94	110	0.433	0.984	0.94	0.50	1.56	257.11	1.60		1	100	1.00	1.65	1.00	258.1	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	179.36	1.92	1.07	110	0.442	0.984	1.07	0.50	1.55	261.61	1.63		1	100	1.00	1.70	1.00	262.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	186.51	2.06	1.10	110	0.451	0.983	1.11	0.50	1.53	269.32	1.64		1	100	1.00	1.75	1.00	270.3	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
8.37	187.62	1.80	0.96	110	0.460	0.983	0.96	0.50	1.52	268.24	1.59		1	100	1.00	1.80	1.00	269.2	1.00	Infin.	0.000	0.486	Non-Liq.	Non-Liq.	0.00
8.53	196.66	1.97	1.00	110	0.469	0.982	1.00	0.50	1.50	278.47	1.60		1	100	1.00	1.85	1.00	279.5	1.00	Infin.	0.000	0.491	Non-Liq.	Non-Liq.	0.00
8.69	203.40	2.06	1.01	110	0.478	0.982	1.01	0.50	1.49	285.29	1.59		1	100	1.00	1.90	1.00	286.4	1.00	Infin.	0.000	0.496	Non-Liq.	Non-Liq.	0.00
8.86	213.10	2.23	1.05	110	0.487	0.982	1.05	0.50	1.47	296.14	1.59		1	100	1.00	1.95	1.00	297.2	1.00	Infin.	0.000	0.501	Non-Liq.	Non-Liq.	0.00
9.02	211.76	2.34	1.10	110	0.496	0.981	1.11	0.50	1.46	291.57	1.62		1	100	1.00	2.00	1.00	292.7	1.00	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
9.19	215.66	2.34	1.09	110	0.505	0.981	1.09	0.50	1.45	294.28	1.61		1	100	1.00	2.05	1.00	295.4	1.00	Infin.	0.000	0.510	Non-Liq.	Non-Liq.	0.00
9.35	219.54	2.54	1.16	110	0.514	0.981	1.16	0.50	1.43	296.93	1.63		1	100	1.00	2.10	1.00	298.0	1.00	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
9.51	229.63	2.68	1.17	110	0.523	0.980	1.17	0.50	1.42	307.91	1.62		1	100	1.00	2.15	1.00	309.1	1.00	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
9.68	235.06	2.79	1.18	110	0.532	0.980	1.19	0.50	1.41	312.51	1.62		1	100	1.00	2.20	1.00	313.7	1.00	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
9.84	237.58	2.88	1.21	110	0.541	0.980	1.21	0.50	1.40	313.21	1.63		1	100	1.00	2.25	1.00	314.4	1.00	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
10.01	233.01	2.93	1.26	110	0.550	0.979	1.26	0.50	1.39	305.09	1.65		1	100	1.00	2.30	1.00	306.7	1.00	Infin.	0.000	0.533	Non-Liq.	Non Liq.	0.00
10.17	237.10	2.96	1.25	110	0.559	0.979	1.25	0.50	1.38	307.65	1.64		1	100	1.00	2.35	1.00	308.3	1.00	Infin.	0.000	0.537	Non-Liq.	Non-Liq.	0.00
10.33	243.13	3.06	1.26	110	0.568	0.979	1.26	0.50	1.36	312.86	1.64		1	100	1.00	2.40	1.00	313.1	1.00	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
10.50	243.55	3.17	1.30	110	0.577	0.978	1.30	0.50	1.36	311.64	1.65		1	100	1.01	2.45	1.00	314.7	1.00	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
10.66	243.58	3.23	1.32	110	0.586	0.978	1.33	0.51	1.35	309.70	1.66		1	100	1.01	2.50	1.00	314.6	1.00	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
10.83	251.39	3.25	1.29	110	0.595	0.978	1.30	0.50	1.33	316.43	1.65		1	100	1.00	2.55	1.00	318.3	1.00	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
10.99	254.32	3.43	1.35	110	0.604	0.977	1.35	0.51	1.33	318.41	1.66		1	100	1.01	2.60	1.00	323.3	1.00	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
11.15	250.44	3.64	1.45	110	0.614	0.977	1.46	0.52	1.32	312.74	1.69		1	100	1.03	2.65	1.00	324.1	1.00	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
11.32	235.91	3.45	1.46	110	0.623	0.977	1.47	0.52	1.32	293.22	1.71		1	100	1.05	2.70	1.00	307.7	1.00	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
11.48	231.44	3.34	1.44	110	0.632	0.976	1.45	0.52	1.31	285.58	1.71		1	100	1.05	2.75	1.00	300.1	1.00	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
11.65	243.81	3.39	1.39	110	0.641	0.976	1.40	0.51	1.29	297.60	1.69		1	100	1.03	2.80	1.00	308.0	1.00	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
11.81	248.76	3.18	1.28	110	0.650	0.975	1.28	0.51	1.28	300.06	1.66		1	100	1.01	2.85	1.00	303.9	1.00	Infin.	0.000	0.576	Non-Liq.	Non-Liq.	0.00
11.98	252.74	3.49	1.38	110	0.659	0.975	1.39	0.51	1.27	303.78	1.68		1	100	1.03	2.90	1.00	312.7	1.00	Infin.	0.000	0.580	Non-Liq.	Non-Liq.	0.00
12.14	246.32	3.71	1.51	110	0.668	0.975	1.51	0.52	1.27	295.51	1.72		1	100	1.05	2.95	1.00	311.7	1.00	Infin.	0.000	0.583	Non-Liq.	Non-Liq.	0.00
12.30	247.22	3.84	1.55	110	0.677	0.974	1.56	0.53	1.27	294.93	1.73		1	100	1.06	3.00	1.00	313.3	1.00	Infin.	0.000	0.587	Non-Liq.	Non-Liq.	0.00
12.47	246.81	3.92	1.59	110	0.686	0.974	1.59	0.53	1.26	292.77	1.74		1	100	1.07	3.05	1.00	313.0	1.00	Infin.	0.000	0.590	Non-Liq.	Non-Liq.	0.00
12.63	246.30	4.04	1.64	110	0.695	0.974	1.65	0.53	1.25	290.63	1.75		1	100	1.07	3.10	1.00	313.4	1.00	Infin.	0.000	0.593	Non-Liq.	Non-Liq.	0.00
12.80	244.00	4.09	1.67	110	0.704	0.973	1.68	0.54	1.25	286.30	1.76		1	100	1.08	3.15	1.00	310.9	1.00	Infin.	0.000	0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	243.85	4.05	1.66	110	0.713	0.973	1.67	0.54	1.24	284.13	1.76		1	100	1.08	3.20	1.00	308.4	1.00	Infin.	0.000	0.600	**Non-Liq.**	Non-Liq.	**0.00**
13.12	250.82	4.24	1.69	110	0.722	0.973	1.70	0.54	1.23	290.33	1.76		1	100	1.08	3.25	1.00	315.3	1.00	Infin.	0.000	0.603	**Non-Liq.**	Non-Liq.	**0.00**
13.29	254.86	4.23	1.66	110	0.731	0.972	1.66	0.53	1.22	292.76	1.76		1	100	1.08	3.30	1.00	316.1	1.00	Infin.	0.000	0.606	**Non-Liq.**	Non-Liq.	**0.00**
13.45	265.02	4.01	1.51	110	0.740	0.972	1.52	0.52	1.21	301.15	1.72		1	100	1.05	3.35	1.00	316.9	1.00	Infin.	0.000	0.609	**Non-Liq.**	Non-Liq.	**0.00**
13.62	296.24	3.54	1.19	110	0.749	0.972	1.20	0.50	1.19	331.97	1.61		1	100	1.00	3.40	1.00	333.2	1.00	Infin.	0.000	0.612	**Non-Liq.**	Non-Liq.	**0.00**
13.78	358.75	4.85	1.35	110	0.758	0.971	1.35	0.50	1.18	399.79	1.61		1	100	1.00	3.45	1.00	401.3	1.00	Infin.	0.000	0.615	**Non-Liq.**	Non-Liq.	**0.00**
13.94	401.73	4.27	1.06	110	0.767	0.971	1.07	0.50	1.17	445.14	1.49		1	100	1.00	3.45	1.00	446.8	1.00	Infin.	0.000	0.618	**Non-Liq.**	Non-Liq.	**0.00**
14.11	397.89	5.59	1.40	110	0.776	0.971	1.41	0.50	1.17	438.29	1.60		1	100	1.00	3.45	1.00	439.9	1.00	Infin.	0.000	0.621	**Non-Liq.**	Non-Liq.	**0.00**
14.27	408.46	4.70	1.15	110	0.785	0.970	1.15	0.50	1.16	447.36	1.52		1	100	1.00	3.45	1.00	449.0	1.00	Infin.	0.000	0.624	**Non-Liq.**	Non-Liq.	**0.00**
14.44	435.23	5.55	1.28	110	0.794	0.970	1.28	0.50	1.15	474.00	1.55		1	100	1.00	3.45	1.00	475.8	1.00	Infin.	0.000	0.627	**Non-Liq.**	Non-Liq.	**0.00**
14.60	389.69	5.04	1.29	110	0.803	0.970	1.30	0.50	1.15	421.92	1.58		1	100	1.00	3.45	1.00	423.5	1.00	Infin.	0.000	0.629	**Non-Liq.**	Non-Liq.	**0.00**
14.76	348.88	3.51	1.01	110	0.812	0.969	1.01	0.50	1.14	375.53	1.52		1	100	1.00	3.45	1.00	376.9	1.00	Infin.	0.000	0.632	**Non-Liq.**	Non-Liq.	**0.00**
14.93	347.64	3.21	0.92	110	0.821	0.969	0.93	0.50	1.14	372.12	1.49		1	100	1.00	3.45	1.00	373.5	1.00	Infin.	0.000	0.635	**Non-Liq.**	Non-Liq.	**0.00**
15.09	366.34	3.29	0.90	110	0.830	0.969	0.90	0.50	1.13	390.04	1.47		1	100	1.00	3.45	1.00	391.5	1.00	Infin.	0.000	0.637	**Non-Liq.**	Non-Liq.	**0.00**
15.26	355.46	3.76	1.06	110	0.839	0.968	1.06	0.50	1.12	376.38	1.53		1	100	1.00	3.45	1.00	377.8	1.00	Infin.	0.000	0.640	**Non-Liq.**	Non-Liq.	**0.00**
15.42	339.34	3.85	1.14	110	0.848	0.968	1.14	0.50	1.12	357.34	1.57		1	100	1.00	3.45	1.00	358.7	1.00	Infin.	0.000	0.643	**Non-Liq.**	Non-Liq.	**0.00**
15.58	338.34	4.27	1.26	110	0.857	0.967	1.27	0.50	1.11	354.40	1.61		1	100	1.00	3.45	1.00	355.7	1.00	Infin.	0.000	0.645	**Non-Liq.**	Non-Liq.	**0.00**
15.75	341.10	4.54	1.33	110	0.866	0.967	1.33	0.50	1.11	355.42	1.63		1	100	1.00	3.45	1.00	356.7	1.00	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	**0.00**
15.91	335.06	4.41	1.32	110	0.875	0.967	1.32	0.50	1.10	347.30	1.63		1	100	1.00	3.45	1.00	348.6	1.00	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	**0.00**
16.08	339.73	3.85	1.13	110	0.884	0.966	1.14	0.50	1.09	350.34	1.58		1	100	1.00	3.45	1.00	351.6	1.00	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
16.24	339.17	3.94	1.16	110	0.893	0.966	1.16	0.50	1.09	347.98	1.59		1	100	1.00	3.45	1.00	349.3	1.00	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
16.40	304.89	4.11	1.35	110	0.902	0.966	1.35	0.51	1.08	311.54	1.67		1	100	1.02	3.45	1.00	317.6	1.00	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
16.57	240.39	3.63	1.51	110	0.911	0.965	1.51	0.54	1.08	245.31	1.77		1	100	1.08	3.45	1.00	267.0	1.00	Infin.	0.000	0.660	**Non-Liq.**	Non-Liq.	**0.00**
16.73	200.85	3.97	1.97	110	0.920	0.965	1.98	0.58	1.08	204.91	1.91		1	100	1.20	3.45	1.00	246.3	1.00	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	**0.00**
16.90	186.05	3.36	1.80	110	0.929	0.965	1.81	0.58	1.08	188.60	1.90		1	100	1.19	3.45	1.00	225.2	1.00	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	**0.00**
17.06	145.35	4.55	3.13	110	0.938	0.964	3.15	0.65	1.08	147.65	2.15		1	93	1.56		1.00	230.8	1.00	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
17.22	137.21	1.70	1.24	110	0.947	0.964	1.25	0.57	1.06	137.16	1.87		1	90	1.16	1.00	1.00	160.3	1.00	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	**0.00**
17.39	195.13	2.67	1.37	110	0.956	0.963	1.37	0.55	1.06	193.97	1.80		1	100	1.11	1.05	1.00	215.5	1.00	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	**0.00**
17.55	375.11	3.14	0.84	110	0.965	0.963	0.84	0.50	1.05	370.21	1.46		1	100	1.00	1.10	1.00	371.6	1.00	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	**0.00**
17.72	366.40	3.61	0.98	110	0.974	0.963	0.99	0.50	1.04	359.90	1.52		1	100	1.00	1.15	1.00	361.2	1.00	Infin.	0.000	0.675	**Non-Liq.**	Non-Liq.	**0.00**
17.88	334.19	2.48	0.74	110	0.983	0.962	0.75	0.50	1.04	326.66	1.45		1	100	1.00	1.20	1.00	327.9	1.00	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
18.04	253.24	2.71	1.07	110	0.992	0.962	1.08	0.50	1.03	246.22	1.65		1	100	1.00	1.25	1.00	248.4	1.00	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
18.21	169.29	2.90	1.71	110	1.001	0.962	1.72	0.58	1.03	164.25	1.92		1	97	1.21	1.30	1.00	199.5	1.00	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
18.37	135.74	2.18	1.61	110	1.010	0.961	1.62	0.60	1.03	130.89	1.97		1	88	1.26	1.35	1.00	165.6	1.00	Infin.	0.000	0.683	**Non-Liq.**	Non-Liq.	**0.00**
18.54	258.73	2.13	0.82	110	1.020	0.961	0.83	0.50	1.02	248.14	1.56		1	100	1.00	1.40	1.00	249.1	1.00	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
18.70	348.17	2.48	0.71	110	1.029	0.960	0.71	0.50	1.01	332.78	1.43		1	100	1.00	1.45	1.00	334.0	1.00	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
18.86	379.90	3.61	0.95	110	1.038	0.960	0.95	0.50	1.01	361.60	1.51		1	100	1.00	1.50	1.00	363.0	1.00	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
19.03	419.21	3.90	0.93	110	1.047	0.960	0.93	0.50	1.01	397.39	1.47		1	100	1.00	1.55	1.00	398.9	1.00	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
19.19	396.96	4.58	1.15	110	1.056	0.959	1.16	0.50	1.00	374.62	1.57		1	100	1.00	1.60	1.00	376.0	1.00	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
19.36	387.05	4.64	1.20	110	1.065	0.959	1.20	0.50	1.00	363.69	1.59		1	100	1.00	1.65	1.00	365.0	1.00	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
19.52	368.81	4.55	1.23	110	1.074	0.958	1.24	0.50	0.99	345.03	1.61		1	100	1.00	1.70	1.00	346.3	1.00	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
19.69	354.61	3.09	0.87	110	1.083	0.958	0.87	0.50	0.99	330.32	1.50		1	100	1.00	1.75	1.00	331.6	1.00	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
19.85	342.37	2.52	0.74	110	1.092	0.957	0.74	0.50	0.98	317.55	1.46		1	100	1.00	1.80	1.00	318.7	1.00	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
20.01	342.04	2.21	0.65	110	1.101	0.957	0.65	0.50	0.98	315.93	1.42		1	100	1.00	1.85	1.00	317.1	1.00	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
20.18	348.47	2.02	0.58	110	1.107	0.957	0.58	0.50	0.98	321.00	1.38		1	100	1.00	1.90	1.00	322.2	1.00	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
20.34	358.46	2.21	0.62	110	1.111	0.956	0.62	0.50	0.98	329.65	1.39		1	100	1.00	1.95	1.00	330.9	1.00	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
20.51	366.69	2.31	0.63	110	1.115	0.956	0.63	0.50	0.97	336.65	1.39		1	100	1.00	2.00	1.00	337.9	1.00	Infin.	0.000	0.706	**Non-Liq.**	Non-Liq.	**0.00**
20.67	400.46	2.25	0.56	110	1.118	0.955	0.56	0.50	0.97	367.10	1.33		1	100	1.00	2.05	1.00	368.5	1.00	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
20.83	398.65	2.07	0.52	110	1.122	0.955	0.52	0.50	0.97	364.80	1.31		1	100	1.00	2.10	1.00	366.2	1.00	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
21.00	411.19	1.95	0.47	110	1.126	0.954	0.48	0.50	0.97	375.65	1.27		1	100	1.00	2.15	1.00	377.1	1.00	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
21.16	402.69	3.64	0.90	110	1.130	0.954	0.91	0.50	0.97	367.22	1.48		1	100	1.00	2.20	1.00	368.6	1.00	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
21.33	432.94	4.66	1.08	110	1.134	0.954	1.08	0.50	0.97	394.20	1.53		1	100	1.00	2.25	1.00	395.7	1.00	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
21.49	469.69	5.29	1.13	110	1.138	0.953	1.13	0.50	0.96	427.01	1.52		1	100	1.00	2.30	1.00	428.6	1.00	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
21.65	374.94	3.56	0.95	110	1.142	0.953	0.95	0.50	0.96	340.08	1.52		1	100	1.00	2.35	1.00	341.3	1.00	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
21.82	335.23	2.37	0.71	110	1.146	0.952	0.71	0.50	0.96	303.43	1.46		1	100	1.00	2.40	1.00	304.6	1.00	Infin.	0.000	0.718	**Non-Liq.**	Non-Liq.	**0.00**
21.98	327.25	1.94	0.59	110	1.150	0.952	0.59	0.50	0.96	295.67	1.41		1	100	1.00	2.45	1.00	296.8	1.00	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
22.15	329.21	1.70	0.51	110	1.154	0.951	0.52	0.50	0.96	296.94	1.37		1	100	1.00	2.50	1.00	298.1	1.00	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
22.31	336.57	1.69	0.50	110	1.158	0.951	0.50	0.50	0.96	303.09	1.35		1	100	1.00	2.55	1.00	304.2	1.00	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
22.47	342.42	1.62	0.47	110	1.161	0.950	0.48	0.50	0.95	307.85	1.33		1	100	1.00	2.60	1.00	309.0	1.00	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
22.64	357.21	1.50	0.42	110	1.165	0.950	0.42	0.50	0.95	320.65	1.28		1	100	1.00	2.65	1.00	321.9	1.00	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
22.80	365.13	1.60	0.44	110	1.169	0.949	0.44	0.50	0.95	327.23	1.29		1	100	1.00	2.70	1.00	328.5	1.00	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
22.97	275.06	1.75	0.64	110	1.173	0.949	0.64	0.50	0.95	245.84	1.49		1	100	1.00	2.75	1.00	246.8	1.00	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
23.13	359.31	1.67	0.47	110	1.177	0.948	0.47	0.50	0.95	320.93	1.31		1	100	1.00	2.80	1.00	322.1	1.00	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
23.29	360.37	1.63	0.45	110	1.181	0.948	0.45	0.50	0.95	321.34	1.30		1	100	1.00	2.85	1.00	322.5	1.00	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
23.46	371.26	1.97	0.53	110	1.185	0.947	0.53	0.50	0.94	330.53	1.34		1	100	1.00	2.90	1.00	331.8	1.00	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
23.62	356.90	1.94	0.54	110	1.189	0.947	0.54	0.50	0.94	317.18	1.36		1	100	1.00	2.95	1.00	318.4	1.00	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
23.79	361.74	2.11	0.58	110	1.193	0.946	0.58	0.50	0.94	320.97	1.38		1	100	1.00	3.00	1.00	322.2	1.00	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
23.95	364.42	2.28	0.63	110	1.197	0.946	0.63	0.50	0.94	322.82	1.40		1	100	1.00	3.05	1.00	324.0	1.00	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
24.11	368.01	2.35	0.64	110	1.200	0.945	0.64	0.50	0.94	325.48	1.40		1	100	1.00	3.10	1.00	326.7	1.00	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
24.28	376.81	2.30	0.61	110	1.204	0.945	0.61	0.50	0.94	332.74	1.38		1	100	1.00	3.15	1.00	334.0	1.00	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
24.44	395.44	2.76	0.70	110	1.208	0.944	0.70	0.50	0.94	348.68	1.41		1	100	1.00	3.20	1.00	350.0	1.00	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
24.61	439.09	2.71	0.62	110	1.212	0.943	0.62	0.50	0.93	386.66	1.34		1	100	1.00	3.25	1.00	388.1	1.00	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
24.77	490.41	3.14	0.64	110	1.216	0.943	0.64	0.50	0.93	431.28	1.32		1	100	1.00	3.30	1.00	432.9	1.00	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
24.93	529.94	3.64	0.69	110	1.220	0.942	0.69	0.50	0.93	465.38	1.33		1	100	1.00	3.35	1.00	467.1	1.00	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**
25.10	499.75	2.73	0.55	110	1.224	0.942	0.55	0.50	0.93	438.10	1.27		1	100	1.00	3.40	1.00	439.7	1.00	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
25.26	478.20	2.89	0.60	110	1.228	0.941	0.61	0.50	0.93	418.49	1.31		1	100	1.00	3.45	1.00	420.1	1.00	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
25.43	506.69	3.13	0.62	110	1.232	0.941	0.62	0.50	0.93	442.78	1.30		1	100	1.00	3.50	1.00	444.4	1.00	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
25.59	475.10	3.98	0.84	110	1.236	0.940	0.84	0.50	0.93	414.45	1.43		1	100	1.00	3.55	1.00	416.0	1.00	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
25.75	412.87	3.59	0.87	110	1.240	0.939	0.87	0.50	0.92	359.45	1.48		1	100	1.00	3.60	1.00	360.8	1.00	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
25.92	387.95	2.71	0.70	110	1.243	0.939	0.70	0.50	0.92	337.15	1.42		1	100	1.00	3.65	1.00	338.4	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.08	382.12	2.49	0.65	110	1.247	0.938	0.65	0.50	0.92	331.55	1.40		1	100	1.00	3.65	1.00	332.8	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.25	377.33	2.13	0.56	110	1.251	0.938	0.57	0.50	0.92	326.86	1.36		1	100	1.00	3.65	1.00	328.1	1.00	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
26.41	378.71	2.10	0.56	110	1.255	0.937	0.56	0.50	0.92	327.55	1.36		1	100	1.00	3.65	1.00	328.8	1.00	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
26.57	368.97	2.20	0.60	110	1.259	0.936	0.60	0.50	0.92	318.60	1.39		1	100	1.00	3.65	1.00	319.8	1.00	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
26.74	347.99	2.18	0.63	110	1.263	0.936	0.63	0.50	0.92	299.95	1.42		1	100	1.00	3.65	1.00	301.1	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
26.90	340.27	1.97	0.58	110	1.267	0.935	0.58	0.50	0.91	292.82	1.41		1	100	1.00	3.65	1.00	293.9	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
27.07	342.93	1.87	0.55	110	1.271	0.934	0.55	0.50	0.91	294.66	1.39		1	100	1.00	3.65	1.00	295.8	1.00	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
27.23	348.32	2.14	0.62	110	1.275	0.934	0.62	0.50	0.91	298.85	1.42		1	100	1.00	3.65	1.00	300.0	1.00	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
27.40	349.36	2.35	0.67	110	1.279	0.933	0.68	0.50	0.91	299.28	1.45		1	100	1.00	3.65	1.00	300.4	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.56	359.08	2.55	0.71	110	1.282	0.932	0.71	0.50	0.91	307.17	1.46		1	100	1.00	3.65	1.00	308.3	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.72	348.61	2.28	0.65	110	1.286	0.932	0.66	0.50	0.91	297.72	1.44		1	100	1.00	3.65	1.00	298.8	1.00	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
27.89	328.38	2.28	0.69	110	1.290	0.931	0.70	0.50	0.91	279.95	1.47		1	100	1.00	3.65	1.00	281.0	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	318.21	2.37	0.75	110	1.294	0.930	0.75	0.50	0.90	270.83	1.51		1	100	1.00	3.65	1.00	271.8	1.00	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
28.22	301.08	2.13	0.71	110	1.298	0.929	0.71	0.50	0.90	255.81	1.51		1	100	1.00	3.65	1.00	256.8	1.00	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
28.38	284.36	2.03	0.71	110	1.302	0.929	0.72	0.50	0.90	241.17	1.53		1	100	1.00	3.65	1.00	242.1	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.54	233.79	1.73	0.74	110	1.306	0.928	0.74	0.50	0.90	197.79	1.60		1	100	1.00	3.65	1.00	198.5	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.71	198.59	1.43	0.72	110	1.310	0.927	0.72	0.50	0.90	167.50	1.65		1	98	1.00	3.65	1.00	168.5	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
28.87	159.05	1.23	0.77	110	1.314	0.926	0.78	0.53	0.89	132.88	1.75		1	89	1.07	3.65	1.00	142.6	1.00	0.349	0.349	0.759	0.46	93%	1.00
29.04	114.83	1.31	1.14	110	1.318	0.926	1.15	0.60	0.88	94.08	1.97		1	74	1.26	3.65	1.00	119.2	1.00	0.238	0.238	0.760	0.31	98%	1.27
29.20	70.90	1.32	1.86	110	1.322	0.925	1.90	0.69	0.86	56.38	2.28		1	53	1.89		1.00	106.3	1.00	0.192	0.192	0.760	0.25	99%	1.44
29.36	37.97	1.25	3.30	110	1.325	0.924	3.42	0.81	0.83	28.87	2.67		0						1.00			0.761	Non-Liq.	Non-Liq.	0.00
29.53	27.93	1.04	3.72	110	1.329	0.923	3.91	0.85	0.82	20.70	2.81		0						1.00			0.761	Non-Liq.	Non-Liq.	0.00
29.69	18.87	0.73	3.87	110	1.333	0.923	4.16	0.90	0.81	13.46	2.98		0						1.00			0.762	Non-Liq.	Non-Liq.	0.00
29.86	13.89	0.49	3.53	110	1.337	0.922	3.90	0.93	0.80	9.54	3.08		0						1.00			0.762	Non-Liq.	Non-Liq.	0.00
30.02	9.76	0.66	6.75	110	1.341	0.921	7.83	1.00	0.79	6.28	3.41		0						1.00			0.763	Non-Liq.	Non-Liq.	0.00
30.18	57.63	0.77	1.33	110	1.345	0.920	1.36	0.69	0.85	45.11	2.26		1	44	1.84		1.00	83.0	1.00	0.133	0.133	0.763	0.17	100%	1.80
30.35	117.53	0.99	0.84	110	1.349	0.919	0.85	0.57	0.87	95.56	1.88		1	75	1.17	0.45	1.26	141.6	1.00	0.344	0.344	0.763	0.45	93%	1.01
30.51	114.11	1.23	1.08	110	1.353	0.918	1.09	0.60	0.86	92.04	1.96		1	73	1.25	0.50	1.26	146.0	1.00	0.369	0.369	0.764	0.48	92%	0.92
30.68	61.97	1.48	2.39	110	1.357	0.918	2.44	0.73	0.83	47.78	2.41		1	46	2.34		1.00	111.8	1.00	0.210	0.210	0.764	0.27	99%	1.36
30.84	26.16	1.22	4.64	110	1.361	0.917	4.90	0.88	0.80	18.78	2.91		0						1.00			0.764	Non-Liq.	Non-Liq.	0.00
31.00	14.26	0.26	1.81	110	1.364	0.916	2.00	0.88	0.80	9.74	2.91		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.17	13.19	0.23	1.73	110	1.368	0.915	1.93	0.89	0.80	8.89	2.94		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.33	12.49	0.36	2.88	110	1.372	0.914	3.24	0.93	0.78	8.24	3.08		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.50	17.25	0.69	3.98	110	1.376	0.913	4.33	0.92	0.79	11.79	3.03		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.66	38.57	0.92	2.37	110	1.380	0.912	2.46	0.78	0.81	28.56	2.58		1	25	3.20		1.00	91.5	1.00	0.151	0.151	0.766	0.20	100%	1.66
31.82	35.69	1.30	3.63	110	1.384	0.911	3.78	0.83	0.80	25.97	2.73		0						1.00			0.766	Non-Liq.	Non-Liq.	0.00
31.99	58.47	1.43	2.44	110	1.388	0.910	2.50	0.74	0.82	44.14	2.44		1	43	2.48		1.00	109.5	1.00	0.202	0.202	0.766	0.26	99%	1.39
32.15	153.79	1.76	1.14	110	1.392	0.909	1.15	0.57	0.85	123.10	1.88		1	85	1.17	1.00	1.00	145.0	1.00	0.363	0.363	0.766	0.47	92%	1.00
32.32	250.44	2.28	0.91	110	1.396	0.908	0.91	0.50	0.87	204.70	1.65		1	100	1.01	1.05	1.00	206.8	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.48	286.97	2.91	1.02	110	1.400	0.907	1.02	0.50	0.87	234.50	1.65		1	100	1.00	1.10	1.00	236.0	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.64	309.86	3.53	1.14	110	1.403	0.906	1.14	0.51	0.87	252.58	1.67		1	100	1.01	1.15	1.00	257.2	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.81	322.36	3.86	1.20	110	1.407	0.905	1.20	0.51	0.86	262.31	1.67		1	100	1.02	1.20	1.00	268.2	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.97	328.44	4.15	1.26	110	1.411	0.904	1.27	0.51	0.86	266.57	1.69		1	100	1.03	1.20	1.00	275.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.14	330.70	3.81	1.15	110	1.415	0.903	1.16	0.50	0.86	268.83	1.65		1	100	1.00	1.20	1.00	271.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.30	324.34	3.31	1.02	110	1.419	0.902	1.02	0.50	0.86	263.54	1.62		1	100	1.00	1.20	1.00	264.5	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.46	306.20	3.39	1.11	110	1.423	0.901	1.11	0.51	0.86	247.92	1.66		1	100	1.01	1.20	1.00	251.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.63	287.68	3.87	1.35	110	1.427	0.900	1.35	0.53	0.85	230.75	1.75		1	100	1.07	1.20	1.00	247.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.79	277.70	4.63	1.67	110	1.431	0.899	1.68	0.56	0.85	220.68	1.83		1	100	1.13	1.20	1.00	250.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.96	267.02	5.00	1.87	110	1.435	0.898	1.88	0.57	0.84	210.82	1.88		1	100	1.17	1.20	1.00	248.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.12	262.99	4.90	1.86	110	1.439	0.897	1.87	0.57	0.84	207.23	1.89		1	100	1.18	1.20	1.00	244.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.28	254.98	4.12	1.61	110	1.443	0.896	1.62	0.56	0.84	201.34	1.85		1	100	1.14	1.20	1.00	230.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.45	255.22	3.88	1.52	110	1.446	0.895	1.53	0.56	0.84	201.61	1.82		1	100	1.13	1.20	1.00	227.7	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.61	235.40	3.66	1.56	110	1.450	0.894	1.56	0.57	0.84	185.03	1.86		1	100	1.15	1.20	1.00	213.7	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.78	213.23	3.63	1.70	110	1.454	0.893	1.72	0.58	0.83	166.27	1.92		1	98	1.21	1.20	1.00	201.2	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.94	232.64	3.28	1.41	110	1.458	0.892	1.42	0.56	0.84	182.78	1.83		1	100	1.13	1.20	1.00	206.9	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.10	266.61	3.08	1.15	110	1.462	0.890	1.16	0.52	0.84	211.53	1.72		1	100	1.05	1.20	1.00	223.3	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.27	275.08	2.85	1.04	110	1.466	0.889	1.04	0.51	0.85	218.93	1.68		1	100	1.02	1.20	1.00	224.4	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.43	276.58	3.07	1.11	110	1.470	0.888	1.12	0.52	0.84	219.36	1.70		1	100	1.04	1.20	1.00	226.1	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.60	260.34	3.57	1.37	110	1.474	0.887	1.38	0.54	0.83	204.30	1.79		1	100	1.10	1.20	1.00	225.0	0.98	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.76	280.13	5.74	2.05	110	1.478	0.886	2.06	0.58	0.82	216.97	1.91		1	100	1.20	1.20	1.00	260.4	0.98	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.93	323.56	6.58	2.03	110	1.482	0.885	2.04	0.57	0.83	251.42	1.87		1	100	1.16	1.20	1.00	292.6	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.09	191.60	6.05	3.16	110	1.485	0.883	3.18	0.66	0.80	143.75	2.17		1	92	1.59		1.00	228.1	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.25	264.99	3.90	1.47	110	1.489	0.882	1.48	0.55	0.83	206.32	1.81		1	100	1.11	1.00	1.00	230.4	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.42	319.83	3.03	0.95	110	1.493	0.881	0.95	0.50	0.84	253.26	1.60		1	100	1.00	1.05	1.00	254.2	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.58	332.93	3.09	0.93	110	1.497	0.880	0.93	0.50	0.84	263.34	1.59		1	100	1.00	1.10	1.00	264.3	0.98	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
36.75	372.73	3.69	0.99	110	1.501	0.878	0.99	0.50	0.84	294.57	1.58		1	100	1.00	1.15	1.00	295.7	0.98	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
36.91	404.69	4.23	1.05	110	1.505	0.877	1.05	0.50	0.84	319.52	1.57		1	100	1.00	1.20	1.00	320.7	0.97	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
37.07	405.53	3.77	0.93	110	1.509	0.876	0.93	0.50	0.84	319.76	1.53		1	100	1.00	1.25	1.00	321.0	0.97	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
37.24	398.38	4.78	1.20	110	1.513	0.875	1.20	0.50	0.84	313.70	1.62		1	100	1.00	1.30	1.00	314.9	0.97	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
37.40	378.24	5.25	1.39	110	1.517	0.873	1.39	0.52	0.83	295.75	1.69		1	100	1.03	1.35	1.00	306.3	0.97	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
37.57	281.40	4.91	1.75	110	1.521	0.872	1.75	0.56	0.81	215.59	1.85		1	100	1.15	1.40	1.00	248.4	0.97	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
37.73	240.64	3.31	1.37	110	1.525	0.871	1.38	0.55	0.82	184.66	1.82		1	100	1.12	1.45	1.00	207.4	0.97	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
37.89	240.96	2.46	1.02	110	1.528	0.869	1.03	0.52	0.82	186.65	1.72		1	100	1.05	1.50	1.00	196.8	0.97	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
38.06	258.07	2.27	0.88	110	1.532	0.868	0.88	0.50	0.83	201.28	1.65		1	100	1.00	1.55	1.00	202.6	0.96	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
38.22	239.78	2.30	0.96	110	1.536	0.867	0.97	0.52	0.82	185.59	1.70		1	100	1.04	1.60	1.00	193.5	0.96	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
38.39	218.69	1.98	0.90	110	1.540	0.865	0.91	0.52	0.82	168.72	1.71		1	99	1.05	1.65	1.00	177.3	0.96	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
38.55	264.47	1.94	0.73	110	1.544	0.864	0.74	0.50	0.83	205.71	1.59		1	100	1.00	1.70	1.00	206.5	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.71	297.09	1.85	0.62	110	1.548	0.863	0.63	0.50	0.83	230.94	1.50		1	100	1.00	1.75	1.00	231.8	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.88	312.92	1.80	0.57	110	1.552	0.861	0.58	0.50	0.83	243.00	1.46		1	100	1.00	1.80	1.00	243.9	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.04	327.85	2.06	0.63	110	1.556	0.860	0.63	0.50	0.82	254.33	1.47		1	100	1.00	1.85	1.00	255.3	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.21	337.25	2.27	0.67	110	1.560	0.859	0.67	0.50	0.82	261.32	1.49		1	100	1.00	1.90	1.00	262.3	0.96	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
39.37	350.08	2.32	0.66	110	1.564	0.857	0.67	0.50	0.82	270.97	1.47		1	100	1.00	1.95	1.00	272.0	0.95	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
39.53	354.11	2.14	0.60	110	1.567	0.856	0.61	0.50	0.82	273.76	1.44		1	100	1.00	2.00	1.00	274.8	0.95	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
39.70	359.55	2.27	0.63	110	1.571	0.854	0.63	0.50	0.82	277.64	1.45		1	100	1.00	2.05	1.00	278.7	0.95	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
39.86	355.78	2.53	0.71	110	1.575	0.853	0.72	0.50	0.82	274.37	1.49		1	100	1.00	2.10	1.00	275.4	0.95	Infin.	0.000	0.755	Non-Liq.	Non-Liq.	0.00
40.03	334.77	2.75	0.82	110	1.579	0.852	0.83	0.50	0.82	257.77	1.55		1	100	1.00	2.15	1.00	258.7	0.95	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
40.19	342.17	2.95	0.86	110	1.583	0.850	0.86	0.50	0.82	263.17	1.56		1	100	1.00	2.20	1.00	264.2	0.95	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
40.35	344.05	2.87	0.83	110	1.587	0.849	0.84	0.50	0.82	264.29	1.55		1	100	1.00	2.25	1.00	265.3	0.95	Infin.	0.000	0.753	Non-Liq.	Non-Liq.	0.00
40.52	335.17	2.88	0.86	110	1.591	0.847	0.86	0.50	0.82	257.12	1.57		1	100	1.00	2.30	1.00	258.1	0.95	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.68	320.89	2.72	0.85	110	1.595	0.846	0.85	0.50	0.81	245.81	1.58		1	100	1.00	2.35	1.00	246.7	0.94	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.85	339.05	1.89	0.56	110	1.599	0.844	0.56	0.50	0.81	259.47	1.43		1	100	1.00	2.40	1.00	260.4	0.94	Infin.	0.000	0.751	Non-Liq.	Non-Liq.	0.00
41.01	382.25	2.92	0.76	110	1.603	0.843	0.77	0.50	0.81	292.33	1.49		1	100	1.00	2.45	1.00	293.4	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.17	403.21	3.03	0.75	110	1.607	0.841	0.76	0.50	0.81	308.04	1.47		1	100	1.00	2.50	1.00	309.2	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.34	379.57	3.67	0.97	110	1.610	0.840	0.97	0.50	0.81	289.56	1.57		1	100	1.00	2.55	1.00	290.6	0.94	Infin.	0.000	0.749	Non-Liq.	Non-Liq.	0.00
41.50	396.71	3.17	0.80	110	1.614	0.838	0.80	0.50	0.81	302.32	1.50		1	100	1.00	2.60	1.00	303.4	0.94	Infin.	0.000	0.748	Non-Liq.	Non-Liq.	0.00
41.67	391.23	3.14	0.80	110	1.618	0.837	0.81	0.50	0.81	297.76	1.50		1	100	1.00	2.65	1.00	298.9	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.83	390.72	3.06	0.78	110	1.622	0.835	0.79	0.50	0.81	297.01	1.50		1	100	1.00	2.70	1.00	298.1	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.99	382.61	2.95	0.77	110	1.626	0.834	0.78	0.50	0.81	290.47	1.50		1	100	1.00	2.75	1.00	291.6	0.93	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
42.16	380.43	2.84	0.75	110	1.630	0.832	0.75	0.50	0.81	288.46	1.49		1	100	1.00	2.80	1.00	289.5	0.93	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
42.32	381.27	2.80	0.73	110	1.634	0.831	0.74	0.50	0.80	288.75	1.48		1	100	1.00	2.85	1.00	289.8	0.93	Infin.	0.000	0.744	Non-Liq.	Non-Liq.	0.00
42.49	383.78	2.53	0.66	110	1.638	0.829	0.66	0.50	0.80	290.31	1.45		1	100	1.00	2.90	1.00	291.4	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.65	395.93	2.51	0.63	110	1.642	0.827	0.64	0.50	0.80	299.18	1.43		1	100	1.00	2.95	1.00	300.3	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.81	401.54	2.69	0.67	110	1.646	0.826	0.67	0.50	0.80	303.07	1.44		1	100	1.00	3.00	1.00	304.2	0.93	Infin.	0.000	0.742	Non-Liq.	Non-Liq.	0.00
42.98	408.28	2.41	0.59	110	1.649	0.824	0.59	0.50	0.80	307.81	1.40		1	100	1.00	3.05	1.00	309.0	0.93	Infin.	0.000	0.741	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	410.18	2.68	0.65	110	1.653	0.823	0.66	0.50	0.80	308.88	1.43		1	100	1.00	3.10	1.00	310.0	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
43.31	413.71	2.73	0.66	110	1.657	0.821	0.66	0.50	0.80	311.18	1.43		1	100	1.00	3.15	1.00	312.3	0.93	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
43.47	420.65	2.58	0.61	110	1.661	0.820	0.62	0.50	0.80	316.05	1.40		1	100	1.00	3.20	1.00	317.2	0.92	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
43.64	425.34	3.15	0.74	110	1.665	0.818	0.74	0.50	0.80	319.21	1.46		1	100	1.00	3.25	1.00	320.4	0.92	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
43.80	433.25	2.87	0.66	110	1.669	0.816	0.67	0.50	0.80	324.78	1.42		1	100	1.00	3.30	1.00	326.0	0.92	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
43.96	445.49	2.84	0.64	110	1.673	0.815	0.64	0.50	0.80	333.60	1.40		1	100	1.00	3.35	1.00	334.8	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.13	458.14	2.05	0.45	110	1.677	0.813	0.45	0.50	0.79	342.71	1.28		1	100	1.00	3.40	1.00	344.0	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.29	407.19	2.23	0.55	110	1.681	0.811	0.55	0.50	0.79	304.10	1.38		1	100	1.00	3.45	1.00	305.2	0.92	Infin.	0.000	0.734	**Non-Liq.**	Non-Liq.	**0.00**
44.46	318.78	4.85	1.52	110	1.685	0.810	1.53	0.54	0.78	232.72	1.79		1	100	1.10	3.50	1.00	256.2	0.92	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
44.62	311.01	4.70	1.51	110	1.689	0.808	1.52	0.55	0.77	226.57	1.79		1	100	1.10	3.55	1.00	250.2	0.92	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
44.78	390.54	5.84	1.50	110	1.692	0.807	1.50	0.53	0.78	287.14	1.72		1	100	1.05	3.60	1.00	303.9	0.92	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
44.95	419.57	5.18	1.23	110	1.696	0.805	1.24	0.50	0.79	311.92	1.64		1	100	1.00	3.65	1.00	313.1	0.91	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
45.11	377.69	3.17	0.84	110	1.700	0.803	0.84	0.50	0.79	280.34	1.54		1	100	1.00	3.70	1.00	281.4	0.91	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
45.28	407.75	4.13	1.01	110	1.704	0.802	1.02	0.50	0.79	302.40	1.58		1	100	1.00	3.75	1.00	303.5	0.91	Infin.	0.000	0.728	**Non-Liq.**	Non-Liq.	**0.00**
45.44	392.74	3.86	0.98	110	1.708	0.800	0.99	0.50	0.79	290.89	1.58		1	100	1.00	3.80	1.00	292.0	0.91	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
45.60	382.50	3.90	1.02	110	1.712	0.798	1.02	0.50	0.79	282.94	1.60		1	100	1.00	3.85	1.00	284.0	0.91	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
45.77	373.19	3.69	0.99	110	1.716	0.797	0.99	0.50	0.79	275.71	1.59		1	100	1.00	3.90	1.00	276.7	0.91	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
45.93	367.93	3.54	0.96	110	1.720	0.795	0.97	0.50	0.78	271.49	1.59		1	100	1.00	3.90	1.00	272.5	0.91	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
46.10	369.72	3.36	0.91	110	1.724	0.793	0.91	0.50	0.78	272.51	1.57		1	100	1.00	3.90	1.00	273.5	0.91	Infin.	0.000	0.723	**Non-Liq.**	Non-Liq.	**0.00**
46.26	381.32	3.27	0.86	110	1.728	0.792	0.86	0.50	0.78	280.78	1.54		1	100	1.00	3.90	1.00	281.8	0.91	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
46.42	386.91	3.19	0.82	110	1.731	0.790	0.83	0.50	0.78	284.59	1.53		1	100	1.00	3.90	1.00	285.7	0.91	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
46.59	380.97	3.15	0.83	110	1.735	0.788	0.83	0.50	0.78	279.88	1.53		1	100	1.00	3.90	1.00	280.9	0.90	Infin.	0.000	0.720	**Non-Liq.**	Non-Liq.	**0.00**
46.75	341.92	3.27	0.96	110	1.739	0.787	0.96	0.50	0.78	250.78	1.61		1	100	1.00	3.90	1.00	251.7	0.90	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
46.92	315.47	3.20	1.01	110	1.743	0.785	1.02	0.50	0.78	230.52	1.65		1	100	1.01	3.90	1.00	232.8	0.90	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
47.08	363.49	3.46	0.95	110	1.747	0.783	0.96	0.50	0.78	266.07	1.59		1	100	1.00	3.90	1.00	267.1	0.90	Infin.	0.000	0.716	**Non-Liq.**	Non-Liq.	**0.00**
47.24	379.91	4.34	1.14	110	1.751	0.782	1.15	0.50	0.78	277.81	1.64		1	100	1.00	3.90	1.00	277.9	0.90	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
47.41	382.41	5.30	1.38	110	1.755	0.780	1.39	0.52	0.77	276.50	1.71		1	100	1.04	3.90	1.00	289.5	0.90	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
47.57	369.25	5.87	1.59	110	1.759	0.778	1.60	0.54	0.76	264.21	1.77		1	100	1.08	3.90	1.00	287.4	0.90	Infin.	0.000	0.713	**Non-Liq.**	Non-Liq.	**0.00**
47.74	359.68	5.73	1.59	110	1.763	0.777	1.60	0.54	0.76	256.70	1.78		1	100	1.09	3.90	1.00	280.7	0.90	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
47.90	383.68	4.97	1.29	110	1.767	0.775	1.30	0.51	0.77	277.49	1.68		1	100	1.03	3.90	1.00	285.9	0.90	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
48.06	403.15	4.67	1.16	110	1.770	0.773	1.16	0.50	0.77	293.27	1.63		1	100	1.00	3.90	1.00	294.4	0.90	Infin.	0.000	0.710	**Non-Liq.**	Non-Liq.	**0.00**
48.23	405.14	3.95	0.97	110	1.774	0.772	0.98	0.50	0.77	294.40	1.57		1	100	1.00	3.90	1.00	295.5	0.89	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
48.39	369.68	3.01	0.81	110	1.778	0.770	0.82	0.50	0.77	268.22	1.54		1	100	1.00	3.90	1.00	269.2	0.89	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
48.56	336.91	2.26	0.67	110	1.782	0.768	0.67	0.50	0.77	244.06	1.51		1	100	1.00	3.90	1.00	245.0	0.89	Infin.	0.000	0.707	**Non-Liq.**	Non-Liq.	**0.00**
48.72	299.19	1.63	0.55	110	1.786	0.767	0.55	0.50	0.77	216.35	1.49		1	100	1.00	3.90	1.00	217.2	0.89	Infin.	0.000	0.705	**Non-Liq.**	Non-Liq.	**0.00**
48.88	236.26	1.38	0.58	110	1.790	0.765	0.59	0.50	0.77	170.38	1.58		1	99	1.00	3.90	1.00	171.0	0.89	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
49.05	139.68	1.94	1.39	110	1.794	0.763	1.41	0.62	0.72	94.13	2.03		1	74	1.34		1.00	125.9	0.89	0.265	0.236	0.703	**0.34**	97%	**1.18**
49.21	65.30	2.32	3.55	110	1.798	0.762	3.65	0.78	0.66	39.62	2.58		1	38	3.23		1.00	128.1	0.94	0.276	0.260	0.702	**0.37**	96%	**1.15**
49.38	49.82	2.01	4.03	110	1.802	0.760	4.18	0.82	0.64	29.26	2.72		0						0.94			0.701	**Non-Liq.**	Non-Liq.	**0.00**
49.54	44.18	1.88	4.26	110	1.806	0.758	4.44	0.84	0.64	25.53	2.78		0						0.94			0.700	**Non-Liq.**	Non-Liq.	**0.00**
49.70	52.54	2.11	4.01	110	1.810	0.757	4.15	0.82	0.64	30.90	2.70		0						0.94			0.699	**Non-Liq.**	Non-Liq.	**0.00**
49.87	96.95	2.31	2.38	110	1.813	0.755	2.42	0.71	0.68	61.49	2.32		1	57	2.03		1.00	124.7	0.91	0.260	0.237	0.698	**0.34**	97%	**1.19**
50.03	125.29	2.02	1.61	110	1.817	0.753	1.64	0.64	0.71	82.44	2.11		1	69	1.48		1.00	122.2	0.91	0.250	0.227	0.696	**0.33**	98%	**1.22**
50.20	125.58	2.07	1.65	110	1.821	0.752	1.67	0.64	0.70	82.44	2.12		1	69	1.49		1.00	123.1	0.91	0.253	0.231	0.695	**0.33**	97%	**1.21**
50.36	128.65	2.24	1.74	110	1.825	0.750	1.77	0.65	0.70	84.23	2.13		1	70	1.51		1.00	127.4	0.91	0.272	0.248	0.694	**0.36**	97%	**1.16**
50.52	128.05	2.41	1.88	110	1.829	0.748	1.91	0.66	0.70	83.35	2.16		1	69	1.57		1.00	130.7	0.91	0.288	0.261	0.693	**0.38**	96%	**1.12**
50.69	127.87	2.55	1.99	110	1.833	0.747	2.02	0.66	0.70	82.85	2.18		1	69	1.61		1.00	133.4	0.91	0.301	0.273	0.692	**0.39**	96%	**1.09**
50.85	127.22	2.50	1.97	110	1.837	0.745	2.00	0.66	0.69	82.33	2.17		1	69	1.61		1.00	132.2	0.91	0.295	0.268	0.691	**0.39**	96%	**1.11**
51.02	120.78	2.43	2.02	110	1.841	0.743	2.05	0.67	0.69	77.65	2.20		1	66	1.67		1.00	129.4	0.91	0.282	0.255	0.689	**0.37**	96%	**1.14**
51.18	116.72	2.42	2.07	110	1.845	0.742	2.11	0.67	0.69	74.63	2.22		1	65	1.72		1.00	128.3	0.91	0.277	0.251	0.688	**0.36**	97%	**1.15**
51.35	117.01	2.42	2.07	110	1.849	0.740	2.10	0.67	0.69	74.72	2.22		1	65	1.72		1.00	128.4	0.91	0.277	0.250	0.687	**0.36**	97%	**1.15**
51.51	117.05	2.54	2.17	110	1.852	0.738	2.20	0.68	0.68	74.45	2.24		1	65	1.76		1.00	130.9	0.90	0.289	0.261	0.686	**0.38**	96%	**1.12**
51.67	118.36	2.51	2.12	110	1.856	0.737	2.15	0.68	0.68	75.32	2.22		1	65	1.73		1.00	130.3	0.90	0.286	0.258	0.685	**0.38**	96%	**1.13**
51.84	121.19	2.58	2.13	110	1.860	0.735	2.16	0.67	0.68	77.11	2.22		1	66	1.71		1.00	132.2	0.90	0.295	0.266	0.684	**0.39**	96%	**1.10**
52.00	128.21	2.29	1.78	110	1.864	0.733	1.81	0.65	0.69	82.58	2.14		1	69	1.54		1.00	127.2	0.90	0.271	0.245	0.682	**0.36**	97%	**1.16**
52.17	129.58	2.67	2.06	110	1.868	0.732	2.09	0.66	0.69	82.75	2.19		1	69	1.64		1.00	135.4	0.90	0.311	0.280	0.681	**0.41**	95%	**1.07**
52.33	98.86	2.96	2.99	110	1.872	0.730	3.05	0.73	0.66	60.52	2.40		1	56	2.31		1.00	139.7	0.90	0.333	0.300	0.680	**0.44**	94%	**1.02**
52.49	61.64	2.40	3.89	110	1.876	0.728	4.02	0.80	0.63	35.69	2.65		0						0.93			0.679	**Non-Liq.**	Non-Liq.	**0.00**
52.66	47.03	1.60	3.41	110	1.880	0.727	3.55	0.82	0.62	26.65	2.70		0						0.93			0.678	**Non-Liq.**	Non-Liq.	**0.00**
52.82	25.94	1.33	5.12	110	1.884	0.725	5.52	0.93	0.59	13.33	3.06		0						0.93			0.677	**Non-Liq.**	Non-Liq.	**0.00**
52.99	23.82	1.09	4.58	110	1.888	0.724	4.98	0.93	0.58	12.13	3.06		0						0.93			0.676	**Non-Liq.**	Non-Liq.	**0.00**
53.15	25.73	0.89	3.46	110	1.892	0.722	3.74	0.89	0.60	13.41	2.95		0						0.93			0.674	**Non-Liq.**	Non-Liq.	**0.00**
53.31	17.66	0.88	4.99	110	1.895	0.720	5.59	0.97	0.57	8.45	3.22		0						0.93			0.673	**Non-Liq.**	Non-Liq.	**0.00**
53.48	15.40	0.79	5.10	110	1.899	0.719	5.81	0.99	0.56	7.14	3.28		0						0.93			0.672	**Non-Liq.**	Non-Liq.	**0.00**
53.64	16.91	0.99	5.82	110	1.903	0.717	6.56	0.99	0.56	7.92	3.28		0						0.93			0.671	**Non-Liq.**	Non-Liq.	**0.00**
53.81	21.62	1.39	6.41	110	1.907	0.716	7.03	0.97	0.56	10.53	3.20		0						0.93			0.670	**Non-Liq.**	Non-Liq.	**0.00**
53.97	61.80	1.89	3.06	110	1.911	0.714	3.16	0.78	0.63	35.67	2.58		1	34	3.18		1.00	113.6	0.93	0.216	0.201	0.669	**0.30**	98%	**1.33**
54.13	169.40	2.67	1.58	110	1.915	0.712	1.60	0.61	0.70	110.04	2.02		1	81	1.32		1.00	145.4	0.86	0.366	0.315	0.667	**0.47**	92%	**0.91**
54.30	205.29	3.08	1.50	110	1.919	0.711	1.51	0.59	0.70	135.35	1.94		1	89	1.23	0.25	1.46	242.4	0.86	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
54.46	216.51	3.54	1.63	110	1.923	0.709	1.65	0.59	0.70	142.34	1.95		1	91	1.24	0.25	1.46	257.6	0.86	Infin.	0.000	0.665	**Non-Liq.**	Non-Liq.	**0.00**
54.63	226.53	3.84	1.70	110	1.927	0.708	1.71	0.59	0.70	148.83	1.95		1	93	1.24	0.25	1.46	269.2	0.86	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	**0.00**
54.79	253.78	4.49	1.77	110	1.931	0.706	1.78	0.59	0.70	167.28	1.93		1	98	1.22	0.25	1.46	297.4	0.86	Infin.	0.000	0.663	**Non-Liq.**	Non-Liq.	**0.00**
54.95	261.07	5.47	2.09	110	1.934	0.705	2.11	0.60	0.70	170.33	1.98		1	99	1.27	0.25	1.46	317.1	0.86	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	**0.00**
55.12	254.36	6.20	2.44	110	1.938	0.703	2.46	0.62	0.69	163.85	2.04		1	97	1.36		1.00	222.6	0.86	Infin.	0.000	0.661	**Non-Liq.**	Non-Liq.	**0.00**
55.28	242.98	6.44	2.65	110	1.942	0.701	2.67	0.63	0.68	155.04	2.09		1	95	1.43		1.00	221.5	0.85	Infin.	0.000	0.659	**Non-Liq.**	Non-Liq.	**0.00**
55.45	210.76	5.98	2.84	110	1.946	0.700	2.86	0.65	0.67	132.53	2.15		1	89	1.56		1.00	206.2	0.85	Infin.	0.000	0.658	**Non-Liq.**	Non-Liq.	**0.00**
55.61	179.72	5.45	3.03	110	1.950	0.698	3.06	0.67	0.66	111.22	2.22		1	81	1.72		1.00	191.6	0.85	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
55.77	154.42	4.96	3.21	110	1.954	0.697	3.26	0.69	0.65	94.09	2.29		1	74	1.92		1.00	180.2	0.85	Infin.	0.000	0.656	**Non-Liq.**	Non-Liq.	**0.00**
55.94	130.91	4.35	3.32	110	1.958	0.695	3.37	0.71	0.64	78.55	2.35		1	67	2.13		1.00	167.3	0.89	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
56.10	111.46	3.85	3.45	110	1.962	0.694	3.52	0.73	0.64	65.80	2.42		1	59	2.39		1.00	157.1	0.89	0.441	0.390	0.654	**0.60**	85%	**0.62**
56.27	89.53	3.08	3.44	110	1.966	0.692	3.52	0.76	0.63	51.85	2.49		1	50	2.72		1.00	140.9	0.92	0.340	0.314	0.653	**0.48**	92%	**1.01**
56.43	70.63	2.41	3.41	110	1.970	0.691	3.51	0.78	0.62	39.99	2.57		1	39	3.15		1.00	125.9	0.92	0.266	0.245	0.652	**0.38**	96%	**1.17**
56.59	55.06	1.89	3.43	110	1.974	0.689	3.55	0.81	0.60	30.35	2.66		0						0.92			0.650	**Non-Liq.**	Non-Liq.	**0.00**
56.76	39.94	1.59	3.99	110	1.977	0.688	4.19	0.86	0.59	20.99	2.83		0						0.92			0.649	**Non-Liq.**	Non-Liq.	**0.00**
56.92	26.94	1.16	4.32	110	1.981	0.686	4.66	0.91	0.56	13.32	3.01		0						0.92			0.648	**Non-Liq.**	Non-Liq.	**0.00**
57.09	24.31	0.74	3.02	110	1.985	0.685	3.29	0.89	0.57	12.02	2.95		0						0.92			0.647	**Non-Liq.**	Non-Liq.	**0.00**
57.25	17.67	0.69	3.89	110	1.989	0.683	4.39	0.96	0.55	8.09	3.17		0						0.92			0.646	**Non-Liq.**	Non-Liq.	**0.00**
57.41	17.34	0.73	4.18	110	1.993	0.682	4.72	0.97	0.54	7.86	3.20		0						0.92			0.645	**Non-Liq.**	Non-Liq.	**0.00**
57.58	19.61	0.61	3.11	110	1.997	0.680	3.46	0.93	0.56	9.24	3.06		0						0.92			0.644	**Non-Liq.**	Non-Liq.	**0.00**
57.74	24.98	0.61	2.45	110	2.001	0.679	2.67	0.88	0.57	12.44	2.89		0						0.92			0.643	**Non-Liq.**	Non-Liq.	**0.00**
57.91	19.44	0.61	3.14	110	2.005	0.678	3.50	0.93	0.55	9.10	3.07		0						0.92			0.642	**Non-Liq.**	Non-Liq.	**0.00**
58.07	18.43	0.58	3.12	110	2.009	0.676	3.50	0.94	0.55	8.52	3.09		0						0.92			0.641	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
58.23	17.22	0.56	3.23	110	2.013	0.675	3.66	0.95	0.54	7.81	3.13		0						0.92			0.640	**Non-Liq.**	Non-Liq.	**0.00**
58.40	17.30	0.55	3.17	110	2.016	0.673	3.59	0.95	0.54	7.85	3.13		0						0.92			0.638	**Non-Liq.**	Non-Liq.	**0.00**
58.56	18.04	0.54	2.97	110	2.020	0.672	3.35	0.94	0.55	8.27	3.09		0						0.92			0.637	**Non-Liq.**	Non-Liq.	**0.00**
58.73	16.07	0.52	3.22	110	2.024	0.671	3.69	0.96	0.54	7.13	3.17		0						0.91			0.636	**Non-Liq.**	Non-Liq.	**0.00**
58.89	15.75	0.49	3.08	110	2.028	0.669	3.53	0.96	0.54	6.95	3.17		0						0.91			0.635	**Non-Liq.**	Non-Liq.	**0.00**
59.06	15.86	0.51	3.23	110	2.032	0.668	3.71	0.96	0.53	6.98	3.18		0						0.91			0.634	**Non-Liq.**	Non-Liq.	**0.00**
59.22	17.14	0.64	3.71	110	2.036	0.666	4.21	0.96	0.53	7.61	3.18		0						0.91			0.633	**Non-Liq.**	Non-Liq.	**0.00**
59.38	19.02	1.05	5.54	110	2.040	0.665	6.21	0.98	0.53	8.43	3.24		0						0.91			0.632	**Non-Liq.**	Non-Liq.	**0.00**
59.55	50.85	1.55	3.04	110	2.044	0.664	3.17	0.81	0.59	27.10	2.67		0						0.91			0.631	**Non-Liq.**	Non-Liq.	**0.00**
59.71	71.44	1.83	2.56	110	2.048	0.662	2.64	0.75	0.61	39.86	2.49		1	39	2.71		1.00	107.9	0.91	0.197	0.180	0.630	**0.28**	98%	**1.40**
59.88	152.33	2.73	1.79	110	2.052	0.661	1.81	0.64	0.65	92.95	2.11		1	74	1.47		1.00	136.5	0.83	0.316	0.263	0.629	**0.42**	95%	**1.05**
60.04	157.44	0.00	0.00	110	2.055	0.660	0.00	0.75	0.61	88.95	2.49		1	72	1.00		1.00	89.0	0.83	0.145	0.121	0.628	**0.19**	100%	**1.68**
60.20	137.47	0.00	0.00	110	2.059	0.658	0.00	0.75	0.61	77.55	2.48		1	66	1.00		1.00	77.6	0.87	0.123	0.107	0.627	**0.17**	100%	**1.88**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-4
Plot: 4

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
7.2

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.18
Avg SF of Liquefiable Layers: 0.06

Probab Avg	Total Induced Subsidence (inches)
6%	Max
100%	1.2

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	92.62	1.11	1.20	110	0.009	1.000	1.20	0.56	1.70	148.81	1.84		1	93	1.13	0.25	1.00	168.8	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.33	130.04	2.02	1.55	110	0.018	1.000	1.55	0.55	1.70	208.92	1.82		1	100	1.12	0.25	1.00	234.3	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.49	152.39	3.01	1.98	110	0.027	1.000	1.98	0.57	1.70	244.82	1.86		1	100	1.16	0.25	1.00	282.8	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.66	146.45	3.22	2.20	110	0.036	1.000	2.20	0.58	1.70	235.26	1.91		1	100	1.20	0.25	1.00	282.0	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.82	125.63	2.97	2.36	110	0.045	1.000	2.36	0.60	1.70	201.79	1.97		1	100	1.27	0.25	1.00	255.7	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.98	97.23	2.48	2.55	110	0.054	1.000	2.55	0.63	1.70	156.14	2.07		1	95	1.40		1.00	218.4	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
1.15	63.94	1.59	2.49	110	0.063	0.999	2.50	0.66	1.70	102.64	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.484	Non-Liq.	Non-Liq.	0.00
1.31	63.94	1.59	2.49	110	0.072	0.999	2.50	0.66	1.70	102.62	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.484	Non-Liq.	Non-Liq.	0.00
1.48	41.59	1.09	2.61	110	0.081	0.999	2.62	0.70	1.70	66.70	2.32		1	60	2.02		1.00	134.8	1.00	0.308	0.308	0.484	Non-Liq.	Non-Liq.	0.00
1.64	28.11	0.74	2.64	110	0.090	0.998	2.64	0.74	1.70	45.02	2.45		1	44	2.52		1.00	113.6	1.00	0.216	0.216	0.484	Non-Liq.	Non-Liq.	0.00
1.80	20.76	0.53	2.55	110	0.099	0.998	2.57	0.77	1.70	33.20	2.54		1	31	2.98		1.00	98.9	1.00	0.170	0.170	0.484	Non-Liq.	Non-Liq.	0.00
1.97	21.63	0.56	2.58	110	0.108	0.998	2.60	0.77	1.70	34.58	2.53		1	33	2.92		1.00	101.1	1.00	0.176	0.176	0.484	Non-Liq.	Non-Liq.	0.00
2.13	34.59	0.78	2.25	110	0.117	0.997	2.26	0.71	1.70	55.39	2.34		1	52	2.07		1.00	114.6	1.00	0.220	0.220	0.483	Non-Liq.	Non-Liq.	0.00
2.30	34.08	0.89	2.61	110	0.126	0.997	2.62	0.72	1.70	54.56	2.39		1	52	2.25		1.00	123.0	1.00	0.253	0.253	0.483	Non-Liq.	Non-Liq.	0.00
2.46	31.06	0.81	2.60	110	0.135	0.996	2.61	0.73	1.70	49.69	2.41		1	48	2.37		1.00	117.7	1.00	0.231	0.231	0.483	Non-Liq.	Non-Liq.	0.00
2.62	26.71	0.71	2.65	110	0.144	0.996	2.67	0.75	1.70	42.69	2.47		1	42	2.62		1.00	111.6	1.00	0.209	0.209	0.483	Non-Liq.	Non-Liq.	0.00
2.79	24.66	0.64	2.61	110	0.153	0.996	2.62	0.76	1.70	39.38	2.49		1	38	2.72		1.00	107.1	1.00	0.194	0.194	0.483	Non-Liq.	Non-Liq.	0.00
2.95	22.66	0.59	2.60	110	0.162	0.995	2.62	0.76	1.70	36.15	2.52		1	35	2.86		1.00	103.4	1.00	0.183	0.183	0.482	Non-Liq.	Non-Liq.	0.00
3.12	21.79	0.57	2.60	110	0.171	0.995	2.62	0.77	1.70	34.74	2.53		1	33	2.93		1.00	101.7	1.00	0.178	0.178	0.482	Non-Liq.	Non-Liq.	0.00
3.28	20.52	0.55	2.69	110	0.180	0.994	2.72	0.78	1.70	32.68	2.56		1	30	3.10		1.00	101.3	1.00	0.177	0.177	0.482	Non-Liq.	Non-Liq.	0.00
3.44	18.85	0.54	2.86	110	0.189	0.994	2.89	0.79	1.70	29.98	2.61		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	16.96	0.52	3.05	110	0.198	0.994	3.09	0.81	1.70	26.93	2.66		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.77	15.22	0.50	3.30	110	0.208	0.993	3.34	0.82	1.70	24.12	2.72		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.94	13.60	0.54	3.97	110	0.217	0.993	4.03	0.85	1.70	21.50	2.81		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.10	13.10	0.56	4.31	110	0.226	0.993	4.38	0.86	1.70	20.69	2.85		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.27	13.76	0.61	4.45	110	0.235	0.992	4.52	0.86	1.70	21.73	2.84		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.43	12.78	0.63	4.94	110	0.244	0.992	5.03	0.88	1.70	20.14	2.90		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.59	9.82	0.62	6.32	110	0.253	0.991	6.49	0.93	1.70	15.37	3.06		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.76	9.11	0.58	6.39	110	0.262	0.991	6.58	0.93	1.70	14.22	3.09		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
4.92	9.64	0.67	6.94	110	0.271	0.991	7.14	0.94	1.70	15.05	3.09		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
5.09	11.05	0.51	4.60	110	0.280	0.990	4.72	0.89	1.70	17.31	2.93		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
5.25	26.79	0.51	1.91	110	0.289	0.990	1.93	0.72	1.70	42.58	2.38		1	41	2.22		1.00	94.7	1.00	0.159	0.159	0.480	Non-Liq.	Non-Liq.	0.00
5.41	43.87	0.61	1.40	110	0.298	0.989	1.41	0.65	1.70	70.01	2.12		1	62	1.50		1.00	105.0	1.00	0.188	0.188	0.480	Non-Liq.	Non-Liq.	0.00
5.58	61.57	0.87	1.42	110	0.307	0.989	1.42	0.61	1.70	98.44	2.02		1	76	1.32		1.00	130.2	1.00	0.285	0.285	0.479	Non-Liq.	Non-Liq.	0.00
5.74	81.48	1.27	1.55	110	0.316	0.989	1.56	0.60	1.70	130.42	1.96		1	88	1.25	1.00	1.00	163.4	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.91	104.49	1.77	1.69	110	0.325	0.988	1.70	0.58	1.70	167.37	1.91		1	98	1.20	1.05	1.00	201.7	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.07	121.74	2.26	1.85	110	0.334	0.988	1.86	0.58	1.70	195.08	1.90		1	100	1.19	1.10	1.00	232.8	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.23	129.40	2.54	1.96	110	0.343	0.988	1.97	0.58	1.70	207.37	1.90		1	100	1.19	1.15	1.00	248.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.40	133.71	2.63	1.97	110	0.352	0.987	1.98	0.58	1.70	214.28	1.90		1	100	1.18	1.20	1.00	254.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	136.13	2.67	1.96	110	0.361	0.987	1.97	0.57	1.70	218.15	1.89		1	100	1.18	1.20	1.00	258.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	137.04	2.50	1.82	110	0.370	0.986	1.83	0.57	1.70	219.60	1.86		1	100	1.16	1.20	1.00	254.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	134.61	2.27	1.69	110	0.379	0.986	1.69	0.56	1.70	215.68	1.84		1	100	1.14	1.20	1.00	246.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	133.55	2.02	1.51	110	0.388	0.986	1.52	0.55	1.70	213.97	1.81		1	100	1.11	1.20	1.00	238.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	130.84	1.92	1.47	110	0.397	0.985	1.47	0.55	1.70	209.60	1.80		1	100	1.11	1.20	1.00	233.0	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	125.34	1.72	1.37	110	0.406	0.985	1.38	0.55	1.69	199.24	1.79		1	100	1.10	1.20	1.00	220.4	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	121.32	1.59	1.31	110	0.415	0.985	1.32	0.55	1.67	190.42	1.79		1	100	1.10	1.20	1.00	210.4	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	121.32	1.59	1.31	110	0.424	0.984	1.32	0.55	1.65	188.35	1.80		1	100	1.10	1.20	1.00	208.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	117.69	1.47	1.25	110	0.433	0.984	1.25	0.55	1.63	180.43	1.79		1	100	1.10	1.20	1.00	199.4	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	112.60	1.37	1.22	110	0.442	0.984	1.22	0.55	1.61	170.99	1.80		1	99	1.11	1.20	1.00	189.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	105.92	1.25	1.18	110	0.451	0.983	1.19	0.55	1.60	159.50	1.81		1	96	1.12	1.20	1.00	178.5	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
8.37	94.02	1.10	1.17	110	0.460	0.983	1.18	0.56	1.60	141.18	1.85		1	91	1.14	1.20	1.00	161.8	1.00	Infin.	0.000	0.486	Non-Liq.	Non-Liq.	0.00
8.53	82.35	0.71	0.86	110	0.469	0.982	0.86	0.55	1.56	121.02	1.81		1	85	1.11	1.20	1.00	135.0	1.00	0.309	0.309	0.491	0.63	82%	1.05
8.69	75.19	0.69	0.91	110	0.478	0.982	0.92	0.56	1.56	110.51	1.85		1	81	1.15	1.20	1.00	127.3	1.00	0.272	0.272	0.496	0.55	88%	1.14
8.86	63.26	0.61	0.97	110	0.487	0.982	0.97	0.59	1.57	93.45	1.93		1	74	1.21	1.20	1.00	113.9	1.00	0.217	0.217	0.501	0.43	94%	1.30
9.02	59.99	0.57	0.95	110	0.496	0.981	0.96	0.59	1.56	87.95	1.94		1	71	1.23	1.20	1.00	108.8	1.00	0.200	0.200	0.506	0.39	96%	1.37
9.19	56.32	0.53	0.94	110	0.505	0.981	0.94	0.60	1.55	81.99	1.96		1	69	1.25	1.20	1.00	103.2	1.00	0.182	0.182	0.510	0.36	97%	1.45
9.35	53.37	0.45	0.85	110	0.514	0.981	0.86	0.60	1.54	76.78	1.96		1	66	1.25	1.20	1.00	96.4	1.00	0.163	0.163	0.515	0.32	98%	1.55
9.51	48.12	0.39	0.82	110	0.523	0.980	0.83	0.60	1.53	68.86	1.99		1	61	1.29	1.20	1.00	88.9	1.00	0.145	0.145	0.520	0.28	99%	1.66
9.68	43.46	0.35	0.81	110	0.532	0.980	0.82	0.62	1.53	61.93	2.03		1	57	1.34		1.00	82.7	1.00	0.133	0.133	0.524	0.25	99%	1.77
9.84	43.28	0.29	0.68	110	0.541	0.980	0.69	0.61	1.50	60.60	1.99		1	56	1.29	0.05	1.71	133.7	1.00	0.302	0.302	0.529	0.57	86%	1.07
10.01	40.37	0.42	1.04	110	0.550	0.979	1.05	0.64	1.52	57.28	2.12		1	54	1.48		1.00	84.9	1.00	0.137	0.137	0.533	0.26	99%	1.73
10.17	38.85	0.35	0.91	110	0.559	0.979	0.92	0.64	1.50	54.36	2.10		1	52	1.46		1.00	79.2	1.00	0.126	0.126	0.537	0.23	99%	1.83
10.33	35.99	0.37	1.03	110	0.568	0.979	1.05	0.66	1.50	50.33	2.16		1	48	1.58		1.00	79.3	1.00	0.126	0.126	0.541	0.23	99%	1.83
10.50	35.23	0.33	0.94	110	0.577	0.978	0.96	0.65	1.48	48.64	2.15		1	47	1.55		1.00	75.5	1.00	0.120	0.120	0.545	0.22	99%	1.90
10.66	32.68	0.32	0.98	110	0.586	0.978	0.99	0.66	1.48	44.89	2.19		1	44	1.64		1.00	73.5	1.00	0.117	0.117	0.550	0.21	99%	2.00
10.83	29.98	0.30	0.99	110	0.595	0.978	1.01	0.68	1.47	40.94	2.22		1	40	1.73		1.00	70.8	1.00	0.113	0.113	0.554	0.20	99%	2.00
10.99	26.35	0.27	1.02	110	0.604	0.977	1.04	0.69	1.47	35.85	2.28		1	34	1.89		1.00	67.7	1.00	0.109	0.109	0.557	0.20	100%	2.07
11.15	21.42	0.31	1.43	110	0.614	0.977	1.48	0.74	1.50	29.41	2.44		1	26	2.47		1.00	72.5	1.00	0.115	0.115	0.561	0.21	99%	2.00
11.32	14.65	0.21	1.40	110	0.623	0.977	1.46	0.78	1.51	20.05	2.57		1	10	3.16		1.00	63.4	1.00	0.104	0.104	0.565	0.18	100%	2.17
11.48	9.05	0.21	2.30	110	0.632	0.976	2.47	0.87	1.57	12.46	2.87		0						1.00			0.569	Non-Liq.	Non-Liq.	0.00
11.65	7.19	0.20	2.77	110	0.641	0.976	3.04	0.91	1.58	9.77	3.01		0						1.00			0.572	Non-Liq.	Non-Liq.	0.00
11.81	2.70	0.13	4.89	110	0.650	0.975	6.44	1.00	1.63	3.16	3.60		0						1.00			0.576	Non-Liq.	Non-Liq.	0.00
11.98	2.65	0.12	4.64	110	0.659	0.975	6.18	1.00	1.61	3.02	3.60		0						1.00			0.580	Non-Liq.	Non-Liq.	0.00
12.14	3.48	0.11	3.10	110	0.668	0.975	3.84	1.00	1.58	4.21	3.37		0						1.00			0.583	Non-Liq.	Non-Liq.	0.00
12.30	2.50	0.10	3.84	110	0.677	0.974	5.27	1.00	1.56	2.69	3.61		0						1.00			0.587	Non-Liq.	Non-Liq.	0.00
12.47	1.85	0.11	5.73	110	0.686	0.974	9.10	1.00	1.54	1.70	3.90		0						1.00			0.590	Non-Liq.	Non-Liq.	0.00
12.63	1.79	0.13	7.43	110	0.695	0.974	12.14	1.00	1.52	1.58	4.00		0						1.00			0.593	Non-Liq.	Non-Liq.	0.00
12.80	5.10	0.29	5.59	110	0.704	0.973	6.48	1.00	1.50	6.25	3.36		0						1.00			0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
12.96	30.82	0.58	1.88	110	0.713	0.973	1.92	0.73	1.34	38.00	2.42		1	37	2.37		1.00	90.3	1.00	0.148	0.148	0.600	**0.25**	99%	**1.65**
13.12	81.21	1.11	1.36	110	0.722	0.973	1.37	0.61	1.26	96.14	2.01		1	75	1.32		1.00	126.7	1.00	0.269	0.269	0.603	**0.45**	93%	**1.16**
13.29	92.10	1.26	1.37	110	0.731	0.972	1.38	0.60	1.25	107.89	1.98		1	80	1.27	1.00	1.00	137.9	1.00	0.324	0.324	0.606	**0.53**	89%	**1.04**
13.45	131.97	1.30	0.99	110	0.740	0.972	0.99	0.54	1.21	150.49	1.77		1	94	1.09	1.05	1.00	164.4	1.00	Infin.	0.000	0.609	**Non-Liq.**	Non-Liq.	**0.00**
13.62	176.29	1.68	0.95	110	0.749	0.972	0.96	0.51	1.19	198.00	1.68		1	100	1.02	1.10	1.00	203.4	1.00	Infin.	0.000	0.612	**Non-Liq.**	Non-Liq.	**0.00**
13.78	208.26	2.28	1.09	110	0.758	0.971	1.10	0.51	1.19	232.55	1.68		1	100	1.02	1.15	1.00	238.3	1.00	Infin.	0.000	0.615	**Non-Liq.**	Non-Liq.	**0.00**
13.94	234.75	2.60	1.11	110	0.767	0.971	1.11	0.50	1.18	259.95	1.65		1	100	1.00	1.20	1.00	261.3	1.00	Infin.	0.000	0.618	**Non-Liq.**	Non-Liq.	**0.00**
14.11	244.80	2.82	1.15	110	0.776	0.971	1.16	0.50	1.17	269.60	1.65		1	100	1.00	1.25	1.00	271.7	1.00	Infin.	0.000	0.621	**Non-Liq.**	Non-Liq.	**0.00**
14.27	272.06	2.98	1.09	110	0.785	0.970	1.10	0.50	1.16	297.68	1.61		1	100	1.00	1.30	1.00	298.8	1.00	Infin.	0.000	0.624	**Non-Liq.**	Non-Liq.	**0.00**
14.44	294.29	3.35	1.14	110	0.794	0.970	1.14	0.50	1.15	320.23	1.60		1	100	1.00	1.35	1.00	321.4	1.00	Infin.	0.000	0.627	**Non-Liq.**	Non-Liq.	**0.00**
14.60	316.23	3.17	1.00	110	0.803	0.970	1.00	0.50	1.15	342.22	1.54		1	100	1.00	1.40	1.00	343.5	1.00	Infin.	0.000	0.629	**Non-Liq.**	Non-Liq.	**0.00**
14.76	316.63	3.35	1.06	110	0.812	0.969	1.06	0.50	1.14	340.73	1.56		1	100	1.00	1.45	1.00	342.0	1.00	Infin.	0.000	0.632	**Non-Liq.**	Non-Liq.	**0.00**
14.93	294.75	3.41	1.16	110	0.821	0.969	1.16	0.50	1.14	315.37	1.61		1	100	1.00	1.50	1.00	316.5	1.00	Infin.	0.000	0.635	**Non-Liq.**	Non-Liq.	**0.00**
15.09	278.02	3.48	1.25	110	0.830	0.969	1.25	0.50	1.13	296.09	1.65		1	100	1.01	1.55	1.00	299.0	1.00	Infin.	0.000	0.637	**Non-Liq.**	Non-Liq.	**0.00**
15.26	279.30	3.53	1.26	110	0.839	0.968	1.27	0.51	1.12	295.90	1.66		1	100	1.01	1.55	1.00	299.6	1.00	Infin.	0.000	0.640	**Non-Liq.**	Non-Liq.	**0.00**
15.42	288.00	3.58	1.24	110	0.848	0.968	1.25	0.50	1.12	303.25	1.65		1	100	1.00	1.55	1.00	304.4	1.00	Infin.	0.000	0.643	**Non-Liq.**	Non-Liq.	**0.00**
15.58	292.46	3.59	1.23	110	0.857	0.967	1.23	0.50	1.11	306.22	1.64		1	100	1.00	1.55	1.00	307.4	1.00	Infin.	0.000	0.645	**Non-Liq.**	Non-Liq.	**0.00**
15.75	272.56	3.89	1.43	110	0.866	0.967	1.43	0.52	1.11	285.01	1.71		1	100	1.04	1.55	1.00	298.8	1.00	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	**0.00**
15.91	276.67	3.59	1.30	110	0.875	0.967	1.30	0.51	1.10	287.18	1.67		1	100	1.02	1.55	1.00	294.2	1.00	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	**0.00**
16.08	273.17	3.92	1.44	110	0.884	0.966	1.44	0.52	1.10	282.65	1.71		1	100	1.05	1.55	1.00	297.2	1.00	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
16.24	281.27	3.86	1.37	110	0.893	0.966	1.38	0.52	1.09	289.18	1.69		1	100	1.03	1.55	1.00	299.7	1.00	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
16.40	308.06	4.92	1.60	110	0.902	0.966	1.60	0.53	1.09	315.65	1.72		1	100	1.05	1.55	1.00	334.0	1.00	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
16.57	298.32	4.41	1.48	110	0.911	0.965	1.48	0.52	1.08	303.79	1.71		1	100	1.04	1.55	1.00	317.6	1.00	Infin.	0.000	0.660	**Non-Liq.**	Non-Liq.	**0.00**
16.73	317.60	4.08	1.28	110	0.920	0.965	1.29	0.50	1.07	320.96	1.64		1	100	1.00	1.55	1.00	321.4	1.00	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	**0.00**
16.90	332.36	5.17	1.56	110	0.929	0.965	1.56	0.52	1.07	335.03	1.70		1	100	1.04	1.55	1.00	349.0	1.00	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	**0.00**
17.06	338.43	6.36	1.88	110	0.938	0.964	1.88	0.54	1.07	340.25	1.76		1	100	1.08	1.55	1.00	369.5	1.00	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
17.22	307.99	5.82	1.89	110	0.947	0.964	1.90	0.55	1.06	308.23	1.79		1	100	1.10	1.55	1.00	340.3	1.00	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	**0.00**
17.39	269.28	4.43	1.64	110	0.956	0.963	1.65	0.54	1.06	267.85	1.78		1	100	1.09	1.55	1.00	292.8	1.00	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	**0.00**
17.55	257.64	3.38	1.31	110	0.965	0.963	1.32	0.52	1.05	254.47	1.71		1	100	1.05	1.55	1.00	267.0	1.00	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	**0.00**
17.72	229.45	3.27	1.42	110	0.974	0.963	1.43	0.54	1.05	225.75	1.77		1	100	1.09	1.55	1.00	246.1	1.00	Infin.	0.000	0.675	**Non-Liq.**	Non-Liq.	**0.00**
17.88	185.15	3.15	1.70	110	0.983	0.962	1.71	0.58	1.04	181.55	1.89		1	100	1.18	1.55	1.00	215.2	1.00	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
18.04	157.27	2.43	1.54	110	0.992	0.962	1.55	0.58	1.04	153.30	1.91		1	95	1.20	1.55	1.00	184.1	1.00	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
18.21	172.27	2.97	1.72	110	1.001	0.962	1.73	0.58	1.03	167.15	1.92		1	98	1.21	1.55	1.00	202.6	1.00	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
18.37	148.03	3.30	2.23	110	1.010	0.961	2.24	0.62	1.03	142.99	2.05		1	92	1.37		1.00	195.6	1.00	Infin.	0.000	0.683	**Non-Liq.**	Non-Liq.	**0.00**
18.54	212.42	3.34	1.57	110	1.020	0.961	1.58	0.56	1.02	203.98	1.83		1	100	1.13	1.00	1.00	231.6	1.00	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
18.70	249.14	2.81	1.13	110	1.029	0.960	1.13	0.51	1.01	237.92	1.68		1	100	1.02	1.05	1.00	244.5	1.00	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
18.86	254.49	2.69	1.06	110	1.038	0.960	1.06	0.50	1.01	241.92	1.65		1	100	1.01	1.10	1.00	244.0	1.00	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
19.03	249.73	2.74	1.10	110	1.047	0.960	1.10	0.51	1.01	236.35	1.67		1	100	1.02	1.15	1.00	241.6	1.00	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
19.19	253.62	2.91	1.15	110	1.056	0.959	1.15	0.51	1.00	239.00	1.68		1	100	1.03	1.20	1.00	246.3	1.00	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
19.36	260.64	3.02	1.16	110	1.065	0.959	1.16	0.51	1.00	244.56	1.68		1	100	1.02	1.25	1.00	251.5	1.00	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
19.52	261.87	3.10	1.18	110	1.074	0.958	1.19	0.51	0.99	244.64	1.69		1	100	1.03	1.30	1.00	252.7	1.00	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
19.69	270.64	2.97	1.10	110	1.083	0.958	1.10	0.50	0.99	251.84	1.65		1	100	1.01	1.35	1.00	254.3	1.00	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
19.85	280.85	3.04	1.08	110	1.092	0.957	1.09	0.50	0.98	260.31	1.64		1	100	1.00	1.40	1.00	261.3	1.00	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
20.01	294.22	3.15	1.07	110	1.101	0.957	1.07	0.50	0.98	271.62	1.62		1	100	1.00	1.45	1.00	272.6	1.00	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
20.18	298.62	3.34	1.12	110	1.107	0.957	1.12	0.50	0.98	274.94	1.64		1	100	1.00	1.50	1.00	276.0	1.00	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
20.34	302.63	3.48	1.15	110	1.111	0.956	1.15	0.50	0.98	278.14	1.64		1	100	1.00	1.55	1.00	278.4	1.00	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
20.51	308.19	3.65	1.18	110	1.115	0.956	1.19	0.50	0.97	282.74	1.65		1	100	1.00	1.60	1.00	284.3	1.00	Infin.	0.000	0.706	**Non-Liq.**	Non-Liq.	**0.00**
20.67	305.25	4.01	1.31	110	1.118	0.955	1.32	0.51	0.97	279.36	1.69		1	100	1.03	1.65	1.00	288.4	1.00	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
20.83	298.17	3.98	1.33	110	1.122	0.955	1.34	0.52	0.97	272.31	1.70		1	100	1.04	1.70	1.00	283.4	1.00	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
21.00	287.29	3.36	1.17	110	1.126	0.954	1.17	0.51	0.97	262.03	1.66		1	100	1.01	1.75	1.00	266.4	1.00	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
21.16	276.16	2.37	0.86	110	1.130	0.954	0.86	0.50	0.97	251.51	1.57		1	100	1.00	1.80	1.00	252.5	1.00	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
21.33	269.03	2.09	0.78	110	1.134	0.954	0.78	0.50	0.97	244.57	1.55		1	100	1.00	1.85	1.00	245.5	1.00	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
21.49	271.73	1.47	0.54	110	1.138	0.953	0.54	0.50	0.96	246.60	1.44		1	100	1.00	1.90	1.00	247.5	1.00	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
21.65	275.51	1.48	0.54	110	1.142	0.953	0.54	0.50	0.96	249.62	1.43		1	100	1.00	1.95	1.00	250.6	1.00	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
21.82	269.27	1.33	0.49	110	1.146	0.952	0.50	0.50	0.96	243.52	1.42		1	100	1.00	2.00	1.00	244.4	1.00	Infin.	0.000	0.718	**Non-Liq.**	Non-Liq.	**0.00**
21.98	254.35	1.56	0.61	110	1.150	0.952	0.61	0.50	0.96	229.58	1.50		1	100	1.00	2.05	1.00	230.4	1.00	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
22.15	231.17	1.90	0.82	110	1.154	0.951	0.82	0.50	0.96	208.20	1.62		1	100	1.00	2.10	1.00	209.0	1.00	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
22.31	179.26	2.62	1.46	110	1.158	0.951	1.47	0.57	0.95	159.91	1.88		1	96	1.17	2.15	1.00	187.7	1.00	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
22.47	221.58	3.22	1.45	110	1.161	0.950	1.46	0.55	0.95	197.87	1.82		1	100	1.12	2.20	1.00	222.0	1.00	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
22.64	225.46	3.74	1.66	110	1.165	0.950	1.67	0.56	0.95	200.74	1.86		1	100	1.15	2.25	1.00	231.7	1.00	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
22.80	232.74	4.18	1.79	110	1.169	0.949	1.80	0.57	0.94	206.75	1.87		1	100	1.17	2.30	1.00	241.8	1.00	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
22.97	236.02	4.51	1.91	110	1.173	0.949	1.92	0.58	0.94	209.15	1.89		1	100	1.18	2.35	1.00	248.2	1.00	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
23.13	239.32	4.59	1.92	110	1.177	0.948	1.93	0.58	0.94	211.70	1.89		1	100	1.18	2.40	1.00	250.8	1.00	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
23.29	244.53	4.64	1.90	110	1.181	0.948	1.91	0.57	0.94	215.98	1.88		1	100	1.17	2.45	1.00	254.0	1.00	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
23.46	258.17	4.62	1.79	110	1.185	0.947	1.80	0.56	0.94	227.92	1.85		1	100	1.14	2.50	1.00	261.4	1.00	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
23.62	286.18	4.32	1.51	110	1.189	0.947	1.51	0.54	0.94	253.05	1.76		1	100	1.08	2.55	1.00	274.0	1.00	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
23.79	333.44	4.00	1.20	110	1.193	0.946	1.20	0.50	0.94	295.77	1.64		1	100	1.00	2.60	1.00	295.8	1.00	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
23.95	392.53	3.80	0.97	110	1.197	0.946	0.97	0.50	0.94	347.80	1.52		1	100	1.00	2.65	1.00	349.1	1.00	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
24.11	462.47	4.16	0.90	110	1.200	0.945	0.90	0.50	0.94	409.29	1.45		1	100	1.00	2.70	1.00	410.8	1.00	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
24.28	467.10	5.33	1.14	110	1.204	0.945	1.14	0.50	0.94	412.73	1.54		1	100	1.00	2.75	1.00	414.3	1.00	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
24.44	447.32	4.90	1.09	110	1.208	0.944	1.10	0.50	0.94	394.56	1.53		1	100	1.00	2.80	1.00	396.0	1.00	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
24.61	439.29	6.79	1.54	110	1.212	0.943	1.55	0.51	0.93	386.46	1.66		1	100	1.01	2.85	1.00	392.9	1.00	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
24.77	455.61	4.85	1.07	110	1.216	0.943	1.07	0.50	0.93	400.60	1.52		1	100	1.00	2.90	1.00	402.1	1.00	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
24.93	451.26	5.70	1.26	110	1.220	0.942	1.27	0.50	0.93	396.12	1.58		1	100	1.00	2.95	1.00	397.6	1.00	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**
25.10	407.93	4.55	1.11	110	1.224	0.942	1.12	0.50	0.93	357.41	1.57		1	100	1.00	3.00	1.00	358.7	1.00	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
25.26	378.75	4.01	1.06	110	1.228	0.941	1.06	0.50	0.93	331.23	1.57		1	100	1.00	3.05	1.00	332.5	1.00	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
25.43	353.85	3.37	0.95	110	1.232	0.941	0.96	0.50	0.93	308.89	1.55		1	100	1.00	3.10	1.00	310.0	1.00	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
25.59	340.03	2.76	0.81	110	1.236	0.940	0.81	0.50	0.93	296.31	1.51		1	100	1.00	3.15	1.00	297.4	1.00	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
25.75	328.46	3.20	0.97	110	1.240	0.939	0.98	0.50	0.92	285.74	1.58		1	100	1.00	3.20	1.00	286.8	1.00	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
25.92	319.84	3.29	1.03	110	1.243	0.939	1.03	0.50	0.92	277.77	1.60		1	100	1.00	3.20	1.00	278.8	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.08	333.74	3.88	1.16	110	1.247	0.938	1.17	0.50	0.92	289.43	1.64		1	100	1.00	3.20	1.00	290.5	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.25	351.56	3.87	1.10	110	1.251	0.938	1.10	0.50	0.92	304.47	1.60		1	100	1.00	3.20	1.00	305.6	1.00	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
26.41	345.28	4.26	1.23	110	1.255	0.937	1.24	0.50	0.92	298.43	1.65		1	100	1.00	3.20	1.00	300.0	1.00	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
26.57	347.75	3.84	1.10	110	1.259	0.936	1.11	0.50	0.92	300.21	1.61		1	100	1.00	3.20	1.00	301.3	1.00	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
26.74	367.05	3.31	0.90	110	1.263	0.936	0.90	0.50	0.92	316.44	1.52		1	100	1.00	3.20	1.00	317.6	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
26.90	372.59	3.04	0.82	110	1.267	0.935	0.82	0.50	0.91	320.74	1.49		1	100	1.00	3.20	1.00	321.9	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
27.07	374.52	2.86	0.76	110	1.271	0.934	0.77	0.50	0.91	321.90	1.47		1	100	1.00	3.20	1.00	323.1	1.00	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
27.23	377.61	3.03	0.80	110	1.275	0.934	0.80	0.50	0.91	324.07	1.48		1	100	1.00	3.20	1.00	325.3	1.00	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
27.40	381.19	3.93	1.03	110	1.279	0.933	1.03	0.50	0.91	326.65	1.56		1	100	1.00	3.20	1.00	327.9	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.56	399.40	5.08	1.27	110	1.282	0.932	1.28	0.50	0.91	341.78	1.62		1	100	1.00	3.20	1.00	343.1	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.72	375.52	4.69	1.25	110	1.286	0.932	1.25	0.50	0.91	320.79	1.63		1	100	1.00	3.20	1.00	322.0	1.00	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
27.89	347.76	3.01	0.86	110	1.290	0.931	0.87	0.50	0.91	296.54	1.53		1	100	1.00	3.20	1.00	297.6	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	312.31	2.46	0.79	110	1.294	0.930	0.79	0.50	0.90	265.79	1.53		1	100	1.00	3.20	1.00	266.8	1.00	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
28.22	307.37	2.94	0.96	110	1.298	0.929	0.96	0.50	0.90	261.17	1.60		1	100	1.00	3.20	1.00	262.2	1.00	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
28.38	341.79	2.65	0.78	110	1.302	0.929	0.78	0.50	0.90	290.11	1.50		1	100	1.00	3.20	1.00	291.2	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.54	292.80	2.77	0.95	110	1.306	0.928	0.95	0.50	0.90	247.99	1.61		1	100	1.00	3.20	1.00	248.9	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.71	257.96	2.84	1.10	110	1.310	0.927	1.11	0.52	0.90	217.21	1.70		1	100	1.04	3.20	1.00	226.0	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
28.87	193.75	1.91	0.99	110	1.314	0.926	0.99	0.53	0.89	162.04	1.75		1	97	1.07	3.20	1.00	174.6	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
29.04	110.13	2.95	2.68	110	1.318	0.926	2.71	0.68	0.86	88.55	2.25		1	72	1.79		1.00	158.7	1.00	0.452	0.452	0.760	0.59	85%	0.61
29.20	64.38	2.45	3.80	110	1.322	0.925	3.88	0.77	0.84	50.25	2.53		1	48	2.93		1.00	147.0	1.00	0.376	0.376	0.760	0.49	91%	0.89
29.36	90.04	3.19	3.54	110	1.325	0.924	3.60	0.73	0.85	71.15	2.40		1	63	2.32		1.00	165.2	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.53	118.08	3.29	2.78	110	1.329	0.923	2.82	0.68	0.86	94.48	2.24		1	74	1.77		1.00	167.5	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.69	115.86	2.76	2.38	110	1.333	0.923	2.41	0.67	0.86	92.78	2.20		1	74	1.66		1.00	153.8	1.00	0.418	0.418	0.762	0.55	88%	0.72
29.86	274.31	1.51	0.55	110	1.337	0.922	0.55	0.50	0.89	229.50	1.47		1	100	1.00	0.30	1.41	322.9	1.00	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
30.02	311.77	1.67	0.53	110	1.341	0.921	0.54	0.50	0.89	260.62	1.42		1	100	1.00	0.35	1.41	366.6	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.18	315.95	1.19	0.38	110	1.345	0.920	0.38	0.50	0.89	263.74	1.32		1	100	1.00	0.40	1.41	371.0	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.35	297.70	0.86	0.29	110	1.349	0.919	0.29	0.50	0.89	248.08	1.27		1	100	1.00	0.45	1.41	349.0	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.51	257.40	1.00	0.39	110	1.353	0.918	0.39	0.50	0.88	214.03	1.40		1	100	1.00	0.50	1.41	301.1	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.68	200.41	1.87	0.93	110	1.357	0.918	0.94	0.53	0.88	165.04	1.73		1	98	1.06	0.55	1.41	245.6	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.84	117.72	2.01	1.71	110	1.361	0.917	1.73	0.63	0.85	93.75	2.09		1	74	1.44		1.00	134.7	1.00	0.307	0.307	0.764	0.40	95%	1.09
31.00	42.32	1.90	4.50	110	1.364	0.916	4.65	0.83	0.81	31.36	2.73		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.17	31.82	1.64	5.14	110	1.368	0.915	5.37	0.87	0.80	23.01	2.87		0						1.00			0.765	Non-Liq.	Non-Liq.	0.00
31.33	41.78	1.18	2.82	110	1.372	0.914	2.92	0.79	0.81	31.12	2.60		1	28	3.31		1.00	103.1	1.00	0.182	0.182	0.765	0.24	99%	1.48
31.50	54.16	1.35	2.48	110	1.376	0.913	2.55	0.75	0.82	40.98	2.47		1	40	2.62		1.00	107.2	1.00	0.194	0.194	0.765	0.25	99%	1.43
31.66	56.06	1.68	3.00	110	1.380	0.912	3.07	0.76	0.82	42.21	2.51		1	41	2.84		1.00	119.8	1.00	0.240	0.240	0.766	0.31	98%	1.26
31.82	60.54	2.05	3.38	110	1.384	0.911	3.46	0.77	0.81	45.52	2.53		1	44	2.90		1.00	132.1	1.00	0.294	0.294	0.766	0.38	96%	1.12
31.99	82.92	2.20	2.65	110	1.388	0.910	2.70	0.71	0.82	63.52	2.35		1	58	2.11		1.00	133.8	1.00	0.303	0.303	0.766	0.40	96%	1.10
32.15	148.83	1.99	1.34	110	1.392	0.909	1.35	0.59	0.85	118.52	1.94		1	84	1.23	1.00	1.00	146.5	1.00	0.372	0.372	0.766	0.49	92%	0.90
32.32	268.70	2.23	0.83	110	1.396	0.908	0.83	0.50	0.87	219.97	1.60		1	100	1.00	1.05	1.00	220.8	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.48	308.62	2.97	0.96	110	1.400	0.907	0.97	0.50	0.87	252.47	1.61		1	100	1.00	1.10	1.00	253.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.64	309.13	3.57	1.16	110	1.403	0.906	1.16	0.51	0.87	251.87	1.67		1	100	1.02	1.15	1.00	257.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.81	309.47	4.46	1.44	110	1.407	0.905	1.45	0.53	0.86	250.13	1.75		1	100	1.07	1.20	1.00	268.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.97	308.84	5.13	1.66	110	1.411	0.904	1.67	0.55	0.85	248.16	1.80		1	100	1.11	1.25	1.00	275.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.14	317.27	5.82	1.84	110	1.415	0.903	1.84	0.56	0.85	253.92	1.83		1	100	1.13	1.30	1.00	287.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.30	316.07	6.46	2.04	110	1.419	0.902	2.05	0.57	0.85	251.67	1.87		1	100	1.16	1.35	1.00	293.2	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.46	306.67	6.63	2.16	110	1.423	0.901	2.17	0.58	0.84	243.15	1.90		1	100	1.19	1.40	1.00	289.5	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.63	295.70	6.52	2.20	110	1.427	0.900	2.21	0.58	0.84	233.68	1.91		1	100	1.20	1.45	1.00	282.0	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.79	287.84	6.15	2.14	110	1.431	0.899	2.15	0.58	0.84	227.15	1.91		1	100	1.20	1.50	1.00	273.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.96	286.58	5.47	1.91	110	1.435	0.898	1.92	0.57	0.84	226.60	1.87		1	100	1.16	1.55	1.00	264.5	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.12	285.14	4.97	1.74	110	1.439	0.897	1.75	0.56	0.84	225.74	1.84		1	100	1.14	1.55	1.00	257.8	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.28	290.96	4.93	1.70	110	1.443	0.896	1.70	0.56	0.84	230.34	1.83		1	100	1.13	1.55	1.00	260.3	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.45	290.25	5.14	1.77	110	1.446	0.895	1.78	0.56	0.84	229.07	1.84		1	100	1.14	1.55	1.00	261.8	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.61	288.91	4.35	1.51	110	1.450	0.894	1.51	0.54	0.84	228.85	1.79		1	100	1.10	1.55	1.00	252.1	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.78	290.18	4.30	1.48	110	1.454	0.893	1.49	0.54	0.84	229.67	1.78		1	100	1.09	1.55	1.00	251.9	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.94	286.57	4.37	1.53	110	1.458	0.892	1.53	0.55	0.84	226.16	1.79		1	100	1.10	1.55	1.00	250.3	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.10	285.33	4.63	1.62	110	1.462	0.890	1.63	0.55	0.84	224.33	1.82		1	100	1.12	1.55	1.00	252.2	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.27	282.90	4.65	1.64	110	1.466	0.889	1.65	0.56	0.83	221.92	1.83		1	100	1.13	1.55	1.00	250.7	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.43	284.23	4.21	1.48	110	1.470	0.888	1.49	0.54	0.84	223.46	1.79		1	100	1.10	1.55	1.00	246.3	0.99	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.60	291.38	3.88	1.33	110	1.474	0.887	1.34	0.53	0.84	229.77	1.74		1	100	1.07	1.55	1.00	246.2	0.98	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.76	294.00	3.53	1.20	110	1.478	0.886	1.21	0.52	0.84	232.40	1.71		1	100	1.04	1.55	1.00	243.1	0.98	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.93	283.22	2.96	1.05	110	1.482	0.885	1.05	0.51	0.84	224.32	1.67		1	100	1.02	1.55	1.00	229.3	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.09	264.79	3.14	1.18	110	1.485	0.883	1.19	0.53	0.84	208.03	1.73		1	100	1.06	1.55	1.00	221.5	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.25	239.70	2.92	1.22	110	1.489	0.882	1.23	0.54	0.83	187.17	1.77		1	100	1.09	1.55	1.00	204.4	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.42	190.73	2.49	1.30	110	1.493	0.881	1.31	0.57	0.82	147.05	1.87		1	93	1.16	1.55	1.00	171.2	0.98	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
36.58	172.32	1.04	0.60	110	1.497	0.880	0.61	0.51	0.84	135.25	1.67		1	89	1.02	1.55	1.00	138.5	0.98	0.327	0.319	0.764	0.42	95%	1.05
36.75	139.82	0.84	0.60	110	1.501	0.878	0.61	0.53	0.83	108.50	1.75		1	80	1.07	1.55	1.00	116.7	0.98	0.228	0.222	0.764	0.29	98%	1.30
36.91	130.14	1.01	0.77	110	1.505	0.877	0.78	0.56	0.82	99.75	1.85		1	77	1.14	1.55	1.00	114.3	0.97	0.219	0.213	0.764	0.28	99%	1.33
37.07	111.04	0.59	0.53	110	1.509	0.876	0.54	0.55	0.82	85.14	1.81		1	70	1.11	1.55	1.00	95.2	0.97	0.160	0.156	0.763	0.20	99%	1.60
37.24	70.92	1.49	2.10	110	1.513	0.875	2.14	0.71	0.78	50.84	2.35		1	49	2.12		1.00	107.6	0.99	0.196	0.193	0.763	0.25	99%	1.42
37.40	56.54	1.73	3.06	110	1.517	0.873	3.15	0.77	0.76	39.40	2.54		1	38	2.99		1.00	117.9	0.98	0.232	0.229	0.762	0.30	98%	1.28
37.57	26.06	1.68	6.46	110	1.521	0.872	6.86	0.92	0.72	16.60	3.05		0						0.98			0.762	Non-Liq.	Non-Liq.	0.00
37.73	18.93	1.02	5.39	110	1.525	0.871	5.87	0.94	0.71	11.65	3.12		0						0.98			0.762	Non-Liq.	Non-Liq.	0.00
37.89	12.92	0.63	4.91	110	1.528	0.869	5.57	0.98	0.70	7.50	3.26		0						0.98			0.761	Non-Liq.	Non-Liq.	0.00
38.06	14.23	0.52	3.65	110	1.532	0.868	4.09	0.95	0.70	8.45	3.13		0						0.98			0.761	Non-Liq.	Non-Liq.	0.00
38.22	18.57	0.45	2.40	110	1.536	0.867	2.61	0.88	0.72	11.59	2.91		0						0.98			0.760	Non-Liq.	Non-Liq.	0.00
38.39	10.40	0.40	3.83	110	1.540	0.865	4.49	1.00	0.69	5.76	3.29		0						0.98			0.760	Non-Liq.	Non-Liq.	0.00
38.55	8.61	0.33	3.87	110	1.544	0.864	4.71	1.00	0.69	4.58	3.39		0						0.98			0.759	Non-Liq.	Non-Liq.	0.00
38.71	9.61	0.33	3.43	110	1.548	0.863	4.09	1.00	0.68	5.21	3.31		0						0.98			0.759	Non-Liq.	Non-Liq.	0.00
38.88	9.33	0.35	3.71	110	1.552	0.861	4.45	1.00	0.68	5.01	3.34		0						0.98			0.758	Non-Liq.	Non-Liq.	0.00
39.04	8.70	0.42	4.84	110	1.556	0.860	5.89	1.00	0.68	4.59	3.44		0						0.98			0.758	Non-Liq.	Non-Liq.	0.00
39.21	12.90	0.44	3.42	110	1.560	0.859	3.89	0.96	0.69	7.39	3.17		0						0.98			0.757	Non-Liq.	Non-Liq.	0.00
39.37	17.45	0.56	3.19	110	1.564	0.857	3.50	0.91	0.70	10.51	3.02		0						0.98			0.757	Non-Liq.	Non-Liq.	0.00
39.53	20.31	0.80	3.94	110	1.567	0.856	4.27	0.91	0.70	12.38	3.01		0						0.98			0.756	Non-Liq.	Non-Liq.	0.00
39.70	31.28	0.98	3.12	110	1.571	0.854	3.29	0.84	0.72	20.13	2.78		0						0.98			0.756	Non-Liq.	Non-Liq.	0.00
39.86	28.06	0.97	3.45	110	1.575	0.853	3.65	0.86	0.71	17.76	2.85		0						0.97			0.755	Non-Liq.	Non-Liq.	0.00
40.03	65.29	1.25	1.91	110	1.579	0.852	1.95	0.72	0.75	45.20	2.36		1	44	2.16		1.00	97.7	0.97	0.167	0.163	0.754	0.22	99%	1.56
40.19	75.32	1.52	2.02	110	1.583	0.850	2.06	0.71	0.75	52.43	2.33		1	50	2.04		1.00	106.9	0.96	0.194	0.186	0.754	0.25	99%	1.43
40.35	68.28	1.42	2.08	110	1.587	0.849	2.12	0.72	0.75	47.09	2.37		1	46	2.20		1.00	103.6	0.97	0.183	0.178	0.753	0.24	99%	1.47
40.52	76.08	1.52	2.00	110	1.591	0.847	2.04	0.70	0.75	52.82	2.32		1	50	2.02		1.00	106.8	0.96	0.193	0.185	0.752	0.25	99%	1.43
40.68	80.77	1.39	1.72	110	1.595	0.846	1.75	0.69	0.75	56.49	2.26		1	53	1.82		1.00	102.7	0.96	0.181	0.173	0.752	0.23	99%	1.49
40.85	107.08	1.51	1.41	110	1.599	0.844	1.43	0.64	0.77	76.62	2.10		1	66	1.45		1.00	111.4	0.96	0.208	0.200	0.751	0.27	99%	1.37
41.01	126.77	2.12	1.67	110	1.603	0.843	1.69	0.64	0.77	90.84	2.09		1	73	1.44		1.00	131.1	0.94	0.290	0.273	0.750	0.36	97%	1.12
41.17	204.50	2.61	1.28	110	1.607	0.841	1.29	0.56	0.79	151.55	1.85		1	94	1.15	1.00	1.00	174.4	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.34	221.25	3.11	1.41	110	1.610	0.840	1.42	0.57	0.79	163.68	1.86		1	97	1.15	1.05	1.00	189.4	0.94	Infin.	0.000	0.749	Non-Liq.	Non-Liq.	0.00
41.50	230.53	3.66	1.59	110	1.614	0.838	1.60	0.57	0.78	169.74	1.89		1	99	1.18	1.10	1.00	200.7	0.94	Infin.	0.000	0.748	Non-Liq.	Non-Liq.	0.00
41.67	236.49	4.16	1.76	110	1.618	0.837	1.77	0.58	0.78	173.29	1.92		1	100	1.20	1.15	1.00	209.5	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.83	238.11	4.55	1.91	110	1.622	0.835	1.92	0.59	0.78	173.63	1.94		1	100	1.23	1.15	1.00	214.8	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.99	239.78	3.88	1.62	110	1.626	0.834	1.63	0.57	0.78	175.95	1.88		1	100	1.17	1.15	1.00	207.4	0.93	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
42.16	274.29	3.22	1.17	110	1.630	0.832	1.18	0.53	0.80	205.09	1.74		1	100	1.06	1.15	1.00	218.5	0.93	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
42.32	291.71	2.41	0.83	110	1.634	0.831	0.83	0.50	0.80	220.63	1.60		1	100	1.00	1.15	1.00	221.5	0.93	Infin.	0.000	0.744	Non-Liq.	Non-Liq.	0.00
42.49	285.46	2.18	0.76	110	1.638	0.829	0.77	0.50	0.80	215.62	1.59		1	100	1.00	1.15	1.00	216.4	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.65	273.88	2.74	1.00	110	1.642	0.827	1.01	0.51	0.80	205.39	1.68		1	100	1.03	1.15	1.00	211.6	0.93	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
42.81	343.04	4.15	1.21	110	1.646	0.826	1.21	0.51	0.80	257.35	1.68		1	100	1.02	1.15	1.00	264.6	0.93	Infin.	0.000	0.742	Non-Liq.	Non-Liq.	0.00
42.98	408.63	5.08	1.24	110	1.649	0.824	1.25	0.50	0.80	307.99	1.64		1	100	1.00	1.15	1.00	308.4	0.93	Infin.	0.000	0.741	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
43.14	577.81	9.13	1.58	110	1.653	0.823	1.59	0.50	0.80	435.30	1.65		1	100	1.00	1.15	1.00	437.0	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
43.31	597.92	9.45	1.58	110	1.657	0.821	1.58	0.50	0.80	450.30	1.64		1	100	1.00	1.15	1.00	452.0	0.93	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
43.47	392.43	8.74	2.23	110	1.661	0.820	2.24	0.57	0.77	285.78	1.87		1	100	1.16	1.15	1.00	332.9	0.92	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
43.64	395.33	5.19	1.31	110	1.665	0.818	1.32	0.51	0.79	295.31	1.67		1	100	1.02	1.15	1.00	302.0	0.92	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
43.80	397.94	3.38	0.85	110	1.669	0.816	0.85	0.50	0.80	298.21	1.52		1	100	1.00	1.15	1.00	299.3	0.92	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
43.96	401.09	1.69	0.42	110	1.673	0.815	0.42	0.50	0.80	300.23	1.30		1	100	1.00	1.15	1.00	301.4	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.13	389.81	1.87	0.48	110	1.677	0.813	0.48	0.50	0.79	291.41	1.35		1	100	1.00	1.15	1.00	292.5	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.29	358.36	1.92	0.53	110	1.681	0.811	0.54	0.50	0.79	267.48	1.41		1	100	1.00	1.15	1.00	268.5	0.92	Infin.	0.000	0.734	**Non-Liq.**	Non-Liq.	**0.00**
44.46	351.76	2.17	0.62	110	1.685	0.810	0.62	0.50	0.79	262.22	1.46		1	100	1.00	1.15	1.00	263.2	0.92	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
44.62	367.06	3.54	0.96	110	1.689	0.808	0.97	0.50	0.79	273.36	1.59		1	100	1.00	1.15	1.00	274.4	0.92	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
44.78	396.02	5.60	1.41	110	1.692	0.807	1.42	0.52	0.78	292.17	1.70		1	100	1.04	1.15	1.00	304.5	0.92	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
44.95	497.62	0.00	0.00	110	1.696	0.805	0.00	0.80	0.68	320.55	2.66		0		1.00				0.96			0.730	**Non-Liq.**	Non-Liq.	**0.00**
45.11	534.51	0.00	0.00	110	1.700	0.803	0.00	0.81	0.68	342.84	2.68		0		1.00				0.96			0.729	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-5
Plot: 5

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
5.7

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.32
Avg SF of Liquefiable Layers: 0.06

Probab	Total Induced Subsidence (inches)
Avg	
4%	
Max	
98%	0.8

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	7.20	0.07	0.96	110	0.009	1.000	0.96	0.82	1.70	11.55	2.69		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
0.33	11.97	0.11	0.92	110	0.018	1.000	0.92	0.75	1.70	19.20	2.49		1	8	2.70		1.00	51.9	1.00	0.093	0.093	0.485	Non-Liq.	Non-Liq.	0.00
0.49	16.98	0.15	0.86	110	0.027	1.000	0.86	0.71	1.70	27.24	2.34		1	23	2.08		1.00	56.7	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.66	18.41	0.17	0.90	110	0.036	1.000	0.90	0.70	1.70	29.52	2.32		1	26	2.01		1.00	59.5	1.00	0.100	0.100	0.485	Non-Liq.	Non-Liq.	0.00
0.82	16.13	0.16	1.01	110	0.045	1.000	1.01	0.73	1.70	25.85	2.40		1	21	2.29		1.00	59.2	1.00	0.099	0.099	0.485	Non-Liq.	Non-Liq.	0.00
0.98	12.95	0.14	1.06	110	0.054	1.000	1.06	0.75	1.70	20.72	2.49		1	12	2.71		1.00	56.1	1.00	0.096	0.096	0.485	Non-Liq.	Non-Liq.	0.00
1.15	10.49	0.11	1.05	110	0.063	0.999	1.05	0.78	1.70	16.75	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.484	Non-Liq.	Non-Liq.	0.00
1.31	10.49	0.11	1.05	110	0.072	0.999	1.06	0.78	1.70	16.74	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.484	Non-Liq.	Non-Liq.	0.00
1.48	9.50	0.14	1.52	110	0.081	0.999	1.53	0.81	1.70	15.13	2.69		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.64	11.89	0.21	1.77	110	0.090	0.998	1.79	0.80	1.70	18.96	2.64		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.80	17.29	0.33	1.93	110	0.099	0.998	1.94	0.77	1.70	27.62	2.53		1	23	2.91		1.00	80.4	1.00	0.128	0.128	0.484	Non-Liq.	Non-Liq.	0.00
1.97	29.55	0.52	1.75	110	0.108	0.998	1.76	0.70	1.70	47.31	2.32		1	46	2.00		1.00	94.8	1.00	0.159	0.159	0.484	Non-Liq.	Non-Liq.	0.00
2.13	29.26	0.52	1.76	110	0.117	0.997	1.77	0.70	1.70	46.83	2.32		1	45	2.02		1.00	94.6	1.00	0.159	0.159	0.483	Non-Liq.	Non-Liq.	0.00
2.30	27.77	0.48	1.74	110	0.126	0.997	1.75	0.71	1.70	44.42	2.34		1	43	2.07		1.00	92.1	1.00	0.153	0.153	0.483	Non-Liq.	Non-Liq.	0.00
2.46	25.48	0.44	1.74	110	0.135	0.996	1.75	0.72	1.70	40.72	2.37		1	40	2.18		1.00	88.8	1.00	0.145	0.145	0.483	Non-Liq.	Non-Liq.	0.00
2.62	22.54	0.40	1.76	110	0.144	0.996	1.77	0.73	1.70	35.99	2.41		1	34	2.36		1.00	85.1	1.00	0.137	0.137	0.483	Non-Liq.	Non-Liq.	0.00
2.79	20.15	0.37	1.83	110	0.153	0.996	1.85	0.75	1.70	32.13	2.46		1	30	2.58		1.00	83.0	1.00	0.133	0.133	0.483	Non-Liq.	Non-Liq.	0.00
2.95	17.63	0.42	2.37	110	0.162	0.995	2.39	0.78	1.70	28.07	2.58		1	24	3.19		1.00	89.5	1.00	0.147	0.147	0.482	Non-Liq.	Non-Liq.	0.00
3.12	13.94	0.43	3.06	110	0.171	0.995	3.10	0.83	1.70	22.12	2.73		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.28	11.33	0.42	3.69	110	0.180	0.994	3.75	0.86	1.70	17.92	2.85		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.44	10.79	0.35	3.27	110	0.189	0.994	3.33	0.86	1.70	17.03	2.84		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	19.14	0.32	1.69	110	0.198	0.994	1.71	0.75	1.70	30.44	2.46		1	27	2.58		1.00	78.4	1.00	0.125	0.125	0.482	Non-Liq.	Non-Liq.	0.00
3.77	28.87	0.35	1.20	110	0.208	0.993	1.21	0.68	1.70	46.06	2.23		1	45	1.74		1.00	79.9	1.00	0.127	0.127	0.482	Non-Liq.	Non-Liq.	0.00
3.94	37.13	0.44	1.18	110	0.217	0.993	1.19	0.65	1.70	59.31	2.13		1	55	1.52		1.00	90.2	1.00	0.148	0.148	0.481	Non-Liq.	Non-Liq.	0.00
4.10	42.19	0.52	1.24	110	0.226	0.993	1.25	0.64	1.70	67.43	2.10		1	60	1.46		1.00	98.5	1.00	0.169	0.169	0.481	Non-Liq.	Non-Liq.	0.00
4.27	42.88	0.62	1.43	110	0.235	0.992	1.44	0.65	1.70	68.52	2.14		1	61	1.53		1.00	104.7	1.00	0.187	0.187	0.481	Non-Liq.	Non-Liq.	0.00
4.43	42.87	0.65	1.51	110	0.244	0.992	1.52	0.65	1.70	68.49	2.15		1	61	1.56		1.00	106.9	1.00	0.194	0.194	0.481	Non-Liq.	Non-Liq.	0.00
4.59	43.05	0.62	1.44	110	0.253	0.991	1.44	0.65	1.70	68.77	2.14		1	61	1.53		1.00	105.0	1.00	0.188	0.188	0.481	Non-Liq.	Non-Liq.	0.00
4.76	40.55	0.64	1.58	110	0.262	0.991	1.59	0.66	1.70	64.74	2.18		1	59	1.63		1.00	105.4	1.00	0.189	0.189	0.480	Non-Liq.	Non-Liq.	0.00
4.92	37.17	0.59	1.58	110	0.271	0.991	1.60	0.67	1.70	59.29	2.21		1	55	1.70		1.00	101.0	1.00	0.176	0.176	0.480	Non-Liq.	Non-Liq.	0.00
5.09	45.41	0.55	1.21	110	0.280	0.990	1.22	0.63	1.70	72.52	2.07		1	63	1.41		1.00	102.1	1.00	0.179	0.179	0.480	Non-Liq.	Non-Liq.	0.00
5.25	49.21	0.55	1.12	110	0.289	0.990	1.13	0.62	1.70	78.61	2.02		1	67	1.33		1.00	104.9	1.00	0.187	0.187	0.480	Non-Liq.	Non-Liq.	0.00
5.41	48.56	0.56	1.16	110	0.298	0.989	1.16	0.62	1.70	77.55	2.04		1	66	1.35		1.00	104.9	1.00	0.187	0.187	0.480	Non-Liq.	Non-Liq.	0.00
5.58	48.19	0.59	1.22	110	0.307	0.989	1.23	0.62	1.70	76.94	2.06		1	66	1.38		1.00	106.1	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
5.74	48.82	0.59	1.20	110	0.316	0.989	1.21	0.62	1.70	77.94	2.05		1	66	1.37		1.00	106.5	1.00	0.192	0.192	0.479	Non-Liq.	Non-Liq.	0.00
5.91	49.59	0.58	1.17	110	0.325	0.988	1.18	0.62	1.70	79.16	2.03		1	67	1.35		1.00	106.6	1.00	0.193	0.193	0.479	Non-Liq.	Non-Liq.	0.00
6.07	49.01	0.58	1.19	110	0.334	0.988	1.19	0.62	1.70	78.21	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
6.23	48.87	0.58	1.19	110	0.343	0.988	1.20	0.62	1.70	77.97	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
6.40	48.92	0.59	1.20	110	0.352	0.987	1.21	0.62	1.70	78.04	2.05		1	67	1.37		1.00	106.5	1.00	0.192	0.192	0.479	Non-Liq.	Non-Liq.	0.00
6.56	50.19	0.62	1.23	110	0.361	0.987	1.24	0.62	1.70	80.07	2.04		1	68	1.36		1.00	109.1	1.00	0.201	0.201	0.478	Non-Liq.	Non-Liq.	0.00
6.73	54.54	0.64	1.17	110	0.370	0.986	1.17	0.61	1.70	87.04	2.00		1	71	1.30		1.00	113.3	1.00	0.215	0.215	0.478	Non-Liq.	Non-Liq.	0.00
6.89	60.79	0.78	1.29	110	0.379	0.986	1.29	0.61	1.70	97.07	1.99		1	76	1.29	0.90	1.02	127.9	1.00	0.275	0.275	0.478	Non-Liq.	Non-Liq.	0.00
7.05	70.21	1.20	1.71	110	0.388	0.986	1.72	0.62	1.70	112.19	2.03		1	82	1.35		1.00	151.2	1.00	0.401	0.401	0.478	Non-Liq.	Non-Liq.	0.00
7.22	86.10	1.28	1.49	110	0.397	0.985	1.49	0.59	1.70	137.71	1.93		1	90	1.22	1.00	1.00	168.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	112.25	1.15	1.02	110	0.406	0.985	1.02	0.53	1.66	175.45	1.74		1	100	1.06	1.05	1.00	187.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	123.77	1.31	1.06	110	0.415	0.985	1.06	0.52	1.63	190.49	1.72		1	100	1.05	1.10	1.00	201.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	123.77	1.31	1.06	110	0.424	0.984	1.06	0.53	1.62	188.51	1.73		1	100	1.05	1.15	1.00	199.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	137.24	1.24	0.90	110	0.433	0.984	0.90	0.50	1.57	202.88	1.65		1	100	1.01	1.20	1.00	204.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	143.26	1.17	0.82	110	0.442	0.984	0.82	0.50	1.55	208.83	1.61		1	100	1.00	1.25	1.00	209.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	133.59	0.95	0.71	110	0.451	0.983	0.72	0.50	1.53	192.72	1.60		1	100	1.00	1.30	1.00	193.4	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
8.37	119.63	0.65	0.54	110	0.460	0.983	0.54	0.50	1.52	170.80	1.56		1	99	1.00	1.35	1.00	171.4	1.00	Infin.	0.000	0.486	Non-Liq.	Non-Liq.	0.00
8.53	108.61	0.64	0.59	110	0.469	0.982	0.59	0.50	1.50	153.49	1.62		1	95	1.00	1.40	1.00	154.1	1.00	0.420	0.420	0.491	**0.86**	63%	0.66
8.69	97.77	0.53	0.54	110	0.478	0.982	0.54	0.50	1.49	136.81	1.64		1	90	1.00	1.45	1.00	136.9	1.00	0.318	0.318	0.496	**0.64**	81%	1.04
8.86	91.00	0.48	0.52	110	0.487	0.982	0.53	0.51	1.48	126.66	1.66		1	87	1.01	1.50	1.00	128.5	1.00	0.277	0.277	0.501	**0.55**	88%	1.13
9.02	88.06	0.54	0.61	110	0.496	0.981	0.62	0.52	1.48	122.80	1.71		1	85	1.05	1.55	1.00	128.8	1.00	0.279	0.279	0.506	**0.55**	88%	1.12
9.19	80.39	0.53	0.66	110	0.505	0.981	0.66	0.54	1.49	112.21	1.76		1	82	1.08	1.60	1.00	121.5	1.00	0.247	0.247	0.510	**0.48**	92%	1.21
9.35	57.91	0.50	0.87	110	0.514	0.981	0.88	0.59	1.53	83.01	1.94		1	69	1.23	1.65	1.00	102.3	1.00	0.180	0.180	0.515	**0.35**	97%	1.46
9.51	67.62	0.54	0.79	110	0.523	0.980	0.80	0.57	1.49	94.64	1.87		1	75	1.16	1.70	1.00	110.3	1.00	0.205	0.205	0.520	**0.39**	96%	1.35
9.68	67.40	0.52	0.77	110	0.532	0.980	0.78	0.57	1.48	93.34	1.87		1	74	1.16	1.75	1.00	108.5	1.00	0.199	0.199	0.524	**0.38**	96%	1.37
9.84	67.98	0.51	0.75	110	0.541	0.980	0.76	0.57	1.46	93.14	1.86		1	74	1.15	1.80	1.00	107.8	1.00	0.197	0.197	0.529	**0.37**	96%	1.38
10.01	65.93	0.45	0.68	110	0.550	0.979	0.69	0.56	1.44	89.29	1.85		1	72	1.15	1.85	1.00	102.7	1.00	0.181	0.181	0.533	**0.34**	97%	1.48
10.17	65.84	0.44	0.67	110	0.559	0.979	0.68	0.56	1.43	88.34	1.85		1	72	1.15	1.90	1.00	101.6	1.00	0.178	0.178	0.537	**0.33**	97%	1.47
10.33	64.79	0.46	0.70	110	0.568	0.979	0.71	0.57	1.42	86.44	1.87		1	71	1.16	1.95	1.00	100.8	1.00	0.175	0.175	0.541	**0.32**	98%	1.48
10.50	65.15	0.49	0.74	110	0.577	0.978	0.75	0.57	1.42	86.37	1.88		1	71	1.17	2.00	1.00	101.9	1.00	0.178	0.178	0.545	**0.33**	98%	1.47
10.66	65.57	0.48	0.74	110	0.586	0.978	0.74	0.57	1.40	86.12	1.88		1	71	1.17	2.05	1.00	101.4	1.00	0.177	0.177	0.550	**0.32**	98%	1.48
10.83	66.76	0.49	0.73	110	0.595	0.978	0.74	0.57	1.39	86.85	1.88		1	71	1.17	2.10	1.00	101.9	1.00	0.178	0.178	0.554	**0.32**	98%	1.47
10.99	69.51	0.50	0.72	110	0.604	0.977	0.73	0.57	1.37	89.46	1.86		1	72	1.16	2.15	1.00	103.8	1.00	0.184	0.184	0.557	**0.33**	97%	1.44
11.15	72.61	0.54	0.74	110	0.614	0.977	0.74	0.57	1.36	92.59	1.86		1	74	1.15	2.20	1.00	107.0	1.00	0.194	0.194	0.561	**0.35**	97%	1.40
11.32	77.76	0.57	0.73	110	0.623	0.977	0.73	0.56	1.34	98.03	1.83		1	76	1.13	2.25	1.00	111.4	1.00	0.209	0.209	0.565	**0.37**	96%	1.34
11.48	84.82	0.65	0.76	110	0.632	0.976	0.77	0.55	1.33	105.90	1.82		1	79	1.12	2.30	1.00	119.2	1.00	0.238	0.238	0.569	**0.42**	95%	1.24
11.65	92.40	0.51	0.55	110	0.641	0.976	0.56	0.52	1.30	112.72	1.72		1	82	1.05	2.35	1.00	118.6	1.00	0.235	0.235	0.572	**0.41**	95%	1.25
11.81	100.55	0.65	0.64	110	0.650	0.975	0.65	0.53	1.29	122.02	1.73		1	85	1.06	2.40	1.00	129.2	1.00	0.281	0.281	0.576	**0.49**	91%	1.13
11.98	108.89	0.74	0.67	110	0.659	0.975	0.68	0.52	1.28	131.02	1.71		1	88	1.05	2.45	1.00	137.7	1.00	0.323	0.323	0.580	**0.56**	87%	1.03
12.14	120.07	0.79	0.66	110	0.668	0.975	0.66	0.51	1.27	142.80	1.68		1	92	1.02	2.50	1.00	146.6	1.00	0.373	0.373	0.583	**0.64**	81%	0.86
12.30	132.01	0.89	0.68	110	0.677	0.974	0.68	0.50	1.25	155.55	1.66		1	95	1.01	2.55	1.00	157.3	1.00	0.442	0.442	0.587	**0.75**	72%	0.61
12.47	144.08	1.04	0.72	110	0.686	0.974	0.72	0.50	1.24	168.48	1.65		1	98	1.00	2.60	1.00	169.2	1.00	Infin.	0.000	0.590	Non-Liq.	Non-Liq.	0.00
12.63	152.23	1.19	0.78	110	0.695	0.974	0.79	0.50	1.24	177.08	1.65		1	100	1.01	2.65	1.00	178.9	1.00	Infin.	0.000	0.593	Non-Liq.	Non-Liq.	0.00
12.80	162.83	1.20	0.74	110	0.704	0.973	0.74	0.50	1.23	187.89	1.62		1	100	1.00	2.70	1.00	188.6	1.00	Infin.	0.000	0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	177.02	1.56	0.88	110	0.713	0.973	0.88	0.50	1.22	203.18	1.65		1	100	1.00	2.75	1.00	204.1	1.00	Infin.	0.000	0.600	**Non-Liq.**	Non-Liq.	**0.00**
13.12	188.21	1.70	0.90	110	0.722	0.973	0.90	0.50	1.21	214.55	1.64		1	100	1.00	2.80	1.00	215.4	1.00	Infin.	0.000	0.603	**Non-Liq.**	Non-Liq.	**0.00**
13.29	199.52	1.82	0.91	110	0.731	0.972	0.92	0.50	1.20	226.07	1.63		1	100	1.00	2.85	1.00	226.9	1.00	Infin.	0.000	0.606	**Non-Liq.**	Non-Liq.	**0.00**
13.45	206.33	1.96	0.95	110	0.740	0.972	0.95	0.50	1.20	232.38	1.63		1	100	1.00	2.90	1.00	233.2	1.00	Infin.	0.000	0.609	**Non-Liq.**	Non-Liq.	**0.00**
13.62	209.22	1.92	0.92	110	0.749	0.972	0.92	0.50	1.19	234.21	1.62		1	100	1.00	2.95	1.00	235.1	1.00	Infin.	0.000	0.612	**Non-Liq.**	Non-Liq.	**0.00**
13.78	216.92	2.11	0.97	110	0.758	0.971	0.98	0.50	1.18	241.40	1.63		1	100	1.00	3.00	1.00	242.3	1.00	Infin.	0.000	0.615	**Non-Liq.**	Non-Liq.	**0.00**
13.94	220.68	1.88	0.85	110	0.767	0.971	0.85	0.50	1.17	244.14	1.58		1	100	1.00	3.05	1.00	245.1	1.00	Infin.	0.000	0.618	**Non-Liq.**	Non-Liq.	**0.00**
14.11	225.50	2.72	1.21	110	0.776	0.971	1.21	0.51	1.17	249.15	1.69		1	100	1.03	3.10	1.00	257.6	1.00	Infin.	0.000	0.621	**Non-Liq.**	Non-Liq.	**0.00**
14.27	226.97	2.77	1.22	110	0.785	0.970	1.22	0.52	1.17	249.35	1.69		1	100	1.03	3.15	1.00	258.3	1.00	Infin.	0.000	0.624	**Non-Liq.**	Non-Liq.	**0.00**
14.44	260.76	3.44	1.32	110	0.794	0.970	1.32	0.51	1.16	284.70	1.68		1	100	1.03	3.20	1.00	293.3	1.00	Infin.	0.000	0.627	**Non-Liq.**	Non-Liq.	**0.00**
14.60	273.34	5.44	1.99	110	0.803	0.970	2.00	0.55	1.16	300.02	1.82		1	100	1.12	3.25	1.00	336.8	1.00	Infin.	0.000	0.629	**Non-Liq.**	Non-Liq.	**0.00**
14.76	293.55	5.65	1.92	110	0.812	0.969	1.93	0.54	1.15	319.57	1.79		1	100	1.10	3.30	1.00	352.3	1.00	Infin.	0.000	0.632	**Non-Liq.**	Non-Liq.	**0.00**
14.93	441.40	7.59	1.72	110	0.821	0.969	1.72	0.51	1.14	473.40	1.66		1	100	1.01	3.35	1.00	479.8	1.00	Infin.	0.000	0.635	**Non-Liq.**	Non-Liq.	**0.00**
15.09	347.82	7.25	2.09	110	0.830	0.969	2.09	0.54	1.14	374.13	1.78		1	100	1.09	3.40	1.00	410.8	1.00	Infin.	0.000	0.637	**Non-Liq.**	Non-Liq.	**0.00**
15.26	302.88	7.87	2.60	110	0.839	0.968	2.61	0.58	1.14	326.31	1.90		1	100	1.18	3.45	1.00	387.9	1.00	Infin.	0.000	0.640	**Non-Liq.**	Non-Liq.	**0.00**
15.42	275.99	6.43	2.33	110	0.848	0.968	2.34	0.57	1.13	295.07	1.88		1	100	1.17	3.50	1.00	346.0	1.00	Infin.	0.000	0.643	**Non-Liq.**	Non-Liq.	**0.00**
15.58	376.75	5.16	1.37	110	0.857	0.967	1.37	0.50	1.11	394.73	1.61		1	100	1.00	3.55	1.00	396.2	1.00	Infin.	0.000	0.645	**Non-Liq.**	Non-Liq.	**0.00**
15.75	321.62	5.68	1.76	110	0.866	0.967	1.77	0.53	1.11	337.17	1.74		1	100	1.07	3.60	1.00	361.3	1.00	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	**0.00**
15.91	321.75	3.28	1.02	110	0.875	0.967	1.02	0.50	1.10	333.46	1.55		1	100	1.00	3.65	1.00	334.7	1.00	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	**0.00**
16.08	344.32	3.11	0.90	110	0.884	0.966	0.90	0.50	1.09	355.08	1.49		1	100	1.00	3.70	1.00	356.4	1.00	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
16.24	348.92	2.94	0.84	110	0.893	0.966	0.84	0.50	1.09	358.01	1.47		1	100	1.00	3.75	1.00	359.3	1.00	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
16.40	351.59	2.77	0.79	110	0.902	0.966	0.79	0.50	1.08	358.94	1.44		1	100	1.00	3.80	1.00	360.3	1.00	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
16.57	366.52	2.53	0.69	110	0.911	0.965	0.69	0.50	1.08	372.35	1.39		1	100	1.00	3.85	1.00	373.7	1.00	Infin.	0.000	0.660	**Non-Liq.**	Non-Liq.	**0.00**
16.73	381.08	3.05	0.80	110	0.920	0.965	0.80	0.50	1.07	385.27	1.43		1	100	1.00	3.90	1.00	386.7	1.00	Infin.	0.000	0.662	**Non-Liq.**	Non-Liq.	**0.00**
16.90	413.82	3.60	0.87	110	0.929	0.965	0.87	0.50	1.07	416.40	1.44		1	100	1.00	3.95	1.00	418.0	1.00	Infin.	0.000	0.664	**Non-Liq.**	Non-Liq.	**0.00**
17.06	452.15	4.24	0.94	110	0.938	0.964	0.94	0.50	1.06	452.86	1.44		1	100	1.00	4.00	1.00	454.6	1.00	Infin.	0.000	0.666	**Non-Liq.**	Non-Liq.	**0.00**
17.22	427.40	3.95	0.92	110	0.947	0.964	0.93	0.50	1.06	425.97	1.45		1	100	1.00	4.05	1.00	427.6	1.00	Infin.	0.000	0.669	**Non-Liq.**	Non-Liq.	**0.00**
17.39	404.51	3.69	0.91	110	0.956	0.963	0.91	0.50	1.05	401.19	1.46		1	100	1.00	4.10	1.00	402.7	1.00	Infin.	0.000	0.671	**Non-Liq.**	Non-Liq.	**0.00**
17.55	425.81	4.21	0.99	110	0.965	0.963	0.99	0.50	1.05	420.37	1.48		1	100	1.00	4.15	1.00	421.9	1.00	Infin.	0.000	0.673	**Non-Liq.**	Non-Liq.	**0.00**
17.72	438.64	4.22	0.96	110	0.974	0.963	0.96	0.50	1.04	431.05	1.47		1	100	1.00	4.20	1.00	432.7	1.00	Infin.	0.000	0.675	**Non-Liq.**	Non-Liq.	**0.00**
17.88	461.57	3.57	0.77	110	0.983	0.962	0.78	0.50	1.04	451.54	1.38		1	100	1.00	4.25	1.00	453.2	1.00	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
18.04	498.99	4.53	0.91	110	0.992	0.962	0.91	0.50	1.03	485.99	1.42		1	100	1.00	4.30	1.00	487.8	1.00	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
18.21	579.29	5.58	0.96	110	1.001	0.962	0.96	0.50	1.03	561.80	1.40		1	100	1.00	4.35	1.00	563.9	1.00	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
18.37	590.35	3.67	0.62	110	1.010	0.961	0.62	0.50	1.02	569.97	1.24		1	100	1.00	4.40	1.00	572.1	1.00	Infin.	0.000	0.683	**Non-Liq.**	Non-Liq.	**0.00**
18.54	576.43	4.80	0.83	110	1.020	0.961	0.83	0.50	1.02	554.03	1.35		1	100	1.00	4.45	1.00	556.1	1.00	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
18.70	606.56	5.65	0.93	110	1.029	0.960	0.93	0.50	1.01	580.47	1.38		1	100	1.00	4.50	1.00	582.6	1.00	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
18.86	565.11	6.10	1.08	110	1.038	0.960	1.08	0.50	1.01	538.37	1.46		1	100	1.00	4.55	1.00	540.4	1.00	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
19.03	544.74	8.59	1.58	110	1.047	0.960	1.58	0.50	1.01	516.68	1.61		1	100	1.00	4.60	1.00	518.6	1.00	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
19.19	567.96	6.47	1.14	110	1.056	0.959	1.14	0.50	1.00	536.43	1.48		1	100	1.00	4.65	1.00	538.4	1.00	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
19.36	526.36	6.42	1.22	110	1.065	0.959	1.22	0.50	1.00	494.95	1.52		1	100	1.00	4.70	1.00	496.8	1.00	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
19.52	450.76	4.60	1.02	110	1.074	0.958	1.02	0.50	0.99	421.92	1.49		1	100	1.00	4.75	1.00	423.5	1.00	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
19.69	418.45	3.90	0.93	110	1.083	0.958	0.94	0.50	0.99	389.97	1.48		1	100	1.00	4.80	1.00	391.4	1.00	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
19.85	376.34	3.82	1.02	110	1.092	0.957	1.02	0.50	0.98	349.16	1.54		1	100	1.00	4.85	1.00	350.5	1.00	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
20.01	355.23	3.87	1.09	110	1.101	0.957	1.09	0.50	0.98	328.16	1.58		1	100	1.00	4.90	1.00	329.4	1.00	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
20.18	380.08	4.45	1.17	110	1.107	0.957	1.17	0.50	0.98	350.22	1.59		1	100	1.00	4.95	1.00	351.5	1.00	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
20.34	440.83	4.85	1.10	110	1.111	0.956	1.10	0.50	0.98	405.64	1.53		1	100	1.00	5.00	1.00	407.2	1.00	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
20.51	486.23	4.83	0.99	110	1.115	0.956	1.00	0.50	0.97	446.73	1.47		1	100	1.00	5.05	1.00	448.4	1.00	Infin.	0.000	0.706	**Non-Liq.**	Non-Liq.	**0.00**
20.67	520.20	4.75	0.91	110	1.118	0.955	0.92	0.50	0.97	477.17	1.42		1	100	1.00	5.10	1.00	479.0	1.00	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
20.83	532.02	4.83	0.91	110	1.122	0.955	0.91	0.50	0.97	487.19	1.41		1	100	1.00	5.15	1.00	489.0	1.00	Infin.	0.000	0.709	**Non-Liq.**	Non-Liq.	**0.00**
21.00	551.58	5.24	0.95	110	1.126	0.954	0.95	0.50	0.97	504.26	1.42		1	100	1.00	5.20	1.00	506.1	1.00	Infin.	0.000	0.711	**Non-Liq.**	Non-Liq.	**0.00**
21.16	555.09	5.57	1.00	110	1.130	0.954	1.00	0.50	0.97	506.59	1.44		1	100	1.00	5.25	1.00	508.5	1.00	Infin.	0.000	0.712	**Non-Liq.**	Non-Liq.	**0.00**
21.33	541.40	4.23	0.78	110	1.134	0.954	0.78	0.50	0.97	493.22	1.36		1	100	1.00	5.30	1.00	495.1	1.00	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
21.49	529.93	3.90	0.74	110	1.138	0.953	0.74	0.50	0.96	481.91	1.34		1	100	1.00	5.35	1.00	483.7	1.00	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
21.65	514.51	3.55	0.69	110	1.142	0.953	0.69	0.50	0.96	467.06	1.33		1	100	1.00	5.40	1.00	468.8	1.00	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
21.82	465.36	3.51	0.75	110	1.146	0.952	0.76	0.50	0.96	421.62	1.39		1	100	1.00	5.45	1.00	423.2	1.00	Infin.	0.000	0.718	**Non-Liq.**	Non-Liq.	**0.00**
21.98	477.52	3.41	0.71	110	1.150	0.952	0.72	0.50	0.96	431.92	1.36		1	100	1.00	5.50	1.00	433.5	1.00	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
22.15	498.55	3.95	0.79	110	1.154	0.951	0.79	0.50	0.96	450.22	1.39		1	100	1.00	5.55	1.00	451.9	1.00	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
22.31	488.77	4.36	0.89	110	1.158	0.951	0.89	0.50	0.96	440.62	1.43		1	100	1.00	5.60	1.00	442.3	1.00	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
22.47	467.81	4.12	0.88	110	1.161	0.950	0.88	0.50	0.95	420.97	1.44		1	100	1.00	5.65	1.00	422.5	1.00	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
22.64	430.22	3.45	0.80	110	1.165	0.950	0.80	0.50	0.95	386.41	1.43		1	100	1.00	5.70	1.00	387.9	1.00	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
22.80	388.20	3.02	0.78	110	1.169	0.949	0.78	0.50	0.95	347.98	1.45		1	100	1.00	5.75	1.00	349.3	1.00	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
22.97	382.78	2.72	0.71	110	1.173	0.949	0.71	0.50	0.95	342.53	1.42		1	100	1.00	5.80	1.00	343.8	1.00	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
23.13	356.17	2.68	0.75	110	1.177	0.948	0.75	0.50	0.95	318.11	1.46		1	100	1.00	5.85	1.00	319.3	1.00	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
23.29	356.43	2.35	0.66	110	1.181	0.948	0.66	0.50	0.95	317.81	1.42		1	100	1.00	5.90	1.00	319.0	1.00	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
23.46	343.88	1.99	0.58	110	1.185	0.947	0.58	0.50	0.94	306.08	1.39		1	100	1.00	5.95	1.00	307.2	1.00	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
23.62	344.88	1.60	0.46	110	1.189	0.947	0.47	0.50	0.94	306.46	1.33		1	100	1.00	6.00	1.00	307.6	1.00	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
23.79	352.04	1.86	0.53	110	1.193	0.946	0.53	0.50	0.94	312.33	1.36		1	100	1.00	6.05	1.00	313.5	1.00	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
23.95	379.12	2.56	0.68	110	1.197	0.946	0.68	0.50	0.94	335.89	1.41		1	100	1.00	6.10	1.00	337.1	1.00	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
24.11	381.50	2.41	0.63	110	1.200	0.945	0.63	0.50	0.94	337.45	1.39		1	100	1.00	6.15	1.00	338.7	1.00	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
24.28	382.45	2.59	0.68	110	1.204	0.945	0.68	0.50	0.94	337.74	1.41		1	100	1.00	6.20	1.00	339.0	1.00	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
24.44	362.80	2.22	0.61	110	1.208	0.944	0.61	0.50	0.94	319.81	1.40		1	100	1.00	6.25	1.00	321.0	1.00	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
24.61	345.67	1.84	0.53	110	1.212	0.943	0.53	0.50	0.93	304.16	1.37		1	100	1.00	6.30	1.00	305.3	1.00	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
24.77	352.36	1.35	0.38	110	1.216	0.943	0.39	0.50	0.93	309.57	1.27		1	100	1.00	6.35	1.00	310.7	1.00	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
24.93	361.66	1.81	0.50	110	1.220	0.942	0.50	0.50	0.93	317.26	1.34		1	100	1.00	6.40	1.00	318.4	1.00	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**
25.10	368.75	1.84	0.50	110	1.224	0.942	0.50	0.50	0.93	322.98	1.33		1	100	1.00	6.45	1.00	324.2	1.00	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
25.26	366.01	1.90	0.52	110	1.228	0.941	0.52	0.50	0.93	320.06	1.35		1	100	1.00	6.50	1.00	321.3	1.00	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
25.43	371.63	1.81	0.49	110	1.232	0.941	0.49	0.50	0.93	324.47	1.32		1	100	1.00	6.55	1.00	325.7	1.00	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
25.59	377.11	1.91	0.51	110	1.236	0.940	0.51	0.50	0.93	328.74	1.33		1	100	1.00	6.60	1.00	330.0	1.00	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
25.75	376.28	2.06	0.55	110	1.240	0.939	0.55	0.50	0.92	327.50	1.35		1	100	1.00	6.65	1.00	328.7	1.00	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
25.92	388.18	2.48	0.64	110	1.243	0.939	0.64	0.50	0.92	337.36	1.39		1	100	1.00	6.70	1.00	338.6	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.08	387.53	2.18	0.56	110	1.247	0.938	0.57	0.50	0.92	336.26	1.35		1	100	1.00	6.75	1.00	337.5	1.00	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
26.25	390.12	1.95	0.50	110	1.251	0.938	0.50	0.50	0.92	337.98	1.32		1	100	1.00	6.80	1.00	339.2	1.00	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
26.41	385.52	1.93	0.50	110	1.255	0.937	0.50	0.50	0.92	333.46	1.32		1	100	1.00	6.85	1.00	334.7	1.00	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
26.57	386.49	1.78	0.46	110	1.259	0.936	0.46	0.50	0.92	333.78	1.30		1	100	1.00	6.90	1.00	335.0	1.00	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
26.74	384.18	1.88	0.49	110	1.263	0.936	0.49	0.50	0.92	331.26	1.32		1	100	1.00	6.95	1.00	332.5	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
26.90	381.61	1.93	0.51	110	1.267	0.935	0.51	0.50	0.91	328.53	1.33		1	100	1.00	7.00	1.00	329.8	1.00	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
27.07	376.27	1.93	0.51	110	1.271	0.934	0.51	0.50	0.91	323.41	1.34		1	100	1.00	7.05	1.00	324.6	1.00	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
27.23	373.66	1.90	0.51	110	1.275	0.934	0.51	0.50	0.91	320.67	1.34		1	100	1.00	7.10	1.00	321.9	1.00	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
27.40	376.94	1.90	0.51	110	1.279	0.933	0.51	0.50	0.91	322.99	1.33		1	100	1.00	7.15	1.00	324.2	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.56	386.83	3.91	1.01	110	1.282	0.932	1.01	0.50	0.91	330.99	1.55		1	100	1.00	7.20	1.00	332.2	1.00	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
27.72	393.44	4.16	1.06	110	1.286	0.932	1.06	0.50	0.91	336.15	1.56		1	100	1.00	7.25	1.00	337.4	1.00	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
27.89	437.24	5.53	1.26	110	1.290	0.931	1.27	0.50	0.91	373.12	1.60		1	100	1.00	7.30	1.00	374.5	1.00	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	525.83	5.33	1.01	110	1.294	0.930	1.02	0.50	0.90	448.27	1.48		1	100	1.00	7.35	1.00	449.9	1.00	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
28.22	485.02	4.40	0.91	110	1.298	0.929	0.91	0.50	0.90	412.76	1.46		1	100	1.00	7.40	1.00	414.3	1.00	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
28.38	366.91	3.58	0.98	110	1.302	0.929	0.98	0.50	0.90	311.51	1.56		1	100	1.00	7.45	1.00	312.7	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.54	359.69	4.34	1.21	110	1.306	0.928	1.21	0.50	0.90	304.90	1.63		1	100	1.00	7.50	1.00	306.0	1.00	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
28.71	376.46	4.11	1.09	110	1.310	0.927	1.09	0.50	0.90	318.68	1.59		1	100	1.00	7.55	1.00	319.9	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
28.87	396.64	4.96	1.25	110	1.314	0.926	1.25	0.50	0.90	335.32	1.62		1	100	1.00	7.60	1.00	336.6	1.00	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
29.04	393.61	3.29	0.83	110	1.318	0.926	0.84	0.50	0.90	332.26	1.49		1	100	1.00	7.65	1.00	333.5	1.00	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
29.20	387.79	2.93	0.76	110	1.322	0.925	0.76	0.50	0.89	326.84	1.46		1	100	1.00	7.70	1.00	328.1	1.00	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
29.36	376.30	2.51	0.67	110	1.325	0.924	0.67	0.50	0.89	316.65	1.43		1	100	1.00	7.75	1.00	317.8	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.53	377.25	2.25	0.60	110	1.329	0.923	0.60	0.50	0.89	316.99	1.39		1	100	1.00	7.80	1.00	318.2	1.00	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
29.69	384.97	2.36	0.61	110	1.333	0.923	0.62	0.50	0.89	323.02	1.39		1	100	1.00	7.85	1.00	324.2	1.00	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
29.86	387.70	2.46	0.64	110	1.337	0.922	0.64	0.50	0.89	324.84	1.40		1	100	1.00	7.90	1.00	326.1	1.00	Infin.	0.000	0.762	Non-Liq.	Non-Liq.	0.00
30.02	389.61	2.68	0.69	110	1.341	0.921	0.69	0.50	0.89	325.97	1.43		1	100	1.00	7.95	1.00	327.2	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.18	389.44	2.61	0.67	110	1.345	0.920	0.67	0.50	0.89	325.35	1.42		1	100	1.00	8.00	1.00	326.6	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.35	385.84	2.70	0.70	110	1.349	0.919	0.70	0.50	0.89	321.86	1.44		1	100	1.00	8.05	1.00	323.1	1.00	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
30.51	373.85	2.74	0.73	110	1.353	0.918	0.74	0.50	0.88	311.37	1.46		1	100	1.00	8.10	1.00	312.5	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.68	373.81	2.42	0.65	110	1.357	0.918	0.65	0.50	0.88	310.88	1.42		1	100	1.00	8.15	1.00	312.0	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
30.84	390.03	2.25	0.58	110	1.361	0.917	0.58	0.50	0.88	323.95	1.37		1	100	1.00	8.20	1.00	325.2	1.00	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
31.00	396.06	2.07	0.52	110	1.364	0.916	0.53	0.50	0.88	328.50	1.34		1	100	1.00	8.25	1.00	329.7	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.17	382.13	2.25	0.59	110	1.368	0.915	0.59	0.50	0.88	316.45	1.39		1	100	1.00	8.30	1.00	317.6	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.33	375.82	2.42	0.64	110	1.372	0.914	0.65	0.50	0.88	310.76	1.42		1	100	1.00	8.35	1.00	311.9	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.50	391.03	2.99	0.77	110	1.376	0.913	0.77	0.50	0.88	322.92	1.46		1	100	1.00	8.40	1.00	324.1	1.00	Infin.	0.000	0.765	Non-Liq.	Non-Liq.	0.00
31.66	400.92	2.99	0.74	110	1.380	0.912	0.75	0.50	0.88	330.65	1.45		1	100	1.00	8.45	1.00	331.9	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
31.82	406.82	3.52	0.87	110	1.384	0.911	0.87	0.50	0.87	335.05	1.50		1	100	1.00	8.45	1.00	336.3	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
31.99	418.90	4.27	1.02	110	1.388	0.910	1.02	0.50	0.87	344.55	1.54		1	100	1.00	8.45	1.00	345.8	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.15	377.63	3.97	1.05	110	1.392	0.909	1.05	0.50	0.87	310.05	1.58		1	100	1.00	8.45	1.00	311.2	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.32	379.13	2.48	0.65	110	1.396	0.908	0.66	0.50	0.87	310.85	1.43		1	100	1.00	8.45	1.00	312.0	1.00	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
32.48	383.08	2.56	0.67	110	1.400	0.907	0.67	0.50	0.87	313.66	1.43		1	100	1.00	8.45	1.00	314.8	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.64	374.12	2.93	0.78	110	1.403	0.906	0.79	0.50	0.87	305.87	1.49		1	100	1.00	8.45	1.00	307.0	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.81	381.30	3.49	0.92	110	1.407	0.905	0.92	0.50	0.87	311.32	1.53		1	100	1.00	8.45	1.00	312.5	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
32.97	408.55	3.13	0.77	110	1.411	0.904	0.77	0.50	0.87	333.19	1.46		1	100	1.00	8.45	1.00	334.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.14	382.63	3.51	0.92	110	1.415	0.903	0.92	0.50	0.86	311.54	1.53		1	100	1.00	8.45	1.00	312.7	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.30	380.84	3.52	0.93	110	1.419	0.902	0.93	0.50	0.86	309.65	1.54		1	100	1.00	8.45	1.00	310.8	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.46	373.57	2.42	0.65	110	1.423	0.901	0.65	0.50	0.86	303.30	1.43		1	100	1.00	8.45	1.00	304.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.63	348.56	2.29	0.66	110	1.427	0.900	0.66	0.50	0.86	282.52	1.46		1	100	1.00	8.45	1.00	283.6	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.79	339.90	1.86	0.55	110	1.431	0.899	0.55	0.50	0.86	275.10	1.41		1	100	1.00	8.45	1.00	276.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
33.96	325.76	1.16	0.36	110	1.435	0.898	0.36	0.50	0.86	263.24	1.30		1	100	1.00	8.45	1.00	264.2	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.12	318.65	1.04	0.33	110	1.439	0.897	0.33	0.50	0.86	257.12	1.29		1	100	1.00	8.45	1.00	258.1	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.28	302.21	0.98	0.32	110	1.443	0.896	0.33	0.50	0.86	243.46	1.31		1	100	1.00	8.45	1.00	244.4	1.00	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.45	271.69	0.85	0.31	110	1.446	0.895	0.31	0.50	0.86	218.46	1.34		1	100	1.00	8.45	1.00	219.3	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.61	230.31	1.74	0.76	110	1.450	0.894	0.76	0.50	0.85	184.75	1.63		1	100	1.00	8.45	1.00	185.4	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.78	172.13	2.62	1.52	110	1.454	0.893	1.53	0.59	0.83	133.65	1.94		1	89	1.23	8.45	1.00	165.6	0.99	Infin.	0.000	0.767	Non-Liq.	Non-Liq.	0.00
34.94	115.70	2.67	2.31	110	1.458	0.892	2.34	0.67	0.81	87.10	2.21		1	71	1.68		1.00	146.4	0.99	0.372	0.368	0.766	0.48	92%	0.91
35.10	77.37	2.49	3.21	110	1.462	0.890	3.28	0.74	0.79	56.46	2.44		1	53	2.49		1.00	140.7	0.99	0.339	0.336	0.766	0.44	94%	1.02
35.27	43.09	2.75	6.39	110	1.466	0.889	6.62	0.86	0.75	29.67	2.86		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.43	41.07	3.05	7.42	110	1.470	0.888	7.70	0.88	0.75	27.99	2.92		0						0.99			0.766	Non-Liq.	Non-Liq.	0.00
35.60	117.22	3.50	2.98	110	1.474	0.887	3.02	0.69	0.79	86.91	2.29		1	71	1.91		1.00	166.1	0.98	Infin.	0.000	0.766	Non-Liq.	Non-Liq.	0.00
35.76	102.95	2.85	2.77	110	1.478	0.886	2.81	0.70	0.79	75.92	2.30		1	65	1.96		1.00	149.1	0.99	0.389	0.384	0.766	0.50	91%	0.84
35.93	60.37	2.54	4.20	110	1.482	0.885	4.31	0.79	0.77	42.64	2.61		0						0.99			0.765	Non-Liq.	Non-Liq.	0.00
36.09	66.61	1.85	2.78	110	1.485	0.883	2.84	0.74	0.78	47.83	2.45		1	46	2.53		1.00	121.1	0.99	0.245	0.243	0.765	0.32	98%	1.24
36.25	123.04	2.42	1.97	110	1.489	0.882	1.99	0.65	0.80	92.00	2.14		1	73	1.53		1.00	140.7	0.98	0.339	0.332	0.765	0.43	94%	1.02
36.42	104.40	2.38	2.28	110	1.493	0.881	2.31	0.68	0.79	76.94	2.24		1	66	1.77		1.00	136.3	0.98	0.315	0.310	0.765	0.41	95%	1.07
36.58	92.52	2.48	2.68	110	1.497	0.880	2.72	0.71	0.78	67.30	2.33		1	60	2.05		1.00	138.1	0.98	0.325	0.319	0.764	0.42	95%	1.05
36.75	72.66	3.21	4.42	110	1.501	0.878	4.52	0.78	0.76	51.20	2.57		1	49	3.16		1.00	161.8	0.99	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
36.91	123.36	4.33	3.51	110	1.505	0.877	3.55	0.71	0.78	89.76	2.33		1	72	2.05		1.00	184.4	0.97	Infin.	0.000	0.764	Non-Liq.	Non-Liq.	0.00
37.07	154.86	4.78	3.09	110	1.509	0.876	3.12	0.67	0.79	114.09	2.22		1	82	1.72		1.00	196.3	0.97	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
37.24	152.31	3.58	2.35	110	1.513	0.875	2.38	0.65	0.79	113.04	2.13		1	82	1.52		1.00	171.8	0.97	Infin.	0.000	0.763	Non-Liq.	Non-Liq.	0.00
37.40	132.82	2.22	1.67	110	1.517	0.873	1.69	0.63	0.80	98.98	2.07		1	76	1.40		1.00	138.4	0.97	0.326	0.316	0.762	0.42	95%	1.05
37.57	105.83	2.40	2.26	110	1.521	0.872	2.30	0.68	0.78	77.06	2.24		1	66	1.76		1.00	135.9	0.98	0.314	0.306	0.762	0.40	95%	1.07
37.73	67.92	2.37	3.48	110	1.525	0.871	3.56	0.76	0.76	47.47	2.52		1	46	2.88		1.00	136.6	0.98	0.317	0.312	0.762	0.41	95%	1.07
37.89	210.25	2.15	1.02	110	1.528	0.869	1.03	0.54	0.82	161.91	1.76		1	97	1.08	0.60	1.15	201.7	0.97	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
38.06	301.78	1.89	0.62	110	1.532	0.868	0.63	0.50	0.83	235.81	1.50		1	100	1.00	0.60	1.15	271.8	0.96	Infin.	0.000	0.761	Non-Liq.	Non-Liq.	0.00
38.22	341.56	2.23	0.65	110	1.536	0.867	0.66	0.50	0.83	266.71	1.47		1	100	1.00	0.60	1.15	307.4	0.96	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
38.39	339.90	2.19	0.64	110	1.540	0.865	0.65	0.50	0.83	265.07	1.47		1	100	1.00	0.60	1.15	305.5	0.96	Infin.	0.000	0.760	Non-Liq.	Non-Liq.	0.00
38.55	347.24	2.08	0.60	110	1.544	0.864	0.60	0.50	0.83	270.47	1.44		1	100	1.00	0.60	1.15	311.8	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.71	371.45	2.18	0.59	110	1.548	0.863	0.59	0.50	0.83	289.04	1.41		1	100	1.00	0.60	1.15	333.2	0.96	Infin.	0.000	0.759	Non-Liq.	Non-Liq.	0.00
38.88	396.18	1.74	0.44	110	1.552	0.861	0.44	0.50	0.83	307.98	1.31		1	100	1.00	0.65	1.15	355.0	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.04	405.84	1.92	0.47	110	1.556	0.860	0.47	0.50	0.82	315.12	1.32		1	100	1.00	0.70	1.15	363.2	0.96	Infin.	0.000	0.758	Non-Liq.	Non-Liq.	0.00
39.21	400.44	2.26	0.57	110	1.560	0.859	0.57	0.50	0.82	310.52	1.38		1	100	1.00	0.70	1.15	357.9	0.96	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
39.37	383.75	3.81	0.99	110	1.564	0.857	1.00	0.50	0.82	297.15	1.57		1	100	1.00	0.70	1.15	342.5	0.95	Infin.	0.000	0.757	Non-Liq.	Non-Liq.	0.00
39.53	290.03	4.33	1.49	110	1.567	0.856	1.50	0.55	0.81	219.94	1.79		1	100	1.10	0.70	1.15	279.6	0.95	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
39.70	204.10	3.79	1.85	110	1.571	0.854	1.87	0.60	0.79	150.99	1.97		1	94	1.27	0.70	1.15	220.3	0.95	Infin.	0.000	0.756	Non-Liq.	Non-Liq.	0.00
39.86	126.34	3.03	2.39	110	1.575	0.853	2.42	0.67	0.77	90.32	2.21		1	73	1.68		1.00	151.9	0.95	0.406	0.386	0.755	0.51	90%	0.77
40.03	296.00	2.40	0.81	110	1.579	0.852	0.82	0.50	0.82	227.78	1.59		1	100	1.00	0.70	1.10	249.4	0.95	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
40.19	353.59	2.39	0.68	110	1.583	0.850	0.68	0.50	0.82	271.99	1.48		1	100	1.00	0.70	1.10	297.8	0.95	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
40.35	389.58	2.81	0.70	110	1.587	0.849	0.71	0.50	0.82	283.99	1.48		1	100	1.00	0.70	1.10	311.0	0.95	Infin.	0.000	0.753	Non-Liq.	Non-Liq.	0.00
40.52	358.58	2.73	0.76	110	1.591	0.847	0.76	0.50	0.82	275.16	1.51		1	100	1.00	0.70	1.10	301.3	0.95	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.68	360.65	2.12	0.59	110	1.595	0.846	0.59	0.50	0.81	276.42	1.43		1	100	1.00	0.70	1.10	302.7	0.94	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
40.85	364.14	2.43	0.67	110	1.599	0.844	0.67	0.50	0.81	278.76	1.46		1	100	1.00	0.70	1.10	305.3	0.94	Infin.	0.000	0.751	Non-Liq.	Non-Liq.	0.00
41.01	369.03	2.40	0.65	110	1.603	0.843	0.65	0.50	0.81	282.17	1.45		1	100	1.00	0.70	1.10	309.0	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.17	370.72	2.34	0.63	110	1.607	0.841	0.63	0.50	0.81	283.12	1.44		1	100	1.00	0.70	1.10	310.0	0.94	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
41.34	386.57	2.08	0.54	110	1.610	0.840	0.54	0.50	0.81	294.92	1.38		1	100	1.00	0.70	1.10	323.0	0.94	Infin.	0.000	0.749	Non-Liq.	Non-Liq.	0.00
41.50	407.71	2.69	0.66	110	1.614	0.838	0.66	0.50	0.81	310.74	1.43		1	100	1.00	0.70	1.10	340.3	0.94	Infin.	0.000	0.748	Non-Liq.	Non-Liq.	0.00
41.67	452.33	3.54	0.78	110	1.618	0.837	0.79	0.50	0.81	344.46	1.45		1	100	1.00	0.70	1.10	377.2	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.83	466.57	3.92	0.84	110	1.622	0.835	0.84	0.50	0.81	354.91	1.47		1	100	1.00	0.70	1.10	388.6	0.94	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
41.99	524.35	3.52	0.67	110	1.626	0.834	0.67	0.50	0.81	398.53	1.36		1	100	1.00	0.70	1.10	436.4	0.93	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
42.16	610.77	2.62	0.43	110	1.630	0.832	0.43	0.50	0.81	463.86	1.17		1	100	1.00	0.70	1.10	508.0	0.93	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
42.32	716.25	0.00	0.00	110	1.634	0.831	0.00	0.83	0.70	470.17	2.75		0		1.00				0.97			0.744	Non-Liq.	Non-Liq.	0.00
42.49	652.94	0.00	0.00	110	1.638	0.829	0.00	0.83	0.70	429.16	2.73		0		1.00				0.97			0.743	Non-Liq.	Non-Liq.	0.00
42.65	696.03	0.00	0.00	110	1.642	0.827	0.00	0.83	0.69	455.52	2.74		0		1.00				0.96			0.743	Non-Liq.	Non-Liq.	0.00

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA

Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-6A
Plot: 6

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
2.1

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.97	0.75
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Probab Avg	Total Induced Subsidence (inches)
3%	Required SF: 1.50
Max	Min SF of Liquefiable Layers: 0.27
99%	Avg SF of Liquefiable Layers: 0.02
	0.3

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	6.69	0.01	0.21	110	0.009	1.000	0.21	0.76	1.70	10.74	2.50		1	0	1.00		1.00	10.7	1.00	0.059	0.059	0.485	Non-Liq.	Non-Liq.	0.00
0.33	14.12	0.04	0.28	110	0.018	1.000	0.28	0.67	1.70	22.66	2.22		1	15	1.00		1.00	22.7	1.00	0.069	0.069	0.485	Non-Liq.	Non-Liq.	0.00
0.49	16.59	0.09	0.55	110	0.027	1.000	0.56	0.69	1.70	26.61	2.26		1	22	1.83		1.00	48.7	1.00	0.091	0.091	0.485	Non-Liq.	Non-Liq.	0.00
0.66	21.13	0.18	0.84	110	0.036	1.000	0.84	0.68	1.70	33.89	2.25		1	32	1.81		1.00	61.3	1.00	0.101	0.101	0.485	Non-Liq.	Non-Liq.	0.00
0.82	29.41	0.29	0.98	110	0.045	1.000	0.98	0.66	1.70	47.18	2.17		1	46	1.59		1.00	75.1	1.00	0.119	0.119	0.485	Non-Liq.	Non-Liq.	0.00
0.98	35.60	0.35	0.99	110	0.054	1.000	0.99	0.64	1.70	57.12	2.10		1	54	1.46		1.00	83.2	1.00	0.134	0.134	0.485	Non-Liq.	Non-Liq.	0.00
1.15	34.08	0.35	1.03	110	0.063	0.999	1.03	0.65	1.70	54.66	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.484	Non-Liq.	Non-Liq.	0.00
1.31	34.08	0.35	1.03	110	0.072	0.999	1.04	0.65	1.70	54.64	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.484	Non-Liq.	Non-Liq.	0.00
1.48	30.11	0.33	1.11	110	0.081	0.999	1.11	0.66	1.70	48.25	2.19		1	47	1.64		1.00	79.2	1.00	0.126	0.126	0.484	Non-Liq.	Non-Liq.	0.00
1.64	28.15	0.27	0.96	110	0.090	0.998	0.96	0.66	1.70	45.09	2.18		1	44	1.62		1.00	72.8	1.00	0.116	0.116	0.484	Non-Liq.	Non-Liq.	0.00
1.80	29.07	0.35	1.20	110	0.099	0.998	1.20	0.67	1.70	46.55	2.22		1	45	1.72		1.00	80.2	1.00	0.128	0.128	0.484	Non-Liq.	Non-Liq.	0.00
1.97	26.19	0.39	1.47	110	0.108	0.998	1.48	0.70	1.70	41.91	2.31		1	41	1.99		1.00	83.4	1.00	0.134	0.134	0.484	Non-Liq.	Non-Liq.	0.00
2.13	20.41	0.42	2.07	110	0.117	0.997	2.08	0.75	1.70	32.61	2.49		1	30	2.72		1.00	88.5	1.00	0.145	0.145	0.483	Non-Liq.	Non-Liq.	0.00
2.30	15.45	0.44	2.83	110	0.126	0.997	2.85	0.81	1.70	24.62	2.67		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.46	12.62	0.37	2.95	110	0.135	0.996	2.98	0.83	1.70	20.06	2.75		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.62	13.50	0.27	2.01	110	0.144	0.996	2.04	0.80	1.70	21.46	2.63		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.79	20.18	0.31	1.56	110	0.153	0.996	1.57	0.73	1.70	32.18	2.42		1	30	2.39		1.00	77.0	1.00	0.123	0.123	0.483	Non-Liq.	Non-Liq.	0.00
2.95	25.28	0.31	1.23	110	0.162	0.995	1.23	0.69	1.70	40.36	2.28		1	39	1.88		1.00	76.0	1.00	0.121	0.121	0.482	Non-Liq.	Non-Liq.	0.00
3.12	31.76	0.36	1.12	110	0.171	0.995	1.13	0.66	1.70	50.76	2.18		1	49	1.61		1.00	81.6	1.00	0.131	0.131	0.482	Non-Liq.	Non-Liq.	0.00
3.28	35.56	0.38	1.08	110	0.180	0.994	1.09	0.65	1.70	56.85	2.13		1	53	1.50		1.00	85.5	1.00	0.138	0.138	0.482	Non-Liq.	Non-Liq.	0.00
3.44	40.16	0.39	0.98	110	0.189	0.994	0.98	0.63	1.70	64.22	2.06		1	58	1.38		1.00	88.8	1.00	0.145	0.145	0.482	Non-Liq.	Non-Liq.	0.00
3.61	45.45	0.46	1.00	110	0.198	0.994	1.01	0.61	1.70	72.71	2.02		1	64	1.33		1.00	96.5	1.00	0.164	0.164	0.482	Non-Liq.	Non-Liq.	0.00
3.77	52.79	0.51	0.96	110	0.208	0.993	0.97	0.60	1.70	84.49	1.96		1	70	1.25	0.65	1.12	118.5	1.00	0.235	0.235	0.482	Non-Liq.	Non-Liq.	0.00
3.94	58.72	0.56	0.95	110	0.217	0.993	0.95	0.58	1.70	94.00	1.92		1	74	1.20	0.70	1.12	127.1	1.00	0.271	0.271	0.481	Non-Liq.	Non-Liq.	0.00
4.10	64.33	0.60	0.94	110	0.226	0.993	0.94	0.57	1.70	103.00	1.88		1	78	1.17	0.75	1.12	135.7	1.00	0.312	0.312	0.481	Non-Liq.	Non-Liq.	0.00
4.27	69.66	0.83	1.19	110	0.235	0.992	1.19	0.59	1.70	111.55	1.93		1	81	1.21	0.80	1.12	151.9	1.00	0.406	0.406	0.481	Non-Liq.	Non-Liq.	0.00
4.43	74.65	1.28	1.71	110	0.244	0.992	1.72	0.61	1.70	119.56	2.01		1	84	1.32		1.00	157.6	1.00	0.444	0.444	0.481	Non-Liq.	Non-Liq.	0.00
4.59	78.74	2.11	2.68	110	0.253	0.991	2.69	0.65	1.70	126.11	2.14		1	86	1.54		1.00	194.3	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
4.76	95.41	2.01	2.11	110	0.262	0.991	2.12	0.61	1.70	152.88	2.01		1	94	1.31		1.00	200.9	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
4.92	90.35	1.38	1.53	110	0.271	0.991	1.54	0.58	1.70	144.74	1.92		1	92	1.21	1.00	1.00	175.8	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.09	73.79	0.57	0.78	110	0.280	0.990	0.78	0.54	1.70	118.12	1.79		1	84	1.10	1.05	1.00	130.0	1.00	0.285	0.285	0.480	Non-Liq.	Non-Liq.	0.00
5.25	64.99	0.41	0.63	110	0.289	0.990	0.63	0.54	1.70	103.96	1.78		1	78	1.09	1.10	1.00	113.6	1.00	0.216	0.216	0.480	Non-Liq.	Non-Liq.	0.00
5.41	60.11	0.48	0.80	110	0.298	0.989	0.81	0.57	1.70	96.11	1.87		1	75	1.16	1.15	1.00	111.7	1.00	0.210	0.210	0.480	Non-Liq.	Non-Liq.	0.00
5.58	57.62	0.71	1.23	110	0.307	0.989	1.24	0.61	1.70	92.09	2.00		1	73	1.30	1.20	1.00	120.0	1.00	0.241	0.241	0.479	Non-Liq.	Non-Liq.	0.00
5.74	60.32	0.70	1.16	110	0.316	0.989	1.16	0.60	1.70	96.42	1.97		1	75	1.26	1.25	1.00	121.7	1.00	0.247	0.247	0.479	Non-Liq.	Non-Liq.	0.00
5.91	59.79	0.67	1.11	110	0.325	0.988	1.12	0.60	1.70	95.55	1.96		1	75	1.25	1.30	1.00	119.7	1.00	0.239	0.239	0.479	Non-Liq.	Non-Liq.	0.00
6.07	56.99	0.42	0.74	110	0.334	0.988	0.75	0.57	1.70	91.04	1.86		1	73	1.16	1.35	1.00	105.8	1.00	0.190	0.190	0.479	Non-Liq.	Non-Liq.	0.00
6.23	64.88	0.50	0.77	110	0.343	0.988	0.77	0.56	1.70	103.70	1.83		1	78	1.13	1.40	1.00	117.4	1.00	0.230	0.230	0.479	Non-Liq.	Non-Liq.	0.00
6.40	81.28	0.52	0.64	110	0.352	0.987	0.64	0.52	1.70	130.04	1.70		1	88	1.04	1.45	1.00	135.6	1.00	0.312	0.312	0.479	Non-Liq.	Non-Liq.	0.00
6.56	88.72	0.58	0.65	110	0.361	0.987	0.66	0.51	1.70	141.98	1.68		1	91	1.02	1.50	1.00	145.7	1.00	0.368	0.368	0.478	Non-Liq.	Non-Liq.	0.00
6.73	90.02	0.70	0.78	110	0.370	0.986	0.78	0.52	1.70	144.05	1.72		1	92	1.05	1.55	1.00	151.9	1.00	0.406	0.406	0.478	Non-Liq.	Non-Liq.	0.00
6.89	95.98	0.75	0.78	110	0.379	0.986	0.79	0.52	1.70	153.61	1.70		1	95	1.04	1.60	1.00	160.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	106.17	0.82	0.77	110	0.388	0.986	0.77	0.51	1.67	166.59	1.67		1	98	1.02	1.65	1.00	170.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	120.42	0.87	0.72	110	0.397	0.985	0.72	0.50	1.63	185.20	1.62		1	100	1.00	1.70	1.00	185.9	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
7.38	147.55	0.97	0.66	110	0.406	0.985	0.66	0.50	1.61	224.51	1.53		1	100	1.00	1.75	1.00	225.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	167.64	1.10	0.66	110	0.415	0.985	0.66	0.50	1.60	252.36	1.49		1	100	1.00	1.80	1.00	253.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	167.64	1.10	0.66	110	0.424	0.984	0.66	0.50	1.58	249.65	1.49		1	100	1.00	1.85	1.00	250.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	175.94	1.23	0.70	110	0.433	0.984	0.70	0.50	1.56	259.28	1.50		1	100	1.00	1.90	1.00	260.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	183.17	1.23	0.67	110	0.442	0.984	0.67	0.50	1.55	267.18	1.48		1	100	1.00	1.95	1.00	268.2	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	189.37	0.94	0.50	110	0.451	0.983	0.50	0.50	1.53	273.46	1.38		1	100	1.00	2.00	1.00	274.5	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
8.37	193.49	1.24	0.64	110	0.460	0.983	0.64	0.50	1.52	276.65	1.45		1	100	1.00	2.05	1.00	277.7	1.00	Infin.	0.000	0.486	Non-Liq.	Non-Liq.	0.00
8.53	194.51	1.46	0.75	110	0.469	0.982	0.75	0.50	1.50	275.42	1.51		1	100	1.00	2.10	1.00	276.4	1.00	Infin.	0.000	0.491	Non-Liq.	Non-Liq.	0.00
8.69	195.90	1.50	0.77	110	0.478	0.982	0.77	0.50	1.49	274.75	1.51		1	100	1.00	2.15	1.00	275.8	1.00	Infin.	0.000	0.496	Non-Liq.	Non-Liq.	0.00
8.86	199.53	1.67	0.84	110	0.487	0.982	0.84	0.50	1.47	277.23	1.54		1	100	1.00	2.20	1.00	278.3	1.00	Infin.	0.000	0.501	Non-Liq.	Non-Liq.	0.00
9.02	202.65	1.56	0.77	110	0.496	0.981	0.77	0.50	1.46	279.00	1.51		1	100	1.00	2.25	1.00	280.0	1.00	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
9.19	204.68	1.62	0.79	110	0.505	0.981	0.80	0.50	1.45	279.26	1.52		1	100	1.00	2.30	1.00	280.3	1.00	Infin.	0.000	0.510	Non-Liq.	Non-Liq.	0.00
9.35	192.88	1.56	0.81	110	0.514	0.981	0.81	0.50	1.43	260.79	1.54		1	100	1.00	2.35	1.00	261.8	1.00	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
9.51	173.28	1.31	0.75	110	0.523	0.980	0.76	0.50	1.42	232.18	1.56		1	100	1.00	2.40	1.00	233.0	1.00	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
9.68	160.53	1.12	0.70	110	0.532	0.980	0.70	0.50	1.41	213.20	1.56		1	100	1.00	2.45	1.00	214.0	1.00	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
9.84	160.48	0.98	0.61	110	0.541	0.980	0.61	0.50	1.40	211.34	1.53		1	100	1.00	2.50	1.00	212.1	1.00	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
10.01	167.93	0.95	0.57	110	0.550	0.979	0.57	0.50	1.39	219.35	1.49		1	100	1.00	2.55	1.00	220.2	1.00	Infin.	0.000	0.533	Non-Liq.	Non Liq.	0.00
10.17	179.44	1.12	0.62	110	0.559	0.979	0.62	0.50	1.38	232.52	1.50		1	100	1.00	2.60	1.00	233.4	1.00	Infin.	0.000	0.537	Non-Liq.	Non-Liq.	0.00
10.33	196.39	1.47	0.75	110	0.568	0.979	0.75	0.50	1.36	252.52	1.53		1	100	1.00	2.65	1.00	253.5	1.00	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
10.50	212.87	1.68	0.79	110	0.577	0.978	0.79	0.50	1.35	271.61	1.52		1	100	1.00	2.70	1.00	272.6	1.00	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
10.66	218.59	1.72	0.79	110	0.586	0.978	0.79	0.50	1.34	276.76	1.52		1	100	1.00	2.75	1.00	277.8	1.00	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
10.83	219.09	1.46	0.67	110	0.595	0.978	0.67	0.50	1.33	275.28	1.47		1	100	1.00	2.80	1.00	276.3	1.00	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
10.99	218.78	1.57	0.72	110	0.604	0.977	0.72	0.50	1.32	272.81	1.49		1	100	1.00	2.85	1.00	273.8	1.00	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
11.15	227.29	1.90	0.84	110	0.614	0.977	0.84	0.50	1.31	281.35	1.53		1	100	1.00	2.90	1.00	282.4	1.00	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
11.32	240.17	1.92	0.80	110	0.623	0.977	0.80	0.50	1.30	295.17	1.50		1	100	1.00	2.95	1.00	296.3	1.00	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
11.48	222.62	1.81	0.81	110	0.632	0.976	0.82	0.50	1.29	271.57	1.53		1	100	1.00	3.00	1.00	272.6	1.00	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
11.65	216.62	2.13	0.98	110	0.641	0.976	0.98	0.50	1.29	262.35	1.61		1	100	1.00	3.05	1.00	263.3	1.00	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
11.81	220.47	2.23	1.01	110	0.650	0.975	1.01	0.50	1.28	265.16	1.61		1	100	1.00	3.10	1.00	266.1	1.00	Infin.	0.000	0.576	Non-Liq.	Non-Liq.	0.00
11.98	211.90	2.36	1.11	110	0.659	0.975	1.12	0.50	1.27	253.63	1.66		1	100	1.01	3.15	1.00	256.5	1.00	Infin.	0.000	0.580	Non-Liq.	Non-Liq.	0.00
12.14	218.21	2.15	0.99	110	0.668	0.975	0.99	0.50	1.26	258.84	1.61		1	100	1.00	3.20	1.00	259.8	1.00	Infin.	0.000	0.583	Non-Liq.	Non-Liq.	0.00
12.30	217.25	1.71	0.79	110	0.677	0.974	0.79	0.50	1.25	255.96	1.54		1	100	1.00	3.25	1.00	256.9	1.00	Infin.	0.000	0.587	Non-Liq.	Non-Liq.	0.00
12.47	227.19	1.31	0.58	110	0.686	0.974	0.58	0.50	1.24	265.93	1.43		1	100	1.00	3.30	1.00	266.9	1.00	Infin.	0.000	0.590	Non-Liq.	Non-Liq.	0.00
12.63	246.00	1.35	0.55	110	0.695	0.974	0.55	0.50	1.23	286.13	1.40		1	100	1.00	3.35	1.00	287.2	1.00	Infin.	0.000	0.593	Non-Liq.	Non-Liq.	0.00
12.80	271.55	2.19	0.81	110	0.704	0.973	0.81	0.50	1.23	313.89	1.49		1	100	1.00	3.40	1.00	315.1	1.00	Infin.	0.000	0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (ft)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	298.70	2.19	0.73	110	0.713	0.973	0.74	0.50	1.22	343.15	1.43		1	100	1.00	3.45	1.00	344.4	1.00	Infin.	0.000	0.600	Non-Liq.	Non-Liq.	0.00
13.12	297.19	2.53	0.85	110	0.722	0.973	0.85	0.50	1.21	339.26	1.49		1	100	1.00	3.50	1.00	340.5	1.00	Infin.	0.000	0.603	Non-Liq.	Non-Liq.	0.00
13.29	297.26	2.68	0.90	110	0.731	0.972	0.90	0.50	1.20	337.23	1.51		1	100	1.00	3.55	1.00	338.5	1.00	Infin.	0.000	0.606	Non-Liq.	Non-Liq.	0.00
13.45	299.77	2.66	0.89	110	0.740	0.972	0.89	0.50	1.20	337.99	1.50		1	100	1.00	3.60	1.00	339.3	1.00	Infin.	0.000	0.609	Non-Liq.	Non-Liq.	0.00
13.62	299.47	2.65	0.88	110	0.749	0.972	0.89	0.50	1.19	335.60	1.50		1	100	1.00	3.65	1.00	336.9	1.00	Infin.	0.000	0.612	Non-Liq.	Non-Liq.	0.00
13.78	293.58	3.11	1.06	110	0.758	0.971	1.06	0.50	1.18	327.01	1.57		1	100	1.00	3.70	1.00	328.2	1.00	Infin.	0.000	0.615	Non-Liq.	Non-Liq.	0.00
13.94	298.13	3.07	1.03	110	0.767	0.971	1.03	0.50	1.17	330.12	1.56		1	100	1.00	3.75	1.00	331.4	1.00	Infin.	0.000	0.618	Non-Liq.	Non-Liq.	0.00
14.11	301.85	3.04	1.01	110	0.776	0.971	1.01	0.50	1.17	332.29	1.55		1	100	1.00	3.80	1.00	333.5	1.00	Infin.	0.000	0.621	Non-Liq.	Non-Liq.	0.00
14.27	298.45	3.68	1.23	110	0.785	0.970	1.24	0.50	1.16	326.64	1.62		1	100	1.00	3.85	1.00	327.9	1.00	Infin.	0.000	0.624	Non-Liq.	Non-Liq.	0.00
14.44	300.98	2.74	0.91	110	0.794	0.970	0.91	0.50	1.15	327.53	1.52		1	100	1.00	3.90	1.00	328.8	1.00	Infin.	0.000	0.627	Non-Liq.	Non-Liq.	0.00
14.60	315.50	2.80	0.89	110	0.803	0.970	0.89	0.50	1.15	341.43	1.50		1	100	1.00	3.95	1.00	342.7	1.00	Infin.	0.000	0.629	Non-Liq.	Non-Liq.	0.00
14.76	313.59	3.04	0.97	110	0.812	0.969	0.97	0.50	1.14	337.45	1.53		1	100	1.00	4.00	1.00	338.7	1.00	Infin.	0.000	0.632	Non-Liq.	Non-Liq.	0.00
14.93	322.37	3.47	1.08	110	0.821	0.969	1.08	0.50	1.14	345.00	1.56		1	100	1.00	4.05	1.00	346.3	1.00	Infin.	0.000	0.635	Non-Liq.	Non-Liq.	0.00
15.09	336.14	3.51	1.04	110	0.830	0.969	1.05	0.50	1.13	357.81	1.54		1	100	1.00	4.10	1.00	359.1	1.00	Infin.	0.000	0.637	Non-Liq.	Non-Liq.	0.00
15.26	323.66	3.11	0.96	110	0.839	0.968	0.96	0.50	1.12	342.62	1.52		1	100	1.00	4.15	1.00	343.9	1.00	Infin.	0.000	0.640	Non-Liq.	Non-Liq.	0.00
15.42	317.94	3.08	0.97	110	0.848	0.968	0.97	0.50	1.12	334.75	1.53		1	100	1.00	4.20	1.00	336.0	1.00	Infin.	0.000	0.643	Non-Liq.	Non-Liq.	0.00
15.58	320.07	3.08	0.96	110	0.857	0.967	0.96	0.50	1.11	335.21	1.53		1	100	1.00	4.25	1.00	336.5	1.00	Infin.	0.000	0.645	Non-Liq.	Non-Liq.	0.00
15.75	310.52	2.97	0.96	110	0.866	0.967	0.96	0.50	1.11	323.47	1.54		1	100	1.00	4.30	1.00	324.7	1.00	Infin.	0.000	0.648	Non-Liq.	Non-Liq.	0.00
15.91	314.10	3.02	0.96	110	0.875	0.967	0.96	0.50	1.10	325.51	1.54		1	100	1.00	4.35	1.00	326.7	1.00	Infin.	0.000	0.650	Non-Liq.	Non-Liq.	0.00
16.08	315.60	2.97	0.94	110	0.884	0.966	0.94	0.50	1.09	325.39	1.53		1	100	1.00	4.40	1.00	326.6	1.00	Infin.	0.000	0.653	Non-Liq.	Non-Liq.	0.00
16.24	327.26	2.77	0.85	110	0.893	0.966	0.85	0.50	1.09	335.73	1.49		1	100	1.00	4.45	1.00	337.0	1.00	Infin.	0.000	0.655	Non-Liq.	Non-Liq.	0.00
16.40	328.11	2.94	0.89	110	0.902	0.966	0.90	0.50	1.08	334.91	1.51		1	100	1.00	4.50	1.00	336.2	1.00	Infin.	0.000	0.657	Non-Liq.	Non-Liq.	0.00
16.57	357.30	2.93	0.82	110	0.911	0.965	0.82	0.50	1.08	362.96	1.45		1	100	1.00	4.55	1.00	364.3	1.00	Infin.	0.000	0.660	Non-Liq.	Non-Liq.	0.00
16.73	379.84	3.02	0.80	110	0.920	0.965	0.80	0.50	1.07	384.01	1.43		1	100	1.00	4.60	1.00	385.4	1.00	Infin.	0.000	0.662	Non-Liq.	Non-Liq.	0.00
16.90	393.42	4.35	1.11	110	0.929	0.965	1.11	0.50	1.07	395.83	1.54		1	100	1.00	4.65	1.00	397.3	1.00	Infin.	0.000	0.664	Non-Liq.	Non-Liq.	0.00
17.06	393.65	3.67	0.93	110	0.938	0.964	0.93	0.50	1.06	394.14	1.48		1	100	1.00	4.70	1.00	395.6	1.00	Infin.	0.000	0.666	Non-Liq.	Non-Liq.	0.00
17.22	403.88	3.66	0.91	110	0.947	0.964	0.91	0.50	1.06	402.47	1.46		1	100	1.00	4.75	1.00	404.0	1.00	Infin.	0.000	0.669	Non-Liq.	Non-Liq.	0.00
17.39	384.75	3.06	0.80	110	0.956	0.963	0.80	0.50	1.05	381.54	1.43		1	100	1.00	4.80	1.00	383.0	1.00	Infin.	0.000	0.671	Non-Liq.	Non-Liq.	0.00
17.55	418.46	2.70	0.64	110	0.965	0.963	0.65	0.50	1.05	413.10	1.34		1	100	1.00	4.85	1.00	414.6	1.00	Infin.	0.000	0.673	Non-Liq.	Non-Liq.	0.00
17.72	426.59	3.76	0.88	110	0.974	0.963	0.88	0.50	1.04	419.18	1.44		1	100	1.00	4.90	1.00	420.8	1.00	Infin.	0.000	0.675	Non-Liq.	Non-Liq.	0.00
17.88	438.49	4.30	0.98	110	0.983	0.962	0.98	0.50	1.04	428.91	1.47		1	100	1.00	4.95	1.00	430.5	1.00	Infin.	0.000	0.677	Non-Liq.	Non-Liq.	0.00
18.04	459.63	3.50	0.76	110	0.992	0.962	0.76	0.50	1.03	447.58	1.37		1	100	1.00	5.00	1.00	449.3	1.00	Infin.	0.000	0.679	Non-Liq.	Non-Liq.	0.00
18.21	446.70	3.76	0.84	110	1.001	0.962	0.84	0.50	1.03	432.99	1.42		1	100	1.00	5.05	1.00	434.6	1.00	Infin.	0.000	0.681	Non-Liq.	Non-Liq.	0.00
18.37	433.53	3.52	0.81	110	1.010	0.961	0.81	0.50	1.02	418.31	1.41		1	100	1.00	5.10	1.00	419.9	1.00	Infin.	0.000	0.683	Non-Liq.	Non-Liq.	0.00
18.54	420.70	4.05	0.96	110	1.020	0.961	0.96	0.50	1.02	404.09	1.48		1	100	1.00	5.15	1.00	405.6	1.00	Infin.	0.000	0.685	Non-Liq.	Non-Liq.	0.00
18.70	427.38	4.04	0.95	110	1.029	0.960	0.95	0.50	1.01	408.71	1.47		1	100	1.00	5.20	1.00	410.2	1.00	Infin.	0.000	0.687	Non-Liq.	Non-Liq.	0.00
18.86	433.11	4.37	1.01	110	1.038	0.960	1.01	0.50	1.01	412.39	1.49		1	100	1.00	5.20	1.00	413.9	1.00	Infin.	0.000	0.689	Non-Liq.	Non-Liq.	0.00
19.03	406.01	4.03	0.99	110	1.047	0.960	0.99	0.50	1.01	384.84	1.51		1	100	1.00	5.20	1.00	386.3	1.00	Infin.	0.000	0.691	Non-Liq.	Non-Liq.	0.00
19.19	382.11	4.15	1.09	110	1.056	0.959	1.09	0.50	1.00	360.57	1.55		1	100	1.00	5.20	1.00	361.9	1.00	Infin.	0.000	0.692	Non-Liq.	Non-Liq.	0.00
19.36	381.05	4.09	1.07	110	1.065	0.959	1.08	0.50	1.00	358.03	1.55		1	100	1.00	5.20	1.00	359.4	1.00	Infin.	0.000	0.694	Non-Liq.	Non-Liq.	0.00
19.52	379.85	4.12	1.08	110	1.074	0.958	1.09	0.50	0.99	355.39	1.56		1	100	1.00	5.20	1.00	356.7	1.00	Infin.	0.000	0.696	Non-Liq.	Non-Liq.	0.00
19.69	382.89	4.14	1.08	110	1.083	0.958	1.08	0.50	0.99	356.74	1.55		1	100	1.00	5.20	1.00	358.1	1.00	Infin.	0.000	0.698	Non-Liq.	Non-Liq.	0.00
19.85	384.60	3.97	1.03	110	1.092	0.957	1.04	0.50	0.98	356.85	1.54		1	100	1.00	5.20	1.00	358.2	1.00	Infin.	0.000	0.699	Non-Liq.	Non-Liq.	0.00
20.01	377.72	4.35	1.15	110	1.101	0.957	1.16	0.50	0.98	349.00	1.58		1	100	1.00	5.20	1.00	350.3	1.00	Infin.	0.000	0.701	Non-Liq.	Non-Liq.	0.00
20.18	371.25	4.23	1.14	110	1.107	0.957	1.14	0.50	0.98	342.06	1.58		1	100	1.00	5.20	1.00	343.3	1.00	Infin.	0.000	0.703	Non-Liq.	Non-Liq.	0.00
20.34	361.72	4.14	1.14	110	1.111	0.956	1.15	0.50	0.98	332.66	1.59		1	100	1.00	5.20	1.00	333.9	1.00	Infin.	0.000	0.704	Non-Liq.	Non-Liq.	0.00
20.51	347.60	4.05	1.16	110	1.115	0.956	1.17	0.50	0.97	319.07	1.61		1	100	1.00	5.20	1.00	320.3	1.00	Infin.	0.000	0.706	Non-Liq.	Non-Liq.	0.00
20.67	339.34	3.76	1.11	110	1.118	0.955	1.11	0.50	0.97	310.92	1.60		1	100	1.00	5.20	1.00	312.1	1.00	Infin.	0.000	0.708	Non-Liq.	Non-Liq.	0.00
20.83	332.14	3.55	1.07	110	1.122	0.955	1.07	0.50	0.97	303.76	1.59		1	100	1.00	5.20	1.00	304.9	1.00	Infin.	0.000	0.709	Non-Liq.	Non-Liq.	0.00
21.00	334.56	3.14	0.94	110	1.126	0.954	0.94	0.50	0.97	305.47	1.55		1	100	1.00	5.20	1.00	306.6	1.00	Infin.	0.000	0.711	Non-Liq.	Non-Liq.	0.00
21.16	327.20	2.80	0.86	110	1.130	0.954	0.86	0.50	0.97	298.19	1.52		1	100	1.00	5.20	1.00	299.3	1.00	Infin.	0.000	0.712	Non-Liq.	Non-Liq.	0.00
21.33	310.59	2.46	0.79	110	1.134	0.954	0.80	0.50	0.97	282.51	1.51		1	100	1.00	5.20	1.00	283.6	1.00	Infin.	0.000	0.714	Non-Liq.	Non-Liq.	0.00
21.49	293.79	1.87	0.63	110	1.138	0.953	0.64	0.50	0.96	266.71	1.46		1	100	1.00	5.20	1.00	267.7	1.00	Infin.	0.000	0.715	Non-Liq.	Non-Liq.	0.00
21.65	272.37	1.43	0.52	110	1.142	0.953	0.53	0.50	0.96	246.76	1.43		1	100	1.00	5.20	1.00	247.7	1.00	Infin.	0.000	0.717	Non-Liq.	Non-Liq.	0.00
21.82	224.93	2.27	1.01	110	1.146	0.952	1.01	0.51	0.96	203.01	1.69		1	100	1.03	5.20	1.00	210.1	1.00	Infin.	0.000	0.718	Non-Liq.	Non-Liq.	0.00
21.98	164.58	3.51	2.13	110	1.150	0.952	2.15	0.62	0.95	146.76	2.03		1	93	1.34		1.00	196.2	1.00	Infin.	0.000	0.719	Non-Liq.	Non-Liq.	0.00
22.15	113.74	3.46	3.04	110	1.154	0.951	3.07	0.68	0.94	100.30	2.25		1	77	1.81		1.00	181.0	1.00	Infin.	0.000	0.721	Non-Liq.	Non-Liq.	0.00
22.31	96.23	3.59	3.73	110	1.158	0.951	3.78	0.72	0.94	84.24	2.37		1	70	2.19		1.00	184.7	1.00	Infin.	0.000	0.722	Non-Liq.	Non-Liq.	0.00
22.47	51.22	2.75	5.37	110	1.161	0.950	5.50	0.81	0.93	43.86	2.68		0				1.00		1.00			0.724	Non-Liq.	Non-Liq.	0.00
22.64	53.23	1.95	3.66	110	1.165	0.950	3.74	0.77	0.93	45.67	2.55		1	44	3.02		1.00	138.0	1.00	0.324	0.324	0.725	**0.45**	93%	**1.05**
22.80	95.82	1.58	1.65	110	1.169	0.949	1.67	0.64	0.94	83.90	2.11		1	70	1.48		1.00	124.3	1.00	0.258	0.258	0.726	**0.36**	97%	**1.20**
22.97	193.72	2.53	1.30	110	1.173	0.949	1.31	0.55	0.94	171.87	1.82		1	99	1.12	1.00	1.00	193.5	1.00	Infin.	0.000	0.727	Non-Liq.	Non-Liq.	0.00
23.13	228.65	2.09	0.91	110	1.177	0.948	0.92	0.51	0.95	203.73	1.66		1	100	1.01	1.05	1.00	206.2	1.00	Infin.	0.000	0.729	Non-Liq.	Non-Liq.	0.00
23.29	278.92	2.84	1.02	110	1.181	0.948	1.02	0.50	0.95	248.47	1.63		1	100	1.00	1.10	1.00	249.4	1.00	Infin.	0.000	0.730	Non-Liq.	Non-Liq.	0.00
23.46	376.36	2.41	0.64	110	1.185	0.947	0.64	0.50	0.94	335.09	1.40		1	100	1.00	1.15	1.00	336.3	1.00	Infin.	0.000	0.731	Non-Liq.	Non-Liq.	0.00
23.62	310.45	2.46	0.79	110	1.189	0.947	0.80	0.50	0.94	275.76	1.52		1	100	1.00	1.20	1.00	276.8	1.00	Infin.	0.000	0.732	Non-Liq.	Non-Liq.	0.00
23.79	306.26	2.29	0.75	110	1.193	0.946	0.75	0.50	0.94	271.58	1.51		1	100	1.00	1.25	1.00	272.6	1.00	Infin.	0.000	0.733	Non-Liq.	Non-Liq.	0.00
23.95	308.85	2.26	0.73	110	1.197	0.946	0.74	0.50	0.94	273.43	1.50		1	100	1.00	1.30	1.00	274.5	1.00	Infin.	0.000	0.735	Non-Liq.	Non-Liq.	0.00
24.11	306.71	2.22	0.72	110	1.200	0.945	0.73	0.50	0.94	271.08	1.50		1	100	1.00	1.35	1.00	272.1	1.00	Infin.	0.000	0.736	Non-Liq.	Non-Liq.	0.00
24.28	307.77	2.19	0.71	110	1.204	0.945	0.72	0.50	0.94	271.58	1.49		1	100	1.00	1.40	1.00	272.6	1.00	Infin.	0.000	0.737	Non-Liq.	Non-Liq.	0.00
24.44	305.26	1.72	0.56	110	1.208	0.944	0.57	0.50	0.94	268.92	1.42		1	100	1.00	1.45	1.00	269.9	1.00	Infin.	0.000	0.738	Non-Liq.	Non-Liq.	0.00
24.61	305.26	1.99	0.65	110	1.212	0.943	0.65	0.50	0.93	268.48	1.47		1	100	1.00	1.50	1.00	269.5	1.00	Infin.	0.000	0.739	Non-Liq.	Non-Liq.	0.00
24.77	310.72	2.04	0.66	110	1.216	0.943	0.66	0.50	0.93	272.86	1.47		1	100	1.00	1.50	1.00	273.9	1.00	Infin.	0.000	0.740	Non-Liq.	Non-Liq.	0.00
24.93	312.81	1.96	0.63	110	1.220	0.942	0.63	0.50	0.93	274.26	1.45		1	100	1.00	1.50	1.00	275.3	1.00	Infin.	0.000	0.741	Non-Liq.	Non-Liq.	0.00
25.10	329.09	2.01	0.61	110	1.224	0.942	0.61	0.50	0.93	288.12	1.43		1	100	1.00	1.50	1.00	289.2	1.00	Infin.	0.000	0.742	Non-Liq.	Non-Liq.	0.00
25.26	344.97	1.95	0.57	110	1.228	0.941	0.57	0.50	0.93	301.80	1.39		1	100	1.00	1.50	1.00	302.7	1.00	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
25.43	351.08	2.30	0.65	110	1.232	0.941	0.66	0.50	0.93	306.47	1.43		1	100	1.00	1.50	1.00	307.6	1.00	Infin.	0.000	0.744	Non-Liq.	Non-Liq.	0.00
25.59	363.90	2.26	0.62	110	1.236	0.940	0.62	0.50	0.93	317.19	1.40		1	100	1.00	1.50	1.00	318.4	1.00	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
25.75	366.29	2.65	0.72	110	1.240	0.939	0.72	0.50	0.92	318.77	1.45		1	100	1.00	1.50	1.00	320.0	1.00	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
25.92	360.95	2.59	0.72	110	1.243	0.939	0.72	0.50	0.92	313.61	1.45		1	100	1.00	1.50	1.00	314.8	1.00	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
26.08	355.58	2.62	0.74	110	1.247	0.938	0.74	0.50	0.92	308.45	1.47		1	100	1.00	1.50	1.00	309.6	1.00	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
26.25	351.54	2.85	0.81	110	1.251	0.938	0.81	0.50	0.92	304.45	1.50		1	100	1.00	1.50	1.00	305.6	1.00	Infin.	0.000	0.748	Non-Liq.	Non-Liq.	0.00
26.41	345.76	2.67	0.77	110	1.255	0.937	0.77	0.50	0.92	298.96	1.49		1	100	1.00	1.50	1.00	300.1	1.00	Infin.	0.000	0.749	Non-Liq.	Non-Liq.	0.00
26.57	331.98	2.56	0.77	110	1.259	0.936	0.77	0.50	0.92	286.55	1.50		1	100	1.00	1.50	1.00	287.6	1.00	Infin.	0.000	0.750	Non-Liq.	Non-Liq.	0.00
26.74	322.29	2.19	0.68	110	1.263	0.936	0.68	0.50	0.92	277.72	1.47		1	100	1.00	1.50	1.00	278.8	1.00	Infin.	0.000	0.751	Non-Liq.	Non-Liq.	0.00
26.90	314.01	1.96	0.62	110	1.267	0.935	0.63	0.50	0.91	270.14	1.45		1	100	1.00	1.50	1.00	271.1	1.00	Infin.	0.000	0.751	Non-Liq.	Non-Liq.	0.00
27.07	312.94	1.77	0.57	110	1.271	0.934	0.57	0.50	0.91	268.79	1.43		1	100	1.00	1.50	1.00	269.8	1.00	Infin.	0.000	0.752	Non-Liq.	Non-Liq.	0.00
27.23	297.68	2.06	0.69	110	1.275	0.934	0.69	0.50	0.91	255.24	1.50		1	100	1.00	1.50	1.00	256.2	1.00	Infin.	0.000	0.753	Non-Liq.	Non-Liq.	0.00
27.40	274.32	1.97	0.72	110	1.279	0.933	0.72	0.50	0.91	234.76	1.54		1	100	1.00	1.50	1.00	235.6	1.00	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
27.56	243.92	1.79	0.73	110	1.282	0.932	0.74	0.50	0.91	208.30	1.58		1	100	1.00	1.50	1.00	209.1	1.00	Infin.	0.000	0.754	Non-Liq.	Non-Liq.	0.00
27.72	203.86	2.06	1.01	110	1.286	0.932	1.02	0.53	0.90	172.64	1.74		1	99	1.06	1.50	1.00	184.4	1.00	Infin.	0.000	0.755	Non-Liq.	Non-Liq.	0.00
27.89	128.56	2.20	1.71	110	1.290	0.931	1.73	0.62	0.88	106.29	2.05		1	79	1.37		1.00	146.0	1.00	0.370	0.370	0.756	**0.49**	91%	**0.91**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	101.99	2.28	2.23	110	1.294	0.930	2.26	0.67	0.87	83.14	2.21		1	69	1.69		1.00	140.6	1.00	0.338	0.338	0.756	**0.45**	93%	**1.02**
28.22	51.11	1.80	3.51	110	1.298	0.929	3.60	0.78	0.85	40.13	2.58		1	39	3.19		1.00	128.0	1.00	0.275	0.275	0.757	**0.36**	97%	**1.16**
28.38	52.32	1.72	3.29	110	1.302	0.929	3.37	0.77	0.85	41.07	2.55		1	40	3.03		1.00	124.6	1.00	0.260	0.260	0.758	**0.34**	97%	**1.20**
28.54	56.72	1.37	2.42	110	1.306	0.928	2.47	0.74	0.86	44.85	2.43		1	44	2.44		1.00	109.6	1.00	0.202	0.202	0.758	**0.27**	99%	**1.39**
28.71	70.59	1.56	2.21	110	1.310	0.927	2.25	0.71	0.86	56.31	2.33		1	53	2.05		1.00	115.3	1.00	0.223	0.223	0.759	**0.29**	98%	**1.32**
28.87	114.33	1.68	1.47	110	1.314	0.926	1.49	0.62	0.87	93.36	2.05		1	74	1.37		1.00	127.5	1.00	0.273	0.273	0.759	**0.36**	97%	**1.17**
29.04	212.27	1.59	0.75	110	1.318	0.926	0.76	0.50	0.90	178.67	1.64		1	100	1.00	1.00	1.00	178.6	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.20	270.62	2.46	0.91	110	1.322	0.925	0.91	0.50	0.89	227.75	1.62		1	100	1.00	1.05	1.00	228.6	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.36	330.54	2.18	0.66	110	1.325	0.924	0.66	0.50	0.89	278.01	1.46		1	100	1.00	1.10	1.00	279.0	1.00	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
29.53	349.39	1.96	0.56	110	1.329	0.923	0.56	0.50	0.89	293.49	1.39		1	100	1.00	1.15	1.00	294.6	1.00	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
29.69	360.66	1.80	0.50	110	1.333	0.923	0.50	0.50	0.89	302.55	1.35		1	100	1.00	1.20	1.00	303.7	1.00	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
29.86	367.26	1.69	0.46	110	1.337	0.922	0.46	0.50	0.89	307.65	1.32		1	100	1.00	1.25	1.00	308.8	1.00	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
30.02	360.19	1.58	0.44	110	1.341	0.921	0.44	0.50	0.89	301.27	1.32		1	100	1.00	1.30	1.00	302.4	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.18	364.67	1.25	0.34	110	1.345	0.920	0.34	0.50	0.89	304.58	1.24		1	100	1.00	1.35	1.00	305.7	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.35	376.58	1.54	0.41	110	1.349	0.919	0.41	0.50	0.89	314.11	1.28		1	100	1.00	1.40	1.00	315.3	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.51	377.16	1.63	0.43	110	1.353	0.918	0.43	0.50	0.88	314.13	1.30		1	100	1.00	1.45	1.00	315.3	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.68	333.76	1.64	0.49	110	1.357	0.918	0.49	0.50	0.88	277.45	1.37		1	100	1.00	1.50	1.00	278.5	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.84	317.96	1.81	0.57	110	1.361	0.917	0.57	0.50	0.88	263.88	1.43		1	100	1.00	1.55	1.00	264.9	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
31.00	293.92	1.53	0.52	110	1.364	0.916	0.52	0.50	0.88	243.49	1.43		1	100	1.00	1.60	1.00	244.4	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.17	298.19	1.57	0.53	110	1.368	0.915	0.53	0.50	0.88	246.69	1.43		1	100	1.00	1.65	1.00	247.6	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.33	299.06	1.55	0.52	110	1.372	0.914	0.52	0.50	0.88	247.06	1.43		1	100	1.00	1.70	1.00	248.0	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.50	301.92	1.67	0.55	110	1.376	0.913	0.55	0.50	0.88	249.07	1.44		1	100	1.00	1.75	1.00	250.0	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.66	296.78	1.60	0.54	110	1.380	0.912	0.54	0.50	0.88	244.47	1.44		1	100	1.00	1.80	1.00	245.4	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.82	282.25	1.66	0.59	110	1.384	0.911	0.59	0.50	0.87	232.11	1.48		1	100	1.00	1.85	1.00	233.0	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.99	283.26	2.04	0.72	110	1.388	0.910	0.73	0.50	0.87	232.61	1.54		1	100	1.00	1.90	1.00	233.5	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.15	279.05	2.52	0.90	110	1.392	0.909	0.91	0.50	0.87	228.81	1.62		1	100	1.00	1.95	1.00	229.7	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.32	264.05	3.05	1.15	110	1.396	0.908	1.16	0.52	0.87	214.79	1.72		1	100	1.05	2.00	1.00	226.1	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.48	250.59	3.28	1.31	110	1.400	0.907	1.32	0.54	0.86	202.48	1.77		1	100	1.09	2.05	1.00	221.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.64	244.23	3.15	1.29	110	1.403	0.906	1.30	0.54	0.86	196.97	1.78		1	100	1.09	2.10	1.00	215.6	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.81	239.79	3.02	1.26	110	1.407	0.905	1.27	0.54	0.86	193.10	1.78		1	100	1.09	2.15	1.00	211.1	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.97	240.83	2.74	1.14	110	1.411	0.904	1.14	0.53	0.86	194.23	1.74		1	100	1.07	2.20	1.00	207.7	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.14	267.29	2.26	0.85	110	1.415	0.903	0.85	0.50	0.86	217.28	1.61		1	100	1.00	2.25	1.00	218.1	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.30	269.49	1.86	0.69	110	1.419	0.902	0.69	0.50	0.86	218.78	1.55		1	100	1.00	2.30	1.00	219.6	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.46	270.31	2.15	0.80	110	1.423	0.901	0.80	0.50	0.86	219.14	1.59		1	100	1.00	2.35	1.00	220.0	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.63	241.91	2.18	0.90	110	1.427	0.900	0.90	0.51	0.86	195.27	1.67		1	100	1.01	2.40	1.00	198.8	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.79	219.65	2.12	0.96	110	1.431	0.899	0.97	0.52	0.85	176.09	1.72		1	100	1.05	2.45	1.00	185.7	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.96	236.69	2.44	1.03	110	1.435	0.898	1.04	0.52	0.85	189.61	1.72		1	100	1.05	2.50	1.00	199.7	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.12	253.42	2.64	1.04	110	1.439	0.897	1.05	0.52	0.85	203.12	1.70		1	100	1.04	2.55	1.00	211.6	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.28	273.96	3.02	1.10	110	1.443	0.896	1.11	0.52	0.85	219.46	1.70		1	100	1.03	2.60	1.00	227.9	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.45	296.13	3.44	1.16	110	1.446	0.895	1.17	0.51	0.85	237.10	1.69		1	100	1.03	2.65	1.00	245.4	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.61	315.65	3.90	1.24	110	1.450	0.894	1.24	0.52	0.85	252.37	1.69		1	100	1.03	2.70	1.00	261.8	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.78	329.54	4.18	1.27	110	1.454	0.893	1.28	0.52	0.85	263.22	1.69		1	100	1.03	2.75	1.00	272.6	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.94	341.71	4.12	1.21	110	1.458	0.892	1.21	0.51	0.85	273.33	1.66		1	100	1.01	2.80	1.00	277.8	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.10	357.73	3.87	1.08	110	1.462	0.890	1.08	0.50	0.85	286.45	1.61		1	100	1.00	2.85	1.00	287.5	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.27	368.55	3.45	0.94	110	1.466	0.889	0.94	0.50	0.85	294.76	1.56		1	100	1.00	2.90	1.00	295.9	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.43	371.34	3.32	0.89	110	1.470	0.888	0.90	0.50	0.85	296.60	1.54		1	100	1.00	2.95	1.00	297.7	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.60	374.83	3.14	0.84	110	1.474	0.887	0.84	0.50	0.85	299.00	1.52		1	100	1.00	3.00	1.00	300.1	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.76	374.45	2.75	0.73	110	1.478	0.886	0.74	0.50	0.85	298.29	1.47		1	100	1.00	3.05	1.00	299.4	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.93	379.11	2.45	0.65	110	1.482	0.885	0.65	0.50	0.85	301.62	1.43		1	100	1.00	3.10	1.00	302.7	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.09	370.12	2.21	0.60	110	1.485	0.883	0.60	0.50	0.84	294.05	1.41		1	100	1.00	3.15	1.00	295.1	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.25	350.96	2.32	0.66	110	1.489	0.882	0.66	0.50	0.84	278.40	1.46		1	100	1.00	3.20	1.00	279.4	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.42	332.11	2.24	0.67	110	1.493	0.881	0.68	0.50	0.84	263.03	1.49		1	100	1.00	3.25	1.00	264.0	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.58	320.02	4.38	1.37	110	1.497	0.880	1.38	0.53	0.83	250.73	1.73		1	100	1.06	3.30	1.00	266.2	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.75	314.68	4.59	1.46	110	1.501	0.878	1.47	0.54	0.83	245.47	1.76		1	100	1.08	3.35	1.00	265.3	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.91	323.64	4.64	1.43	110	1.505	0.877	1.44	0.53	0.83	252.50	1.74		1	100	1.07	3.40	1.00	270.5	0.97	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
37.07	352.97	4.40	1.25	110	1.509	0.876	1.25	0.51	0.83	277.26	1.67		1	100	1.02	3.45	1.00	283.2	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.24	339.32	4.58	1.35	110	1.513	0.875	1.36	0.52	0.83	265.01	1.71		1	100	1.04	3.50	1.00	277.9	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.40	311.75	3.95	1.27	110	1.517	0.873	1.27	0.52	0.83	243.01	1.71		1	100	1.05	3.55	1.00	255.1	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.57	316.65	3.97	1.25	110	1.521	0.872	1.26	0.52	0.83	246.71	1.70		1	100	1.04	3.60	1.00	257.7	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.73	324.98	4.11	1.27	110	1.525	0.871	1.27	0.52	0.83	253.00	1.70		1	100	1.04	3.65	1.00	263.7	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.89	313.50	4.12	1.31	110	1.528	0.869	1.32	0.53	0.82	243.07	1.72		1	100	1.05	3.70	1.00	257.1	0.97	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.06	336.26	4.69	1.39	110	1.532	0.868	1.40	0.53	0.82	260.39	1.73		1	100	1.06	3.75	1.00	275.8	0.96	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.22	355.50	7.68	2.16	110	1.536	0.867	2.17	0.57	0.81	270.57	1.87		1	100	1.16	3.80	1.00	315.7	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.39	365.48	7.76	2.12	110	1.540	0.865	2.13	0.57	0.81	278.20	1.86		1	100	1.15	3.85	1.00	321.5	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.55	420.69	8.65	2.06	110	1.544	0.864	2.06	0.55	0.81	321.61	1.81		1	100	1.12	3.90	1.00	360.0	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.71	390.62	7.43	1.90	110	1.548	0.863	1.91	0.55	0.81	298.48	1.80		1	100	1.11	3.95	1.00	331.8	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.88	316.05	7.07	2.24	110	1.552	0.861	2.25	0.58	0.80	237.81	1.91		1	100	1.20	4.00	1.00	287.2	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.04	282.97	4.44	1.57	110	1.556	0.860	1.58	0.55	0.81	214.87	1.82		1	100	1.12	4.05	1.00	241.6	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.21	275.95	3.83	1.39	110	1.560	0.859	1.39	0.54	0.81	210.08	1.78		1	100	1.09	4.10	1.00	230.8	0.96	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.37	269.76	4.26	1.58	110	1.564	0.857	1.59	0.56	0.80	203.82	1.83		1	100	1.13	4.15	1.00	231.8	0.95	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.53	267.47	4.03	1.51	110	1.567	0.856	1.51	0.55	0.80	202.11	1.82		1	100	1.12	4.20	1.00	227.7	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.70	286.57	4.17	1.45	110	1.571	0.854	1.46	0.54	0.81	217.15	1.79		1	100	1.10	4.25	1.00	239.5	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.86	266.83	3.87	1.45	110	1.575	0.853	1.46	0.55	0.80	201.34	1.81		1	100	1.11	4.30	1.00	225.1	0.95	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
40.03	266.44	3.65	1.37	110	1.579	0.852	1.38	0.55	0.80	201.22	1.79		1	100	1.10	4.35	1.00	222.2	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.19	264.65	3.64	1.38	110	1.583	0.850	1.38	0.55	0.80	199.50	1.79		1	100	1.10	4.40	1.00	220.9	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.35	262.76	3.62	1.38	110	1.587	0.849	1.38	0.55	0.80	197.73	1.80		1	100	1.10	4.45	1.00	219.3	0.95	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
40.52	263.40	3.68	1.40	110	1.591	0.847	1.40	0.55	0.80	197.84	1.80		1	100	1.11	4.50	1.00	220.0	0.95	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.68	268.30	2.97	1.11	110	1.595	0.846	1.11	0.52	0.81	203.34	1.72		1	100	1.05	4.55	1.00	214.4	0.94	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.85	273.61	3.26	1.19	110	1.599	0.844	1.20	0.53	0.80	206.64	1.74		1	100	1.06	4.60	1.00	220.5	0.94	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
41.01	279.17	3.44	1.23	110	1.603	0.843	1.24	0.53	0.80	210.44	1.74		1	100	1.07	4.65	1.00	225.4	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.17	277.56	3.52	1.27	110	1.607	0.841	1.27	0.53	0.80	208.63	1.76		1	100	1.08	4.70	1.00	225.1	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.34	264.17	3.63	1.38	110	1.610	0.840	1.38	0.55	0.79	197.18	1.80		1	100	1.11	4.75	1.00	218.8	0.94	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
41.50	267.65	3.48	1.30	110	1.614	0.838	1.31	0.54	0.80	200.10	1.78		1	100	1.09	4.80	1.00	218.7	0.94	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
41.67	269.53	3.45	1.28	110	1.618	0.837	1.29	0.54	0.80	201.42	1.77		1	100	1.08	4.85	1.00	219.2	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.83	264.07	3.42	1.30	110	1.622	0.835	1.30	0.54	0.79	196.79	1.78		1	100	1.09	4.90	1.00	215.7	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.99	253.52	3.32	1.31	110	1.626	0.834	1.32	0.55	0.79	188.24	1.80		1	100	1.10	4.95	1.00	208.4	0.93	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
42.16	253.46	3.37	1.33	110	1.630	0.832	1.34	0.55	0.79	187.81	1.80		1	100	1.11	5.00	1.00	208.7	0.93	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
42.32	248.94	3.31	1.33	110	1.634	0.831	1.34	0.55	0.79	184.04	1.81		1	100	1.11	5.05	1.00	205.4	0.93	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
42.49	240.19	3.20	1.33	110	1.638	0.829	1.34	0.55	0.79	177.01	1.82		1	100	1.12	5.10	1.00	199.2	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.65	239.26	3.01	1.26	110	1.642	0.827	1.27	0.55	0.79	176.50	1.80		1	100	1.11	5.15	1.00	196.2	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.81	235.68	3.23	1.37	110	1.646	0.826	1.38	0.56	0.78	172.84	1.84		1	100	1.13	5.20	1.00	196.6	0.93	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
42.98	234.20	2.85	1.22	110	1.649	0.824	1.23	0.55	0.78	172.36	1.80		1	99	1.11	5.25	1.00	191.3	0.93	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_σ	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
43.14	238.08	3.09	1.30	110	1.653	0.823	1.31	0.55	0.78	174.63	1.81		1	100	1.12	5.30	1.00	195.8	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
43.31	216.71	3.13	1.45	110	1.657	0.821	1.46	0.57	0.77	157.24	1.88		1	96	1.17	5.35	1.00	184.8	0.93	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
43.47	215.92	2.85	1.32	110	1.661	0.820	1.33	0.56	0.78	157.06	1.85		1	96	1.15	5.40	1.00	180.7	0.92	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
43.64	228.43	2.91	1.27	110	1.665	0.818	1.28	0.55	0.78	166.65	1.82		1	98	1.12	5.45	1.00	188.0	0.92	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
43.80	245.66	2.77	1.13	110	1.669	0.816	1.14	0.54	0.78	180.61	1.76		1	100	1.08	5.50	1.00	195.6	0.92	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
43.96	253.66	2.83	1.12	110	1.673	0.815	1.12	0.53	0.78	186.64	1.75		1	100	1.07	5.55	1.00	200.4	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.13	255.03	2.26	0.89	110	1.677	0.813	0.89	0.51	0.79	189.39	1.67		1	100	1.02	5.60	1.00	193.6	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.29	249.25	2.48	0.99	110	1.681	0.811	1.00	0.52	0.79	183.72	1.72		1	100	1.05	5.65	1.00	193.3	0.92	Infin.	0.000	0.734	**Non-Liq.**	Non-Liq.	**0.00**
44.46	256.60	2.83	1.10	110	1.685	0.810	1.11	0.53	0.78	188.29	1.74		1	100	1.06	5.70	1.00	201.3	0.92	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
44.62	265.56	3.34	1.26	110	1.689	0.808	1.26	0.54	0.78	193.76	1.77		1	100	1.09	5.75	1.00	211.6	0.92	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
44.78	290.32	3.34	1.15	110	1.692	0.807	1.16	0.52	0.78	213.36	1.72		1	100	1.05	5.75	1.00	224.7	0.92	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
44.95	335.88	3.42	1.02	110	1.696	0.805	1.02	0.50	0.79	249.45	1.63		1	100	1.00	5.75	1.00	250.4	0.91	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
45.11	394.83	2.84	0.72	110	1.700	0.803	0.72	0.50	0.79	293.12	1.47		1	100	1.00	5.75	1.00	294.2	0.91	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
45.28	449.80	3.22	0.72	110	1.704	0.802	0.72	0.50	0.79	333.72	1.43		1	100	1.00	5.75	1.00	335.0	0.91	Infin.	0.000	0.728	**Non-Liq.**	Non-Liq.	**0.00**
45.44	447.17	4.13	0.92	110	1.708	0.800	0.93	0.50	0.79	331.38	1.52		1	100	1.00	5.75	1.00	332.6	0.91	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
45.60	452.93	3.89	0.86	110	1.712	0.798	0.86	0.50	0.79	335.27	1.49		1	100	1.00	5.75	1.00	336.5	0.91	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
45.77	475.52	3.64	0.77	110	1.716	0.797	0.77	0.50	0.79	351.66	1.44		1	100	1.00	5.75	1.00	353.0	0.91	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
45.93	444.46	2.97	0.67	110	1.720	0.795	0.67	0.50	0.78	328.23	1.42		1	100	1.00	5.75	1.00	329.5	0.91	Infin.	0.000	0.724	**Non-Liq.**	Non-Liq.	**0.00**
46.10	446.58	2.40	0.54	110	1.724	0.793	0.54	0.50	0.78	329.42	1.35		1	100	1.00	5.75	1.00	330.7	0.91	Infin.	0.000	0.723	**Non-Liq.**	Non-Liq.	**0.00**
46.26	425.00	2.48	0.58	110	1.728	0.792	0.59	0.50	0.78	313.09	1.39		1	100	1.00	5.75	1.00	314.3	0.91	Infin.	0.000	0.722	**Non-Liq.**	Non-Liq.	**0.00**
46.42	414.92	2.66	0.64	110	1.731	0.790	0.64	0.50	0.78	305.28	1.42		1	100	1.00	5.75	1.00	306.4	0.91	Infin.	0.000	0.721	**Non-Liq.**	Non-Liq.	**0.00**
46.59	394.40	2.71	0.69	110	1.735	0.788	0.69	0.50	0.78	289.79	1.46		1	100	1.00	5.75	1.00	290.9	0.90	Infin.	0.000	0.720	**Non-Liq.**	Non-Liq.	**0.00**
46.75	375.24	2.77	0.74	110	1.739	0.787	0.74	0.50	0.78	275.34	1.50		1	100	1.00	5.75	1.00	276.4	0.90	Infin.	0.000	0.719	**Non-Liq.**	Non-Liq.	**0.00**
46.92	360.27	2.57	0.71	110	1.743	0.785	0.72	0.50	0.78	264.00	1.50		1	100	1.00	5.75	1.00	265.0	0.90	Infin.	0.000	0.717	**Non-Liq.**	Non-Liq.	**0.00**
47.08	348.31	2.26	0.65	110	1.747	0.783	0.65	0.50	0.78	254.91	1.48		1	100	1.00	5.75	1.00	255.9	0.90	Infin.	0.000	0.716	**Non-Liq.**	Non-Liq.	**0.00**
47.24	321.44	1.84	0.57	110	1.751	0.782	0.58	0.50	0.78	234.88	1.47		1	100	1.00	5.75	1.00	235.8	0.90	Infin.	0.000	0.715	**Non-Liq.**	Non-Liq.	**0.00**
47.41	279.99	1.88	0.67	110	1.755	0.780	0.68	0.50	0.78	204.20	1.56		1	100	1.00	5.75	1.00	205.0	0.90	Infin.	0.000	0.714	**Non-Liq.**	Non-Liq.	**0.00**
47.57	223.67	1.59	0.71	110	1.759	0.778	0.71	0.50	0.77	162.29	1.66		1	97	1.01	5.75	1.00	164.1	0.90	Infin.	0.000	0.713	**Non-Liq.**	Non-Liq.	**0.00**
47.74	164.82	2.03	1.23	110	1.763	0.777	1.25	0.59	0.74	114.21	1.93		1	82	1.22	5.75	1.00	139.7	0.90	0.334	0.299	0.712	**0.42**	95%	**1.03**
47.90	121.59	2.53	2.08	110	1.767	0.775	2.11	0.67	0.71	80.43	2.20		1	68	1.66		1.00	133.7	0.92	0.302	0.279	0.711	**0.39**	96%	**1.09**
48.06	91.32	2.37	2.60	110	1.770	0.773	2.65	0.72	0.69	58.48	2.37		1	55	2.18		1.00	127.5	0.92	0.273	0.251	0.710	**0.35**	97%	**1.16**
48.23	116.79	2.86	2.45	110	1.774	0.772	2.48	0.69	0.70	76.18	2.27		1	66	1.84		1.00	140.3	0.92	0.337	0.310	0.709	**0.44**	94%	**1.02**
48.39	231.35	2.98	1.29	110	1.778	0.770	1.30	0.56	0.75	162.37	1.83		1	97	1.13	1.00	1.00	184.6	0.89	Infin.	0.000	0.708	**Non-Liq.**	Non-Liq.	**0.00**
48.56	280.33	2.88	1.03	110	1.782	0.768	1.03	0.52	0.76	201.01	1.70		1	100	1.04	1.05	1.00	209.2	0.89	Infin.	0.000	0.707	**Non-Liq.**	Non-Liq.	**0.00**
48.72	300.38	2.56	0.85	110	1.786	0.767	0.86	0.50	0.77	217.21	1.62		1	100	1.00	1.10	1.00	218.0	0.89	Infin.	0.000	0.705	**Non-Liq.**	Non-Liq.	**0.00**
48.88	311.53	2.58	0.83	110	1.790	0.765	0.83	0.50	0.77	225.07	1.60		1	100	1.00	1.15	1.00	225.9	0.89	Infin.	0.000	0.704	**Non-Liq.**	Non-Liq.	**0.00**
49.05	325.26	2.50	0.77	110	1.794	0.763	0.77	0.50	0.77	234.79	1.56		1	100	1.00	1.20	1.00	235.7	0.89	Infin.	0.000	0.703	**Non-Liq.**	Non-Liq.	**0.00**
49.21	339.47	2.81	0.83	110	1.798	0.762	0.83	0.50	0.77	244.84	1.57		1	100	1.00	1.25	1.00	245.8	0.89	Infin.	0.000	0.702	**Non-Liq.**	Non-Liq.	**0.00**
49.38	344.98	3.24	0.94	110	1.802	0.760	0.94	0.50	0.77	248.56	1.61		1	100	1.00	1.30	1.00	249.5	0.89	Infin.	0.000	0.701	**Non-Liq.**	Non-Liq.	**0.00**
49.54	351.47	3.83	1.09	110	1.806	0.758	1.09	0.50	0.76	252.53	1.65		1	100	1.00	1.35	1.00	254.5	0.89	Infin.	0.000	0.700	**Non-Liq.**	Non-Liq.	**0.00**
49.70	357.74	3.92	1.10	110	1.810	0.757	1.10	0.50	0.76	256.89	1.65		1	100	1.00	1.40	1.00	258.4	0.89	Infin.	0.000	0.699	**Non-Liq.**	Non-Liq.	**0.00**
49.87	374.88	3.72	0.99	110	1.813	0.755	1.00	0.50	0.76	269.33	1.60		1	100	1.00	1.45	1.00	270.3	0.88	Infin.	0.000	0.698	**Non-Liq.**	Non-Liq.	**0.00**
50.03	395.53	3.14	0.79	110	1.817	0.753	0.80	0.50	0.76	283.93	1.51		1	100	1.00	1.50	1.00	285.0	0.88	Infin.	0.000	0.696	**Non-Liq.**	Non-Liq.	**0.00**
50.20	406.66	2.61	0.64	110	1.821	0.752	0.64	0.50	0.76	291.65	1.44		1	100	1.00	1.50	1.00	292.7	0.88	Infin.	0.000	0.695	**Non-Liq.**	Non-Liq.	**0.00**
50.36	421.58	2.63	0.62	110	1.825	0.750	0.63	0.50	0.76	302.07	1.42		1	100	1.00	1.50	1.00	303.2	0.88	Infin.	0.000	0.694	**Non-Liq.**	Non-Liq.	**0.00**
50.52	433.35	2.55	0.59	110	1.829	0.748	0.59	0.50	0.76	310.20	1.39		1	100	1.00	1.50	1.00	311.4	0.88	Infin.	0.000	0.693	**Non-Liq.**	Non-Liq.	**0.00**
50.69	439.99	2.57	0.58	110	1.833	0.747	0.59	0.50	0.76	314.64	1.39		1	100	1.00	1.50	1.00	315.8	0.88	Infin.	0.000	0.692	**Non-Liq.**	Non-Liq.	**0.00**
50.85	441.89	2.61	0.59	110	1.837	0.745	0.59	0.50	0.76	315.66	1.39		1	100	1.00	1.50	1.00	316.8	0.88	Infin.	0.000	0.691	**Non-Liq.**	Non-Liq.	**0.00**
51.02	455.49	2.77	0.61	110	1.841	0.743	0.61	0.50	0.76	325.07	1.39		1	100	1.00	1.50	1.00	326.3	0.88	Infin.	0.000	0.689	**Non-Liq.**	Non-Liq.	**0.00**
51.18	472.21	3.30	0.70	110	1.845	0.742	0.70	0.50	0.76	336.69	1.42		1	100	1.00	1.50	1.00	338.0	0.88	Infin.	0.000	0.688	**Non-Liq.**	Non-Liq.	**0.00**
51.35	504.84	3.77	0.75	110	1.849	0.740	0.75	0.50	0.76	359.67	1.43		1	100	1.00	1.50	1.00	361.0	0.88	Infin.	0.000	0.687	**Non-Liq.**	Non-Liq.	**0.00**
51.51	459.09	4.28	0.93	110	1.852	0.738	0.94	0.50	0.76	326.60	1.53		1	100	1.00	1.50	1.00	327.8	0.87	Infin.	0.000	0.686	**Non-Liq.**	Non-Liq.	**0.00**
51.67	422.99	4.23	1.00	110	1.856	0.737	1.00	0.50	0.75	300.50	1.57		1	100	1.00	1.50	1.00	301.6	0.87	Infin.	0.000	0.685	**Non-Liq.**	Non-Liq.	**0.00**
51.84	454.99	5.33	1.17	110	1.860	0.735	1.18	0.50	0.75	322.99	1.61		1	100	1.00	1.50	1.00	324.2	0.87	Infin.	0.000	0.684	**Non-Liq.**	Non-Liq.	**0.00**
52.00	493.38	5.94	1.20	110	1.864	0.733	1.21	0.50	0.75	349.99	1.60		1	100	1.00	1.50	1.00	351.3	0.87	Infin.	0.000	0.682	**Non-Liq.**	Non-Liq.	**0.00**
52.17	477.89	5.21	1.09	110	1.868	0.732	1.09	0.50	0.75	338.60	1.57		1	100	1.00	1.50	1.00	339.9	0.87	Infin.	0.000	0.681	**Non-Liq.**	Non-Liq.	**0.00**
52.33	440.86	3.78	0.86	110	1.872	0.730	0.86	0.50	0.75	311.93	1.51		1	100	1.00	1.50	1.00	313.1	0.87	Infin.	0.000	0.680	**Non-Liq.**	Non-Liq.	**0.00**
52.49	459.07	3.21	0.70	110	1.876	0.728	0.70	0.50	0.75	324.53	1.43		1	100	1.00	1.50	1.00	325.7	0.87	Infin.	0.000	0.679	**Non-Liq.**	Non-Liq.	**0.00**
52.66	325.12	2.21	0.68	110	1.880	0.727	0.68	0.50	0.75	229.21	1.53		1	100	1.00	1.50	1.00	230.1	0.87	Infin.	0.000	0.678	**Non-Liq.**	Non-Liq.	**0.00**
52.82	240.31	2.13	0.89	110	1.884	0.725	0.89	0.52	0.74	166.81	1.71		1	98	1.05	1.50	1.00	175.1	0.87	Infin.	0.000	0.677	**Non-Liq.**	Non-Liq.	**0.00**
52.99	196.52	2.05	1.05	110	1.888	0.724	1.06	0.56	0.72	133.20	1.83		1	89	1.13	1.50	1.00	151.2	0.87	0.401	0.348	0.676	**0.51**	90%	**0.77**
53.15	141.14	1.74	1.23	110	1.892	0.722	1.25	0.61	0.70	92.47	2.00		1	74	1.30	1.50	1.00	120.5	0.87	0.243	0.210	0.674	**0.31**	98%	**1.24**
53.31	110.78	1.92	1.73	110	1.895	0.720	1.76	0.66	0.68	69.84	2.19		1	62	1.64		1.00	114.7	0.90	0.220	0.197	0.673	**0.29**	98%	**1.31**
53.48	75.09	1.81	2.41	110	1.899	0.719	2.47	0.74	0.65	44.95	2.43		1	44	2.44		1.00	109.6	0.93	0.202	0.188	0.672	**0.28**	99%	**1.38**
53.64	58.78	1.67	2.83	110	1.903	0.717	2.93	0.78	0.63	34.03	2.57		1	32	3.14		1.00	107.0	0.93	0.194	0.180	0.671	**0.27**	99%	**1.42**
53.81	71.04	1.45	2.05	110	1.907	0.716	2.10	0.73	0.65	42.53	2.40		1	41	2.32		1.00	98.7	0.93	0.170	0.157	0.670	**0.24**	99%	**1.53**
53.97	81.60	1.36	1.67	110	1.911	0.714	1.71	0.70	0.66	49.93	2.29		1	48	1.92		1.00	95.8	0.93	0.162	0.150	0.669	**0.22**	99%	**1.58**
54.13	70.69	1.16	1.64	110	1.915	0.712	1.69	0.71	0.66	42.65	2.34		1	41	2.09		1.00	89.0	0.93	0.146	0.135	0.667	**0.20**	99%	**1.69**
54.30	44.26	1.08	2.45	110	1.919	0.711	2.56	0.80	0.62	24.87	2.64		0						0.93			0.666	**Non-Liq.**	Non-Liq.	**0.00**
54.46	37.41	1.01	2.69	110	1.923	0.709	2.84	0.83	0.61	20.46	2.73		0						0.93			0.665	**Non-Liq.**	Non-Liq.	**0.00**
54.63	29.79	1.23	4.12	110	1.927	0.708	4.40	0.89	0.59	15.43	2.95		0						0.93			0.664	**Non-Liq.**	Non-Liq.	**0.00**
54.79	31.13	1.67	5.36	110	1.931	0.706	5.72	0.91	0.58	15.96	3.01		0						0.93			0.663	**Non-Liq.**	Non-Liq.	**0.00**
54.95	44.13	1.70	3.85	110	1.934	0.705	4.02	0.84	0.60	24.02	2.77		0						0.93			0.662	**Non-Liq.**	Non-Liq.	**0.00**
55.12	95.31	2.21	2.32	110	1.938	0.703	2.37	0.71	0.65	57.43	2.34		1	54	2.08		1.00	119.4	0.89	0.238	0.212	0.661	**0.32**	98%	**1.25**
55.28	136.83	2.52	1.84	110	1.942	0.701	1.87	0.65	0.67	85.88	2.14		1	71	1.53		1.00	131.8	0.85	0.293	0.250	0.659	**0.38**	96%	**1.11**
55.45	185.97	2.78	1.49	110	1.946	0.700	1.51	0.60	0.69	120.71	1.97		1	85	1.26	0.45	1.26	192.9	0.85	Infin.	0.000	0.658	**Non-Liq.**	Non-Liq.	**0.00**
55.61	219.92	3.19	1.45	110	1.950	0.698	1.47	0.58	0.70	144.48	1.91		1	92	1.20	0.45	1.26	218.4	0.85	Infin.	0.000	0.657	**Non-Liq.**	Non-Liq.	**0.00**
55.77	244.90	3.67	1.50	110	1.954	0.697	1.51	0.57	0.70	161.53	1.88		1	97	1.17	0.45	1.26	239.9	0.85	Infin.	0.000	0.656	**Non-Liq.**	Non-Liq.	**0.00**
55.94	256.05	3.99	1.56	110	1.958	0.695	1.57	0.57	0.70	168.76	1.88		1	99	1.17	0.45	1.26	250.5	0.85	Infin.	0.000	0.655	**Non-Liq.**	Non-Liq.	**0.00**
56.10	257.95	4.20	1.63	110	1.962	0.694	1.64	0.58	0.70	169.41	1.90		1	99	1.19	0.45	1.26	254.1	0.85	Infin.	0.000	0.654	**Non-Liq.**	Non-Liq.	**0.00**
56.27	260.48	4.35	1.67	110	1.966	0.692	1.68	0.58	0.70	170.70	1.90		1	99	1.19	0.45	1.26	257.2	0.85	Infin.	0.000	0.653	**Non-Liq.**	Non-Liq.	**0.00**
56.43	262.97	4.01	1.52	110	1.970	0.691	1.54	0.57	0.70	173.23	1.87		1	100	1.16	0.45	1.26	254.4	0.85	Infin.	0.000	0.652	**Non-Liq.**	Non-Liq.	**0.00**
56.59	252.09	3.88	1.54	110	1.974	0.689	1.55	0.57	0.70	165.32	1.89		1	98	1.18	0.45	1.26	245.7	0.85	Infin.	0.000	0.650	**Non-Liq.**	Non-Liq.	**0.00**
56.76	232.68	3.79	1.63	110	1.977	0.688	1.64	0.59	0.69	151.04	1.93		1	94	1.22	0.45	1.26	232.8	0.85	Infin.	0.000	0.649	**Non-Liq.**	Non-Liq.	**0.00**
56.92	183.02	3.54	1.93	110	1.981	0.686	1.95	0.63	0.67	115.43	2.06		1	83	1.39		1.00	161.0	0.85	Infin.	0.000	0.648	**Non-Liq.**	Non-Liq.	**0.00**
57.09	160.88	2.83	1.76	110	1.985	0.685	1.78	0.63	0.67	100.96	2.08		1	77	1.41		1.00	142.7	0.85	0.350	0.296	0.647	**0.46**	93%	**1.00**
57.25	152.41	2.48	1.63	110	1.989	0.683	1.65	0.63	0.67	95.58	2.07		1	75	1.40		1.00	134.1	0.84	0.304	0.257	0.646	**0.40**	95%	**1.08**
57.41	121.85	2.08	1.70	110	1.993	0.682	1.73	0.66	0.66	74.74	2.16		1	65	1.58		1.00	118.0	0.88	0.233	0.205	0.645	**0.32**	98%	**1.27**
57.58	78.30	1.74	2.23	110	1.997	0.680	2.28	0.73	0.63	45.38	2.40		1	44	2.33		1.00	105.7	0.92	0.190	0.174	0.644	**0.27**	99%	**1.43**
57.74	46.88	1.34	2.86	110	2.001	0.679	2.99	0.81	0.60	25.32	2.67		0						0.92			0.643	**Non-Liq.**	Non-Liq.	**0.00**
57.91	32.55	1.03	3.17	110	2.005	0.678	3.38	0.86	0.58	16.63	2.85		0						0.92			0.642	**Non-Liq.**	Non-Liq.	**0.00**
58.07	26.44	0.80	3.01	110	2.009	0.676	3.26	0.88	0.57	13.10	2.92		0						0.92			0.641	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
58.23	32.25	0.58	1.80	110	2.013	0.675	1.92	0.82	0.59	16.89	2.70		0						0.92			0.640	**Non-Liq.**	Non-Liq.	**0.00**
58.40	30.59	0.70	2.28	110	2.016	0.673	2.44	0.84	0.58	15.67	2.79		0						0.92			0.638	**Non-Liq.**	Non-Liq.	**0.00**
58.56	19.12	0.58	3.04	110	2.020	0.672	3.40	0.93	0.55	8.86	3.07		0						0.92			0.637	**Non-Liq.**	Non-Liq.	**0.00**
58.73	20.40	0.44	2.17	110	2.024	0.671	2.41	0.89	0.56	9.72	2.95		0						0.91			0.636	**Non-Liq.**	Non-Liq.	**0.00**
58.89	29.72	0.45	1.52	110	2.028	0.669	1.63	0.82	0.59	15.38	2.70		0						0.91			0.635	**Non-Liq.**	Non-Liq.	**0.00**
59.06	18.72	0.48	2.57	110	2.032	0.668	2.89	0.92	0.55	8.65	3.04		0						0.91			0.634	**Non-Liq.**	Non-Liq.	**0.00**
59.22	15.04	0.45	2.97	110	2.036	0.666	3.44	0.96	0.53	6.54	3.18		0						0.91			0.633	**Non-Liq.**	Non-Liq.	**0.00**
59.38	14.96	0.42	2.81	110	2.040	0.665	3.25	0.96	0.53	6.50	3.17		0						0.91			0.632	**Non-Liq.**	Non-Liq.	**0.00**
59.55	14.95	0.43	2.89	110	2.044	0.664	3.35	0.96	0.53	6.47	3.18		0						0.91			0.631	**Non-Liq.**	Non-Liq.	**0.00**
59.71	15.06	0.48	3.17	110	2.048	0.662	3.67	0.97	0.53	6.49	3.20		0						0.91			0.630	**Non-Liq.**	Non-Liq.	**0.00**
59.88	16.51	0.00	0.01	110	2.052	0.661	0.01	0.83	0.58	7.89	2.74		0		1.00				0.91			0.629	**Non-Liq.**	Non-Liq.	**0.00**
60.04	19.45	0.00	0.01	110	2.055	0.660	0.01	0.82	0.58	9.57	2.69		0		1.00				0.91			0.628	**Non-Liq.**	Non-Liq.	**0.00**
60.20	26.53	0.00	0.00	110	2.059	0.658	0.00	0.79	0.59	13.65	2.61		0		1.00				0.91			0.627	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA

Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-7
Plot: 7

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
3.1

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.97	0.75
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Required SF: 1.50
Unit Weight of saturated soils: 110 pcf
Min SF of Liquefiable Layers: 0.25
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Avg SF of Liquefiable Layers: 0.04

Probab	Total Induced Subsidence (inches)
Avg	2%
Max	99%
	0.4

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	7.32	0.09	1.28	110	0.009	1.000	1.29	0.83	1.70	11.75	2.74		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
0.33	12.26	0.12	1.00	110	0.018	1.000	1.00	0.76	1.70	19.67	2.50		1	9	2.75		1.00	54.0	1.00	0.095	0.095	0.485	Non-Liq.	Non-Liq.	0.00
0.49	14.26	0.15	1.02	110	0.027	1.000	1.03	0.74	1.70	22.87	2.44		1	16	2.50		1.00	57.1	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.66	13.52	0.15	1.09	110	0.036	1.000	1.10	0.75	1.70	21.67	2.48		1	13	2.66		1.00	57.7	1.00	0.098	0.098	0.485	Non-Liq.	Non-Liq.	0.00
0.82	11.35	0.14	1.22	110	0.045	1.000	1.22	0.78	1.70	18.16	2.57		1	6	3.14		1.00	57.0	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.98	9.04	0.12	1.33	110	0.054	1.000	1.34	0.81	1.70	14.44	2.67		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
1.15	7.13	0.08	1.07	110	0.063	0.999	1.08	0.82	1.70	11.36	2.72		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.31	7.13	0.08	1.07	110	0.072	0.999	1.08	0.82	1.70	11.34	2.72		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.48	6.14	0.08	1.27	110	0.081	0.999	1.29	0.85	1.70	9.74	2.82		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.64	6.75	0.14	2.01	110	0.090	0.998	2.04	0.87	1.70	10.70	2.88		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.80	12.03	0.25	2.04	110	0.099	0.998	2.05	0.81	1.70	19.17	2.67		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.97	26.83	0.46	1.71	110	0.108	0.998	1.72	0.71	1.70	42.94	2.34		1	42	2.10		1.00	90.0	1.00	0.148	0.148	0.484	Non-Liq.	Non-Liq.	0.00
2.13	27.70	0.58	2.10	110	0.117	0.997	2.11	0.72	1.70	44.32	2.39		1	43	2.27		1.00	100.6	1.00	0.175	0.175	0.483	Non-Liq.	Non-Liq.	0.00
2.30	30.71	0.62	2.02	110	0.126	0.997	2.02	0.71	1.70	49.14	2.34		1	47	2.10		1.00	103.0	1.00	0.182	0.182	0.483	Non-Liq.	Non-Liq.	0.00
2.46	35.14	0.59	1.69	110	0.135	0.996	1.70	0.68	1.70	56.25	2.25		1	53	1.80		1.00	101.0	1.00	0.176	0.176	0.483	Non-Liq.	Non-Liq.	0.00
2.62	34.66	0.52	1.49	110	0.144	0.996	1.49	0.67	1.70	55.46	2.22		1	52	1.71		1.00	95.1	1.00	0.160	0.160	0.483	Non-Liq.	Non-Liq.	0.00
2.79	30.29	0.43	1.42	110	0.153	0.996	1.43	0.68	1.70	48.42	2.25		1	47	1.81		1.00	87.5	1.00	0.142	0.142	0.483	Non-Liq.	Non-Liq.	0.00
2.95	25.72	0.37	1.42	110	0.162	0.995	1.43	0.70	1.70	41.07	2.31		1	40	1.98		1.00	81.4	1.00	0.130	0.130	0.482	Non-Liq.	Non-Liq.	0.00
3.12	22.47	0.33	1.49	110	0.171	0.995	1.50	0.72	1.70	35.83	2.37		1	34	2.19		1.00	78.6	1.00	0.125	0.125	0.482	Non-Liq.	Non-Liq.	0.00
3.28	20.80	0.31	1.47	110	0.180	0.994	1.48	0.73	1.70	33.13	2.40		1	31	2.29		1.00	76.0	1.00	0.121	0.121	0.482	Non-Liq.	Non-Liq.	0.00
3.44	20.45	0.30	1.47	110	0.189	0.994	1.48	0.73	1.70	32.55	2.40		1	30	2.32		1.00	75.4	1.00	0.120	0.120	0.482	Non-Liq.	Non-Liq.	0.00
3.61	20.73	0.30	1.45	110	0.198	0.994	1.47	0.73	1.70	32.99	2.39		1	31	2.29		1.00	75.5	1.00	0.120	0.120	0.482	Non-Liq.	Non-Liq.	0.00
3.77	19.90	0.31	1.58	110	0.208	0.993	1.59	0.74	1.70	31.64	2.43		1	29	2.44		1.00	77.1	1.00	0.123	0.123	0.482	Non-Liq.	Non-Liq.	0.00
3.94	17.21	0.35	2.05	110	0.217	0.993	2.08	0.77	1.70	27.31	2.55		1	23	3.03		1.00	82.8	1.00	0.133	0.133	0.481	Non-Liq.	Non-Liq.	0.00
4.10	11.84	0.37	3.08	110	0.226	0.993	3.14	0.85	1.70	18.66	2.79		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.27	7.47	0.32	4.24	110	0.235	0.992	4.38	0.92	1.70	11.63	3.04		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.43	7.87	0.27	3.41	110	0.244	0.992	3.51	0.90	1.70	12.25	2.96		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.59	13.03	0.25	1.89	110	0.253	0.991	1.93	0.80	1.70	20.53	2.63		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.76	17.56	0.20	1.13	110	0.262	0.991	1.15	0.73	1.70	27.80	2.40		1	24	2.30		1.00	63.9	1.00	0.104	0.104	0.480	Non-Liq.	Non-Liq.	0.00
4.92	25.00	0.25	0.99	110	0.271	0.991	1.00	0.68	1.70	39.74	2.23		1	39	1.75		1.00	69.6	1.00	0.111	0.111	0.480	Non-Liq.	Non-Liq.	0.00
5.09	28.21	0.27	0.97	110	0.280	0.990	0.98	0.66	1.70	44.88	2.18		1	44	1.63		1.00	73.1	1.00	0.116	0.116	0.480	Non-Liq.	Non-Liq.	0.00
5.25	26.74	0.32	1.19	110	0.289	0.990	1.20	0.68	1.70	42.50	2.25		1	41	1.81		1.00	76.9	1.00	0.122	0.122	0.480	Non-Liq.	Non-Liq.	0.00
5.41	27.54	0.33	1.20	110	0.298	0.989	1.21	0.68	1.70	43.77	2.25		1	43	1.79		1.00	78.2	1.00	0.124	0.124	0.480	Non-Liq.	Non-Liq.	0.00
5.58	30.42	0.33	1.08	110	0.307	0.989	1.10	0.66	1.70	48.39	2.18		1	47	1.63		1.00	78.9	1.00	0.126	0.126	0.479	Non-Liq.	Non-Liq.	0.00
5.74	35.07	0.33	0.95	110	0.316	0.989	0.96	0.64	1.70	55.84	2.10		1	53	1.46		1.00	81.3	1.00	0.130	0.130	0.479	Non-Liq.	Non-Liq.	0.00
5.91	42.76	0.43	0.99	110	0.325	0.988	1.00	0.62	1.70	68.19	2.04		1	61	1.36		1.00	92.6	1.00	0.154	0.154	0.479	Non-Liq.	Non-Liq.	0.00
6.07	59.96	0.60	1.00	110	0.334	0.988	1.01	0.59	1.70	95.81	1.93		1	75	1.22	1.00	1.00	116.9	1.00	0.228	0.228	0.479	Non-Liq.	Non-Liq.	0.00
6.23	82.48	0.78	0.94	110	0.343	0.988	0.94	0.55	1.70	131.98	1.80		1	88	1.11	1.05	1.00	146.8	1.00	0.374	0.374	0.479	Non-Liq.	Non-Liq.	0.00
6.40	98.15	0.89	0.91	110	0.352	0.987	0.91	0.53	1.70	157.14	1.74		1	96	1.06	1.10	1.00	167.6	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	106.99	1.01	0.94	110	0.361	0.987	0.95	0.52	1.70	171.33	1.72		1	99	1.05	1.15	1.00	180.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	112.07	1.09	0.97	110	0.370	0.986	0.98	0.52	1.70	179.48	1.72		1	100	1.05	1.20	1.00	188.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	112.25	1.18	1.05	110	0.379	0.986	1.05	0.53	1.70	179.76	1.74		1	100	1.06	1.25	1.00	191.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	111.68	1.25	1.12	110	0.388	0.986	1.13	0.54	1.70	178.82	1.76		1	100	1.08	1.30	1.00	193.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	113.57	1.36	1.19	110	0.397	0.985	1.20	0.54	1.70	181.71	1.78		1	100	1.09	1.35	1.00	198.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	110.25	1.39	1.26	110	0.406	0.985	1.27	0.55	1.69	175.63	1.80		1	100	1.11	1.40	1.00	195.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	100.97	1.35	1.34	110	0.415	0.985	1.34	0.56	1.69	160.87	1.85		1	97	1.14	1.45	1.00	184.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	100.97	1.35	1.34	110	0.424	0.984	1.34	0.56	1.67	159.07	1.85		1	96	1.15	1.50	1.00	183.0	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	95.77	1.34	1.40	110	0.433	0.984	1.40	0.57	1.67	150.26	1.88		1	94	1.17	1.55	1.00	176.7	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	92.93	1.31	1.41	110	0.442	0.984	1.42	0.58	1.65	144.62	1.90		1	92	1.19	1.60	1.00	172.1	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	90.79	1.03	1.14	110	0.451	0.983	1.14	0.56	1.61	137.80	1.85		1	90	1.14	1.65	1.00	157.8	1.00	0.446	0.446	0.481	**0.93**	56%	**0.57**
8.37	87.38	1.00	1.14	110	0.460	0.983	1.15	0.57	1.60	131.65	1.86		1	88	1.15	1.70	1.00	152.6	1.00	0.410	0.410	0.486	**0.84**	64%	**0.69**
8.53	82.47	0.96	1.17	110	0.469	0.982	1.18	0.57	1.60	123.63	1.89		1	86	1.18	1.75	1.00	146.1	1.00	0.370	0.370	0.491	**0.75**	72%	**0.85**
8.69	86.06	1.00	1.17	110	0.478	0.982	1.17	0.57	1.57	127.32	1.88		1	87	1.17	1.80	1.00	149.3	1.00	0.390	0.390	0.496	**0.79**	69%	**0.78**
8.86	93.45	1.08	1.15	110	0.487	0.982	1.16	0.56	1.55	136.07	1.85		1	90	1.15	1.85	1.00	156.8	1.00	0.439	0.439	0.501	**0.88**	61%	**0.60**
9.02	102.02	1.14	1.12	110	0.496	0.981	1.13	0.55	1.52	146.04	1.82		1	93	1.12	1.90	1.00	164.7	1.00	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
9.19	107.28	1.17	1.09	110	0.505	0.981	1.10	0.55	1.50	151.44	1.80		1	94	1.11	1.95	1.00	168.7	1.00	Infin.	0.000	0.510	Non-Liq.	Non-Liq.	0.00
9.35	109.34	1.18	1.07	110	0.514	0.981	1.08	0.55	1.48	152.59	1.80		1	94	1.10	2.00	1.00	169.1	1.00	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
9.51	111.98	1.16	1.04	110	0.523	0.980	1.04	0.54	1.47	154.35	1.78		1	95	1.09	2.05	1.00	169.5	1.00	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
9.68	118.26	1.20	1.01	110	0.532	0.980	1.02	0.54	1.45	160.83	1.76		1	97	1.08	2.10	1.00	174.2	1.00	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
9.84	127.36	1.25	0.98	110	0.541	0.980	0.99	0.53	1.42	170.74	1.73		1	99	1.06	2.15	1.00	181.7	1.00	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
10.01	137.13	1.33	0.97	110	0.550	0.979	0.97	0.52	1.41	181.45	1.71		1	100	1.04	2.20	1.00	190.2	1.00	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
10.17	144.79	1.41	0.98	110	0.559	0.979	0.98	0.52	1.39	189.61	1.70		1	100	1.04	2.25	1.00	197.4	1.00	Infin.	0.000	0.537	Non-Liq.	Non-Liq.	0.00
10.33	155.29	1.57	1.01	110	0.568	0.979	1.02	0.52	1.38	201.47	1.69		1	100	1.03	2.30	1.00	208.8	1.00	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
10.50	160.35	1.65	1.03	110	0.577	0.978	1.03	0.51	1.37	206.27	1.69		1	100	1.03	2.35	1.00	213.4	1.00	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
10.66	162.80	1.74	1.07	110	0.586	0.978	1.07	0.52	1.36	208.10	1.70		1	100	1.04	2.40	1.00	216.7	1.00	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
10.83	163.62	1.48	0.90	110	0.595	0.978	0.91	0.50	1.34	205.78	1.65		1	100	1.00	2.45	1.00	207.4	1.00	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
10.99	165.03	1.59	0.96	110	0.604	0.977	0.96	0.51	1.33	206.59	1.67		1	100	1.02	2.50	1.00	210.8	1.00	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
11.15	165.44	1.62	0.98	110	0.614	0.977	0.98	0.51	1.32	205.76	1.68		1	100	1.02	2.55	1.00	210.9	1.00	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
11.32	170.54	1.67	0.98	110	0.623	0.977	0.98	0.51	1.31	210.31	1.67		1	100	1.02	2.60	1.00	214.5	1.00	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
11.48	193.35	1.66	0.86	110	0.632	0.976	0.86	0.50	1.29	235.76	1.59		1	100	1.00	2.65	1.00	236.6	1.00	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
11.65	234.30	1.88	0.80	110	0.641	0.976	0.81	0.50	1.29	283.83	1.52		1	100	1.00	2.70	1.00	284.9	1.00	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
11.81	311.45	1.81	0.58	110	0.650	0.975	0.58	0.50	1.28	374.90	1.33		1	100	1.00	2.75	1.00	376.3	1.00	Infin.	0.000	0.576	Non-Liq.	Non-Liq.	0.00
11.98	345.03	2.01	0.58	110	0.659	0.975	0.58	0.50	1.27	412.54	1.30		1	100	1.00	2.80	1.00	414.1	1.00	Infin.	0.000	0.580	Non-Liq.	Non-Liq.	0.00
12.14	350.57	2.01	0.57	110	0.668	0.975	0.58	0.50	1.26	416.32	1.30		1	100	1.00	2.85	1.00	417.9	1.00	Infin.	0.000	0.583	Non-Liq.	Non-Liq.	0.00
12.30	323.89	2.04	0.63	110	0.677	0.974	0.63	0.50	1.25	381.99	1.35		1	100	1.00	2.90	1.00	383.4	1.00	Infin.	0.000	0.587	Non-Liq.	Non-Liq.	0.00
12.47	284.79	2.15	0.75	110	0.686	0.974	0.76	0.50	1.24	333.56	1.45		1	100	1.00	2.95	1.00	334.8	1.00	Infin.	0.000	0.590	Non-Liq.	Non-Liq.	0.00
12.63	272.50	2.15	0.79	110	0.695	0.974	0.79	0.50	1.23	317.04	1.48		1	100	1.00	3.00	1.00	318.2	1.00	Infin.	0.000	0.593	Non-Liq.	Non-Liq.	0.00
12.80	284.55	2.13	0.75	110	0.704	0.973	0.75	0.50	1.23	328.95	1.45		1	100	1.00	3.05	1.00	330.2	1.00	Infin.	0.000	0.597	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	288.27	2.12	0.73	110	0.713	0.973	0.74	0.50	1.22	331.14	1.44		1	100	1.00	3.10	1.00	332.4	1.00	Infin.	0.000	0.600	Non-Liq.	Non-Liq.	0.00
13.12	289.02	2.14	0.74	110	0.722	0.973	0.74	0.50	1.21	329.91	1.45		1	100	1.00	3.15	1.00	331.1	1.00	Infin.	0.000	0.603	Non-Liq.	Non-Liq.	0.00
13.29	293.05	2.33	0.80	110	0.731	0.972	0.80	0.50	1.20	332.44	1.47		1	100	1.00	3.15	1.00	333.7	1.00	Infin.	0.000	0.606	Non-Liq.	Non-Liq.	0.00
13.45	289.11	2.34	0.81	110	0.740	0.972	0.81	0.50	1.20	325.94	1.48		1	100	1.00	3.15	1.00	327.2	1.00	Infin.	0.000	0.609	Non-Liq.	Non-Liq.	0.00
13.62	286.16	2.38	0.83	110	0.749	0.972	0.83	0.50	1.19	320.65	1.49		1	100	1.00	3.15	1.00	321.8	1.00	Infin.	0.000	0.612	Non-Liq.	Non-Liq.	0.00
13.78	285.79	2.45	0.86	110	0.758	0.971	0.86	0.50	1.18	318.31	1.51		1	100	1.00	3.15	1.00	319.5	1.00	Infin.	0.000	0.615	Non-Liq.	Non-Liq.	0.00
13.94	290.46	3.11	1.07	110	0.767	0.971	1.07	0.50	1.17	321.61	1.58		1	100	1.00	3.15	1.00	322.8	1.00	Infin.	0.000	0.618	Non-Liq.	Non-Liq.	0.00
14.11	293.63	3.14	1.07	110	0.776	0.971	1.07	0.50	1.17	323.22	1.58		1	100	1.00	3.15	1.00	324.4	1.00	Infin.	0.000	0.621	Non-Liq.	Non-Liq.	0.00
14.27	305.18	2.93	0.96	110	0.785	0.970	0.96	0.50	1.16	334.02	1.53		1	100	1.00	3.15	1.00	335.3	1.00	Infin.	0.000	0.624	Non-Liq.	Non-Liq.	0.00
14.44	274.68	2.47	0.90	110	0.794	0.970	0.90	0.50	1.15	298.83	1.54		1	100	1.00	3.15	1.00	299.9	1.00	Infin.	0.000	0.627	Non-Liq.	Non-Liq.	0.00
14.60	264.68	1.89	0.71	110	0.803	0.970	0.72	0.50	1.15	286.29	1.48		1	100	1.00	3.15	1.00	287.4	1.00	Infin.	0.000	0.629	Non-Liq.	Non-Liq.	0.00
14.76	260.78	1.87	0.72	110	0.812	0.969	0.72	0.50	1.14	280.48	1.48		1	100	1.00	3.15	1.00	281.5	1.00	Infin.	0.000	0.632	Non-Liq.	Non-Liq.	0.00
14.93	254.73	1.85	0.73	110	0.821	0.969	0.73	0.50	1.14	272.43	1.50		1	100	1.00	3.15	1.00	273.4	1.00	Infin.	0.000	0.635	Non-Liq.	Non-Liq.	0.00
15.09	243.62	1.72	0.71	110	0.830	0.969	0.71	0.50	1.13	259.08	1.50		1	100	1.00	3.15	1.00	260.0	1.00	Infin.	0.000	0.637	Non-Liq.	Non-Liq.	0.00
15.26	247.90	1.73	0.70	110	0.839	0.968	0.70	0.50	1.12	262.22	1.50		1	100	1.00	3.15	1.00	263.2	1.00	Infin.	0.000	0.640	Non-Liq.	Non-Liq.	0.00
15.42	243.67	1.34	0.55	110	0.848	0.968	0.55	0.50	1.12	256.34	1.43		1	100	1.00	3.15	1.00	257.3	1.00	Infin.	0.000	0.643	Non-Liq.	Non-Liq.	0.00
15.58	240.87	1.85	0.77	110	0.857	0.967	0.77	0.50	1.11	252.04	1.54		1	100	1.00	3.15	1.00	253.0	1.00	Infin.	0.000	0.645	Non-Liq.	Non-Liq.	0.00
15.75	227.67	1.80	0.79	110	0.866	0.967	0.79	0.50	1.11	236.93	1.57		1	100	1.00	3.15	1.00	237.8	1.00	Infin.	0.000	0.648	Non-Liq.	Non-Liq.	0.00
15.91	215.03	1.51	0.70	110	0.875	0.967	0.71	0.50	1.10	222.56	1.55		1	100	1.00	3.15	1.00	223.4	1.00	Infin.	0.000	0.650	Non-Liq.	Non-Liq.	0.00
16.08	169.50	0.84	0.50	110	0.884	0.966	0.50	0.50	1.09	174.33	1.53		1	100	1.00	3.15	1.00	175.0	1.00	Infin.	0.000	0.653	Non-Liq.	Non-Liq.	0.00
16.24	113.63	0.81	0.71	110	0.893	0.966	0.72	0.54	1.10	116.73	1.77		1	83	1.08	3.15	1.00	127.1	1.00	0.271	0.271	0.655	0.41	95%	1.16
16.40	74.42	0.94	1.26	110	0.902	0.966	1.28	0.63	1.11	76.80	2.07		1	66	1.40		1.00	107.3	1.00	0.195	0.195	0.657	0.30	98%	1.41
16.57	41.55	1.04	2.51	110	0.911	0.965	2.57	0.74	1.12	42.93	2.46		1	42	2.56		1.00	109.7	1.00	0.203	0.203	0.660	0.31	98%	1.38
16.73	20.49	1.00	4.87	110	0.920	0.965	5.10	0.87	1.13	20.90	2.89		0						1.00			0.662	Non-Liq.	Non-Liq.	0.00
16.90	17.66	0.87	4.92	110	0.929	0.965	5.19	0.89	1.12	17.75	2.95		0						1.00			0.664	Non-Liq.	Non-Liq.	0.00
17.06	17.13	0.80	4.64	110	0.938	0.964	4.91	0.89	1.11	17.03	2.94		0						1.00			0.666	Non-Liq.	Non-Liq.	0.00
17.22	45.69	0.87	1.91	110	0.947	0.964	1.95	0.71	1.08	45.77	2.36		1	44	2.14		1.00	98.1	1.00	0.168	0.168	0.669	0.25	99%	1.54
17.39	85.88	0.98	1.14	110	0.956	0.963	1.15	0.61	1.06	85.36	2.00		1	70	1.30		1.00	111.2	1.00	0.208	0.208	0.671	0.31	98%	1.36
17.55	131.32	1.21	0.92	110	0.965	0.963	0.93	0.55	1.05	129.57	1.80		1	88	1.11	1.00	1.00	144.3	1.00	0.360	0.360	0.673	0.53	89%	1.00
17.72	175.08	1.51	0.86	110	0.974	0.963	0.87	0.52	1.04	171.70	1.69		1	99	1.03	1.05	1.00	178.1	1.00	Infin.	0.000	0.675	Non-Liq.	Non-Liq.	0.00
17.88	212.23	1.86	0.88	110	0.983	0.962	0.88	0.50	1.04	207.10	1.64		1	100	1.00	1.10	1.00	207.9	1.00	Infin.	0.000	0.677	Non-Liq.	Non-Liq.	0.00
18.04	246.62	1.63	0.66	110	0.992	0.962	0.66	0.50	1.03	239.71	1.51		1	100	1.00	1.10	1.00	240.6	1.00	Infin.	0.000	0.679	Non-Liq.	Non-Liq.	0.00
18.21	274.39	2.22	0.81	110	1.001	0.962	0.81	0.50	1.03	265.59	1.54		1	100	1.00	1.10	1.00	266.6	1.00	Infin.	0.000	0.681	Non-Liq.	Non-Liq.	0.00
18.37	300.69	2.46	0.82	110	1.010	0.961	0.82	0.50	1.02	289.83	1.52		1	100	1.00	1.10	1.00	290.9	1.00	Infin.	0.000	0.683	Non-Liq.	Non-Liq.	0.00
18.54	310.01	2.49	0.80	110	1.020	0.961	0.81	0.50	1.02	297.51	1.50		1	100	1.00	1.10	1.00	298.6	1.00	Infin.	0.000	0.685	Non-Liq.	Non-Liq.	0.00
18.70	331.14	2.83	0.85	110	1.029	0.960	0.86	0.50	1.01	316.45	1.51		1	100	1.00	1.10	1.00	317.6	1.00	Infin.	0.000	0.687	Non-Liq.	Non-Liq.	0.00
18.86	350.78	3.15	0.90	110	1.038	0.960	0.90	0.50	1.01	333.81	1.51		1	100	1.00	1.10	1.00	335.1	1.00	Infin.	0.000	0.689	Non-Liq.	Non-Liq.	0.00
19.03	364.85	3.25	0.89	110	1.047	0.960	0.89	0.50	1.01	345.73	1.50		1	100	1.00	1.10	1.00	347.0	1.00	Infin.	0.000	0.691	Non-Liq.	Non-Liq.	0.00
19.19	366.79	3.32	0.91	110	1.056	0.959	0.91	0.50	1.00	346.08	1.50		1	100	1.00	1.10	1.00	347.4	1.00	Infin.	0.000	0.692	Non-Liq.	Non-Liq.	0.00
19.36	364.13	3.25	0.89	110	1.065	0.959	0.89	0.50	1.00	342.09	1.50		1	100	1.00	1.10	1.00	343.4	1.00	Infin.	0.000	0.694	Non-Liq.	Non-Liq.	0.00
19.52	351.02	3.25	0.92	110	1.074	0.958	0.93	0.50	0.99	328.34	1.52		1	100	1.00	1.10	1.00	329.6	1.00	Infin.	0.000	0.696	Non-Liq.	Non-Liq.	0.00
19.69	348.92	2.58	0.74	110	1.083	0.958	0.74	0.50	0.99	325.00	1.45		1	100	1.00	1.10	1.00	326.2	1.00	Infin.	0.000	0.698	Non-Liq.	Non-Liq.	0.00
19.85	359.19	3.47	0.97	110	1.092	0.957	0.97	0.50	0.98	333.20	1.53		1	100	1.00	1.10	1.00	334.4	1.00	Infin.	0.000	0.699	Non-Liq.	Non-Liq.	0.00
20.01	376.67	4.05	1.08	110	1.101	0.957	1.08	0.50	0.98	348.02	1.56		1	100	1.00	1.10	1.00	349.3	1.00	Infin.	0.000	0.701	Non-Liq.	Non-Liq.	0.00
20.18	404.77	4.12	1.02	110	1.107	0.957	1.02	0.50	0.98	373.03	1.52		1	100	1.00	1.10	1.00	374.4	1.00	Infin.	0.000	0.703	Non-Liq.	Non-Liq.	0.00
20.34	377.36	4.95	1.31	110	1.111	0.956	1.32	0.50	0.98	347.09	1.63		1	100	1.00	1.10	1.00	348.4	1.00	Infin.	0.000	0.704	Non-Liq.	Non-Liq.	0.00
20.51	335.46	4.86	1.45	110	1.115	0.956	1.45	0.52	0.97	307.62	1.70		1	100	1.04	1.10	1.00	319.6	1.00	Infin.	0.000	0.706	Non-Liq.	Non-Liq.	0.00
20.67	292.50	6.92	2.37	110	1.118	0.955	2.37	0.58	0.97	266.67	1.91		1	100	1.20	1.10	1.00	320.0	1.00	Infin.	0.000	0.708	Non-Liq.	Non-Liq.	0.00
20.83	287.91	3.88	1.35	110	1.122	0.955	1.35	0.52	0.97	262.84	1.71		1	100	1.05	1.10	1.00	275.8	1.00	Infin.	0.000	0.709	Non-Liq.	Non-Liq.	0.00
21.00	326.82	2.70	0.82	110	1.126	0.954	0.83	0.50	0.97	298.36	1.51		1	100	1.00	1.10	1.00	299.5	1.00	Infin.	0.000	0.711	Non-Liq.	Non-Liq.	0.00
21.16	125.71	3.38	2.69	110	1.130	0.954	2.71	0.66	0.96	112.72	2.18		1	82	1.62		1.00	182.1	1.00	Infin.	0.000	0.712	Non-Liq.	Non-Liq.	0.00
21.33	116.66	3.47	2.97	110	1.134	0.954	3.00	0.68	0.95	104.17	2.23		1	79	1.75		1.00	182.7	1.00	Infin.	0.000	0.714	Non-Liq.	Non-Liq.	0.00
21.49	242.49	3.92	1.62	110	1.138	0.953	1.63	0.55	0.96	219.08	1.82		1	100	1.12	1.00	1.00	247.1	1.00	Infin.	0.000	0.715	Non-Liq.	Non-Liq.	0.00
21.65	336.70	4.03	1.20	110	1.142	0.953	1.20	0.50	0.96	305.29	1.63		1	100	1.00	1.05	1.00	306.4	1.00	Infin.	0.000	0.717	Non-Liq.	Non-Liq.	0.00
21.82	383.91	3.24	0.84	110	1.146	0.952	0.85	0.50	0.96	347.64	1.48		1	100	1.00	1.10	1.00	348.9	1.00	Infin.	0.000	0.718	Non-Liq.	Non-Liq.	0.00
21.98	357.67	2.57	0.72	110	1.150	0.952	0.72	0.50	0.96	323.25	1.44		1	100	1.00	1.15	1.00	324.5	1.00	Infin.	0.000	0.719	Non-Liq.	Non-Liq.	0.00
22.15	353.56	1.87	0.53	110	1.154	0.951	0.53	0.50	0.96	318.98	1.35		1	100	1.00	1.20	1.00	320.2	1.00	Infin.	0.000	0.721	Non-Liq.	Non-Liq.	0.00
22.31	349.51	1.82	0.52	110	1.158	0.951	0.52	0.50	0.96	314.78	1.35		1	100	1.00	1.25	1.00	316.0	1.00	Infin.	0.000	0.722	Non-Liq.	Non-Liq.	0.00
22.47	344.99	1.95	0.56	110	1.161	0.950	0.57	0.50	0.95	310.17	1.38		1	100	1.00	1.30	1.00	311.3	1.00	Infin.	0.000	0.724	Non-Liq.	Non-Liq.	0.00
22.64	338.66	2.25	0.67	110	1.165	0.950	0.67	0.50	0.95	303.95	1.44		1	100	1.00	1.35	1.00	305.1	1.00	Infin.	0.000	0.725	Non-Liq.	Non-Liq.	0.00
22.80	324.89	2.52	0.78	110	1.169	0.949	0.78	0.50	0.95	291.06	1.50		1	100	1.00	1.40	1.00	292.1	1.00	Infin.	0.000	0.726	Non-Liq.	Non-Liq.	0.00
22.97	321.85	2.86	0.89	110	1.173	0.949	0.89	0.50	0.95	287.84	1.55		1	100	1.00	1.40	1.00	288.9	1.00	Infin.	0.000	0.727	Non-Liq.	Non-Liq.	0.00
23.13	325.14	3.11	0.96	110	1.177	0.948	0.96	0.50	0.95	290.31	1.57		1	100	1.00	1.40	1.00	291.4	1.00	Infin.	0.000	0.729	Non-Liq.	Non-Liq.	0.00
23.29	321.77	3.23	1.00	110	1.181	0.948	1.01	0.50	0.95	286.81	1.59		1	100	1.00	1.40	1.00	287.9	1.00	Infin.	0.000	0.730	Non-Liq.	Non-Liq.	0.00
23.46	319.42	3.46	1.08	110	1.185	0.947	1.09	0.50	0.94	284.23	1.62		1	100	1.00	1.40	1.00	285.3	1.00	Infin.	0.000	0.731	Non-Liq.	Non-Liq.	0.00
23.62	320.77	3.46	1.08	110	1.189	0.947	1.08	0.50	0.94	284.96	1.61		1	100	1.00	1.40	1.00	286.0	1.00	Infin.	0.000	0.732	Non-Liq.	Non-Liq.	0.00
23.79	324.18	3.64	1.12	110	1.193	0.946	1.13	0.50	0.94	287.53	1.62		1	100	1.00	1.40	1.00	288.6	1.00	Infin.	0.000	0.733	Non-Liq.	Non-Liq.	0.00
23.95	329.34	3.59	1.09	110	1.197	0.946	1.09	0.50	0.94	291.64	1.61		1	100	1.00	1.40	1.00	292.7	1.00	Infin.	0.000	0.735	Non-Liq.	Non-Liq.	0.00
24.11	336.72	2.85	0.85	110	1.200	0.945	0.85	0.50	0.94	297.71	1.52		1	100	1.00	1.40	1.00	298.8	1.00	Infin.	0.000	0.736	Non-Liq.	Non-Liq.	0.00
24.28	342.31	2.38	0.69	110	1.204	0.945	0.70	0.50	0.94	302.18	1.45		1	100	1.00	1.40	1.00	303.3	1.00	Infin.	0.000	0.737	Non-Liq.	Non-Liq.	0.00
24.44	363.48	2.12	0.58	110	1.208	0.944	0.58	0.50	0.94	320.41	1.38		1	100	1.00	1.40	1.00	321.6	1.00	Infin.	0.000	0.738	Non-Liq.	Non-Liq.	0.00
24.61	368.92	1.84	0.50	110	1.212	0.943	0.50	0.50	0.93	324.69	1.33		1	100	1.00	1.40	1.00	325.9	1.00	Infin.	0.000	0.739	Non-Liq.	Non-Liq.	0.00
24.77	350.00	2.34	0.67	110	1.216	0.943	0.67	0.50	0.93	307.49	1.43		1	100	1.00	1.40	1.00	308.6	1.00	Infin.	0.000	0.740	Non-Liq.	Non-Liq.	0.00
24.93	320.76	2.58	0.80	110	1.220	0.942	0.81	0.50	0.93	281.26	1.52		1	100	1.00	1.40	1.00	282.3	1.00	Infin.	0.000	0.741	Non-Liq.	Non-Liq.	0.00
25.10	290.38	2.75	0.95	110	1.224	0.942	0.95	0.50	0.93	254.11	1.60		1	100	1.00	1.40	1.00	255.1	1.00	Infin.	0.000	0.742	Non-Liq.	Non-Liq.	0.00
25.26	261.78	2.66	1.02	110	1.228	0.941	1.02	0.50	0.93	246.15	1.63		1	100	1.00	1.40	1.00	247.1	1.00	Infin.	0.000	0.743	Non-Liq.	Non-Liq.	0.00
25.43	270.13	2.52	0.93	110	1.232	0.941	0.94	0.50	0.93	235.55	1.62		1	100	1.00	1.40	1.00	236.4	1.00	Infin.	0.000	0.744	Non-Liq.	Non-Liq.	0.00
25.59	259.39	2.62	1.01	110	1.236	0.940	1.01	0.51	0.92	225.59	1.66		1	100	1.01	1.40	1.00	228.5	1.00	Infin.	0.000	0.745	Non-Liq.	Non-Liq.	0.00
25.75	232.66	2.59	1.11	110	1.240	0.939	1.12	0.52	0.92	201.29	1.72		1	100	1.05	1.40	1.00	212.8	1.00	Infin.	0.000	0.746	Non-Liq.	Non-Liq.	0.00
25.92	153.15	2.60	1.70	110	1.243	0.939	1.71	0.60	0.91	130.23	1.99		1	88	1.28	1.40	1.00	167.9	1.00	Infin.	0.000	0.747	Non-Liq.	Non-Liq.	0.00
26.08	77.71	1.98	2.55	110	1.247	0.938	2.59	0.71	0.89	64.33	2.33		1	59	2.05		1.00	131.9	1.00	0.293	0.293	0.747	0.39	96%	1.12
26.25	33.55	1.53	4.55	110	1.251	0.938	4.72	0.84	0.87	26.49	2.79		0						1.00			0.748	Non-Liq.	Non-Liq.	0.00
26.41	22.88	0.79	3.47	110	1.255	0.937	3.67	0.86	0.86	17.64	2.85		0						1.00			0.749	Non-Liq.	Non-Liq.	0.00
26.57	18.15	0.50	2.75	110	1.259	0.936	2.95	0.87	0.86	13.72	2.88		0						1.00			0.750	Non-Liq.	Non-Liq.	0.00
26.74	18.25	0.55	3.03	110	1.263	0.936	3.26	0.88	0.86	13.74	2.91		0						1.00			0.751	Non-Liq.	Non-Liq.	0.00
26.90	17.74	0.85	4.80	110	1.267	0.935	5.17	0.92	0.85	13.19	3.04		0						1.00			0.751	Non-Liq.	Non-Liq.	0.00
27.07	23.20	1.17	5.05	110	1.271	0.934	5.34	0.90	0.85	17.59	2.96		0						1.00			0.752	Non-Liq.	Non-Liq.	0.00
27.23	36.59	1.63	4.44	110	1.275	0.934	4.60	0.84	0.86	28.57	2.76		0						1.00			0.753	Non-Liq.	Non-Liq.	0.00
27.40	72.79	1.23	1.69	110	1.279	0.933	1.72	0.68	0.88	59.44	2.24		1	55	1.76		1.00	104.4	1.00	0.186	0.186	0.754	0.25	99%	1.46
27.56	107.63	1.36	1.26	110	1.282	0.932	1.28	0.61	0.89	89.34	2.02		1	72	1.32		1.00	118.1	1.00	0.233	0.233	0.754	0.31	98%	1.28
27.72	139.45	1.46	1.05	110	1.286	0.932	1.06	0.57	0.89	116.81	1.88		1	83	1.17	1.00	1.00	136.8	1.00	0.318	0.318	0.755	0.42	95%	1.06
27.89	170.39	1.41	0.83	110	1.290	0.931	0.83	0.53	0.90	143.88	1.74		1	92	1.06	1.05	1.00	153.6	1.00	0.417	0.417	0.756	0.55	88%	0.73

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_D	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	178.25	1.31	0.74	110	1.294	0.930	0.74	0.52	0.90	150.76	1.69		1	94	1.03	1.10	1.00	156.1	1.00	0.434	0.434	0.756	**0.57**	86%	**0.67**
28.22	181.74	1.30	0.71	110	1.298	0.929	0.72	0.51	0.90	153.64	1.68		1	95	1.02	1.15	1.00	157.5	1.00	0.443	0.443	0.757	**0.59**	85%	**0.63**
28.38	186.28	1.33	0.71	110	1.302	0.929	0.72	0.51	0.90	157.35	1.67		1	96	1.01	1.20	1.00	160.3	1.00	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
28.54	196.98	1.43	0.73	110	1.306	0.928	0.73	0.50	0.90	166.32	1.65		1	98	1.01	1.25	1.00	168.0	1.00	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
28.71	209.17	1.48	0.71	110	1.310	0.927	0.71	0.50	0.90	176.57	1.63		1	100	1.00	1.30	1.00	177.2	1.00	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
28.87	214.42	1.53	0.71	110	1.314	0.926	0.72	0.50	0.90	180.76	1.62		1	100	1.00	1.35	1.00	181.4	1.00	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
29.04	222.85	1.72	0.77	110	1.318	0.926	0.78	0.50	0.90	187.63	1.63		1	100	1.00	1.40	1.00	188.3	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.20	230.47	3.36	1.46	110	1.322	0.925	1.47	0.56	0.88	191.40	1.83		1	100	1.13	1.45	1.00	216.3	1.00	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
29.36	237.69	3.39	1.42	110	1.325	0.924	1.43	0.55	0.88	197.33	1.81		1	100	1.11	1.50	1.00	220.6	1.00	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
29.53	254.47	3.24	1.27	110	1.329	0.923	1.28	0.53	0.89	211.82	1.75		1	100	1.07	1.55	1.00	228.1	1.00	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
29.69	245.50	3.18	1.29	110	1.333	0.923	1.30	0.54	0.88	203.76	1.77		1	100	1.08	1.60	1.00	221.8	1.00	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
29.86	248.87	2.73	1.10	110	1.337	0.922	1.10	0.52	0.89	207.09	1.71		1	100	1.04	1.65	1.00	217.2	1.00	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
30.02	247.02	3.01	1.22	110	1.341	0.921	1.23	0.53	0.88	204.68	1.75		1	100	1.07	1.70	1.00	219.8	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.18	244.70	3.20	1.31	110	1.345	0.920	1.32	0.54	0.88	202.04	1.77		1	100	1.09	1.75	1.00	220.8	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.35	244.48	3.08	1.26	110	1.349	0.919	1.27	0.54	0.88	201.72	1.76		1	100	1.08	1.80	1.00	218.7	1.00	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
30.51	237.74	3.15	1.33	110	1.353	0.918	1.33	0.54	0.87	195.44	1.79		1	100	1.10	1.85	1.00	215.5	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.68	224.10	2.76	1.23	110	1.357	0.918	1.24	0.54	0.87	183.96	1.78		1	100	1.09	1.90	1.00	202.0	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
30.84	259.52	1.36	0.53	110	1.361	0.917	0.53	0.50	0.88	215.17	1.48		1	100	1.00	1.95	1.00	216.0	1.00	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
31.00	304.23	2.26	0.74	110	1.364	0.916	0.75	0.50	0.88	252.07	1.53		1	100	1.00	2.00	1.00	253.0	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.17	162.49	2.09	1.29	110	1.368	0.915	1.30	0.58	0.86	131.26	1.90		1	88	1.19	2.05	1.00	156.5	1.00	0.437	0.437	0.765	**0.57**	86%	**0.66**
31.33	321.89	2.01	0.63	110	1.372	0.914	0.63	0.50	0.88	266.01	1.46		1	100	1.00	2.10	1.00	267.0	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.50	318.50	1.97	0.62	110	1.376	0.913	0.62	0.50	0.88	262.82	1.46		1	100	1.00	2.15	1.00	263.8	1.00	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
31.66	313.67	1.90	0.60	110	1.380	0.912	0.61	0.50	0.88	258.44	1.46		1	100	1.00	2.20	1.00	259.4	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.82	300.42	1.85	0.62	110	1.384	0.911	0.62	0.50	0.87	247.13	1.48		1	100	1.00	2.25	1.00	248.0	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
31.99	281.46	1.96	0.70	110	1.388	0.910	0.70	0.50	0.87	231.13	1.54		1	100	1.00	2.30	1.00	232.0	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.15	265.77	2.01	0.76	110	1.392	0.909	0.76	0.50	0.87	217.87	1.58		1	100	1.00	2.35	1.00	218.7	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.32	254.71	2.22	0.87	110	1.396	0.908	0.88	0.50	0.87	208.46	1.64		1	100	1.00	2.40	1.00	209.2	1.00	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
32.48	258.16	2.21	0.86	110	1.400	0.907	0.86	0.50	0.87	211.00	1.63		1	100	1.00	2.45	1.00	211.8	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.64	281.06	1.84	0.66	110	1.403	0.906	0.66	0.50	0.87	229.50	1.52		1	100	1.00	2.50	1.00	230.4	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.81	311.55	1.75	0.56	110	1.407	0.905	0.56	0.50	0.87	254.16	1.44		1	100	1.00	2.55	1.00	255.1	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
32.97	355.20	1.77	0.50	110	1.411	0.904	0.50	0.50	0.87	289.53	1.36		1	100	1.00	2.60	1.00	290.6	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.14	376.15	1.82	0.48	110	1.415	0.903	0.48	0.50	0.86	306.25	1.34		1	100	1.00	2.65	1.00	307.4	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.30	382.53	1.72	0.45	110	1.419	0.902	0.45	0.50	0.86	311.03	1.31		1	100	1.00	2.70	1.00	312.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.46	385.73	1.70	0.44	110	1.423	0.901	0.44	0.50	0.86	313.21	1.30		1	100	1.00	2.75	1.00	314.4	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.63	388.54	1.78	0.46	110	1.427	0.900	0.46	0.50	0.86	315.06	1.31		1	100	1.00	2.80	1.00	316.2	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.79	373.85	1.92	0.51	110	1.431	0.899	0.52	0.50	0.86	302.69	1.36		1	100	1.00	2.85	1.00	303.8	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
33.96	360.84	2.35	0.65	110	1.435	0.898	0.65	0.50	0.86	291.71	1.44		1	100	1.00	2.90	1.00	292.8	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.12	336.62	1.68	0.50	110	1.439	0.897	0.50	0.50	0.86	271.68	1.39		1	100	1.00	2.95	1.00	272.7	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.28	305.48	2.24	0.73	110	1.443	0.896	0.74	0.50	0.86	246.11	1.53		1	100	1.00	3.00	1.00	247.0	1.00	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.45	270.74	2.54	0.94	110	1.446	0.895	0.94	0.50	0.85	217.56	1.65		1	100	1.00	3.05	1.00	218.5	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.61	265.04	2.75	1.04	110	1.450	0.894	1.04	0.51	0.85	211.86	1.69		1	100	1.03	3.10	1.00	218.7	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.78	265.84	2.71	1.02	110	1.454	0.893	1.03	0.51	0.85	212.34	1.68		1	100	1.02	3.15	1.00	218.2	0.99	Infin.	0.000	0.767	**Non-Liq.**	Non-Liq.	**0.00**
34.94	292.81	2.65	0.91	110	1.458	0.892	0.91	0.50	0.85	234.57	1.61		1	100	1.00	3.20	1.00	235.4	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.10	308.71	2.64	0.85	110	1.462	0.890	0.86	0.50	0.85	247.04	1.58		1	100	1.00	3.25	1.00	248.0	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.27	337.12	3.28	0.97	110	1.466	0.889	0.98	0.50	0.85	269.52	1.59		1	100	1.00	3.30	1.00	270.5	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.43	331.83	3.25	0.98	110	1.470	0.888	0.98	0.50	0.85	264.91	1.60		1	100	1.00	3.35	1.00	265.9	0.99	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.60	342.49	4.15	1.21	110	1.474	0.887	1.22	0.51	0.85	272.40	1.67		1	100	1.01	3.40	1.00	277.4	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.76	363.18	4.86	1.34	110	1.478	0.886	1.34	0.51	0.84	287.98	1.69		1	100	1.03	3.45	1.00	297.1	0.98	Infin.	0.000	0.766	**Non-Liq.**	Non-Liq.	**0.00**
35.93	393.50	4.20	1.07	110	1.482	0.885	1.07	0.50	0.85	313.11	1.58		1	100	1.00	3.50	1.00	314.3	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.09	486.11	3.26	0.67	110	1.485	0.883	0.67	0.50	0.84	386.57	1.37		1	100	1.00	3.55	1.00	388.0	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.25	452.81	3.01	0.66	110	1.489	0.882	0.67	0.50	0.84	359.53	1.39		1	100	1.00	3.60	1.00	360.9	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.42	475.07	3.03	0.64	110	1.493	0.881	0.64	0.50	0.84	376.77	1.36		1	100	1.00	3.65	1.00	378.2	0.98	Infin.	0.000	0.765	**Non-Liq.**	Non-Liq.	**0.00**
36.58	497.46	2.63	0.53	110	1.497	0.880	0.53	0.50	0.84	394.06	1.29		1	100	1.00	3.70	1.00	395.5	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.75	519.74	2.73	0.52	110	1.501	0.878	0.53	0.50	0.84	411.23	1.27		1	100	1.00	3.75	1.00	412.8	0.98	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
36.91	525.93	2.68	0.51	110	1.505	0.877	0.51	0.50	0.84	415.60	1.26		1	100	1.00	3.80	1.00	417.1	0.97	Infin.	0.000	0.764	**Non-Liq.**	Non-Liq.	**0.00**
37.07	555.81	2.96	0.53	110	1.509	0.876	0.53	0.50	0.84	438.70	1.26		1	100	1.00	3.85	1.00	440.3	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.24	576.13	3.26	0.57	110	1.513	0.875	0.57	0.50	0.84	454.20	1.27		1	100	1.00	3.90	1.00	455.9	0.97	Infin.	0.000	0.763	**Non-Liq.**	Non-Liq.	**0.00**
37.40	579.03	2.97	0.51	110	1.517	0.873	0.51	0.50	0.84	455.90	1.23		1	100	1.00	3.95	1.00	457.6	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.57	555.02	2.54	0.46	110	1.521	0.872	0.46	0.50	0.83	436.38	1.21		1	100	1.00	4.00	1.00	438.0	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.73	538.68	2.11	0.39	110	1.525	0.871	0.39	0.50	0.83	422.95	1.17		1	100	1.00	4.05	1.00	424.5	0.97	Infin.	0.000	0.762	**Non-Liq.**	Non-Liq.	**0.00**
37.89	534.75	2.52	0.47	110	1.528	0.869	0.47	0.50	0.83	419.32	1.23		1	100	1.00	4.10	1.00	420.9	0.97	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.06	523.23	3.08	0.59	110	1.532	0.868	0.59	0.50	0.83	409.73	1.31		1	100	1.00	4.15	1.00	411.3	0.96	Infin.	0.000	0.761	**Non-Liq.**	Non-Liq.	**0.00**
38.22	482.86	4.31	0.89	110	1.536	0.867	0.90	0.50	0.83	377.54	1.47		1	100	1.00	4.20	1.00	379.0	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.39	499.56	3.91	0.78	110	1.540	0.865	0.78	0.50	0.83	390.14	1.42		1	100	1.00	4.25	1.00	391.6	0.96	Infin.	0.000	0.760	**Non-Liq.**	Non-Liq.	**0.00**
38.55	504.10	3.38	0.67	110	1.544	0.864	0.67	0.50	0.83	393.20	1.36		1	100	1.00	4.30	1.00	394.7	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.71	443.92	3.01	0.68	110	1.548	0.863	0.68	0.50	0.83	345.67	1.41		1	100	1.00	4.35	1.00	347.0	0.96	Infin.	0.000	0.759	**Non-Liq.**	Non-Liq.	**0.00**
38.88	474.86	3.10	0.65	110	1.552	0.861	0.65	0.50	0.83	369.38	1.37		1	100	1.00	4.40	1.00	370.8	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.04	482.80	3.73	0.77	110	1.556	0.860	0.77	0.50	0.82	375.10	1.43		1	100	1.00	4.45	1.00	376.5	0.96	Infin.	0.000	0.758	**Non-Liq.**	Non-Liq.	**0.00**
39.21	449.71	3.94	0.88	110	1.560	0.859	0.88	0.50	0.82	348.87	1.49		1	100	1.00	4.50	1.00	350.2	0.96	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.37	400.90	3.48	0.87	110	1.564	0.857	0.87	0.50	0.82	310.48	1.52		1	100	1.00	4.55	1.00	311.6	0.95	Infin.	0.000	0.757	**Non-Liq.**	Non-Liq.	**0.00**
39.53	328.20	3.74	1.14	110	1.567	0.856	1.15	0.51	0.82	252.87	1.67		1	100	1.01	4.60	1.00	257.5	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.70	242.12	2.76	1.14	110	1.571	0.854	1.15	0.54	0.81	183.97	1.76		1	100	1.08	4.65	1.00	198.8	0.95	Infin.	0.000	0.756	**Non-Liq.**	Non-Liq.	**0.00**
39.86	241.13	3.50	1.45	110	1.575	0.853	1.46	0.56	0.80	181.19	1.84		1	100	1.14	4.70	1.00	206.7	0.95	Infin.	0.000	0.755	**Non-Liq.**	Non-Liq.	**0.00**
40.03	216.57	3.02	1.39	110	1.579	0.852	1.40	0.57	0.80	161.99	1.86		1	97	1.15	4.75	1.00	187.5	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.19	226.70	2.34	1.03	110	1.583	0.850	1.04	0.53	0.81	171.70	1.75		1	99	1.07	4.80	1.00	184.4	0.95	Infin.	0.000	0.754	**Non-Liq.**	Non-Liq.	**0.00**
40.35	302.13	1.99	0.66	110	1.587	0.849	0.66	0.50	0.82	231.94	1.52		1	100	1.00	4.85	1.00	232.8	0.95	Infin.	0.000	0.753	**Non-Liq.**	Non-Liq.	**0.00**
40.52	323.21	1.80	0.56	110	1.591	0.847	0.56	0.50	0.82	247.90	1.45		1	100	1.00	4.90	1.00	248.8	0.95	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.68	290.82	1.95	0.67	110	1.595	0.846	0.67	0.50	0.81	222.66	1.54		1	100	1.00	4.95	1.00	223.5	0.94	Infin.	0.000	0.752	**Non-Liq.**	Non-Liq.	**0.00**
40.85	234.61	2.52	1.08	110	1.599	0.844	1.08	0.53	0.80	176.69	1.75		1	100	1.07	5.00	1.00	190.3	0.94	Infin.	0.000	0.751	**Non-Liq.**	Non-Liq.	**0.00**
41.01	223.18	3.14	1.41	110	1.603	0.843	1.42	0.56	0.79	165.64	1.86		1	98	1.15	5.05	1.00	191.2	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.17	246.49	3.45	1.40	110	1.607	0.841	1.41	0.56	0.79	183.54	1.82		1	100	1.12	5.10	1.00	207.2	0.94	Infin.	0.000	0.750	**Non-Liq.**	Non-Liq.	**0.00**
41.34	236.31	3.97	1.68	110	1.610	0.840	1.69	0.58	0.78	174.01	1.90		1	100	1.19	5.15	1.00	207.6	0.94	Infin.	0.000	0.749	**Non-Liq.**	Non-Liq.	**0.00**
41.50	209.85	2.42	1.15	110	1.614	0.838	1.16	0.55	0.79	155.90	1.81		1	95	1.12	5.20	1.00	174.5	0.94	Infin.	0.000	0.748	**Non-Liq.**	Non-Liq.	**0.00**
41.67	228.87	2.31	1.01	110	1.618	0.837	1.01	0.53	0.80	171.46	1.74		1	99	1.07	5.25	1.00	183.4	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.83	272.51	1.92	0.70	110	1.622	0.835	0.71	0.50	0.81	206.78	1.57		1	100	1.00	5.30	1.00	207.6	0.94	Infin.	0.000	0.747	**Non-Liq.**	Non-Liq.	**0.00**
41.99	324.45	1.75	0.54	110	1.626	0.834	0.54	0.50	0.81	246.13	1.44		1	100	1.00	5.35	1.00	247.0	0.93	Infin.	0.000	0.746	**Non-Liq.**	Non-Liq.	**0.00**
42.16	358.84	1.94	0.54	110	1.630	0.832	0.54	0.50	0.81	272.02	1.41		1	100	1.00	5.40	1.00	273.0	0.93	Infin.	0.000	0.745	**Non-Liq.**	Non-Liq.	**0.00**
42.32	372.30	2.11	0.57	110	1.634	0.831	0.57	0.50	0.80	281.93	1.41		1	100	1.00	5.45	1.00	283.0	0.93	Infin.	0.000	0.744	**Non-Liq.**	Non-Liq.	**0.00**
42.49	381.00	2.00	0.52	110	1.638	0.829	0.53	0.50	0.80	288.20	1.38		1	100	1.00	5.50	1.00	289.3	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.65	390.56	2.06	0.53	110	1.642	0.827	0.53	0.50	0.80	295.10	1.37		1	100	1.00	5.55	1.00	296.2	0.93	Infin.	0.000	0.743	**Non-Liq.**	Non-Liq.	**0.00**
42.81	394.48	2.14	0.54	110	1.646	0.826	0.54	0.50	0.80	297.72	1.38		1	100	1.00	5.55	1.00	298.8	0.93	Infin.	0.000	0.742	**Non-Liq.**	Non-Liq.	**0.00**
42.98	391.94	2.30	0.59	110	1.649	0.824	0.59	0.50	0.80	295.44	1.41		1	100	1.00	5.55	1.00	296.5	0.93	Infin.	0.000	0.741	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	388.72	2.40	0.62	110	1.653	0.823	0.62	0.50	0.80	292.66	1.43		1	100	1.00	5.55	1.00	293.8	0.93	Infin.	0.000	0.740	**Non-Liq.**	Non-Liq.	**0.00**
43.31	387.56	2.49	0.64	110	1.657	0.821	0.65	0.50	0.80	291.43	1.44		1	100	1.00	5.55	1.00	292.5	0.93	Infin.	0.000	0.739	**Non-Liq.**	Non-Liq.	**0.00**
43.47	388.39	2.43	0.62	110	1.661	0.820	0.63	0.50	0.80	291.71	1.43		1	100	1.00	5.55	1.00	292.8	0.92	Infin.	0.000	0.738	**Non-Liq.**	Non-Liq.	**0.00**
43.64	394.80	2.34	0.59	110	1.665	0.818	0.60	0.50	0.80	296.20	1.41		1	100	1.00	5.55	1.00	297.3	0.92	Infin.	0.000	0.737	**Non-Liq.**	Non-Liq.	**0.00**
43.80	409.10	2.46	0.60	110	1.669	0.816	0.60	0.50	0.80	306.61	1.40		1	100	1.00	5.55	1.00	307.8	0.92	Infin.	0.000	0.736	**Non-Liq.**	Non-Liq.	**0.00**
43.96	411.66	2.41	0.59	110	1.673	0.815	0.59	0.50	0.80	308.17	1.39		1	100	1.00	5.55	1.00	309.3	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.13	423.11	2.33	0.55	110	1.677	0.813	0.55	0.50	0.79	316.41	1.37		1	100	1.00	5.55	1.00	317.6	0.92	Infin.	0.000	0.735	**Non-Liq.**	Non-Liq.	**0.00**
44.29	427.48	3.38	0.79	110	1.681	0.811	0.79	0.50	0.79	319.31	1.48		1	100	1.00	5.55	1.00	320.5	0.92	Infin.	0.000	0.734	**Non-Liq.**	Non-Liq.	**0.00**
44.46	465.12	8.79	1.89	110	1.685	0.810	1.90	0.54	0.78	341.03	1.77		1	100	1.08	5.55	1.00	370.8	0.92	Infin.	0.000	0.733	**Non-Liq.**	Non-Liq.	**0.00**
44.62	532.93	7.53	1.41	110	1.689	0.808	1.42	0.50	0.79	397.46	1.62		1	100	1.00	5.55	1.00	399.0	0.92	Infin.	0.000	0.732	**Non-Liq.**	Non-Liq.	**0.00**
44.78	591.21	6.48	1.10	110	1.692	0.807	1.10	0.50	0.79	440.56	1.51		1	100	1.00	5.55	1.00	442.2	0.92	Infin.	0.000	0.731	**Non-Liq.**	Non-Liq.	**0.00**
44.95	507.18	5.63	1.11	110	1.696	0.805	1.11	0.50	0.79	377.32	1.55		1	100	1.00	5.55	1.00	378.7	0.91	Infin.	0.000	0.730	**Non-Liq.**	Non-Liq.	**0.00**
45.11	476.27	2.22	0.47	110	1.700	0.803	0.47	0.50	0.79	353.84	1.28		1	100	1.00	5.55	1.00	355.2	0.91	Infin.	0.000	0.729	**Non-Liq.**	Non-Liq.	**0.00**
45.28	485.36	1.77	0.36	110	1.704	0.802	0.37	0.50	0.79	360.20	1.20		1	100	1.00	5.55	1.00	361.5	0.91	Infin.	0.000	0.728	**Non-Liq.**	Non-Liq.	**0.00**
45.44	498.42	2.45	0.49	110	1.708	0.800	0.49	0.50	0.79	369.50	1.28		1	100	1.00	5.55	1.00	370.9	0.91	Infin.	0.000	0.727	**Non-Liq.**	Non-Liq.	**0.00**
45.60	485.91	5.77	1.19	110	1.712	0.798	1.19	0.50	0.79	359.78	1.59		1	100	1.00	5.55	1.00	361.1	0.91	Infin.	0.000	0.726	**Non-Liq.**	Non-Liq.	**0.00**
45.77	460.62	7.80	1.69	110	1.716	0.797	1.70	0.53	0.78	336.16	1.73		1	100	1.06	5.55	1.00	357.1	0.91	Infin.	0.000	0.725	**Non-Liq.**	Non-Liq.	**0.00**
45.93	491.30	0.00	0.00	110	1.720	0.795	0.00	0.80	0.68	313.04	2.66		0		1.00				0.95			0.724	**Non-Liq.**	Non-Liq.	**0.00**
46.10	606.17	0.00	0.00	110	1.724	0.793	0.00	0.82	0.67	382.66	2.71		0		1.00				0.95			0.723	**Non-Liq.**	Non-Liq.	**0.00**
46.26	616.78	0.00	0.00	110	1.728	0.792	0.00	0.82	0.67	388.36	2.72		0		1.00				0.95			0.722	**Non-Liq.**	Non-Liq.	**0.00**

Liquefaction Analysis – Groundwater at 20 feet

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-1
Plot: 1

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
1.1

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.97	0.75
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	20.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.63
Avg SF of Liquefiable Layers: 0.03

Probab	Total
Avg	Induced
1%	Subsidence
Max	(inches)
99%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ M=7.5 CRR	Induced EQ M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	82.43	1.01	1.22	110	0.009	1.000	1.22	0.57	1.70	132.43	1.88		1	88	1.17	0.05	1.00	154.7	1.00	0.424	0.424	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.33	77.94	1.37	1.76	110	0.018	1.000	1.76	0.61	1.70	125.21	2.01		1	86	1.31		1.00	164.0	1.00	Infin.	0.000	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.49	66.43	1.48	2.23	110	0.027	1.000	2.23	0.65	1.70	106.70	2.13		1	80	1.51		1.00	161.4	1.00	Infin.	0.000	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.66	56.46	1.33	2.35	110	0.036	1.000	2.35	0.67	1.70	90.66	2.20		1	73	1.65		1.00	150.0	1.00	0.394	0.394	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.82	50.54	1.16	2.30	110	0.045	1.000	2.30	0.67	1.70	81.14	2.22		1	68	1.72		1.00	139.9	1.00	0.334	0.334	0.485	**Non-Liq.**	Non-Liq.	**0.00**
0.98	45.66	1.04	2.28	110	0.054	1.000	2.28	0.68	1.70	73.28	2.25		1	64	1.80		1.00	132.1	1.00	0.294	0.294	0.485	**Non-Liq.**	Non-Liq.	**0.00**
1.15	40.24	0.94	2.33	110	0.063	0.999	2.33	0.70	1.70	64.56	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.31	40.24	0.94	2.33	110	0.072	0.999	2.33	0.70	1.70	64.54	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.48	34.62	0.81	2.34	110	0.081	0.999	2.35	0.71	1.70	55.50	2.35		1	52	2.11		1.00	117.0	1.00	0.229	0.229	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.64	31.09	0.64	2.05	110	0.090	0.998	2.06	0.71	1.70	49.81	2.34		1	48	2.10		1.00	104.5	1.00	0.186	0.186	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.80	30.58	0.62	2.01	110	0.099	0.998	2.02	0.71	1.70	48.98	2.34		1	47	2.10		1.00	102.7	1.00	0.181	0.181	0.484	**Non-Liq.**	Non-Liq.	**0.00**
1.97	32.03	0.75	2.33	110	0.108	0.998	2.34	0.72	1.70	51.29	2.37		1	49	2.20		1.00	112.8	1.00	0.213	0.213	0.484	**Non-Liq.**	Non-Liq.	**0.00**
2.13	31.02	0.74	2.40	110	0.117	0.997	2.41	0.73	1.70	49.65	2.39		1	48	2.27		1.00	112.8	1.00	0.214	0.214	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.30	29.95	0.70	2.34	110	0.126	0.997	2.35	0.73	1.70	47.92	2.39		1	46	2.29		1.00	109.8	1.00	0.203	0.203	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.46	29.19	0.66	2.26	110	0.135	0.996	2.27	0.73	1.70	46.69	2.39		1	45	2.29		1.00	106.7	1.00	0.193	0.193	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.62	29.17	0.63	2.17	110	0.144	0.996	2.18	0.72	1.70	46.64	2.38		1	45	2.24		1.00	104.4	1.00	0.186	0.186	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.79	29.42	0.62	2.12	110	0.153	0.996	2.13	0.72	1.70	47.03	2.37		1	46	2.20		1.00	103.6	1.00	0.183	0.183	0.483	**Non-Liq.**	Non-Liq.	**0.00**
2.95	29.77	0.62	2.08	110	0.162	0.995	2.09	0.72	1.70	47.57	2.36		1	46	2.17		1.00	103.3	1.00	0.182	0.182	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.12	29.70	0.60	2.02	110	0.171	0.995	2.04	0.72	1.70	47.45	2.36		1	46	2.14		1.00	101.7	1.00	0.178	0.178	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.28	28.88	0.57	1.96	110	0.180	0.994	1.98	0.72	1.70	46.11	2.36		1	45	2.15		1.00	99.1	1.00	0.170	0.170	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.44	26.80	0.52	1.95	110	0.189	0.994	1.97	0.72	1.70	42.76	2.38		1	42	2.24		1.00	95.7	1.00	0.162	0.162	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.61	26.96	0.49	1.80	110	0.198	0.994	1.81	0.72	1.70	43.00	2.36		1	42	2.15		1.00	92.3	1.00	0.153	0.153	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.77	29.75	0.49	1.63	110	0.208	0.993	1.65	0.70	1.70	47.47	2.30		1	46	1.94		1.00	92.2	1.00	0.153	0.153	0.482	**Non-Liq.**	Non-Liq.	**0.00**
3.94	32.57	0.49	1.50	110	0.217	0.993	1.51	0.68	1.70	51.99	2.24		1	50	1.78		1.00	92.7	1.00	0.154	0.154	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.10	34.78	0.51	1.46	110	0.226	0.993	1.47	0.67	1.70	55.52	2.21		1	52	1.70		1.00	94.6	1.00	0.159	0.159	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.27	36.24	0.53	1.47	110	0.235	0.992	1.48	0.67	1.70	57.85	2.20		1	54	1.67		1.00	96.7	1.00	0.164	0.164	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.43	38.86	0.57	1.47	110	0.244	0.992	1.48	0.66	1.70	62.05	2.18		1	57	1.62		1.00	100.3	1.00	0.174	0.174	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.59	44.03	0.63	1.44	110	0.253	0.991	1.45	0.65	1.70	70.34	2.13		1	62	1.51		1.00	106.4	1.00	0.192	0.192	0.481	**Non-Liq.**	Non-Liq.	**0.00**
4.76	50.25	0.69	1.36	110	0.262	0.991	1.37	0.63	1.70	80.32	2.07		1	68	1.41		1.00	112.9	1.00	0.214	0.214	0.480	**Non-Liq.**	Non-Liq.	**0.00**
4.92	56.32	0.74	1.31	110	0.271	0.991	1.31	0.61	1.70	90.06	2.02		1	72	1.33		1.00	119.7	1.00	0.239	0.239	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.09	62.37	0.74	1.19	110	0.280	0.990	1.19	0.60	1.70	99.77	1.96		1	77	1.25	0.55	1.19	148.2	1.00	0.383	0.383	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.25	67.00	0.84	1.26	110	0.289	0.990	1.27	0.59	1.70	107.19	1.95		1	80	1.25	0.60	1.19	158.4	1.00	0.449	0.449	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.41	67.37	0.89	1.32	110	0.298	0.989	1.32	0.60	1.70	107.77	1.97		1	80	1.26	0.65	1.19	160.8	1.00	Infin.	0.000	0.480	**Non-Liq.**	Non-Liq.	**0.00**
5.58	67.34	0.91	1.35	110	0.307	0.989	1.36	0.60	1.70	107.71	1.97		1	80	1.27	0.70	1.19	162.0	1.00	Infin.	0.000	0.479	**Non-Liq.**	Non-Liq.	**0.00**
5.74	67.46	0.93	1.37	110	0.316	0.989	1.38	0.60	1.70	107.89	1.98		1	80	1.27	0.75	1.19	162.9	1.00	Infin.	0.000	0.479	**Non-Liq.**	Non-Liq.	**0.00**
5.91	67.82	0.93	1.37	110	0.325	0.988	1.38	0.60	1.70	108.45	1.98		1	80	1.27	0.80	1.19	163.5	1.00	Infin.	0.000	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.07	65.23	0.93	1.42	110	0.334	0.988	1.43	0.61	1.70	104.28	2.00		1	79	1.30	0.85	1.19	160.7	1.00	Infin.	0.000	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.23	63.78	0.93	1.46	110	0.343	0.988	1.47	0.61	1.70	101.93	2.01		1	78	1.32		1.00	134.5	1.00	0.306	0.306	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.40	65.72	0.95	1.45	110	0.352	0.987	1.45	0.61	1.70	105.03	2.00		1	79	1.30		1.00	136.9	1.00	0.319	0.319	0.479	**Non-Liq.**	Non-Liq.	**0.00**
6.56	71.05	1.00	1.40	110	0.361	0.987	1.41	0.60	1.70	113.58	1.97		1	82	1.26	1.00	1.00	143.8	1.00	0.357	0.357	0.478	**Non-Liq.**	Non-Liq.	**0.00**
6.73	77.49	1.08	1.39	110	0.370	0.986	1.40	0.59	1.70	123.92	1.94		1	86	1.23	1.05	1.00	152.7	1.00	0.411	0.411	0.478	**Non-Liq.**	Non-Liq.	**0.00**
6.89	86.69	1.16	1.34	110	0.379	0.986	1.34	0.58	1.70	138.69	1.89		1	90	1.18	1.10	1.00	164.5	1.00	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.05	98.48	1.28	1.30	110	0.388	0.986	1.31	0.56	1.70	157.61	1.85		1	96	1.14	1.15	1.00	180.6	1.00	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.22	114.53	1.41	1.23	110	0.397	0.985	1.23	0.54	1.70	183.39	1.78		1	100	1.09	1.20	1.00	201.2	1.00	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.38	122.82	1.49	1.21	110	0.406	0.985	1.21	0.54	1.67	193.40	1.76		1	100	1.08	1.25	1.00	209.5	1.00	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
7.55	128.68	1.53	1.19	110	0.415	0.985	1.19	0.53	1.65	199.45	1.75		1	100	1.07	1.30	1.00	214.1	1.00	Infin.	0.000	0.477	**Non-Liq.**	Non-Liq.	**0.00**
7.71	128.68	1.53	1.19	110	0.424	0.984	1.19	0.53	1.63	197.34	1.75		1	100	1.07	1.35	1.00	212.2	1.00	Infin.	0.000	0.477	**Non-Liq.**	Non-Liq.	**0.00**
7.87	134.06	1.56	1.17	110	0.433	0.984	1.17	0.53	1.60	202.54	1.74		1	100	1.06	1.40	1.00	215.9	1.00	Infin.	0.000	0.477	**Non-Liq.**	Non-Liq.	**0.00**
8.04	139.69	1.63	1.16	110	0.442	0.984	1.17	0.53	1.58	208.28	1.73		1	100	1.06	1.45	1.00	220.8	1.00	Infin.	0.000	0.477	**Non-Liq.**	Non-Liq.	**0.00**
8.20	147.04	1.72	1.17	110	0.451	0.983	1.17	0.52	1.56	216.44	1.72		1	100	1.05	1.50	1.00	228.1	1.00	Infin.	0.000	0.477	**Non-Liq.**	Non-Liq.	**0.00**
8.37	151.94	1.71	1.12	110	0.460	0.983	1.13	0.52	1.54	220.33	1.70		1	100	1.04	1.55	1.00	229.4	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
8.53	158.05	1.80	1.14	110	0.469	0.982	1.14	0.52	1.52	226.66	1.69		1	100	1.03	1.60	1.00	235.3	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
8.69	163.87	1.92	1.17	110	0.478	0.982	1.18	0.52	1.51	232.90	1.70		1	100	1.04	1.65	1.00	242.3	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
8.86	169.68	2.08	1.22	110	0.487	0.982	1.23	0.52	1.50	239.19	1.70		1	100	1.04	1.70	1.00	249.8	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
9.02	174.27	2.26	1.30	110	0.496	0.981	1.30	0.52	1.49	244.08	1.72		1	100	1.05	1.75	1.00	257.2	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
9.19	179.31	2.32	1.29	110	0.505	0.981	1.30	0.52	1.47	248.52	1.71		1	100	1.05	1.80	1.00	261.0	1.00	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
9.35	181.08	2.35	1.30	110	0.514	0.981	1.30	0.52	1.46	248.69	1.71		1	100	1.05	1.85	1.00	261.3	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
9.51	191.53	2.42	1.26	110	0.523	0.980	1.27	0.52	1.44	259.55	1.69		1	100	1.03	1.90	1.00	269.1	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
9.68	202.38	2.57	1.27	110	0.532	0.980	1.27	0.51	1.42	271.29	1.68		1	100	1.03	1.95	1.00	279.3	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
9.84	214.08	2.69	1.26	110	0.541	0.980	1.26	0.51	1.41	283.70	1.67		1	100	1.02	2.00	1.00	289.1	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
10.01	227.79	2.91	1.28	110	0.550	0.979	1.28	0.51	1.39	298.89	1.66		1	100	1.01	2.05	1.00	302.9	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
10.17	242.24	3.22	1.33	110	0.559	0.979	1.33	0.51	1.38	315.27	1.66		1	100	1.01	2.10	1.00	319.4	1.00	Infin.	0.000	0.475	**Non-Liq.**	Non-Liq.	**0.00**
10.33	244.06	3.47	1.42	110	0.568	0.979	1.43	0.51	1.37	316.43	1.68		1	100	1.03	2.15	1.00	325.7	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
10.50	249.05	3.55	1.43	110	0.577	0.978	1.43	0.51	1.36	320.21	1.68		1	100	1.02	2.20	1.00	329.2	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
10.66	254.87	3.69	1.45	110	0.586	0.978	1.45	0.51	1.35	325.19	1.68		1	100	1.03	2.25	1.00	334.7	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
10.83	256.89	3.79	1.48	110	0.595	0.978	1.48	0.51	1.34	325.57	1.69		1	100	1.03	2.30	1.00	336.5	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
10.99	258.54	3.96	1.53	110	0.604	0.977	1.53	0.52	1.34	325.83	1.70		1	100	1.04	2.35	1.00	339.6	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
11.15	252.91	3.87	1.53	110	0.614	0.977	1.53	0.52	1.33	316.61	1.71		1	100	1.04	2.40	1.00	331.4	1.00	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
11.32	241.86	3.70	1.53	110	0.623	0.977	1.53	0.52	1.32	301.06	1.72		1	100	1.05	2.45	1.00	317.7	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
11.48	235.08	3.50	1.49	110	0.632	0.976	1.49	0.52	1.31	290.38	1.72		1	100	1.05	2.50	1.00	306.4	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
11.65	233.08	3.34	1.43	110	0.641	0.976	1.44	0.52	1.30	285.38	1.71		1	100	1.05	2.55	1.00	299.4	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
11.81	236.89	2.82	1.19	110	0.650	0.975	1.19	0.50	1.28	285.24	1.65		1	100	1.00	2.60	1.00	286.6	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
11.98	239.86	3.05	1.27	110	0.659	0.975	1.27	0.51	1.27	287.65	1.67		1	100	1.02	2.65	1.00	293.1	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
12.14	232.44	3.13	1.35	110	0.668	0.975	1.35	0.52	1.27	277.93	1.70		1	100	1.04	2.70	1.00	288.9	1.00	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
12.30	231.56	3.17	1.37	110	0.677	0.974	1.37	0.52	1.26	275.23	1.70		1	100	1.04	2.70	1.00	287.5	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
12.47	226.67	3.06	1.35	110	0.686	0.974	1.35	0.52	1.25	267.63	1.71		1	100	1.04	2.70	1.00	280.0	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
12.63	224.32	3.05	1.36	110	0.695	0.974	1.36	0.52	1.25	263.26	1.71		1	100	1.05	2.70	1.00	276.6	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
12.80	219.31	3.06	1.39	110	0.704	0.973	1.40	0.53	1.24	256.14	1.73		1	100	1.06	2.70	1.00	272.0	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	214.97	3.04	1.41	110	0.713	0.973	1.42	0.53	1.23	249.70	1.74		1	100	1.07	2.70	1.00	267.1	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.12	210.39	2.92	1.39	110	0.722	0.973	1.39	0.53	1.23	242.78	1.74		1	100	1.07	2.70	1.00	260.0	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.29	202.73	2.85	1.41	110	0.731	0.972	1.41	0.54	1.22	232.77	1.76		1	100	1.08	2.70	1.00	251.7	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.45	202.03	2.75	1.36	110	0.740	0.972	1.36	0.53	1.21	230.22	1.75		1	100	1.07	2.70	1.00	247.7	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.62	202.36	2.74	1.36	110	0.749	0.972	1.36	0.53	1.20	229.11	1.75		1	100	1.07	2.70	1.00	246.5	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.78	210.84	2.87	1.36	110	0.758	0.971	1.37	0.53	1.19	237.04	1.74		1	100	1.07	2.70	1.00	253.8	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.94	228.51	2.41	1.05	110	0.767	0.971	1.06	0.50	1.17	252.83	1.64		1	100	1.00	2.70	1.00	253.8	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.11	285.52	2.69	0.94	110	0.776	0.971	0.94	0.50	1.17	314.27	1.54		1	100	1.00	2.70	1.00	315.4	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.27	292.87	2.62	0.89	110	0.785	0.970	0.90	0.50	1.16	320.51	1.52		1	100	1.00	2.70	1.00	321.7	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.44	251.89	2.37	0.94	110	0.794	0.970	0.94	0.50	1.15	273.97	1.58		1	100	1.00	2.70	1.00	275.0	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.60	209.49	2.12	1.01	110	0.803	0.970	1.02	0.51	1.15	226.74	1.66		1	100	1.01	2.70	1.00	229.5	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.76	185.30	1.81	0.97	110	0.812	0.969	0.98	0.51	1.15	199.73	1.68		1	100	1.03	2.70	1.00	205.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.93	177.04	1.72	0.97	110	0.821	0.969	0.97	0.52	1.14	189.90	1.70		1	100	1.04	2.70	1.00	197.4	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.09	163.66	1.53	0.94	110	0.830	0.969	0.94	0.52	1.13	174.67	1.71		1	100	1.05	2.70	1.00	183.4	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.26	131.77	1.43	1.09	110	0.839	0.968	1.10	0.56	1.14	140.77	1.83		1	91	1.13	2.70	1.00	159.1	1.00	0.454	0.454	0.469	Non-Liq.	Non-Liq.	0.00
15.42	90.92	1.82	2.00	110	0.848	0.968	2.02	0.64	1.15	98.18	2.12		1	76	1.50		1.00	147.1	1.00	0.376	0.376	0.469	Non-Liq.	Non-Liq.	0.00
15.58	71.71	1.75	2.45	110	0.857	0.967	2.48	0.69	1.16	77.37	2.26		1	66	1.82		1.00	141.2	1.00	0.342	0.342	0.469	Non-Liq.	Non-Liq.	0.00
15.75	110.76	2.45	2.21	110	0.866	0.967	2.22	0.64	1.14	118.01	2.10		1	84	1.46		1.00	171.7	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.91	111.12	2.74	2.46	110	0.875	0.967	2.48	0.65	1.13	117.85	2.14		1	84	1.52		1.00	179.7	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
16.08	114.52	2.87	2.51	110	0.884	0.966	2.52	0.65	1.12	120.66	2.14		1	85	1.52		1.00	183.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.24	142.13	2.72	1.91	110	0.893	0.966	1.92	0.60	1.11	147.88	1.99		1	93	1.28	1.00	1.00	190.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.40	171.27	2.46	1.44	110	0.902	0.966	1.45	0.56	1.09	176.09	1.84		1	100	1.14	1.05	1.00	201.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.57	179.24	2.28	1.27	110	0.911	0.965	1.28	0.55	1.08	182.87	1.79		1	100	1.10	1.10	1.00	202.3	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.73	203.64	2.08	1.02	110	0.920	0.965	1.03	0.51	1.07	205.87	1.69		1	100	1.03	1.15	1.00	213.0	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.90	253.20	2.34	0.92	110	0.929	0.965	0.93	0.50	1.07	254.42	1.59		1	100	1.00	1.20	1.00	255.4	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
17.06	288.82	2.54	0.88	110	0.938	0.964	0.88	0.50	1.06	288.93	1.54		1	100	1.00	1.25	1.00	290.0	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.22	315.97	2.96	0.94	110	0.947	0.964	0.94	0.50	1.06	314.66	1.54		1	100	1.00	1.30	1.00	315.8	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.39	322.57	2.98	0.92	110	0.956	0.963	0.93	0.50	1.05	319.73	1.53		1	100	1.00	1.35	1.00	320.9	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.55	346.12	4.11	1.19	110	0.965	0.963	1.19	0.50	1.05	341.52	1.60		1	100	1.00	1.40	1.00	342.8	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.72	402.20	6.00	1.49	110	0.974	0.963	1.50	0.50	1.04	395.22	1.65		1	100	1.00	1.45	1.00	396.7	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.88	358.55	6.07	1.69	110	0.983	0.962	1.70	0.52	1.04	351.16	1.72		1	100	1.05	1.50	1.00	370.5	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
18.04	345.21	4.98	1.44	110	0.992	0.962	1.45	0.51	1.03	336.13	1.67		1	100	1.02	1.55	1.00	343.7	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.21	360.17	4.43	1.23	110	1.001	0.962	1.23	0.50	1.03	348.93	1.61		1	100	1.00	1.60	1.00	350.2	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.37	359.99	3.79	1.05	110	1.010	0.961	1.06	0.50	1.02	347.18	1.55		1	100	1.00	1.65	1.00	348.5	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.54	354.62	3.03	0.86	110	1.020	0.961	0.86	0.50	1.02	340.46	1.49		1	100	1.00	1.70	1.00	341.7	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.70	344.24	2.99	0.87	110	1.029	0.960	0.87	0.50	1.01	329.01	1.50		1	100	1.00	1.75	1.00	330.2	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.86	332.45	3.04	0.91	110	1.038	0.960	0.92	0.50	1.01	316.31	1.53		1	100	1.00	1.80	1.00	317.5	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.03	327.71	2.96	0.90	110	1.047	0.960	0.91	0.50	1.01	310.43	1.53		1	100	1.00	1.85	1.00	311.6	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.19	307.45	2.73	0.89	110	1.056	0.959	0.89	0.50	1.00	289.93	1.54		1	100	1.00	1.90	1.00	291.0	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.36	274.72	2.45	0.89	110	1.065	0.959	0.89	0.50	1.00	257.85	1.58		1	100	1.00	1.95	1.00	258.8	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.52	271.54	4.15	1.53	110	1.074	0.958	1.53	0.54	0.99	253.63	1.76		1	100	1.08	2.00	1.00	275.2	0.99	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.69	279.83	3.92	1.40	110	1.083	0.958	1.41	0.53	0.99	260.29	1.73		1	100	1.06	2.05	1.00	276.0	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
19.85	285.99	4.02	1.41	110	1.092	0.957	1.41	0.53	0.98	264.88	1.72		1	100	1.05	2.10	1.00	280.2	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.01	315.42	2.61	0.83	110	1.101	0.957	0.83	0.50	0.98	291.27	1.52		1	100	1.00	2.15	1.00	292.4	0.98	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.18	326.56	2.81	0.86	110	1.107	0.957	0.86	0.50	0.98	300.76	1.52		1	100	1.00	2.20	1.00	301.9	0.98	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
20.34	329.89	2.62	0.79	110	1.111	0.956	0.80	0.50	0.98	303.30	1.49		1	100	1.00	2.25	1.00	304.4	0.98	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
20.51	327.47	2.66	0.81	110	1.115	0.956	0.82	0.50	0.97	300.53	1.50		1	100	1.00	2.30	1.00	301.7	0.98	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
20.67	324.48	2.31	0.71	110	1.118	0.955	0.71	0.50	0.97	297.26	1.47		1	100	1.00	2.35	1.00	298.4	0.98	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
20.83	329.51	1.82	0.55	110	1.122	0.955	0.55	0.50	0.97	301.35	1.38		1	100	1.00	2.40	1.00	302.5	0.98	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
21.00	283.15	1.71	0.61	110	1.126	0.954	0.61	0.50	0.97	258.35	1.46		1	100	1.00	2.45	1.00	259.3	0.98	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
21.16	276.58	1.11	0.40	110	1.130	0.954	0.40	0.50	0.97	251.90	1.35		1	100	1.00	2.50	1.00	252.8	0.97	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
21.33	265.97	1.09	0.41	110	1.134	0.954	0.41	0.50	0.97	241.77	1.37		1	100	1.00	2.55	1.00	242.7	0.97	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
21.49	250.21	1.40	0.56	110	1.138	0.953	0.56	0.50	0.96	226.99	1.48		1	100	1.00	2.60	1.00	227.8	0.97	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
21.65	261.15	1.64	0.63	110	1.142	0.953	0.63	0.50	0.96	236.55	1.50		1	100	1.00	2.65	1.00	237.4	0.97	Infin.	0.000	0.482	Non-Liq.	Non-Liq.	0.00
21.82	300.85	1.72	0.57	110	1.146	0.952	0.57	0.50	0.96	272.20	1.42		1	100	1.00	2.70	1.00	273.2	0.97	Infin.	0.000	0.483	Non-Liq.	Non-Liq.	0.00
21.98	283.46	1.98	0.70	110	1.150	0.952	0.70	0.50	0.96	255.97	1.50		1	100	1.00	2.75	1.00	256.9	0.97	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
22.15	299.30	1.41	0.47	110	1.154	0.951	0.47	0.50	0.96	269.87	1.37		1	100	1.00	2.80	1.00	270.9	0.97	Infin.	0.000	0.487	Non-Liq.	Non-Liq.	0.00
22.31	305.84	1.24	0.41	110	1.158	0.951	0.41	0.50	0.96	275.32	1.32		1	100	1.00	2.85	1.00	276.3	0.96	Infin.	0.000	0.489	Non-Liq.	Non-Liq.	0.00
22.47	317.96	1.63	0.51	110	1.161	0.950	0.51	0.50	0.95	285.79	1.38		1	100	1.00	2.90	1.00	286.9	0.96	Infin.	0.000	0.490	Non-Liq.	Non-Liq.	0.00
22.64	329.92	1.81	0.55	110	1.165	0.950	0.55	0.50	0.95	296.08	1.39		1	100	1.00	2.95	1.00	297.2	0.96	Infin.	0.000	0.492	Non-Liq.	Non-Liq.	0.00
22.80	349.36	1.91	0.55	110	1.169	0.949	0.55	0.50	0.95	313.06	1.37		1	100	1.00	3.00	1.00	314.2	0.96	Infin.	0.000	0.494	Non-Liq.	Non-Liq.	0.00
22.97	347.80	2.37	0.68	110	1.173	0.949	0.68	0.50	0.95	311.13	1.44		1	100	1.00	3.05	1.00	312.3	0.96	Infin.	0.000	0.495	Non-Liq.	Non-Liq.	0.00
23.13	355.41	2.55	0.72	110	1.177	0.948	0.72	0.50	0.95	317.43	1.45		1	100	1.00	3.10	1.00	318.6	0.96	Infin.	0.000	0.497	Non-Liq.	Non-Liq.	0.00
23.29	348.90	2.53	0.73	110	1.181	0.948	0.73	0.50	0.95	311.08	1.46		1	100	1.00	3.15	1.00	312.2	0.96	Infin.	0.000	0.498	Non-Liq.	Non-Liq.	0.00
23.46	332.91	2.12	0.64	110	1.185	0.947	0.64	0.50	0.94	296.28	1.43		1	100	1.00	3.20	1.00	297.4	0.96	Infin.	0.000	0.500	Non-Liq.	Non-Liq.	0.00
23.62	334.85	1.98	0.59	110	1.189	0.947	0.59	0.50	0.94	297.52	1.41		1	100	1.00	3.25	1.00	298.6	0.95	Infin.	0.000	0.502	Non-Liq.	Non-Liq.	0.00
23.79	354.63	1.92	0.54	110	1.193	0.946	0.54	0.50	0.94	314.64	1.36		1	100	1.00	3.30	1.00	315.8	0.95	Infin.	0.000	0.503	Non-Liq.	Non-Liq.	0.00
23.95	324.76	1.60	0.49	110	1.197	0.946	0.49	0.50	0.94	287.57	1.36		1	100	1.00	3.35	1.00	288.6	0.95	Infin.	0.000	0.505	Non-Liq.	Non-Liq.	0.00
24.11	341.67	1.26	0.37	110	1.200	0.945	0.37	0.50	0.94	302.11	1.27		1	100	1.00	3.40	1.00	303.2	0.95	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
24.28	335.98	1.14	0.34	110	1.204	0.945	0.34	0.50	0.94	296.57	1.25		1	100	1.00	3.45	1.00	297.7	0.95	Infin.	0.000	0.508	Non-Liq.	Non-Liq.	0.00
24.44	335.54	1.25	0.37	110	1.208	0.944	0.38	0.50	0.94	295.70	1.28		1	100	1.00	3.50	1.00	296.8	0.95	Infin.	0.000	0.509	Non-Liq.	Non-Liq.	0.00
24.61	340.03	1.44	0.42	110	1.212	0.943	0.42	0.50	0.93	299.18	1.31		1	100	1.00	3.55	1.00	300.3	0.95	Infin.	0.000	0.511	Non-Liq.	Non-Liq.	0.00
24.77	343.51	2.18	0.64	110	1.216	0.943	0.64	0.50	0.93	301.77	1.42		1	100	1.00	3.60	1.00	302.9	0.95	Infin.	0.000	0.512	Non-Liq.	Non-Liq.	0.00
24.93	350.49	2.01	0.57	110	1.220	0.942	0.58	0.50	0.93	307.42	1.39		1	100	1.00	3.65	1.00	308.6	0.94	Infin.	0.000	0.514	Non-Liq.	Non-Liq.	0.00
25.10	344.14	2.05	0.60	110	1.224	0.942	0.60	0.50	0.93	301.35	1.41		1	100	1.00	3.70	1.00	302.5	0.94	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
25.26	336.49	3.71	1.10	110	1.228	0.941	1.11	0.50	0.93	294.16	1.61		1	100	1.00	3.75	1.00	295.3	0.94	Infin.	0.000	0.516	Non-Liq.	Non-Liq.	0.00
25.43	347.63	2.78	0.80	110	1.232	0.941	0.80	0.50	0.93	303.44	1.50		1	100	1.00	3.80	1.00	304.6	0.94	Infin.	0.000	0.518	Non-Liq.	Non-Liq.	0.00
25.59	382.52	2.64	0.69	110	1.236	0.940	0.69	0.50	0.93	333.48	1.42		1	100	1.00	3.85	1.00	334.7	0.94	Infin.	0.000	0.519	Non-Liq.	Non-Liq.	0.00
25.75	360.83	2.44	0.68	110	1.240	0.939	0.68	0.50	0.92	314.01	1.43		1	100	1.00	3.90	1.00	315.2	0.94	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
25.92	365.07	2.04	0.56	110	1.243	0.939	0.56	0.50	0.92	317.21	1.37		1	100	1.00	3.95	1.00	318.4	0.94	Infin.	0.000	0.522	Non-Liq.	Non-Liq.	0.00
26.08	363.26	2.01	0.55	110	1.247	0.938	0.56	0.50	0.92	315.13	1.37		1	100	1.00	4.00	1.00	316.3	0.94	Infin.	0.000	0.523	Non-Liq.	Non-Liq.	0.00
26.25	360.99	2.10	0.58	110	1.251	0.938	0.58	0.50	0.92	312.66	1.39		1	100	1.00	4.05	1.00	313.8	0.94	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
26.41	395.59	1.87	0.47	110	1.255	0.937	0.48	0.50	0.92	342.20	1.30		1	100	1.00	4.10	1.00	343.5	0.93	Infin.	0.000	0.526	Non-Liq.	Non-Liq.	0.00
26.57	390.21	2.16	0.55	110	1.259	0.936	0.55	0.50	0.92	337.00	1.35		1	100	1.00	4.15	1.00	338.3	0.93	Infin.	0.000	0.527	Non-Liq.	Non-Liq.	0.00
26.74	369.74	2.08	0.56	110	1.263	0.936	0.57	0.50	0.92	318.77	1.37		1	100	1.00	4.20	1.00	320.0	0.93	Infin.	0.000	0.528	Non-Liq.	Non-Liq.	0.00
26.90	365.49	1.74	0.48	110	1.267	0.935	0.48	0.50	0.91	314.60	1.32		1	100	1.00	4.25	1.00	315.8	0.93	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
27.07	355.65	1.92	0.54	110	1.271	0.934	0.54	0.50	0.91	305.63	1.37		1	100	1.00	4.30	1.00	306.8	0.93	Infin.	0.000	0.531	Non-Liq.	Non-Liq.	0.00
27.23	353.49	1.57	0.44	110	1.275	0.934	0.44	0.50	0.91	303.30	1.32		1	100	1.00	4.35	1.00	304.4	0.93	Infin.	0.000	0.532	Non-Liq.	Non-Liq.	0.00
27.40	346.49	1.68	0.48	110	1.279	0.933	0.49	0.50	0.91	296.81	1.35		1	100	1.00	4.40	1.00	297.9	0.93	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
27.56	345.45	1.99	0.58	110	1.282	0.932	0.58	0.50	0.91	295.46	1.40		1	100	1.00	4.45	1.00	296.6	0.93	Infin.	0.000	0.534	Non-Liq.	Non-Liq.	0.00
27.72	320.92	1.75	0.55	110	1.286	0.932	0.55	0.50	0.91	273.99	1.41		1	100	1.00	4.50	1.00	275.0	0.92	Infin.	0.000	0.535	Non-Liq.	Non-Liq.	0.00
27.89	307.08	1.60	0.52	110	1.290	0.931	0.52	0.50	0.91	261.72	1.41		1	100	1.00	4.55	1.00	262.7	0.92	Infin.	0.000	0.536	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	279.88	1.58	0.56	110	1.294	0.930	0.57	0.50	0.90	238.08	1.46		1	100	1.00	4.60	1.00	239.0	0.92	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
28.22	242.13	3.57	1.47	110	1.298	0.929	1.48	0.55	0.89	203.34	1.81		1	100	1.12	4.65	1.00	227.7	0.92	Infin.	0.000	0.539	**Non-Liq.**	Non-Liq.	**0.00**
28.38	259.83	3.41	1.31	110	1.302	0.929	1.32	0.53	0.90	218.73	1.75		1	100	1.07	4.70	1.00	235.7	0.92	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
28.54	290.00	2.93	1.01	110	1.306	0.928	1.01	0.50	0.90	245.61	1.63		1	100	1.00	4.75	1.00	246.5	0.92	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
28.71	202.32	2.56	1.27	110	1.310	0.927	1.28	0.55	0.89	168.83	1.82		1	99	1.12	4.80	1.00	189.7	0.92	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
28.87	189.41	1.37	0.72	110	1.314	0.926	0.73	0.51	0.90	159.28	1.67		1	96	1.01	4.85	1.00	162.2	0.92	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
29.04	186.12	1.39	0.74	110	1.318	0.926	0.75	0.51	0.89	156.09	1.68		1	95	1.03	4.90	1.00	160.7	0.92	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
29.20	187.42	1.54	0.82	110	1.322	0.925	0.83	0.52	0.89	156.67	1.71		1	95	1.04	4.95	1.00	164.1	0.91	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
29.36	174.10	1.68	0.96	110	1.325	0.924	0.97	0.54	0.88	144.51	1.78		1	92	1.09	5.00	1.00	158.6	0.91	0.451	0.412	0.546	**0.76**	72%	**0.57**
29.53	162.50	1.73	1.07	110	1.329	0.923	1.07	0.56	0.88	134.10	1.84		1	89	1.13	5.05	1.00	152.5	0.91	0.410	0.374	0.547	**0.68**	78%	**0.71**
29.69	156.88	1.76	1.12	110	1.333	0.923	1.13	0.57	0.88	128.96	1.86		1	87	1.16	5.10	1.00	149.6	0.91	0.391	0.357	0.548	**0.65**	80%	**0.78**
29.86	154.45	1.73	1.12	110	1.337	0.922	1.13	0.57	0.88	126.69	1.87		1	87	1.16	5.15	1.00	147.5	0.91	0.378	0.344	0.549	**0.63**	82%	**0.83**
30.02	155.22	1.86	1.20	110	1.341	0.921	1.21	0.57	0.87	126.93	1.89		1	87	1.18	5.20	1.00	150.1	0.91	0.394	0.359	0.550	**0.65**	80%	**0.77**
30.18	159.05	1.71	1.08	110	1.345	0.920	1.09	0.56	0.87	130.24	1.85		1	88	1.14	5.25	1.00	149.5	0.91	0.391	0.355	0.551	**0.64**	81%	**0.78**
30.35	160.50	1.73	1.08	110	1.349	0.919	1.09	0.56	0.87	131.25	1.85		1	88	1.14	5.30	1.00	150.4	0.91	0.396	0.360	0.551	**0.65**	80%	**0.76**
30.51	177.29	1.78	1.00	110	1.353	0.918	1.01	0.55	0.87	145.44	1.79		1	92	1.10	5.35	1.00	160.6	0.91	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
30.68	188.18	1.86	0.99	110	1.357	0.918	1.00	0.54	0.87	154.46	1.77		1	95	1.08	5.40	1.00	168.0	0.91	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
30.84	196.86	2.12	1.08	110	1.361	0.917	1.09	0.54	0.87	161.22	1.78		1	97	1.09	5.45	1.00	176.9	0.90	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
31.00	210.21	3.25	1.55	110	1.364	0.916	1.56	0.57	0.86	170.70	1.88		1	99	1.17	5.50	1.00	200.2	0.90	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
31.17	210.66	3.44	1.63	110	1.368	0.915	1.64	0.58	0.86	170.54	1.90		1	99	1.19	5.55	1.00	202.9	0.90	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.33	214.79	3.75	1.75	110	1.372	0.914	1.76	0.58	0.86	173.38	1.91		1	100	1.20	5.60	1.00	209.2	0.90	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.50	227.93	4.18	1.83	110	1.376	0.913	1.84	0.58	0.86	183.75	1.91		1	100	1.20	5.65	1.00	221.6	0.90	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
31.66	244.07	4.52	1.85	110	1.380	0.912	1.86	0.58	0.86	196.76	1.90		1	100	1.19	5.70	1.00	234.4	0.90	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
31.82	246.01	4.47	1.82	110	1.384	0.911	1.83	0.57	0.86	198.13	1.89		1	100	1.18	5.75	1.00	234.6	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
31.99	244.38	4.40	1.80	110	1.388	0.910	1.81	0.57	0.86	196.51	1.89		1	100	1.18	5.80	1.00	232.4	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
32.15	229.90	4.32	1.88	110	1.392	0.909	1.89	0.58	0.85	184.00	1.92		1	100	1.21	5.85	1.00	223.5	0.90	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
32.32	206.06	3.87	1.88	110	1.396	0.908	1.89	0.59	0.85	164.10	1.95		1	97	1.24	5.90	1.00	204.8	0.90	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.48	204.67	2.85	1.39	110	1.400	0.907	1.40	0.56	0.85	164.05	1.86		1	97	1.15	5.95	1.00	189.2	0.89	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.64	203.20	2.51	1.24	110	1.403	0.906	1.25	0.55	0.86	163.10	1.82		1	97	1.12	6.00	1.00	183.6	0.89	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
32.81	212.73	2.19	1.03	110	1.407	0.905	1.04	0.53	0.86	171.59	1.75		1	99	1.07	6.05	1.00	184.3	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
32.97	233.49	2.13	0.91	110	1.411	0.904	0.92	0.51	0.86	189.28	1.68		1	100	1.02	6.10	1.00	194.5	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
33.14	254.97	2.22	0.87	110	1.415	0.903	0.88	0.50	0.86	207.21	1.64		1	100	1.00	6.15	1.00	208.0	0.89	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
33.30	276.58	2.38	0.86	110	1.419	0.902	0.87	0.50	0.86	224.56	1.61		1	100	1.00	6.20	1.00	225.4	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.46	326.02	2.80	0.86	110	1.423	0.901	0.86	0.50	0.86	264.54	1.56		1	100	1.00	6.25	1.00	265.5	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.63	367.65	3.43	0.93	110	1.427	0.900	0.94	0.50	0.86	298.06	1.55		1	100	1.00	6.30	1.00	299.2	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.79	402.25	3.96	0.99	110	1.431	0.899	0.99	0.50	0.86	325.77	1.55		1	100	1.00	6.35	1.00	327.0	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.96	373.21	2.74	0.73	110	1.435	0.898	0.74	0.50	0.86	301.75	1.47		1	100	1.00	6.40	1.00	302.9	0.89	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.12	367.69	2.68	0.73	110	1.439	0.897	0.73	0.50	0.86	296.87	1.47		1	100	1.00	6.45	1.00	298.0	0.88	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.28	347.49	2.00	0.58	110	1.443	0.896	0.58	0.50	0.86	280.11	1.42		1	100	1.00	6.50	1.00	281.2	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.45	363.15	2.39	0.66	110	1.446	0.895	0.66	0.50	0.86	292.39	1.45		1	100	1.00	6.55	1.00	293.5	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.61	354.73	2.83	0.80	110	1.450	0.894	0.80	0.50	0.85	285.19	1.51		1	100	1.00	6.60	1.00	286.3	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.78	326.42	3.00	0.92	110	1.454	0.893	0.92	0.50	0.85	261.98	1.58		1	100	1.00	6.65	1.00	263.0	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.94	311.03	2.62	0.84	110	1.458	0.892	0.85	0.50	0.85	249.24	1.57		1	100	1.00	6.70	1.00	250.2	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.10	313.61	2.84	0.90	110	1.462	0.890	0.91	0.50	0.85	250.98	1.59		1	100	1.00	6.75	1.00	251.9	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.27	310.40	3.07	0.99	110	1.466	0.889	0.99	0.50	0.85	248.06	1.62		1	100	1.00	6.80	1.00	249.0	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.43	294.50	3.05	1.03	110	1.470	0.888	1.04	0.50	0.85	234.64	1.65		1	100	1.01	6.85	1.00	237.1	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.60	285.50	2.83	0.99	110	1.474	0.887	1.00	0.50	0.85	227.21	1.65		1	100	1.00	6.90	1.00	228.9	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.76	280.39	2.74	0.98	110	1.478	0.886	0.98	0.50	0.85	222.80	1.65		1	100	1.00	6.95	1.00	224.7	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
35.93	276.31	2.73	0.99	110	1.482	0.885	0.99	0.51	0.84	219.05	1.66		1	100	1.01	7.00	1.00	222.3	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.09	271.84	2.66	0.98	110	1.485	0.883	0.99	0.51	0.84	215.14	1.66		1	100	1.01	7.05	1.00	218.7	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.25	266.67	2.73	1.02	110	1.489	0.882	1.03	0.51	0.84	210.29	1.68		1	100	1.03	7.10	1.00	216.8	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.42	266.74	3.17	1.19	110	1.493	0.881	1.19	0.53	0.83	209.00	1.73		1	100	1.06	7.15	1.00	222.4	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.58	258.25	3.44	1.33	110	1.497	0.880	1.34	0.54	0.83	201.01	1.78		1	100	1.09	7.20	1.00	220.6	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.75	253.87	3.88	1.53	110	1.501	0.878	1.54	0.56	0.82	196.21	1.83		1	100	1.13	7.25	1.00	223.1	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.91	268.14	4.26	1.59	110	1.505	0.877	1.60	0.56	0.82	207.04	1.83		1	100	1.13	7.30	1.00	235.1	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.07	272.86	5.01	1.84	110	1.509	0.876	1.85	0.57	0.82	209.36	1.88		1	100	1.17	7.35	1.00	245.8	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.24	267.15	4.61	1.73	110	1.513	0.875	1.74	0.57	0.82	205.00	1.86		1	100	1.16	7.40	1.00	237.9	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.40	258.14	4.98	1.93	110	1.517	0.873	1.94	0.58	0.81	196.71	1.91		1	100	1.20	7.45	1.00	237.1	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.57	251.61	4.92	1.96	110	1.521	0.872	1.97	0.59	0.81	191.15	1.92		1	100	1.21	7.50	1.00	232.8	0.86	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.73	253.20	5.10	2.01	110	1.525	0.871	2.02	0.59	0.81	191.89	1.93		1	100	1.22	7.55	1.00	235.4	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
37.89	250.10	4.99	1.99	110	1.528	0.869	2.01	0.59	0.81	189.23	1.93		1	100	1.22	7.60	1.00	232.3	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.06	236.10	4.60	1.95	110	1.532	0.868	1.96	0.59	0.80	178.13	1.94		1	100	1.23	7.65	1.00	220.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.22	234.67	4.00	1.70	110	1.536	0.867	1.71	0.58	0.81	177.66	1.90		1	100	1.19	7.70	1.00	211.7	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.39	251.51	3.44	1.37	110	1.540	0.865	1.38	0.55	0.81	192.25	1.80		1	100	1.11	7.75	1.00	214.0	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.55	261.62	3.13	1.20	110	1.544	0.864	1.20	0.53	0.82	201.02	1.75		1	100	1.07	7.80	1.00	215.9	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.71	270.23	2.71	1.00	110	1.548	0.863	1.01	0.51	0.82	209.01	1.68		1	100	1.02	7.85	1.00	214.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.88	270.03	2.45	0.91	110	1.552	0.861	0.91	0.50	0.83	209.36	1.65		1	100	1.00	7.90	1.00	210.4	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.04	285.58	1.88	0.66	110	1.556	0.860	0.66	0.50	0.82	221.38	1.53		1	100	1.00	7.95	1.00	222.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.21	285.94	1.84	0.64	110	1.560	0.859	0.65	0.50	0.82	221.38	1.53		1	100	1.00	8.00	1.00	222.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.37	298.71	2.11	0.71	110	1.564	0.857	0.71	0.50	0.82	231.03	1.54		1	100	1.00	8.05	1.00	231.9	0.86	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.53	335.11	2.36	0.71	110	1.567	0.856	0.71	0.50	0.82	259.01	1.50		1	100	1.00	8.10	1.00	260.0	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.70	334.95	4.67	1.39	110	1.571	0.854	1.40	0.53	0.81	255.80	1.73		1	100	1.06	8.15	1.00	271.7	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.86	365.36	4.60	1.26	110	1.575	0.853	1.26	0.51	0.82	280.75	1.67		1	100	1.02	8.20	1.00	286.9	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.03	354.98	4.90	1.38	110	1.579	0.852	1.39	0.52	0.81	271.07	1.71		1	100	1.05	8.25	1.00	284.5	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.19	386.31	4.35	1.13	110	1.583	0.850	1.13	0.50	0.82	297.27	1.62		1	100	1.00	8.30	1.00	298.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.35	312.02	3.03	0.97	110	1.587	0.849	0.98	0.50	0.82	239.57	1.63		1	100	1.00	8.35	1.00	240.5	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.52	311.39	2.28	0.73	110	1.591	0.847	0.74	0.50	0.82	238.79	1.54		1	100	1.00	8.40	1.00	239.7	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.68	294.45	1.66	0.56	110	1.595	0.846	0.57	0.50	0.81	225.45	1.48		1	100	1.00	8.45	1.00	226.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.85	281.98	1.62	0.58	110	1.599	0.844	0.58	0.50	0.81	215.59	1.50		1	100	1.00	8.50	1.00	216.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.01	243.47	1.88	0.77	110	1.603	0.843	0.78	0.50	0.81	185.75	1.64		1	100	1.00	8.55	1.00	186.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.17	276.31	2.79	1.01	110	1.607	0.841	1.01	0.51	0.81	209.65	1.68		1	100	1.02	8.60	1.00	215.6	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.34	272.69	3.15	1.16	110	1.610	0.840	1.16	0.53	0.80	205.34	1.73		1	100	1.06	8.65	1.00	218.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.50	280.76	3.48	1.24	110	1.614	0.838	1.25	0.53	0.80	210.77	1.74		1	100	1.07	8.70	1.00	226.0	0.84	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.67	325.03	3.18	0.98	110	1.618	0.837	0.98	0.50	0.81	247.17	1.62		1	100	1.00	8.75	1.00	248.1	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.83	361.66	3.38	0.94	110	1.622	0.835	0.94	0.50	0.81	274.83	1.58		1	100	1.00	8.80	1.00	275.9	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.99	372.69	3.26	0.87	110	1.626	0.834	0.88	0.50	0.81	282.91	1.55		1	100	1.00	8.85	1.00	284.0	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.16	396.43	3.53	0.89	110	1.630	0.832	0.89	0.50	0.81	300.64	1.53		1	100	1.00	8.90	1.00	301.8	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.32	442.33	3.55	0.80	110	1.634	0.831	0.81	0.50	0.80	335.19	1.47		1	100	1.00	8.95	1.00	336.4	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.49	458.56	3.30	0.72	110	1.638	0.829	0.72	0.50	0.80	347.12	1.42		1	100	1.00	9.00	1.00	348.4	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.65	440.28	2.98	0.68	110	1.642	0.827	0.68	0.50	0.80	332.83	1.42		1	100	1.00	9.05	1.00	334.1	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.81	431.91	2.59	0.60	110	1.646	0.826	0.60	0.50	0.80	326.09	1.38		1	100	1.00	9.10	1.00	327.3	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.98	428.57	2.24	0.52	110	1.649	0.824	0.52	0.50	0.80	323.17	1.34		1	100	1.00	9.15	1.00	324.4	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	428.50	2.17	0.51	110	1.653	0.823	0.51	0.50	0.80	322.73	1.33		1	100	1.00	9.20	1.00	323.9	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.31	431.32	1.87	0.43	110	1.657	0.821	0.43	0.50	0.80	324.48	1.29		1	100	1.00	9.25	1.00	325.7	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.47	442.46	2.46	0.56	110	1.661	0.820	0.56	0.50	0.80	332.50	1.35		1	100	1.00	9.30	1.00	333.7	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.64	485.55	2.74	0.56	110	1.665	0.818	0.57	0.50	0.80	364.57	1.33		1	100	1.00	9.35	1.00	365.9	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.80	480.46	2.91	0.61	110	1.669	0.816	0.61	0.50	0.80	360.31	1.36		1	100	1.00	9.40	1.00	361.7	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
43.96	434.40	2.34	0.54	110	1.673	0.815	0.54	0.50	0.80	325.27	1.35		1	100	1.00	9.45	1.00	326.5	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.13	424.26	2.47	0.58	110	1.677	0.813	0.58	0.50	0.79	317.27	1.38		1	100	1.00	9.50	1.00	318.5	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.29	417.78	3.15	0.75	110	1.681	0.811	0.76	0.50	0.79	312.04	1.47		1	100	1.00	9.55	1.00	313.2	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.46	434.65	2.76	0.64	110	1.685	0.810	0.64	0.50	0.79	324.31	1.40		1	100	1.00	9.60	1.00	325.5	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.62	474.92	3.88	0.82	110	1.689	0.808	0.82	0.50	0.79	354.06	1.46		1	100	1.00	9.65	1.00	355.4	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.78	477.42	3.92	0.82	110	1.692	0.807	0.82	0.50	0.79	355.52	1.46		1	100	1.00	9.70	1.00	356.8	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.95	400.75	3.18	0.79	110	1.696	0.805	0.80	0.50	0.79	297.88	1.50		1	100	1.00	9.75	1.00	299.0	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
45.11	375.01	3.32	0.89	110	1.700	0.803	0.89	0.50	0.79	278.34	1.56		1	100	1.00	9.80	1.00	279.4	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.28	353.62	3.70	1.05	110	1.704	0.802	1.05	0.50	0.79	262.09	1.63		1	100	1.00	9.85	1.00	263.1	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.44	350.76	3.99	1.14	110	1.708	0.800	1.14	0.51	0.78	258.98	1.66		1	100	1.01	9.90	1.00	262.3	0.83	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.60	361.90	4.33	1.20	110	1.712	0.798	1.20	0.51	0.78	266.57	1.67		1	100	1.02	9.95	1.00	271.8	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.77	370.34	4.64	1.25	110	1.716	0.797	1.26	0.51	0.78	272.10	1.68		1	100	1.02	####	1.00	279.3	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.93	366.89	5.10	1.39	110	1.720	0.795	1.40	0.52	0.78	267.69	1.72		1	100	1.05	####	1.00	282.0	0.82	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.10	356.56	4.91	1.38	110	1.724	0.793	1.38	0.52	0.77	259.60	1.72		1	100	1.05	####	1.00	274.4	0.82	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.26	358.23	5.52	1.54	110	1.728	0.792	1.55	0.54	0.77	259.00	1.76		1	100	1.08	####	1.00	280.7	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.42	364.21	5.48	1.51	110	1.731	0.790	1.51	0.53	0.77	263.52	1.75		1	100	1.07	####	1.00	283.3	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.59	355.49	5.43	1.53	110	1.735	0.788	1.53	0.54	0.77	256.41	1.76		1	100	1.08	####	1.00	277.8	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.75	363.06	4.83	1.33	110	1.739	0.787	1.34	0.52	0.77	263.74	1.71		1	100	1.04	####	1.00	275.9	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.92	369.03	3.46	0.94	110	1.743	0.785	0.94	0.50	0.78	270.45	1.58		1	100	1.00	####	1.00	271.5	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.08	367.25	3.54	0.96	110	1.747	0.783	0.97	0.50	0.78	268.84	1.59		1	100	1.00	####	1.00	269.8	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.24	360.71	3.46	0.96	110	1.751	0.782	0.96	0.50	0.78	263.73	1.60		1	100	1.00	####	1.00	264.7	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.41	359.57	3.90	1.08	110	1.755	0.780	1.09	0.50	0.78	262.60	1.64		1	100	1.00	####	1.00	263.6	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.57	355.34	4.23	1.19	110	1.759	0.778	1.20	0.51	0.77	257.82	1.67		1	100	1.02	####	1.00	264.2	0.82	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
47.74	345.82	4.41	1.28	110	1.763	0.777	1.28	0.52	0.77	249.35	1.71		1	100	1.04	####	1.00	261.0	0.82	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
47.90	339.06	4.15	1.22	110	1.767	0.775	1.23	0.52	0.77	244.49	1.70		1	100	1.04	####	1.00	254.5	0.81	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
48.06	331.05	4.03	1.22	110	1.770	0.773	1.23	0.52	0.77	238.19	1.70		1	100	1.04	####	1.00	248.9	0.81	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
48.23	319.37	3.94	1.23	110	1.774	0.772	1.24	0.52	0.76	228.93	1.72		1	100	1.05	####	1.00	241.6	0.81	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
48.39	303.85	3.75	1.23	110	1.778	0.770	1.24	0.53	0.76	216.98	1.74		1	100	1.06	####	1.00	231.2	0.81	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
48.56	293.74	3.57	1.21	110	1.782	0.768	1.22	0.53	0.76	209.31	1.74		1	100	1.06	####	1.00	223.7	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.72	291.29	3.33	1.14	110	1.786	0.767	1.15	0.52	0.76	207.88	1.72		1	100	1.05	####	1.00	219.7	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.88	298.38	3.16	1.06	110	1.790	0.765	1.06	0.51	0.76	213.83	1.69		1	100	1.03	####	1.00	221.3	0.81	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
49.05	325.89	3.09	0.95	110	1.794	0.763	0.95	0.50	0.77	235.25	1.63		1	100	1.00	####	1.00	236.1	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.21	362.41	3.01	0.83	110	1.798	0.762	0.84	0.50	0.77	261.47	1.55		1	100	1.00	####	1.00	262.4	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.38	375.59	3.02	0.80	110	1.802	0.760	0.81	0.50	0.77	270.73	1.53		1	100	1.00	####	1.00	271.7	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.54	373.37	2.95	0.79	110	1.806	0.758	0.79	0.50	0.77	268.83	1.53		1	100	1.00	####	1.00	269.8	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.70	359.81	2.88	0.80	110	1.810	0.757	0.80	0.50	0.76	258.74	1.54		1	100	1.00	####	1.00	259.7	0.81	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
49.87	336.99	2.78	0.82	110	1.813	0.755	0.83	0.50	0.76	241.98	1.57		1	100	1.00	####	1.00	242.9	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.03	346.15	2.56	0.74	110	1.817	0.753	0.74	0.50	0.76	248.32	1.53		1	100	1.00	####	1.00	249.3	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.20	381.96	2.51	0.66	110	1.821	0.752	0.66	0.50	0.76	273.85	1.46		1	100	1.00	####	1.00	274.9	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.36	392.72	2.85	0.73	110	1.825	0.750	0.73	0.50	0.76	281.30	1.49		1	100	1.00	####	1.00	282.4	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.52	396.83	2.89	0.73	110	1.829	0.748	0.73	0.50	0.76	283.95	1.49		1	100	1.00	####	1.00	285.0	0.80	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
50.69	396.75	3.02	0.76	110	1.833	0.747	0.76	0.50	0.76	283.59	1.50		1	100	1.00	####	1.00	284.6	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
50.85	407.28	3.00	0.74	110	1.837	0.745	0.74	0.50	0.76	290.84	1.48		1	100	1.00	####	1.00	291.9	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
51.02	402.29	3.32	0.83	110	1.841	0.743	0.83	0.50	0.76	286.95	1.52		1	100	1.00	####	1.00	288.0	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.18	394.50	3.33	0.84	110	1.845	0.742	0.85	0.50	0.76	281.07	1.54		1	100	1.00	####	1.00	282.1	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.35	393.59	3.17	0.80	110	1.849	0.740	0.81	0.50	0.76	280.12	1.52		1	100	1.00	####	1.00	281.2	0.80	Infin.	0.000	0.548	**Non-Liq.**	Non-Liq.	**0.00**
51.51	390.67	3.12	0.80	110	1.852	0.738	0.80	0.50	0.76	277.73	1.52		1	100	1.00	####	1.00	278.8	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.67	388.71	2.96	0.76	110	1.856	0.737	0.76	0.50	0.75	276.04	1.51		1	100	1.00	####	1.00	277.1	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.84	368.01	2.86	0.78	110	1.860	0.735	0.78	0.50	0.75	260.99	1.53		1	100	1.00	####	1.00	262.0	0.80	Infin.	0.000	0.546	**Non-Liq.**	Non-Liq.	**0.00**
52.00	352.83	2.71	0.77	110	1.864	0.733	0.77	0.50	0.75	249.91	1.54		1	100	1.00	####	1.00	250.8	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.17	339.28	2.70	0.80	110	1.868	0.732	0.80	0.50	0.75	240.00	1.57		1	100	1.00	####	1.00	240.9	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.33	334.38	2.52	0.75	110	1.872	0.730	0.76	0.50	0.75	236.27	1.55		1	100	1.00	####	1.00	237.2	0.80	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
52.49	338.19	2.48	0.73	110	1.876	0.728	0.74	0.50	0.75	238.72	1.54		1	100	1.00	####	1.00	239.6	0.80	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.66	343.61	2.50	0.73	110	1.880	0.727	0.73	0.50	0.75	242.32	1.53		1	100	1.00	####	1.00	243.2	0.79	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.82	346.70	2.63	0.76	110	1.884	0.725	0.76	0.50	0.75	244.25	1.54		1	100	1.00	####	1.00	245.2	0.79	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
52.99	356.95	2.69	0.75	110	1.888	0.724	0.76	0.50	0.75	251.25	1.53		1	100	1.00	####	1.00	252.2	0.79	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
53.15	371.38	2.91	0.78	110	1.892	0.722	0.79	0.50	0.75	261.19	1.53		1	100	1.00	####	1.00	262.2	0.79	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
53.31	388.05	3.41	0.88	110	1.895	0.720	0.88	0.50	0.75	272.69	1.56		1	100	1.00	####	1.00	273.7	0.79	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.48	350.81	3.06	0.87	110	1.899	0.719	0.88	0.50	0.75	246.13	1.59		1	100	1.00	####	1.00	247.1	0.79	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.64	345.68	2.79	0.81	110	1.903	0.717	0.81	0.50	0.75	242.26	1.57		1	100	1.00	####	1.00	243.2	0.79	Infin.	0.000	0.539	**Non-Liq.**	Non-Liq.	**0.00**
53.81	342.94	2.87	0.84	110	1.907	0.716	0.84	0.50	0.74	240.08	1.58		1	100	1.00	####	1.00	241.0	0.79	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
53.97	347.41	2.83	0.81	110	1.911	0.714	0.82	0.50	0.74	242.98	1.57		1	100	1.00	####	1.00	243.9	0.79	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
54.13	347.69	3.06	0.88	110	1.915	0.712	0.88	0.50	0.74	242.93	1.59		1	100	1.00	####	1.00	243.8	0.79	Infin.	0.000	0.537	**Non-Liq.**	Non-Liq.	**0.00**
54.30	347.55	3.09	0.89	110	1.919	0.711	0.89	0.50	0.74	242.58	1.60		1	100	1.00	####	1.00	243.5	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.46	345.11	3.01	0.87	110	1.923	0.709	0.88	0.50	0.74	240.62	1.59		1	100	1.00	####	1.00	241.5	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.63	336.26	2.94	0.87	110	1.927	0.708	0.88	0.50	0.74	234.17	1.60		1	100	1.00	####	1.00	235.0	0.79	Infin.	0.000	0.535	**Non-Liq.**	Non-Liq.	**0.00**
54.79	331.85	2.87	0.86	110	1.931	0.706	0.87	0.50	0.74	230.85	1.60		1	100	1.00	####	1.00	231.7	0.79	Infin.	0.000	0.534	**Non-Liq.**	Non-Liq.	**0.00**
54.95	330.23	2.82	0.85	110	1.934	0.705	0.86	0.50	0.74	229.48	1.60		1	100	1.00	####	1.00	230.3	0.79	Infin.	0.000	0.534	**Non-Liq.**	Non-Liq.	**0.00**
55.12	319.45	2.55	0.80	110	1.938	0.703	0.80	0.50	0.74	221.72	1.59		1	100	1.00	####	1.00	222.5	0.78	Infin.	0.000	0.533	**Non-Liq.**	Non-Liq.	**0.00**
55.28	307.70	2.09	0.68	110	1.942	0.701	0.68	0.50	0.74	213.29	1.55		1	100	1.00	####	1.00	214.1	0.78	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.45	302.76	1.94	0.64	110	1.946	0.700	0.64	0.50	0.74	209.83	1.54		1	100	1.00	####	1.00	210.4	0.78	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.61	284.61	1.51	0.53	110	1.950	0.698	0.53	0.50	0.74	196.79	1.51		1	100	1.00	####	1.00	197.5	0.78	Infin.	0.000	0.531	**Non-Liq.**	Non-Liq.	**0.00**
55.77	294.51	1.35	0.46	110	1.954	0.697	0.46	0.50	0.74	203.47	1.46		1	100	1.00	####	1.00	204.2	0.78	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
55.94	280.07	1.03	0.37	110	1.958	0.695	0.37	0.50	0.74	193.23	1.42		1	100	1.00	####	1.00	194.0	0.78	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
56.10	225.15	1.83	0.81	110	1.962	0.694	0.82	0.52	0.72	152.78	1.71		1	94	1.05	####	1.00	160.7	0.78	Infin.	0.000	0.529	**Non-Liq.**	Non-Liq.	**0.00**
56.27	117.85	2.59	2.20	110	1.966	0.692	2.23	0.68	0.65	71.73	2.25		1	63	1.80		1.00	129.2	0.83	0.281	0.233	0.528	**0.44**	94%	**1.12**
56.43	54.87	1.79	3.26	110	1.970	0.691	3.38	0.80	0.61	30.37	2.65		0						0.88			0.528	**Non-Liq.**	Non-Liq.	**0.00**
56.59	32.82	0.74	2.25	110	1.974	0.689	2.40	0.83	0.60	17.36	2.74		0						0.88			0.527	**Non-Liq.**	Non-Liq.	**0.00**
56.76	25.50	0.61	2.38	110	1.977	0.688	2.58	0.87	0.58	12.91	2.87		0						0.88			0.526	**Non-Liq.**	Non-Liq.	**0.00**
56.92	20.56	0.82	3.98	110	1.981	0.686	4.40	0.94	0.55	9.74	3.10		0						0.88			0.526	**Non-Liq.**	Non-Liq.	**0.00**
57.09	35.90	0.80	2.22	110	1.985	0.685	2.35	0.82	0.60	19.14	2.71		0						0.88			0.525	**Non-Liq.**	Non-Liq.	**0.00**
57.25	57.52	0.96	1.67	110	1.989	0.683	1.73	0.74	0.63	32.91	2.44		1	31	2.47		1.00	81.4	0.88	0.130	0.115	0.524	**0.22**	99%	**1.79**
57.41	35.14	0.94	2.68	110	1.993	0.682	2.84	0.84	0.59	18.42	2.77		0						0.88			0.524	**Non-Liq.**	Non-Liq.	**0.00**
57.58	22.41	0.81	3.61	110	1.997	0.680	3.97	0.92	0.56	10.75	3.04		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.74	20.05	0.55	2.73	110	2.001	0.679	3.04	0.91	0.56	9.53	3.02		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.91	18.79	0.54	2.88	110	2.005	0.678	3.23	0.93	0.55	8.78	3.06		0						0.88			0.522	**Non-Liq.**	Non-Liq.	**0.00**
58.07	18.85	0.57	3.00	110	2.009	0.676	3.36	0.93	0.55	8.77	3.07		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
58.23	17.52	0.53	3.01	110	2.013	0.675	3.40	0.94	0.55	8.01	3.11		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**
58.40	18.20	0.44	2.44	110	2.016	0.673	2.74	0.92	0.55	8.46	3.04		0						0.88			0.520	**Non-Liq.**	Non-Liq.	**0.00**
58.56	18.28	0.56	3.06	110	2.020	0.672	3.44	0.94	0.55	8.39	3.09		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.73	23.81	0.80	3.36	110	2.024	0.671	3.67	0.91	0.55	11.42	3.00		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.89	41.12	1.24	3.02	110	2.028	0.669	3.18	0.83	0.58	21.51	2.75		0						0.88			0.518	**Non-Liq.**	Non-Liq.	**0.00**
59.06	86.65	1.81	2.08	110	2.032	0.668	2.13	0.71	0.63	50.20	2.35		1	48	2.13		1.00	106.7	0.88	0.193	0.169	0.517	**0.33**	98%	**1.40**
59.22	119.37	1.93	1.62	110	2.036	0.666	1.64	0.66	0.65	72.21	2.16		1	63	1.57		1.00	113.4	0.82	0.216	0.177	0.517	**0.34**	97%	**1.31**
59.38	142.80	2.30	1.61	110	2.040	0.665	1.63	0.64	0.66	87.60	2.09		1	71	1.45		1.00	126.6	0.77	0.269	0.207	0.516	**0.40**	95%	**1.15**
59.55	118.50	3.06	2.58	110	2.044	0.664	2.62	0.70	0.63	69.37	2.31		1	62	1.98		1.00	137.6	0.82	0.322	0.265	0.516	**0.51**	90%	**1.03**
59.71	77.32	3.45	4.46	110	2.048	0.662	4.58	0.80	0.59	41.98	2.64		0						0.88			0.515	**Non-Liq.**	Non-Liq.	**0.00**
59.88	39.16	2.67	6.81	110	2.052	0.661	7.19	0.91	0.55	19.16	3.02		0						0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.04	26.72	1.42	5.31	110	2.055	0.660	5.75	0.93	0.54	12.53	3.09		0						0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.20	20.01	0.81	4.05	110	2.059	0.658	4.51	0.95	0.53	9.02	3.14		0						0.88			0.513	**Non-Liq.**	Non-Liq.	**0.00**
60.37	19.72	0.00	0.01	110	2.063	0.657	0.01	0.81	0.58	9.69	2.69		0		1.00				0.87			0.512	**Non-Liq.**	Non-Liq.	**0.00**
60.53	22.97	0.00	0.00	110	2.067	0.656	0.00	0.80	0.58	11.54	2.65		0		1.00				0.87			0.512	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-2A
Plot: 2

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
3.8

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.21
Avg SF of Liquefiable Layers: 0.05

Probab	Total Induced Subsidence (inches)
Avg	
5%	
Max	
100%	0.6

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	8.00	0.09	1.13	110	0.009	1.000	1.13	0.81	1.70	12.84	2.68		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
0.33	11.37	0.11	0.97	110	0.018	1.000	0.97	0.76	1.70	18.24	2.52		1	6	2.86		1.00	52.1	1.00	0.093	0.093	0.485	Non-Liq.	Non-Liq.	0.00
0.49	14.06	0.14	1.00	110	0.027	1.000	1.00	0.74	1.70	22.55	2.44		1	15	2.50		1.00	56.3	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.66	15.85	0.14	0.90	110	0.036	1.000	0.90	0.72	1.70	25.41	2.38		1	20	2.22		1.00	56.4	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.82	15.82	0.14	0.88	110	0.045	1.000	0.89	0.72	1.70	25.35	2.37		1	20	2.21		1.00	55.9	1.00	0.096	0.096	0.485	Non-Liq.	Non-Liq.	0.00
0.98	15.42	0.12	0.78	110	0.054	1.000	0.79	0.72	1.70	24.69	2.36		1	19	2.15		1.00	53.1	1.00	0.094	0.094	0.485	Non-Liq.	Non-Liq.	0.00
1.15	12.24	0.10	0.81	110	0.063	0.999	0.81	0.74	1.70	19.57	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.484	Non-Liq.	Non-Liq.	0.00
1.31	12.24	0.10	0.81	110	0.072	0.999	0.81	0.74	1.70	19.55	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.484	Non-Liq.	Non-Liq.	0.00
1.48	10.64	0.13	1.17	110	0.081	0.999	1.18	0.78	1.70	16.97	2.59		1	3	3.25		1.00	55.1	1.00	0.096	0.096	0.484	Non-Liq.	Non-Liq.	0.00
1.64	11.63	0.20	1.72	110	0.090	0.998	1.73	0.80	1.70	18.54	2.64		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.80	19.13	0.29	1.53	110	0.099	0.998	1.53	0.74	1.70	30.58	2.43		1	28	2.45		1.00	74.9	1.00	0.119	0.119	0.484	Non-Liq.	Non-Liq.	0.00
1.97	35.11	0.52	1.48	110	0.108	0.998	1.48	0.67	1.70	56.24	2.21		1	53	1.70		1.00	95.4	1.00	0.161	0.161	0.484	Non-Liq.	Non-Liq.	0.00
2.13	43.24	0.60	1.40	110	0.117	0.997	1.40	0.65	1.70	69.29	2.13		1	62	1.50		1.00	104.3	1.00	0.185	0.185	0.483	Non-Liq.	Non-Liq.	0.00
2.30	43.08	0.62	1.43	110	0.126	0.997	1.44	0.65	1.70	69.02	2.13		1	61	1.52		1.00	105.0	1.00	0.188	0.188	0.483	Non-Liq.	Non-Liq.	0.00
2.46	41.08	0.60	1.46	110	0.135	0.996	1.46	0.65	1.70	65.79	2.16		1	59	1.56		1.00	102.9	1.00	0.181	0.181	0.483	Non-Liq.	Non-Liq.	0.00
2.62	38.58	0.56	1.46	110	0.144	0.996	1.46	0.66	1.70	61.76	2.18		1	57	1.61		1.00	99.6	1.00	0.172	0.172	0.483	Non-Liq.	Non-Liq.	0.00
2.79	35.25	0.53	1.50	110	0.153	0.996	1.50	0.67	1.70	56.39	2.22		1	53	1.70		1.00	96.1	1.00	0.163	0.163	0.483	Non-Liq.	Non-Liq.	0.00
2.95	32.60	0.49	1.50	110	0.162	0.995	1.51	0.68	1.70	52.12	2.24		1	50	1.78		1.00	92.6	1.00	0.154	0.154	0.482	Non-Liq.	Non-Liq.	0.00
3.12	29.61	0.45	1.52	110	0.171	0.995	1.53	0.69	1.70	47.30	2.28		1	46	1.88		1.00	89.0	1.00	0.146	0.146	0.482	Non-Liq.	Non-Liq.	0.00
3.28	26.41	0.40	1.51	110	0.180	0.994	1.52	0.70	1.70	42.15	2.32		1	41	2.01		1.00	84.6	1.00	0.136	0.136	0.482	Non-Liq.	Non-Liq.	0.00
3.44	23.64	0.34	1.44	110	0.189	0.994	1.45	0.71	1.70	37.68	2.34		1	36	2.10		1.00	79.2	1.00	0.126	0.126	0.482	Non-Liq.	Non-Liq.	0.00
3.61	21.08	0.29	1.36	110	0.198	0.994	1.37	0.72	1.70	33.55	2.37		1	32	2.20		1.00	73.8	1.00	0.117	0.117	0.482	Non-Liq.	Non-Liq.	0.00
3.77	18.23	0.30	1.67	110	0.208	0.993	1.69	0.75	1.70	28.96	2.48		1	25	2.65		1.00	76.6	1.00	0.122	0.122	0.482	Non-Liq.	Non-Liq.	0.00
3.94	15.34	0.30	1.98	110	0.217	0.993	2.00	0.78	1.70	24.30	2.58		1	18	3.21		1.00	78.0	1.00	0.124	0.124	0.481	Non-Liq.	Non-Liq.	0.00
4.10	12.99	0.35	2.73	110	0.226	0.993	2.77	0.83	1.70	20.51	2.72		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.27	11.82	0.38	3.20	110	0.235	0.992	3.26	0.85	1.70	18.62	2.80		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.43	10.34	0.34	3.30	110	0.244	0.992	3.38	0.87	1.70	16.22	2.86		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.59	11.89	0.24	2.04	110	0.253	0.991	2.08	0.81	1.70	18.70	2.68		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.76	26.79	0.25	0.93	110	0.262	0.991	0.94	0.67	1.70	42.63	2.19		1	41	1.65		1.00	70.3	1.00	0.112	0.112	0.480	Non-Liq.	Non-Liq.	0.00
4.92	35.67	0.30	0.84	110	0.271	0.991	0.85	0.63	1.70	56.88	2.06		1	53	1.39		1.00	79.2	1.00	0.126	0.126	0.480	Non-Liq.	Non-Liq.	0.00
5.09	41.25	0.36	0.88	110	0.280	0.990	0.89	0.61	1.70	65.83	2.02		1	59	1.33		1.00	87.7	1.00	0.143	0.143	0.480	Non-Liq.	Non-Liq.	0.00
5.25	44.28	0.41	0.92	110	0.289	0.990	0.93	0.61	1.70	70.69	2.01		1	62	1.31		1.00	92.7	1.00	0.154	0.154	0.480	Non-Liq.	Non-Liq.	0.00
5.41	46.60	0.44	0.94	110	0.298	0.989	0.95	0.61	1.70	74.40	2.00		1	65	1.30	1.00	1.00	96.8	1.00	0.164	0.164	0.480	Non-Liq.	Non-Liq.	0.00
5.58	50.22	0.47	0.93	110	0.307	0.989	0.94	0.60	1.70	80.20	1.97		1	68	1.26	1.05	1.00	101.4	1.00	0.177	0.177	0.479	Non-Liq.	Non-Liq.	0.00
5.74	54.67	0.47	0.87	110	0.316	0.989	0.87	0.58	1.70	87.34	1.92		1	71	1.21	1.10	1.00	105.9	1.00	0.190	0.190	0.479	Non-Liq.	Non-Liq.	0.00
5.91	56.65	0.48	0.85	110	0.325	0.988	0.86	0.58	1.70	90.50	1.90		1	73	1.19	1.15	1.00	108.2	1.00	0.198	0.198	0.479	Non-Liq.	Non-Liq.	0.00
6.07	56.48	0.50	0.89	110	0.334	0.988	0.90	0.58	1.70	90.22	1.92		1	73	1.20	1.20	1.00	109.0	1.00	0.201	0.201	0.479	Non-Liq.	Non-Liq.	0.00
6.23	58.52	0.53	0.91	110	0.343	0.988	0.92	0.58	1.70	93.48	1.91		1	74	1.20	1.25	1.00	112.4	1.00	0.212	0.212	0.479	Non-Liq.	Non-Liq.	0.00
6.40	61.73	0.57	0.92	110	0.352	0.987	0.93	0.58	1.70	98.62	1.90		1	76	1.18	1.30	1.00	117.2	1.00	0.230	0.230	0.479	Non-Liq.	Non-Liq.	0.00
6.56	65.05	0.55	0.84	110	0.361	0.987	0.85	0.56	1.70	103.94	1.85		1	78	1.15	1.35	1.00	119.6	1.00	0.239	0.239	0.478	Non-Liq.	Non-Liq.	0.00
6.73	67.42	0.56	0.83	110	0.370	0.986	0.84	0.56	1.70	107.74	1.84		1	80	1.13	1.40	1.00	122.6	1.00	0.251	0.251	0.478	Non-Liq.	Non-Liq.	0.00
6.89	72.04	0.64	0.89	110	0.379	0.986	0.89	0.56	1.70	115.15	1.83		1	83	1.13	1.45	1.00	130.6	1.00	0.287	0.287	0.478	Non-Liq.	Non-Liq.	0.00
7.05	79.98	0.56	0.70	110	0.388	0.986	0.71	0.53	1.70	127.76	1.73		1	87	1.06	1.50	1.00	135.9	1.00	0.314	0.314	0.478	Non-Liq.	Non-Liq.	0.00
7.22	84.69	0.74	0.87	110	0.397	0.985	0.88	0.54	1.70	135.25	1.77		1	89	1.09	1.55	1.00	147.6	1.00	0.379	0.379	0.478	Non-Liq.	Non-Liq.	0.00
7.38	84.27	0.71	0.84	110	0.406	0.985	0.84	0.54	1.67	132.75	1.77		1	89	1.08	1.60	1.00	144.4	1.00	0.360	0.360	0.478	Non-Liq.	Non-Liq.	0.00
7.55	88.99	0.71	0.80	110	0.415	0.985	0.81	0.53	1.64	137.62	1.74		1	90	1.07	1.65	1.00	147.5	1.00	0.378	0.378	0.477	Non-Liq.	Non-Liq.	0.00
7.71	88.99	0.71	0.80	110	0.424	0.984	0.81	0.53	1.63	136.17	1.75		1	90	1.07	1.70	1.00	146.2	1.00	0.371	0.371	0.477	Non-Liq.	Non-Liq.	0.00
7.87	97.16	0.72	0.74	110	0.433	0.984	0.74	0.52	1.59	145.34	1.70		1	92	1.04	1.75	1.00	151.8	1.00	0.405	0.405	0.477	Non-Liq.	Non-Liq.	0.00
8.04	104.13	0.76	0.73	110	0.442	0.984	0.73	0.51	1.56	153.24	1.68		1	95	1.03	1.80	1.00	157.7	1.00	0.445	0.445	0.477	Non-Liq.	Non-Liq.	0.00
8.20	109.72	0.85	0.77	110	0.451	0.983	0.78	0.51	1.55	159.96	1.68		1	96	1.03	1.85	1.00	164.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.37	127.90	0.84	0.66	110	0.460	0.983	0.66	0.50	1.52	182.65	1.59		1	100	1.00	1.90	1.00	183.3	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.53	139.29	1.12	0.80	110	0.469	0.982	0.80	0.50	1.50	197.04	1.63		1	100	1.00	1.95	1.00	197.8	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.69	174.32	1.33	0.76	110	0.478	0.982	0.77	0.50	1.49	244.41	1.55		1	100	1.00	2.00	1.00	245.3	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.86	197.20	1.54	0.78	110	0.487	0.982	0.78	0.50	1.47	273.99	1.52		1	100	1.00	2.05	1.00	275.0	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.02	211.19	1.71	0.81	110	0.496	0.981	0.81	0.50	1.46	290.78	1.51		1	100	1.00	2.10	1.00	291.9	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.19	221.47	1.88	0.85	110	0.505	0.981	0.85	0.50	1.45	302.22	1.52		1	100	1.00	2.15	1.00	303.4	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.35	230.78	2.04	0.88	110	0.514	0.981	0.88	0.50	1.43	312.17	1.52		1	100	1.00	2.20	1.00	313.3	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.51	234.50	2.16	0.92	110	0.523	0.980	0.92	0.50	1.42	314.45	1.53		1	100	1.00	2.25	1.00	315.6	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.68	232.94	2.27	0.98	110	0.532	0.980	0.98	0.50	1.41	309.69	1.56		1	100	1.00	2.30	1.00	310.8	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.84	231.57	2.35	1.01	110	0.541	0.980	1.02	0.50	1.40	305.27	1.57		1	100	1.00	2.35	1.00	306.4	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.01	230.54	2.41	1.04	110	0.550	0.979	1.05	0.50	1.39	301.40	1.59		1	100	1.00	2.40	1.00	302.5	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.17	237.18	2.50	1.05	110	0.559	0.979	1.06	0.50	1.38	307.58	1.58		1	100	1.00	2.45	1.00	308.7	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.33	247.31	2.55	1.03	110	0.568	0.979	1.03	0.50	1.36	318.18	1.57		1	100	1.00	2.50	1.00	319.4	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.50	243.77	2.52	1.03	110	0.577	0.978	1.04	0.50	1.35	311.14	1.58		1	100	1.00	2.55	1.00	312.3	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.66	237.97	2.56	1.07	110	0.586	0.978	1.08	0.50	1.34	301.36	1.60		1	100	1.00	2.60	1.00	302.5	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.83	236.70	2.58	1.09	110	0.595	0.978	1.09	0.50	1.33	297.46	1.61		1	100	1.00	2.65	1.00	298.6	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.99	231.19	3.35	1.45	110	0.604	0.977	1.45	0.52	1.34	291.69	1.71		1	100	1.04	2.70	1.00	305.6	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.15	223.52	4.80	2.15	110	0.614	0.977	2.15	0.56	1.36	286.52	1.85		1	100	1.15	2.75	1.00	330.3	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.32	231.18	4.24	1.83	110	0.623	0.977	1.84	0.55	1.34	291.09	1.79		1	100	1.10	2.80	1.00	321.9	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.48	277.74	3.56	1.28	110	0.632	0.976	1.29	0.50	1.29	339.00	1.63		1	100	1.00	2.85	1.00	340.3	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.65	232.79	2.16	0.93	110	0.641	0.976	0.93	0.50	1.29	281.99	1.57		1	100	1.00	2.90	1.00	283.0	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.81	242.50	1.85	0.76	110	0.650	0.975	0.76	0.50	1.28	291.73	1.49		1	100	1.00	2.95	1.00	292.8	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.98	238.61	2.39	1.00	110	0.659	0.975	1.00	0.50	1.27	285.05	1.59		1	100	1.00	3.00	1.00	286.1	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.14	226.91	2.22	0.98	110	0.668	0.975	0.98	0.50	1.26	269.19	1.60		1	100	1.00	3.05	1.00	270.2	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.30	230.52	2.15	0.93	110	0.677	0.974	0.93	0.50	1.25	271.64	1.58		1	100	1.00	3.10	1.00	272.7	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.47	221.89	1.76	0.79	110	0.686	0.974	0.80	0.50	1.24	259.71	1.54		1	100	1.00	3.15	1.00	260.7	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.63	219.46	1.58	0.72	110	0.695	0.974	0.72	0.50	1.23	255.17	1.51		1	100	1.00	3.20	1.00	256.1	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.80	210.68	1.41	0.67	110	0.704	0.973	0.67	0.50	1.23	243.34	1.51		1	100	1.00	3.25	1.00	244.3	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	195.33	1.35	0.69	110	0.713	0.973	0.70	0.50	1.22	224.11	1.54		1	100	1.00	3.30	1.00	225.0	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
13.12	189.89	1.37	0.72	110	0.722	0.973	0.72	0.50	1.21	216.47	1.57		1	100	1.00	3.35	1.00	217.3	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
13.29	182.75	2.89	1.58	110	0.731	0.972	1.59	0.56	1.23	211.28	1.82		1	100	1.13	3.40	1.00	238.6	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.45	189.66	3.51	1.85	110	0.740	0.972	1.86	0.57	1.23	218.84	1.87		1	100	1.16	3.45	1.00	255.0	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.62	243.92	3.67	1.50	110	0.749	0.972	1.51	0.53	1.20	275.93	1.74		1	100	1.06	3.50	1.00	294.2	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.78	196.55	3.12	1.59	110	0.758	0.971	1.59	0.55	1.20	222.44	1.81		1	100	1.12	3.55	1.00	249.0	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.94	166.33	2.01	1.21	110	0.767	0.971	1.22	0.54	1.19	186.17	1.77		1	100	1.09	3.60	1.00	203.2	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
14.11	168.09	2.05	1.22	110	0.776	0.971	1.22	0.54	1.18	186.97	1.77		1	100	1.09	3.65	1.00	204.2	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
14.27	186.64	4.05	2.17	110	0.785	0.970	2.18	0.59	1.19	209.42	1.94		1	100	1.22	3.70	1.00	257.4	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.44	201.80	4.71	2.33	110	0.794	0.970	2.34	0.59	1.18	225.11	1.94		1	100	1.23	3.75	1.00	278.4	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.60	281.02	4.40	1.57	110	0.803	0.970	1.57	0.53	1.16	306.15	1.72		1	100	1.05	3.80	1.00	324.0	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.76	344.71	3.37	0.98	110	0.812	0.969	0.98	0.50	1.14	371.03	1.51		1	100	1.00	3.85	1.00	372.4	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.93	284.50	2.91	1.02	110	0.821	0.969	1.03	0.50	1.14	304.37	1.58		1	100	1.00	3.90	1.00	305.5	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
15.09	313.45	2.95	0.94	110	0.830	0.969	0.94	0.50	1.13	333.60	1.52		1	100	1.00	3.95	1.00	334.8	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
15.26	330.55	3.27	0.99	110	0.839	0.968	0.99	0.50	1.12	349.94	1.53		1	100	1.00	4.00	1.00	351.2	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.42	347.21	3.40	0.98	110	0.848	0.968	0.98	0.50	1.12	365.65	1.51		1	100	1.00	4.05	1.00	367.0	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.58	369.08	4.35	1.18	110	0.857	0.967	1.18	0.50	1.11	386.68	1.56		1	100	1.00	4.10	1.00	388.1	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.75	398.50	4.30	1.08	110	0.866	0.967	1.08	0.50	1.11	415.38	1.52		1	100	1.00	4.15	1.00	416.9	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.91	418.82	3.93	0.94	110	0.875	0.967	0.94	0.50	1.10	434.34	1.46		1	100	1.00	4.20	1.00	436.0	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
16.08	410.39	4.19	1.02	110	0.884	0.966	1.02	0.50	1.09	423.39	1.49		1	100	1.00	4.25	1.00	425.0	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.24	419.61	4.80	1.14	110	0.893	0.966	1.15	0.50	1.09	430.73	1.53		1	100	1.00	4.30	1.00	432.3	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.40	443.67	4.84	1.09	110	0.902	0.966	1.09	0.50	1.08	453.18	1.50		1	100	1.00	4.35	1.00	454.9	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.57	437.41	4.97	1.14	110	0.911	0.965	1.14	0.50	1.08	444.55	1.52		1	100	1.00	4.40	1.00	446.2	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.73	435.84	4.65	1.07	110	0.920	0.965	1.07	0.50	1.07	440.77	1.50		1	100	1.00	4.45	1.00	442.4	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.90	448.38	4.22	0.94	110	0.929	0.965	0.94	0.50	1.07	451.26	1.45		1	100	1.00	4.50	1.00	452.9	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
17.06	457.41	3.79	0.83	110	0.938	0.964	0.83	0.50	1.06	458.14	1.40		1	100	1.00	4.55	1.00	459.8	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.22	450.04	4.42	0.98	110	0.947	0.964	0.99	0.50	1.06	448.58	1.46		1	100	1.00	4.60	1.00	450.3	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.39	437.15	4.09	0.94	110	0.956	0.963	0.94	0.50	1.05	433.64	1.45		1	100	1.00	4.65	1.00	435.3	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.55	447.32	4.19	0.94	110	0.965	0.963	0.94	0.50	1.05	441.66	1.45		1	100	1.00	4.70	1.00	443.3	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.72	476.04	4.81	1.01	110	0.974	0.963	1.01	0.50	1.04	467.89	1.46		1	100	1.00	4.75	1.00	469.6	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.88	526.73	4.25	0.81	110	0.983	0.962	0.81	0.50	1.04	515.42	1.36		1	100	1.00	4.80	1.00	517.3	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
18.04	498.22	4.85	0.97	110	0.992	0.962	0.98	0.50	1.03	485.24	1.44		1	100	1.00	4.85	1.00	487.1	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.21	506.10	5.27	1.04	110	1.001	0.962	1.04	0.50	1.03	490.70	1.46		1	100	1.00	4.90	1.00	492.5	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.37	512.17	6.70	1.31	110	1.010	0.961	1.31	0.50	1.02	494.36	1.55		1	100	1.00	4.95	1.00	496.2	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.54	559.50	8.56	1.53	110	1.020	0.961	1.53	0.50	1.02	537.73	1.59		1	100	1.00	5.00	1.00	539.7	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.70	562.50	8.26	1.47	110	1.029	0.960	1.47	0.50	1.01	538.24	1.57		1	100	1.00	5.05	1.00	540.2	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.86	559.79	8.82	1.58	110	1.038	0.960	1.58	0.50	1.01	533.30	1.60		1	100	1.00	5.10	1.00	535.3	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.03	547.34	8.23	1.50	110	1.047	0.960	1.51	0.50	1.01	519.15	1.59		1	100	1.00	5.15	1.00	521.1	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.19	552.34	7.74	1.40	110	1.056	0.959	1.40	0.50	1.00	521.65	1.56		1	100	1.00	5.20	1.00	523.6	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.36	492.99	7.25	1.47	110	1.065	0.959	1.47	0.50	1.00	463.51	1.60		1	100	1.00	5.25	1.00	465.2	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.52	443.38	5.21	1.18	110	1.074	0.958	1.18	0.50	0.99	415.00	1.55		1	100	1.00	5.30	1.00	416.6	0.99	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.69	430.83	4.17	0.97	110	1.083	0.958	0.97	0.50	0.99	401.53	1.49		1	100	1.00	5.35	1.00	403.0	0.99	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
19.85	411.08	3.30	0.80	110	1.092	0.957	0.80	0.50	0.98	381.48	1.43		1	100	1.00	5.40	1.00	382.9	0.99	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
20.01	393.49	2.98	0.76	110	1.101	0.957	0.76	0.50	0.98	363.61	1.43		1	100	1.00	5.45	1.00	365.0	0.98	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
20.18	395.26	2.83	0.72	110	1.107	0.957	0.72	0.50	0.98	364.24	1.41		1	100	1.00	5.50	1.00	365.6	0.98	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
20.34	374.51	2.35	0.63	110	1.111	0.956	0.63	0.50	0.98	344.46	1.38		1	100	1.00	5.55	1.00	345.7	0.98	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
20.51	326.62	2.65	0.81	110	1.115	0.956	0.81	0.50	0.97	299.75	1.51		1	100	1.00	5.60	1.00	300.9	0.98	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
20.67	282.57	2.55	0.90	110	1.118	0.955	0.91	0.50	0.97	258.73	1.58		1	100	1.00	5.65	1.00	259.7	0.98	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
20.83	276.78	3.44	1.24	110	1.122	0.955	1.25	0.52	0.97	252.72	1.69		1	100	1.03	5.70	1.00	262.3	0.98	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
21.00	278.21	2.80	1.01	110	1.126	0.954	1.01	0.50	0.97	253.83	1.62		1	100	1.00	5.75	1.00	254.8	0.98	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
21.16	340.07	3.01	0.88	110	1.130	0.954	0.89	0.50	0.97	309.96	1.52		1	100	1.00	5.80	1.00	311.1	0.97	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
21.33	368.76	2.98	0.81	110	1.134	0.954	0.81	0.50	0.97	335.61	1.47		1	100	1.00	5.85	1.00	336.9	0.97	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
21.49	341.22	3.31	0.97	110	1.138	0.953	0.97	0.50	0.96	309.93	1.55		1	100	1.00	5.90	1.00	311.1	0.97	Infin.	0.000	0.480	**Non-Liq.**	Non-Liq.	**0.00**
21.65	390.12	3.77	0.97	110	1.142	0.953	0.97	0.50	0.96	353.89	1.52		1	100	1.00	5.95	1.00	355.2	0.97	Infin.	0.000	0.482	**Non-Liq.**	Non-Liq.	**0.00**
21.82	410.04	3.82	0.93	110	1.146	0.952	0.93	0.50	0.96	371.37	1.49		1	100	1.00	6.00	1.00	372.8	0.97	Infin.	0.000	0.483	**Non-Liq.**	Non-Liq.	**0.00**
21.98	384.92	3.63	0.94	110	1.150	0.952	0.95	0.50	0.96	347.96	1.51		1	100	1.00	6.05	1.00	349.3	0.97	Infin.	0.000	0.485	**Non-Liq.**	Non-Liq.	**0.00**
22.15	353.56	2.69	0.76	110	1.154	0.951	0.76	0.50	0.96	318.98	1.47		1	100	1.00	6.10	1.00	320.2	0.97	Infin.	0.000	0.487	**Non-Liq.**	Non-Liq.	**0.00**
22.31	330.47	2.03	0.62	110	1.158	0.951	0.62	0.50	0.96	297.58	1.42		1	100	1.00	6.15	1.00	298.7	0.96	Infin.	0.000	0.489	**Non-Liq.**	Non-Liq.	**0.00**
22.47	302.85	2.02	0.67	110	1.161	0.950	0.67	0.50	0.95	272.16	1.47		1	100	1.00	6.20	1.00	273.2	0.96	Infin.	0.000	0.490	**Non-Liq.**	Non-Liq.	**0.00**
22.64	277.81	2.78	1.00	110	1.165	0.950	1.01	0.50	0.95	249.15	1.63		1	100	1.00	6.25	1.00	250.1	0.96	Infin.	0.000	0.492	**Non-Liq.**	Non-Liq.	**0.00**
22.80	261.06	4.42	1.69	110	1.169	0.949	1.70	0.55	0.95	232.39	1.82		1	100	1.12	6.30	1.00	262.1	0.96	Infin.	0.000	0.494	**Non-Liq.**	Non-Liq.	**0.00**
22.97	275.05	5.35	1.94	110	1.173	0.949	1.95	0.57	0.94	244.17	1.86		1	100	1.15	6.35	1.00	282.3	0.96	Infin.	0.000	0.495	**Non-Liq.**	Non-Liq.	**0.00**
23.13	338.08	5.26	1.55	110	1.177	0.948	1.56	0.53	0.95	301.07	1.73		1	100	1.06	6.40	1.00	319.0	0.96	Infin.	0.000	0.497	**Non-Liq.**	Non-Liq.	**0.00**
23.29	290.23	4.56	1.57	110	1.181	0.948	1.58	0.54	0.94	257.48	1.77		1	100	1.09	6.45	1.00	280.5	0.96	Infin.	0.000	0.498	**Non-Liq.**	Non-Liq.	**0.00**
23.46	297.08	3.04	1.02	110	1.185	0.947	1.03	0.50	0.94	264.28	1.62		1	100	1.00	6.50	1.00	265.3	0.96	Infin.	0.000	0.500	**Non-Liq.**	Non-Liq.	**0.00**
23.62	303.30	2.81	0.92	110	1.189	0.947	0.93	0.50	0.94	269.39	1.58		1	100	1.00	6.55	1.00	270.4	0.95	Infin.	0.000	0.502	**Non-Liq.**	Non-Liq.	**0.00**
23.79	309.47	2.71	0.87	110	1.193	0.946	0.88	0.50	0.94	274.43	1.55		1	100	1.00	6.60	1.00	275.5	0.95	Infin.	0.000	0.503	**Non-Liq.**	Non-Liq.	**0.00**
23.95	314.79	2.69	0.86	110	1.197	0.946	0.86	0.50	0.94	278.71	1.54		1	100	1.00	6.65	1.00	279.8	0.95	Infin.	0.000	0.505	**Non-Liq.**	Non-Liq.	**0.00**
24.11	323.75	2.59	0.80	110	1.200	0.945	0.80	0.50	0.94	286.20	1.51		1	100	1.00	6.70	1.00	287.3	0.95	Infin.	0.000	0.506	**Non-Liq.**	Non-Liq.	**0.00**
24.28	334.53	2.78	0.83	110	1.204	0.945	0.83	0.50	0.94	295.29	1.52		1	100	1.00	6.75	1.00	296.4	0.95	Infin.	0.000	0.508	**Non-Liq.**	Non-Liq.	**0.00**
24.44	341.22	2.78	0.82	110	1.208	0.944	0.82	0.50	0.94	300.72	1.51		1	100	1.00	6.80	1.00	301.8	0.95	Infin.	0.000	0.509	**Non-Liq.**	Non-Liq.	**0.00**
24.61	345.28	2.16	0.62	110	1.212	0.943	0.63	0.50	0.93	303.82	1.42		1	100	1.00	6.85	1.00	305.0	0.95	Infin.	0.000	0.511	**Non-Liq.**	Non-Liq.	**0.00**
24.77	354.45	2.39	0.67	110	1.216	0.943	0.68	0.50	0.93	311.41	1.43		1	100	1.00	6.90	1.00	312.6	0.95	Infin.	0.000	0.512	**Non-Liq.**	Non-Liq.	**0.00**
24.93	357.66	2.44	0.68	110	1.220	0.942	0.68	0.50	0.93	313.74	1.44		1	100	1.00	6.95	1.00	314.9	0.94	Infin.	0.000	0.514	**Non-Liq.**	Non-Liq.	**0.00**
25.10	363.46	2.39	0.66	110	1.224	0.942	0.66	0.50	0.93	318.33	1.42		1	100	1.00	7.00	1.00	319.5	0.94	Infin.	0.000	0.515	**Non-Liq.**	Non-Liq.	**0.00**
25.26	370.76	2.17	0.59	110	1.228	0.941	0.59	0.50	0.93	324.22	1.38		1	100	1.00	7.05	1.00	325.4	0.94	Infin.	0.000	0.516	**Non-Liq.**	Non-Liq.	**0.00**
25.43	377.75	2.41	0.64	110	1.232	0.941	0.64	0.50	0.93	329.83	1.40		1	100	1.00	7.10	1.00	331.1	0.94	Infin.	0.000	0.518	**Non-Liq.**	Non-Liq.	**0.00**
25.59	391.33	2.46	0.63	110	1.236	0.940	0.63	0.50	0.93	341.18	1.38		1	100	1.00	7.15	1.00	342.5	0.94	Infin.	0.000	0.519	**Non-Liq.**	Non-Liq.	**0.00**
25.75	392.15	2.61	0.66	110	1.240	0.939	0.67	0.50	0.92	341.36	1.40		1	100	1.00	7.20	1.00	342.6	0.94	Infin.	0.000	0.520	**Non-Liq.**	Non-Liq.	**0.00**
25.92	382.77	2.62	0.68	110	1.243	0.939	0.69	0.50	0.92	332.64	1.42		1	100	1.00	7.25	1.00	333.9	0.94	Infin.	0.000	0.522	**Non-Liq.**	Non-Liq.	**0.00**
26.08	373.25	2.66	0.71	110	1.247	0.938	0.71	0.50	0.92	323.83	1.44		1	100	1.00	7.30	1.00	325.0	0.94	Infin.	0.000	0.523	**Non-Liq.**	Non-Liq.	**0.00**
26.25	363.79	2.44	0.67	110	1.251	0.938	0.67	0.50	0.92	315.10	1.43		1	100	1.00	7.35	1.00	316.3	0.94	Infin.	0.000	0.524	**Non-Liq.**	Non-Liq.	**0.00**
26.41	362.15	2.32	0.64	110	1.255	0.937	0.64	0.50	0.92	313.18	1.42		1	100	1.00	7.40	1.00	314.3	0.93	Infin.	0.000	0.526	**Non-Liq.**	Non-Liq.	**0.00**
26.57	366.11	2.55	0.70	110	1.259	0.936	0.70	0.50	0.92	316.12	1.44		1	100	1.00	7.45	1.00	317.3	0.93	Infin.	0.000	0.527	**Non-Liq.**	Non-Liq.	**0.00**
26.74	372.93	2.51	0.67	110	1.263	0.936	0.68	0.50	0.92	321.53	1.42		1	100	1.00	7.50	1.00	322.7	0.93	Infin.	0.000	0.528	**Non-Liq.**	Non-Liq.	**0.00**
26.90	383.15	3.06	0.80	110	1.267	0.935	0.80	0.50	0.91	329.86	1.47		1	100	1.00	7.55	1.00	331.1	0.93	Infin.	0.000	0.529	**Non-Liq.**	Non-Liq.	**0.00**
27.07	413.34	3.14	0.76	110	1.271	0.934	0.76	0.50	0.91	355.38	1.44		1	100	1.00	7.60	1.00	356.7	0.93	Infin.	0.000	0.531	**Non-Liq.**	Non-Liq.	**0.00**
27.23	409.32	4.09	1.00	110	1.275	0.934	1.00	0.50	0.91	351.37	1.53		1	100	1.00	7.65	1.00	352.7	0.93	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
27.40	399.12	4.88	1.22	110	1.279	0.933	1.23	0.50	0.91	342.06	1.61		1	100	1.00	7.70	1.00	343.3	0.93	Infin.	0.000	0.533	**Non-Liq.**	Non-Liq.	**0.00**
27.56	379.94	3.65	0.96	110	1.282	0.932	0.96	0.50	0.91	325.07	1.54		1	100	1.00	7.75	1.00	326.3	0.93	Infin.	0.000	0.534	**Non-Liq.**	Non-Liq.	**0.00**
27.72	353.99	3.89	1.10	110	1.286	0.932	1.10	0.50	0.91	302.33	1.60		1	100	1.00	7.80	1.00	303.5	0.92	Infin.	0.000	0.535	**Non-Liq.**	Non-Liq.	**0.00**
27.89	386.19	3.37	0.87	110	1.290	0.931	0.88	0.50	0.91	329.43	1.50		1	100	1.00	7.85	1.00	330.7	0.92	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	410.07	4.19	1.02	110	1.294	0.930	1.03	0.50	0.90	349.34	1.54		1	100	1.00	7.90	1.00	350.6	0.92	Infin.	0.000	0.538	Non-Liq.	Non-Liq.	0.00
28.22	438.73	4.93	1.12	110	1.298	0.929	1.13	0.50	0.90	373.26	1.56		1	100	1.00	7.95	1.00	374.7	0.92	Infin.	0.000	0.539	Non-Liq.	Non-Liq.	0.00
28.38	454.65	5.10	1.12	110	1.302	0.929	1.13	0.50	0.90	386.27	1.55		1	100	1.00	8.00	1.00	387.7	0.92	Infin.	0.000	0.540	Non-Liq.	Non-Liq.	0.00
28.54	455.41	6.81	1.50	110	1.306	0.928	1.50	0.50	0.90	386.04	1.65		1	100	1.00	8.05	1.00	389.3	0.92	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
28.71	557.48	6.50	1.17	110	1.310	0.927	1.17	0.50	0.90	472.46	1.51		1	100	1.00	8.10	1.00	474.2	0.92	Infin.	0.000	0.542	Non-Liq.	Non-Liq.	0.00
28.87	504.25	5.71	1.13	110	1.314	0.926	1.14	0.50	0.90	426.60	1.53		1	100	1.00	8.15	1.00	428.2	0.92	Infin.	0.000	0.543	Non-Liq.	Non-Liq.	0.00
29.04	452.21	4.48	0.99	110	1.318	0.926	0.99	0.50	0.90	381.89	1.51		1	100	1.00	8.20	1.00	383.3	0.92	Infin.	0.000	0.544	Non-Liq.	Non-Liq.	0.00
29.20	427.62	3.52	0.82	110	1.322	0.925	0.83	0.50	0.89	360.53	1.46		1	100	1.00	8.25	1.00	361.9	0.91	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
29.36	419.70	3.00	0.71	110	1.325	0.924	0.72	0.50	0.89	353.30	1.42		1	100	1.00	8.30	1.00	354.6	0.91	Infin.	0.000	0.546	Non-Liq.	Non-Liq.	0.00
29.53	414.05	3.21	0.78	110	1.329	0.923	0.78	0.50	0.89	348.02	1.45		1	100	1.00	8.35	1.00	349.3	0.91	Infin.	0.000	0.547	Non-Liq.	Non-Liq.	0.00
29.69	430.08	5.15	1.20	110	1.333	0.923	1.20	0.50	0.89	361.00	1.59		1	100	1.00	8.40	1.00	362.3	0.91	Infin.	0.000	0.548	Non-Liq.	Non-Liq.	0.00
29.86	475.65	5.92	1.24	110	1.337	0.922	1.25	0.50	0.89	398.78	1.58		1	100	1.00	8.45	1.00	400.3	0.91	Infin.	0.000	0.549	Non-Liq.	Non-Liq.	0.00
30.02	487.87	5.66	1.16	110	1.341	0.921	1.16	0.50	0.89	408.46	1.55		1	100	1.00	8.50	1.00	410.0	0.91	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
30.18	400.37	3.93	0.98	110	1.345	0.920	0.98	0.50	0.89	334.51	1.54		1	100	1.00	8.55	1.00	335.8	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.35	403.47	3.24	0.80	110	1.349	0.919	0.80	0.50	0.89	336.62	1.47		1	100	1.00	8.60	1.00	337.9	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.51	396.31	2.84	0.72	110	1.353	0.918	0.72	0.50	0.88	330.14	1.44		1	100	1.00	8.65	1.00	331.4	0.91	Infin.	0.000	0.552	Non-Liq.	Non-Liq.	0.00
30.68	386.15	2.45	0.63	110	1.357	0.918	0.64	0.50	0.88	321.18	1.41		1	100	1.00	8.70	1.00	322.4	0.91	Infin.	0.000	0.553	Non-Liq.	Non-Liq.	0.00
30.84	392.22	2.37	0.61	110	1.361	0.917	0.61	0.50	0.88	325.78	1.39		1	100	1.00	8.75	1.00	327.0	0.90	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
31.00	405.26	2.42	0.60	110	1.364	0.916	0.60	0.50	0.88	336.16	1.37		1	100	1.00	8.80	1.00	337.4	0.90	Infin.	0.000	0.555	Non-Liq.	Non-Liq.	0.00
31.17	430.96	2.96	0.69	110	1.368	0.915	0.69	0.50	0.88	357.04	1.40		1	100	1.00	8.85	1.00	358.4	0.90	Infin.	0.000	0.556	Non-Liq.	Non-Liq.	0.00
31.33	477.81	2.81	0.59	110	1.372	0.914	0.59	0.50	0.88	395.41	1.32		1	100	1.00	8.85	1.00	396.9	0.90	Infin.	0.000	0.556	Non-Liq.	Non-Liq.	0.00
31.50	511.39	3.25	0.64	110	1.376	0.913	0.64	0.50	0.88	422.67	1.33		1	100	1.00	8.85	1.00	424.3	0.90	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
31.66	526.85	3.67	0.70	110	1.380	0.912	0.70	0.50	0.88	434.87	1.35		1	100	1.00	8.85	1.00	436.5	0.90	Infin.	0.000	0.558	Non-Liq.	Non-Liq.	0.00
31.82	556.04	4.16	0.75	110	1.384	0.911	0.75	0.50	0.87	458.37	1.36		1	100	1.00	8.85	1.00	460.1	0.90	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
31.99	549.66	4.48	0.82	110	1.388	0.910	0.82	0.50	0.87	452.46	1.39		1	100	1.00	8.85	1.00	454.1	0.90	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
32.15	532.09	4.07	0.77	110	1.392	0.909	0.77	0.50	0.87	437.34	1.38		1	100	1.00	8.85	1.00	439.0	0.90	Infin.	0.000	0.560	Non-Liq.	Non-Liq.	0.00
32.32	480.94	3.60	0.75	110	1.396	0.908	0.75	0.50	0.87	394.63	1.40		1	100	1.00	8.85	1.00	396.1	0.90	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.48	490.89	4.33	0.88	110	1.400	0.907	0.88	0.50	0.87	402.25	1.45		1	100	1.00	8.85	1.00	403.8	0.89	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.64	528.43	4.91	0.93	110	1.403	0.906	0.93	0.50	0.87	432.50	1.45		1	100	1.00	8.85	1.00	434.1	0.89	Infin.	0.000	0.562	Non-Liq.	Non-Liq.	0.00
32.81	460.35	4.63	1.00	110	1.407	0.905	1.01	0.50	0.87	376.10	1.52		1	100	1.00	8.85	1.00	377.5	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
32.97	486.15	4.33	0.89	110	1.411	0.904	0.89	0.50	0.87	396.69	1.46		1	100	1.00	8.85	1.00	398.2	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
33.14	443.98	3.08	0.69	110	1.415	0.903	0.70	0.50	0.86	361.68	1.40		1	100	1.00	8.85	1.00	363.0	0.89	Infin.	0.000	0.564	Non-Liq.	Non-Liq.	0.00
33.30	410.68	3.53	0.86	110	1.419	0.902	0.86	0.50	0.86	334.00	1.49		1	100	1.00	8.85	1.00	335.3	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.46	410.45	3.02	0.74	110	1.423	0.901	0.74	0.50	0.86	333.35	1.44		1	100	1.00	8.85	1.00	334.6	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.63	405.83	2.64	0.65	110	1.427	0.900	0.65	0.50	0.86	329.13	1.41		1	100	1.00	8.85	1.00	330.4	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.79	322.06	1.47	0.46	110	1.431	0.899	0.46	0.50	0.86	260.60	1.37		1	100	1.00	8.85	1.00	261.6	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.96	275.23	1.64	0.60	110	1.435	0.898	0.60	0.50	0.86	222.23	1.50		1	100	1.00	8.85	1.00	223.1	0.89	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.12	227.81	2.72	1.19	110	1.439	0.897	1.20	0.54	0.85	181.18	1.78		1	100	1.09	8.85	1.00	198.3	0.88	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.28	169.10	2.93	1.74	110	1.443	0.896	1.75	0.61	0.83	131.34	1.99		1	88	1.29	8.85	1.00	170.0	0.88	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.45	86.25	3.30	3.82	110	1.446	0.895	3.89	0.75	0.79	63.47	2.46		1	58	2.58		1.00	163.6	0.91	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.61	69.63	2.59	3.72	110	1.450	0.894	3.80	0.76	0.79	50.64	2.52		1	49	2.88		1.00	145.8	0.94	0.368	0.346	0.569	0.61	84%	0.88
34.78	43.14	2.39	5.53	110	1.454	0.893	5.73	0.85	0.76	30.06	2.81		0						0.94			0.569	Non-Liq.	Non-Liq.	0.00
34.94	30.65	2.97	9.69	110	1.458	0.892	10.17	0.94	0.74	20.42	3.10		0						0.94			0.570	Non-Liq.	Non-Liq.	0.00
35.10	41.47	3.52	8.49	110	1.462	0.890	8.80	0.90	0.75	28.30	2.96		0						0.94			0.570	Non-Liq.	Non-Liq.	0.00
35.27	65.17	3.19	4.90	110	1.466	0.889	5.01	0.80	0.77	46.41	2.63		0						0.94			0.570	Non-Liq.	Non-Liq.	0.00
35.43	88.65	2.38	2.68	110	1.470	0.888	2.73	0.71	0.79	65.24	2.34		1	59	2.09		1.00	136.3	0.91	0.315	0.286	0.571	0.50	91%	1.05
35.60	43.77	2.29	5.24	110	1.474	0.887	5.42	0.84	0.76	30.22	2.79		0						0.94			0.571	Non-Liq.	Non-Liq.	0.00
35.76	29.66	1.82	6.14	110	1.478	0.886	6.46	0.90	0.74	19.72	2.98		0						0.94			0.572	Non-Liq.	Non-Liq.	0.00
35.93	29.62	1.77	5.98	110	1.482	0.885	6.30	0.90	0.74	19.65	2.97		0						0.93			0.572	Non-Liq.	Non-Liq.	0.00
36.09	178.35	2.16	1.21	110	1.485	0.883	1.22	0.57	0.82	137.89	1.86		1	90	1.16	0.40	1.31	208.8	0.87	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
36.25	241.23	1.79	0.74	110	1.489	0.882	0.75	0.50	0.84	190.98	1.62		1	100	1.00	0.40	1.31	249.9	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.42	267.52	1.54	0.57	110	1.493	0.881	0.58	0.50	0.84	211.65	1.51		1	100	1.00	0.40	1.31	276.9	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.58	307.90	1.25	0.41	110	1.497	0.880	0.41	0.50	0.84	243.45	1.36		1	100	1.00	0.40	1.31	318.6	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.75	313.53	1.06	0.34	110	1.501	0.878	0.34	0.50	0.84	247.60	1.31		1	100	1.00	0.40	1.31	324.0	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.91	259.68	0.86	0.33	110	1.505	0.877	0.33	0.50	0.84	204.60	1.38		1	100	1.00	0.40	1.31	267.7	0.87	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
37.07	199.86	0.72	0.36	110	1.509	0.876	0.36	0.50	0.84	156.99	1.49		1	96	1.00	0.40	1.31	205.4	0.87	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
37.24	136.61	0.99	0.72	110	1.513	0.875	0.73	0.55	0.82	104.86	1.81		1	79	1.11	0.40	1.31	152.8	0.87	0.412	0.357	0.574	0.62	83%	0.71
37.40	83.21	1.31	1.58	110	1.517	0.873	1.61	0.67	0.79	60.64	2.21		1	56	1.69		1.00	102.5	0.90	0.180	0.162	0.574	0.28	98%	1.46
37.57	44.38	1.10	2.47	110	1.521	0.872	2.56	0.78	0.75	30.55	2.57		1	28	3.13		1.00	95.7	0.93	0.162	0.150	0.574	0.26	99%	1.56
37.73	27.18	1.18	4.34	110	1.525	0.871	4.60	0.88	0.72	17.57	2.91		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
37.89	28.70	1.31	4.57	110	1.528	0.869	4.83	0.88	0.72	18.57	2.91		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.06	39.57	1.47	3.71	110	1.532	0.868	3.86	0.83	0.74	26.46	2.73		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.22	75.21	1.54	2.05	110	1.536	0.867	2.09	0.71	0.77	53.52	2.33		1	51	2.03		1.00	108.8	0.89	0.200	0.179	0.575	0.31	98%	1.38
38.39	174.70	1.55	0.88	110	1.540	0.865	0.89	0.54	0.82	133.49	1.78		1	89	1.09	0.35	1.36	198.1	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
38.55	220.50	1.33	0.60	110	1.544	0.864	0.61	0.50	0.83	171.31	1.59		1	99	1.00	0.40	1.36	232.3	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
38.71	247.95	1.28	0.52	110	1.548	0.863	0.52	0.50	0.83	192.54	1.51		1	100	1.00	0.45	1.36	261.1	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
38.88	252.96	1.31	0.52	110	1.552	0.861	0.52	0.50	0.83	196.21	1.50		1	100	1.00	0.50	1.36	266.1	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
39.04	230.96	1.38	0.60	110	1.556	0.860	0.60	0.50	0.82	178.81	1.58		1	100	1.00	0.55	1.36	242.5	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
39.21	145.79	1.25	0.86	110	1.560	0.859	0.87	0.56	0.80	109.70	1.84		1	81	1.14	0.60	1.36	169.1	0.86	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
39.37	85.88	1.67	1.94	110	1.564	0.857	1.98	0.69	0.76	60.91	2.27		1	56	1.85		1.00	112.5	0.89	0.212	0.189	0.576	0.33	98%	1.33
39.53	62.58	1.46	2.33	110	1.567	0.856	2.39	0.74	0.75	43.14	2.43		1	42	2.46		1.00	106.0	0.92	0.191	0.176	0.576	0.31	98%	1.42
39.70	41.74	1.21	2.90	110	1.571	0.854	3.01	0.80	0.73	27.65	2.65		0						0.92			0.576	Non-Liq.	Non-Liq.	0.00
39.86	15.02	0.92	6.14	110	1.575	0.853	6.86	0.99	0.67	8.58	3.27		0						0.92			0.575	Non-Liq.	Non-Liq.	0.00
40.03	11.69	1.18	10.11	110	1.579	0.852	11.69	1.00	0.67	6.40	3.51		0						0.92			0.575	Non-Liq.	Non-Liq.	0.00
40.19	18.75	1.87	9.99	110	1.583	0.850	10.91	1.00	0.67	10.84	3.32		0						0.92			0.575	Non-Liq.	Non-Liq.	0.00
40.35	94.45	2.16	2.29	110	1.587	0.849	2.33	0.69	0.75	66.23	2.29		1	60	1.91		1.00	126.7	0.89	0.269	0.238	0.575	0.41	95%	1.16
40.52	251.97	2.43	0.96	110	1.591	0.847	0.97	0.52	0.81	191.75	1.69		1	100	1.03	1.00	1.00	198.8	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
40.68	313.15	2.26	0.72	110	1.595	0.846	0.73	0.50	0.81	239.85	1.54		1	100	1.00	1.00	1.00	240.7	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
40.85	341.76	2.88	0.84	110	1.599	0.844	0.85	0.50	0.81	261.55	1.56		1	100	1.00	1.00	1.00	262.5	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.01	354.79	3.52	0.99	110	1.603	0.843	1.00	0.50	0.81	271.24	1.60		1	100	1.00	1.00	1.00	272.3	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.17	373.62	4.05	1.09	110	1.607	0.841	1.09	0.50	0.81	285.35	1.62		1	100	1.00	1.00	1.00	286.4	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.34	386.97	4.10	1.06	110	1.610	0.840	1.06	0.50	0.81	295.23	1.60		1	100	1.00	1.00	1.00	296.3	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.50	384.45	4.56	1.19	110	1.614	0.838	1.19	0.50	0.81	292.94	1.64		1	100	1.00	1.00	1.00	294.0	0.84	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.67	388.83	3.67	0.94	110	1.618	0.837	0.95	0.50	0.81	295.93	1.56		1	100	1.00	1.00	1.00	297.0	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
41.83	401.57	3.65	0.91	110	1.622	0.835	0.91	0.50	0.81	305.29	1.54		1	100	1.00	1.00	1.00	306.4	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
41.99	345.90	3.80	1.10	110	1.626	0.834	1.10	0.50	0.81	262.37	1.64		1	100	1.00	1.00	1.00	262.9	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.16	326.26	3.40	1.04	110	1.630	0.832	1.05	0.50	0.81	247.11	1.64		1	100	1.00	1.00	1.00	247.6	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.32	340.48	3.88	1.14	110	1.634	0.831	1.14	0.51	0.80	257.02	1.66		1	100	1.01	1.00	1.00	260.8	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.49	364.19	3.38	0.93	110	1.638	0.829	0.93	0.50	0.80	275.43	1.57		1	100	1.00	1.00	1.00	276.5	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.65	390.03	3.10	0.79	110	1.642	0.827	0.80	0.50	0.80	294.70	1.50		1	100	1.00	1.00	1.00	295.8	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.81	313.44	2.00	0.64	110	1.646	0.826	0.64	0.50	0.80	236.30	1.50		1	100	1.00	1.00	1.00	237.2	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.98	281.49	1.86	0.66	110	1.649	0.824	0.67	0.50	0.80	211.83	1.55		1	100	1.00	1.00	1.00	212.6	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
43.14	220.54	1.03	0.47	110	1.653	0.823	0.47	0.50	0.80	165.50	1.54		1	98	1.00	1.00	1.00	166.1	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.31	170.25	0.75	0.44	110	1.657	0.821	0.44	0.50	0.80	127.32	1.62		1	87	1.00	1.00	1.00	127.8	0.84	0.274	0.229	0.572	**0.40**	95%	**1.14**
43.47	150.87	0.88	0.58	110	1.661	0.820	0.59	0.53	0.79	111.11	1.73		1	81	1.06	1.00	1.00	118.4	0.83	0.234	0.196	0.572	**0.34**	97%	**1.25**
43.64	112.32	0.90	0.80	110	1.665	0.818	0.81	0.59	0.77	80.14	1.93		1	68	1.22	1.00	1.00	98.0	0.87	0.168	0.146	0.572	**0.26**	99%	**1.53**
43.80	82.53	1.03	1.25	110	1.669	0.816	1.28	0.66	0.74	56.60	2.17		1	53	1.60		1.00	90.3	0.87	0.148	0.129	0.571	**0.23**	99%	**1.65**
43.96	68.72	1.03	1.49	110	1.673	0.815	1.53	0.69	0.73	46.10	2.29		1	45	1.91		1.00	88.2	0.91	0.144	0.131	0.571	**0.23**	99%	**1.68**
44.13	55.11	0.91	1.64	110	1.677	0.813	1.69	0.73	0.72	36.12	2.40		1	35	2.31		1.00	83.4	0.91	0.134	0.122	0.571	**0.21**	99%	**1.76**
44.29	41.85	0.92	2.19	110	1.681	0.811	2.28	0.78	0.70	26.42	2.59		1	22	3.24		1.00	85.6	0.91	0.138	0.126	0.570	**0.22**	99%	**1.73**
44.46	26.31	1.06	4.02	110	1.685	0.810	4.29	0.89	0.66	15.39	2.94		0						0.91			0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.62	21.72	0.91	4.17	110	1.689	0.808	4.52	0.92	0.65	12.33	3.03		0						0.91			0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.78	37.10	1.02	2.74	110	1.692	0.807	2.87	0.82	0.68	22.80	2.70		0						0.91			0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.95	79.45	1.14	1.44	110	1.696	0.805	1.47	0.68	0.73	53.41	2.23		1	51	1.73		1.00	92.7	0.87	0.154	0.134	0.569	**0.24**	99%	**1.61**
45.11	124.52	1.08	0.86	110	1.700	0.803	0.88	0.58	0.76	88.02	1.92		1	72	1.21	0.70	1.10	116.3	0.83	0.226	0.187	0.568	**0.33**	98%	**1.28**
45.28	146.40	1.60	1.09	110	1.704	0.802	1.11	0.59	0.76	103.42	1.93		1	78	1.22	0.75	1.10	137.7	0.83	0.323	0.267	0.568	**0.47**	92%	**1.03**
45.44	147.64	1.68	1.14	110	1.708	0.800	1.15	0.59	0.75	104.02	1.94		1	78	1.23	0.80	1.10	139.6	0.83	0.333	0.275	0.567	**0.48**	92%	**1.01**
45.60	111.81	2.01	1.80	110	1.712	0.798	1.83	0.66	0.73	75.74	2.17		1	65	1.61		1.00	121.6	0.87	0.247	0.214	0.567	**0.38**	96%	**1.21**
45.77	107.68	2.34	2.17	110	1.716	0.797	2.21	0.68	0.72	72.03	2.25		1	63	1.79		1.00	128.7	0.86	0.278	0.241	0.567	**0.42**	94%	**1.13**
45.93	150.61	2.63	1.75	110	1.720	0.795	1.77	0.63	0.74	103.74	2.07		1	78	1.40		1.00	144.8	0.82	0.363	0.298	0.566	**0.53**	89%	**1.00**
46.10	249.00	2.59	1.04	110	1.724	0.793	1.05	0.53	0.77	180.59	1.73		1	100	1.06	1.00	1.00	192.4	0.82	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.26	324.42	3.00	0.93	110	1.728	0.792	0.93	0.50	0.78	238.69	1.61		1	100	1.00	1.05	1.00	239.6	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.42	376.79	3.64	0.96	110	1.731	0.790	0.97	0.50	0.78	277.11	1.58		1	100	1.00	1.10	1.00	278.1	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.59	401.24	4.49	1.12	110	1.735	0.788	1.12	0.50	0.78	294.84	1.62		1	100	1.00	1.15	1.00	295.9	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.75	410.01	4.98	1.21	110	1.739	0.787	1.22	0.50	0.78	300.97	1.64		1	100	1.00	1.20	1.00	302.1	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.92	417.89	4.83	1.16	110	1.743	0.785	1.16	0.50	0.78	306.43	1.62		1	100	1.00	1.25	1.00	307.6	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.08	432.83	4.59	1.06	110	1.747	0.783	1.06	0.50	0.78	317.08	1.58		1	100	1.00	1.30	1.00	318.3	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.24	435.16	3.80	0.87	110	1.751	0.782	0.88	0.50	0.78	318.43	1.51		1	100	1.00	1.35	1.00	319.6	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.41	434.87	4.29	0.99	110	1.755	0.780	0.99	0.50	0.78	317.86	1.55		1	100	1.00	1.40	1.00	319.0	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.57	434.40	5.04	1.16	110	1.759	0.778	1.17	0.50	0.78	317.16	1.61		1	100	1.00	1.45	1.00	318.3	0.82	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
47.74	430.64	5.51	1.28	110	1.763	0.777	1.28	0.50	0.77	313.70	1.65		1	100	1.00	1.50	1.00	315.3	0.82	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
47.90	433.15	6.42	1.48	110	1.767	0.775	1.49	0.52	0.77	312.64	1.70		1	100	1.04	1.55	1.00	325.7	0.81	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
48.06	428.46	6.61	1.54	110	1.770	0.773	1.55	0.52	0.76	308.02	1.72		1	100	1.05	1.60	1.00	324.6	0.81	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
48.23	424.25	6.72	1.58	110	1.774	0.772	1.59	0.53	0.76	304.04	1.73		1	100	1.06	1.65	1.00	323.0	0.81	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
48.39	419.06	6.65	1.59	110	1.778	0.770	1.59	0.53	0.76	299.75	1.73		1	100	1.06	1.70	1.00	319.3	0.81	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
48.56	409.58	6.70	1.64	110	1.782	0.768	1.64	0.53	0.76	291.80	1.75		1	100	1.07	1.75	1.00	314.3	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.72	401.26	6.55	1.63	110	1.786	0.767	1.64	0.54	0.76	285.28	1.76		1	100	1.08	1.80	1.00	308.3	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.88	393.67	6.35	1.61	110	1.790	0.765	1.62	0.54	0.75	279.50	1.76		1	100	1.08	1.85	1.00	302.2	0.81	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
49.05	386.90	6.22	1.61	110	1.794	0.763	1.62	0.54	0.75	274.18	1.76		1	100	1.08	1.90	1.00	297.2	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.21	381.95	6.11	1.60	110	1.798	0.762	1.61	0.54	0.75	270.24	1.76		1	100	1.08	1.95	1.00	293.3	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.38	382.17	6.15	1.61	110	1.802	0.760	1.62	0.54	0.75	269.99	1.77		1	100	1.08	2.00	1.00	293.4	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.54	376.16	6.01	1.60	110	1.806	0.758	1.61	0.54	0.75	265.33	1.77		1	100	1.08	2.05	1.00	288.7	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.70	367.77	5.85	1.59	110	1.810	0.757	1.60	0.54	0.75	258.87	1.77		1	100	1.09	2.10	1.00	282.6	0.81	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
49.87	358.21	5.75	1.61	110	1.813	0.755	1.61	0.54	0.75	251.37	1.78		1	100	1.10	2.15	1.00	276.4	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.03	351.53	5.60	1.59	110	1.817	0.753	1.60	0.54	0.75	246.26	1.79		1	100	1.10	2.20	1.00	271.2	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.20	347.31	4.90	1.41	110	1.821	0.752	1.42	0.53	0.75	244.59	1.75		1	100	1.07	2.25	1.00	262.5	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.36	345.77	5.05	1.46	110	1.825	0.750	1.47	0.54	0.75	242.68	1.76		1	100	1.08	2.30	1.00	262.8	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.52	347.22	5.22	1.50	110	1.829	0.748	1.51	0.54	0.74	243.04	1.77		1	100	1.09	2.35	1.00	264.8	0.80	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
50.69	346.06	5.37	1.55	110	1.833	0.747	1.56	0.54	0.74	241.42	1.78		1	100	1.09	2.40	1.00	265.2	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
50.85	349.13	5.22	1.50	110	1.837	0.745	1.50	0.54	0.74	243.91	1.77		1	100	1.08	2.45	1.00	265.3	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
51.02	348.56	4.86	1.39	110	1.841	0.743	1.40	0.53	0.75	244.21	1.74		1	100	1.07	2.50	1.00	261.6	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.18	349.29	4.35	1.25	110	1.845	0.742	1.25	0.52	0.75	246.10	1.70		1	100	1.04	2.55	1.00	256.9	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.35	348.08	4.19	1.20	110	1.849	0.740	1.21	0.52	0.75	245.42	1.69		1	100	1.03	2.60	1.00	254.3	0.80	Infin.	0.000	0.548	**Non-Liq.**	Non-Liq.	**0.00**
51.51	347.63	4.03	1.16	110	1.852	0.738	1.17	0.51	0.75	245.34	1.68		1	100	1.02	2.65	1.00	252.2	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.67	345.96	4.21	1.22	110	1.856	0.737	1.22	0.52	0.75	243.12	1.70		1	100	1.04	2.65	1.00	253.0	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.84	345.46	4.03	1.17	110	1.860	0.735	1.17	0.51	0.75	243.07	1.68		1	100	1.03	2.65	1.00	250.7	0.80	Infin.	0.000	0.546	**Non-Liq.**	Non-Liq.	**0.00**
52.00	342.27	3.60	1.05	110	1.864	0.733	1.06	0.50	0.75	241.88	1.65		1	100	1.00	2.65	1.00	243.9	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.17	345.47	2.90	0.84	110	1.868	0.732	0.84	0.50	0.75	244.41	1.58		1	100	1.00	2.65	1.00	245.3	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.33	353.60	2.51	0.71	110	1.872	0.730	0.71	0.50	0.75	249.93	1.52		1	100	1.00	2.65	1.00	250.9	0.80	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
52.49	353.44	2.43	0.69	110	1.876	0.728	0.69	0.50	0.75	249.55	1.51		1	100	1.00	2.65	1.00	250.5	0.80	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.66	329.04	2.54	0.77	110	1.880	0.727	0.77	0.50	0.75	231.99	1.57		1	100	1.00	2.65	1.00	232.9	0.79	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.82	324.06	2.40	0.74	110	1.884	0.725	0.75	0.50	0.75	228.21	1.56		1	100	1.00	2.65	1.00	229.1	0.79	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
52.99	357.49	2.12	0.59	110	1.888	0.724	0.60	0.50	0.75	251.63	1.46		1	100	1.00	2.65	1.00	252.6	0.79	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
53.15	377.56	1.69	0.45	110	1.892	0.722	0.45	0.50	0.75	265.56	1.36		1	100	1.00	2.65	1.00	266.5	0.79	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
53.31	383.09	1.73	0.45	110	1.895	0.720	0.45	0.50	0.75	269.18	1.36		1	100	1.00	2.65	1.00	270.2	0.79	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.48	384.71	1.88	0.49	110	1.899	0.719	0.49	0.50	0.75	270.05	1.38		1	100	1.00	2.65	1.00	271.1	0.79	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.64	382.98	1.55	0.41	110	1.903	0.717	0.41	0.50	0.75	268.55	1.33		1	100	1.00	2.65	1.00	269.6	0.79	Infin.	0.000	0.539	**Non-Liq.**	Non-Liq.	**0.00**
53.81	378.65	1.68	0.44	110	1.907	0.716	0.45	0.50	0.74	265.22	1.36		1	100	1.00	2.65	1.00	266.2	0.79	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
53.97	364.32	1.45	0.40	110	1.911	0.714	0.40	0.50	0.74	254.87	1.34		1	100	1.00	2.65	1.00	255.8	0.79	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
54.13	345.61	1.28	0.37	110	1.915	0.712	0.37	0.50	0.74	241.46	1.34		1	100	1.00	2.65	1.00	242.4	0.79	Infin.	0.000	0.537	**Non-Liq.**	Non-Liq.	**0.00**
54.30	328.15	1.38	0.42	110	1.919	0.711	0.42	0.50	0.74	228.96	1.40		1	100	1.00	2.65	1.00	229.8	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.46	286.22	1.49	0.52	110	1.923	0.709	0.53	0.50	0.74	199.33	1.50		1	100	1.00	2.65	1.00	200.1	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.63	215.92	2.04	0.94	110	1.927	0.708	0.95	0.54	0.72	146.37	1.77		1	93	1.09	2.65	1.00	159.6	0.79	0.458	0.361	0.535	**0.67**	79%	**0.55**
54.79	142.12	2.27	1.60	110	1.931	0.706	1.62	0.63	0.68	90.57	2.08		1	73	1.42		1.00	128.9	0.79	0.279	0.219	0.534	**0.41**	95%	**1.13**
54.95	95.61	2.50	2.61	110	1.934	0.705	2.66	0.72	0.65	57.33	2.37		1	54	2.21		1.00	126.7	0.83	0.269	0.225	0.534	**0.42**	95%	**1.15**
55.12	68.05	2.25	3.30	110	1.938	0.703	3.40	0.78	0.62	39.00	2.57		1	38	3.14		1.00	122.4	0.89	0.251	0.222	0.533	**0.42**	95%	**1.20**
55.28	52.93	1.90	3.59	110	1.942	0.701	3.73	0.81	0.61	29.39	2.69		0						0.89			0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.45	46.61	2.06	4.41	110	1.946	0.700	4.61	0.85	0.60	25.19	2.80		0						0.89			0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.61	110.59	2.63	2.38	110	1.950	0.698	2.42	0.70	0.65	67.05	2.30		1	60	1.94		1.00	129.9	0.83	0.284	0.236	0.531	**0.44**	94%	**1.11**
55.77	134.82	3.19	2.37	110	1.954	0.697	2.40	0.68	0.66	82.91	2.23		1	69	1.74		1.00	144.4	0.83	0.360	0.299	0.530	**0.56**	87%	**1.00**
55.94	157.81	3.55	2.25	110	1.958	0.695	2.28	0.66	0.67	98.35	2.16		1	76	1.58		1.00	155.1	0.78	0.427	0.334	0.530	**0.63**	82%	**0.65**
56.10	180.29	3.92	2.18	110	1.962	0.694	2.20	0.64	0.67	113.50	2.11		1	82	1.47		1.00	166.8	0.78	Infin.	0.000	0.529	**Non-Liq.**	Non-Liq.	**0.00**
56.27	192.22	4.13	2.15	110	1.966	0.692	2.17	0.63	0.68	121.48	2.08		1	85	1.43		1.00	173.3	0.78	Infin.	0.000	0.528	**Non-Liq.**	Non-Liq.	**0.00**
56.43	181.99	3.86	2.12	110	1.970	0.691	2.14	0.64	0.67	114.52	2.10		1	82	1.45		1.00	166.0	0.78	Infin.	0.000	0.528	**Non-Liq.**	Non-Liq.	**0.00**
56.59	157.22	3.50	2.23	110	1.974	0.689	2.26	0.66	0.66	97.46	2.16		1	76	1.58		1.00	153.6	0.78	0.417	0.325	0.527	**0.62**	83%	**0.68**
56.76	135.91	2.78	2.04	110	1.977	0.688	2.07	0.66	0.66	83.65	2.18		1	69	1.62		1.00	135.7	0.83	0.312	0.259	0.526	**0.49**	91%	**1.05**
56.92	120.38	2.34	1.94	110	1.981	0.686	1.97	0.67	0.66	73.50	2.21		1	64	1.68		1.00	123.7	0.83	0.256	0.212	0.526	**0.40**	95%	**1.18**
57.09	104.50	2.33	2.23	110	1.985	0.685	2.27	0.70	0.64	62.45	2.30		1	57	1.95		1.00	121.6	0.83	0.247	0.205	0.525	**0.39**	96%	**1.21**
57.25	69.37	1.60	2.31	110	1.989	0.683	2.38	0.75	0.62	39.77	2.46		1	39	2.57		1.00	102.2	0.88	0.179	0.158	0.524	**0.30**	98%	**1.46**
57.41	32.64	1.19	3.63	110	1.993	0.682	3.87	0.87	0.58	16.66	2.88		0						0.88			0.524	**Non-Liq.**	Non-Liq.	**0.00**
57.58	24.63	0.77	3.11	110	1.997	0.680	3.38	0.90	0.57	12.11	2.96		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.74	22.59	0.67	2.95	110	2.001	0.679	3.23	0.90	0.56	10.95	2.98		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.91	21.75	0.79	3.64	110	2.005	0.678	4.01	0.93	0.55	10.33	3.06		0						0.88			0.522	**Non-Liq.**	Non-Liq.	**0.00**
58.07	25.26	0.77	3.05	110	2.009	0.676	3.31	0.89	0.56	12.41	2.95		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
58.23	28.61	0.75	2.63	110	2.013	0.675	2.83	0.86	0.57	14.43	2.85		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**
58.40	24.43	0.68	2.77	110	2.016	0.673	3.02	0.89	0.56	11.94	2.94		0						0.88			0.520	**Non-Liq.**	Non-Liq.	**0.00**
58.56	36.91	0.77	2.09	110	2.020	0.672	2.21	0.81	0.59	19.49	2.68		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.73	23.45	0.91	3.86	110	2.024	0.671	4.23	0.92	0.55	11.13	3.05		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.89	18.11	1.14	6.28	110	2.028	0.669	7.07	1.00	0.52	7.93	3.30		0						0.88			0.518	**Non-Liq.**	Non-Liq.	**0.00**
59.06	65.03	1.57	2.41	110	2.032	0.668	2.48	0.76	0.61	36.29	2.50		1	35	2.78		1.00	100.8	0.88	0.175	0.154	0.517	**0.30**	98%	**1.48**
59.22	103.87	1.91	1.83	110	2.036	0.666	1.87	0.68	0.64	61.58	2.25		1	57	1.79		1.00	110.3	0.82	0.205	0.168	0.517	**0.33**	98%	**1.35**
59.38	65.03	1.50	2.30	110	2.040	0.665	2.38	0.75	0.61	36.27	2.49		1	35	2.72		1.00	98.5	0.88	0.169	0.148	0.516	**0.29**	98%	**1.51**
59.55	38.85	0.98	2.51	110	2.044	0.664	2.65	0.82	0.58	20.23	2.72		0						0.88			0.516	**Non-Liq.**	Non-Liq.	**0.00**
59.71	27.32	0.71	2.60	110	2.048	0.662	2.81	0.87	0.56	13.44	2.88		0						0.88			0.515	**Non-Liq.**	Non-Liq.	**0.00**
59.88	17.57	0.45	2.57	110	2.052	0.661	2.91	0.93	0.54	7.92	3.07		0						0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.04	14.52	0.43	2.94	110	2.055	0.660	3.43	0.97	0.53	6.19	3.20		0						0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.20	13.78	0.46	3.32	110	2.059	0.658	3.91	0.99	0.52	5.74	3.26		0						0.88			0.513	**Non-Liq.**	Non-Liq.	**0.00**
60.37	14.34	0.56	3.88	110	2.063	0.657	4.54	0.99	0.52	5.98	3.28		0						0.87			0.512	**Non-Liq.**	Non-Liq.	**0.00**
60.53	16.36	0.62	3.78	110	2.067	0.656	4.32	0.97	0.52	7.05	3.21		0						0.87			0.512	**Non-Liq.**	Non-Liq.	**0.00**
60.70	23.29	0.00	0.00	110	2.071	0.654	0.00	0.80	0.58	11.71	2.64		0		1.00				0.87			0.511	**Non-Liq.**	Non-Liq.	**0.00**
60.86	28.55	0.00	0.00	110	2.075	0.653	0.00	0.79	0.59	14.72	2.60		1	0	1.00		1.00	14.7	0.87	0.062	0.054	0.511	**0.11**	100%	**5.46**
61.02	34.53	0.00	0.00	110	2.079	0.652	0.00	0.78	0.59	18.16	2.56		1	6	1.00		1.00	18.2	0.87	0.065	0.057	0.510	**0.11**	100%	**5.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-3
Plot: 3

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
2.3

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.97	0.75
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	20.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Probab	Total Induced Subsidence (inches)
Avg	4%
Max	100%
	0.3

Required SF: 1.50
Min SF of Liquefiable Layers: 0.23
Avg SF of Liquefiable Layers: 0.03

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (feet)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	61.63	0.93	1.50	110	0.009	1.000	1.50	0.62	1.70	99.01	2.03		1	76	1.34		1.00	133.0	1.00	0.299	0.299	0.485	Non-Liq.	Non-Liq.	0.00
0.33	79.05	1.53	1.94	110	0.018	1.000	1.94	0.62	1.70	126.99	2.03		1	87	1.35		1.00	171.2	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.49	78.13	1.93	2.46	110	0.027	1.000	2.46	0.64	1.70	125.50	2.12		1	86	1.48		1.00	186.4	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.66	68.31	1.84	2.70	110	0.036	1.000	2.70	0.66	1.70	109.70	2.18		1	81	1.63		1.00	178.6	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.82	54.87	1.52	2.77	110	0.045	1.000	2.77	0.68	1.70	88.09	2.26		1	72	1.82		1.00	159.9	1.00	0.460	0.460	0.485	Non-Liq.	Non-Liq.	0.00
0.98	47.14	1.21	2.56	110	0.054	1.000	2.57	0.69	1.70	75.66	2.28		1	65	1.88		1.00	142.1	1.00	0.347	0.347	0.485	Non-Liq.	Non-Liq.	0.00
1.15	39.47	1.02	2.57	110	0.063	0.999	2.58	0.71	1.70	63.32	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.484	Non-Liq.	Non-Liq.	0.00
1.31	39.47	1.02	2.57	110	0.072	0.999	2.58	0.71	1.70	63.30	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.484	Non-Liq.	Non-Liq.	0.00
1.48	31.24	0.82	2.63	110	0.081	0.999	2.64	0.73	1.70	50.07	2.41		1	48	2.37		1.00	118.7	1.00	0.236	0.236	0.484	Non-Liq.	Non-Liq.	0.00
1.64	24.89	0.66	2.65	110	0.090	0.998	2.66	0.75	1.70	39.85	2.49		1	39	2.72		1.00	108.3	1.00	0.198	0.198	0.484	Non-Liq.	Non-Liq.	0.00
1.80	19.86	0.33	1.65	110	0.099	0.998	1.66	0.74	1.70	31.75	2.44		1	29	2.48		1.00	78.7	1.00	0.125	0.125	0.484	Non-Liq.	Non-Liq.	0.00
1.97	20.55	0.42	2.06	110	0.108	0.998	2.07	0.75	1.70	32.85	2.49		1	31	2.70		1.00	88.6	1.00	0.145	0.145	0.484	Non-Liq.	Non-Liq.	0.00
2.13	20.42	0.47	2.29	110	0.117	0.997	2.30	0.76	1.70	32.62	2.52		1	30	2.85		1.00	93.0	1.00	0.155	0.155	0.483	Non-Liq.	Non-Liq.	0.00
2.30	19.65	0.48	2.45	110	0.126	0.997	2.46	0.77	1.70	31.37	2.55		1	29	3.02		1.00	94.8	1.00	0.159	0.159	0.483	Non-Liq.	Non-Liq.	0.00
2.46	18.16	0.52	2.85	110	0.135	0.996	2.87	0.79	1.70	28.96	2.62		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.62	15.20	0.57	3.77	110	0.144	0.996	3.81	0.83	1.70	24.19	2.76		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.79	13.95	0.57	4.06	110	0.153	0.996	4.10	0.85	1.70	22.17	2.81		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.95	11.38	0.56	4.92	110	0.162	0.995	4.99	0.89	1.70	18.02	2.93		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.12	12.18	0.59	4.85	110	0.171	0.995	4.92	0.88	1.70	19.30	2.90		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.28	12.71	0.60	4.68	110	0.180	0.994	4.75	0.87	1.70	20.13	2.88		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.44	11.57	0.62	5.32	110	0.189	0.994	5.41	0.89	1.70	18.29	2.95		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	11.06	0.51	4.57	110	0.198	0.994	4.65	0.88	1.70	17.45	2.92		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.77	20.97	0.48	2.28	110	0.208	0.993	2.30	0.76	1.70	33.36	2.51		1	31	2.81		1.00	93.8	1.00	0.157	0.157	0.482	Non-Liq.	Non-Liq.	0.00
3.94	29.22	0.55	1.88	110	0.217	0.993	1.90	0.71	1.70	46.60	2.34		1	45	2.09		1.00	97.6	1.00	0.166	0.166	0.481	Non-Liq.	Non-Liq.	0.00
4.10	37.87	0.68	1.79	110	0.226	0.993	1.80	0.68	1.70	60.49	2.24		1	56	1.78		1.00	107.4	1.00	0.195	0.195	0.481	Non-Liq.	Non-Liq.	0.00
4.27	45.79	0.82	1.80	110	0.235	0.992	1.81	0.66	1.70	73.20	2.18		1	64	1.62		1.00	118.8	1.00	0.236	0.236	0.481	Non-Liq.	Non-Liq.	0.00
4.43	52.76	0.97	1.84	110	0.244	0.992	1.85	0.65	1.70	84.38	2.14		1	70	1.54		1.00	129.9	1.00	0.284	0.284	0.481	Non-Liq.	Non-Liq.	0.00
4.59	58.36	1.00	1.72	110	0.253	0.991	1.73	0.64	1.70	93.37	2.09		1	74	1.44		1.00	134.3	1.00	0.305	0.305	0.481	Non-Liq.	Non-Liq.	0.00
4.76	62.10	1.17	1.89	110	0.262	0.991	1.90	0.64	1.70	99.36	2.10		1	77	1.46		1.00	144.7	1.00	0.362	0.362	0.480	Non-Liq.	Non-Liq.	0.00
4.92	64.35	1.31	2.03	110	0.271	0.991	2.04	0.64	1.70	102.96	2.11		1	78	1.48		1.00	152.2	1.00	0.408	0.408	0.480	Non-Liq.	Non-Liq.	0.00
5.09	68.21	1.45	2.13	110	0.280	0.990	2.14	0.64	1.70	109.15	2.11		1	80	1.47		1.00	160.8	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.25	72.78	1.57	2.16	110	0.289	0.990	2.17	0.64	1.70	116.48	2.10		1	83	1.45		1.00	168.6	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.41	77.81	1.63	2.10	110	0.298	0.989	2.11	0.63	1.70	124.55	2.07		1	86	1.40		1.00	174.2	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.58	85.70	1.64	1.91	110	0.307	0.989	1.92	0.61	1.70	137.21	2.01		1	90	1.31		1.00	179.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.74	100.29	1.65	1.65	110	0.316	0.989	1.65	0.58	1.70	160.64	1.91		1	96	1.20	1.00	1.00	193.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.91	115.78	1.63	1.41	110	0.325	0.988	1.41	0.55	1.70	185.51	1.82		1	100	1.12	1.05	1.00	209.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.07	127.60	1.61	1.26	110	0.334	0.988	1.27	0.54	1.70	204.49	1.76		1	100	1.08	1.10	1.00	221.2	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.23	135.25	1.64	1.21	110	0.343	0.988	1.22	0.53	1.70	216.77	1.73		1	100	1.06	1.15	1.00	230.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.40	142.84	1.69	1.18	110	0.352	0.987	1.19	0.52	1.70	228.95	1.71		1	100	1.04	1.20	1.00	239.3	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	144.87	1.70	1.18	110	0.361	0.987	1.18	0.52	1.70	232.20	1.70		1	100	1.04	1.25	1.00	241.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	154.10	1.74	1.13	110	0.370	0.986	1.13	0.51	1.70	247.01	1.67		1	100	1.02	1.30	1.00	251.8	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	159.66	1.81	1.14	110	0.379	0.986	1.14	0.51	1.68	253.36	1.66		1	100	1.01	1.35	1.00	257.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	165.12	1.78	1.08	110	0.388	0.986	1.08	0.50	1.65	257.24	1.64		1	100	1.00	1.40	1.00	257.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	169.35	1.74	1.02	110	0.397	0.985	1.03	0.50	1.63	260.70	1.62		1	100	1.00	1.45	1.00	261.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	177.82	1.68	0.94	110	0.406	0.985	0.95	0.50	1.61	270.69	1.58		1	100	1.00	1.50	1.00	271.7	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	173.84	1.63	0.94	110	0.415	0.985	0.94	0.50	1.60	261.72	1.59		1	100	1.00	1.55	1.00	262.7	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	173.84	1.63	0.94	110	0.424	0.984	0.94	0.50	1.58	258.90	1.59		1	100	1.00	1.60	1.00	259.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	174.47	1.63	0.94	110	0.433	0.984	0.94	0.50	1.56	257.11	1.60		1	100	1.00	1.65	1.00	258.1	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	179.36	1.92	1.07	110	0.442	0.984	1.07	0.50	1.55	261.61	1.63		1	100	1.00	1.70	1.00	262.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	186.51	2.06	1.10	110	0.451	0.983	1.11	0.50	1.53	269.32	1.64		1	100	1.00	1.75	1.00	270.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.37	187.62	1.80	0.96	110	0.460	0.983	0.96	0.50	1.52	268.24	1.59		1	100	1.00	1.80	1.00	269.2	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.53	196.66	1.97	1.00	110	0.469	0.982	1.00	0.50	1.50	278.47	1.60		1	100	1.00	1.85	1.00	279.5	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.69	203.40	2.06	1.01	110	0.478	0.982	1.01	0.50	1.49	285.29	1.59		1	100	1.00	1.90	1.00	286.4	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.86	213.10	2.23	1.05	110	0.487	0.982	1.05	0.50	1.47	296.14	1.59		1	100	1.00	1.95	1.00	297.2	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.02	211.76	2.34	1.10	110	0.496	0.981	1.11	0.50	1.46	291.57	1.62		1	100	1.00	2.00	1.00	292.7	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.19	215.66	2.34	1.09	110	0.505	0.981	1.09	0.50	1.45	294.28	1.61		1	100	1.00	2.05	1.00	295.4	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.35	219.54	2.54	1.16	110	0.514	0.981	1.16	0.50	1.43	296.93	1.63		1	100	1.00	2.10	1.00	298.0	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.51	229.63	2.68	1.17	110	0.523	0.980	1.17	0.50	1.42	307.91	1.62		1	100	1.00	2.15	1.00	309.1	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.68	235.06	2.79	1.18	110	0.532	0.980	1.19	0.50	1.41	312.51	1.62		1	100	1.00	2.20	1.00	313.7	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.84	237.58	2.88	1.21	110	0.541	0.980	1.21	0.50	1.40	313.21	1.63		1	100	1.00	2.25	1.00	314.4	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.01	233.01	2.93	1.26	110	0.550	0.979	1.26	0.50	1.39	305.09	1.65		1	100	1.00	2.30	1.00	306.7	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.17	237.10	2.96	1.25	110	0.559	0.979	1.25	0.50	1.38	307.65	1.64		1	100	1.00	2.35	1.00	308.3	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.33	243.13	3.06	1.26	110	0.568	0.979	1.26	0.50	1.36	312.86	1.64		1	100	1.00	2.40	1.00	313.1	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.50	243.55	3.17	1.30	110	0.577	0.978	1.30	0.50	1.36	311.64	1.65		1	100	1.01	2.45	1.00	314.7	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.66	243.58	3.23	1.32	110	0.586	0.978	1.33	0.51	1.35	309.70	1.66		1	100	1.01	2.50	1.00	314.6	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.83	251.39	3.25	1.29	110	0.595	0.978	1.30	0.50	1.33	316.43	1.65		1	100	1.00	2.55	1.00	318.3	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.99	254.32	3.43	1.35	110	0.604	0.977	1.35	0.51	1.33	318.41	1.66		1	100	1.01	2.60	1.00	323.3	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.15	250.44	3.64	1.45	110	0.614	0.977	1.46	0.52	1.32	312.74	1.69		1	100	1.03	2.65	1.00	324.1	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.32	235.91	3.45	1.46	110	0.623	0.977	1.47	0.52	1.32	293.22	1.71		1	100	1.05	2.70	1.00	307.7	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.48	231.44	3.34	1.44	110	0.632	0.976	1.45	0.52	1.31	285.58	1.71		1	100	1.05	2.75	1.00	300.1	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.65	243.81	3.39	1.39	110	0.641	0.976	1.40	0.51	1.29	297.60	1.69		1	100	1.03	2.80	1.00	308.0	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.81	248.76	3.18	1.28	110	0.650	0.975	1.28	0.51	1.28	300.06	1.66		1	100	1.01	2.85	1.00	303.9	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.98	252.74	3.49	1.38	110	0.659	0.975	1.39	0.51	1.27	303.78	1.68		1	100	1.03	2.90	1.00	312.7	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.14	246.32	3.71	1.51	110	0.668	0.975	1.51	0.52	1.27	295.51	1.72		1	100	1.05	2.95	1.00	311.7	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.30	247.22	3.84	1.55	110	0.677	0.974	1.56	0.53	1.27	294.93	1.73		1	100	1.06	3.00	1.00	313.3	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.47	246.81	3.92	1.59	110	0.686	0.974	1.59	0.53	1.26	292.77	1.74		1	100	1.07	3.05	1.00	313.0	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.63	246.30	4.04	1.64	110	0.695	0.974	1.65	0.53	1.25	290.63	1.75		1	100	1.07	3.10	1.00	313.4	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.80	244.00	4.09	1.67	110	0.704	0.973	1.68	0.54	1.25	286.30	1.76		1	100	1.08	3.15	1.00	310.9	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ	M=7.5 CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	243.85	4.05	1.66	110	0.713	0.973	1.67	0.54	1.24	284.13	1.76		1	100	1.08	3.20	1.00	308.4	1.00	Infin.	0.000	0.472		**Non-Liq.**	Non-Liq.	**0.00**
13.12	250.82	4.24	1.69	110	0.722	0.973	1.70	0.54	1.23	290.33	1.76		1	100	1.08	3.25	1.00	315.3	1.00	Infin.	0.000	0.472		**Non-Liq.**	Non-Liq.	**0.00**
13.29	254.86	4.23	1.66	110	0.731	0.972	1.66	0.53	1.22	292.76	1.76		1	100	1.08	3.30	1.00	316.1	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
13.45	265.02	4.01	1.51	110	0.740	0.972	1.52	0.52	1.21	301.15	1.72		1	100	1.05	3.35	1.00	316.9	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
13.62	296.24	3.54	1.19	110	0.749	0.972	1.20	0.50	1.19	331.97	1.61		1	100	1.00	3.40	1.00	333.2	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
13.78	358.75	4.85	1.35	110	0.758	0.971	1.35	0.50	1.18	399.79	1.61		1	100	1.00	3.45	1.00	401.3	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
13.94	401.73	4.27	1.06	110	0.767	0.971	1.07	0.50	1.17	445.14	1.49		1	100	1.00	3.45	1.00	446.8	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
14.11	397.89	5.59	1.40	110	0.776	0.971	1.41	0.50	1.17	438.29	1.60		1	100	1.00	3.45	1.00	439.9	1.00	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
14.27	408.46	4.70	1.15	110	0.785	0.970	1.15	0.50	1.16	447.36	1.52		1	100	1.00	3.45	1.00	449.0	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
14.44	435.23	5.55	1.28	110	0.794	0.970	1.28	0.50	1.15	474.00	1.55		1	100	1.00	3.45	1.00	475.8	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
14.60	389.69	5.04	1.29	110	0.803	0.970	1.30	0.50	1.15	421.92	1.58		1	100	1.00	3.45	1.00	423.5	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
14.76	348.88	3.51	1.01	110	0.812	0.969	1.01	0.50	1.14	375.53	1.52		1	100	1.00	3.45	1.00	376.9	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
14.93	347.64	3.21	0.92	110	0.821	0.969	0.93	0.50	1.14	372.12	1.49		1	100	1.00	3.45	1.00	373.5	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
15.09	366.34	3.29	0.90	110	0.830	0.969	0.90	0.50	1.13	390.04	1.47		1	100	1.00	3.45	1.00	391.5	1.00	Infin.	0.000	0.470		**Non-Liq.**	Non-Liq.	**0.00**
15.26	355.46	3.76	1.06	110	0.839	0.968	1.06	0.50	1.12	376.38	1.53		1	100	1.00	3.45	1.00	377.8	1.00	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
15.42	339.34	3.85	1.14	110	0.848	0.968	1.14	0.50	1.12	357.34	1.57		1	100	1.00	3.45	1.00	358.7	1.00	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
15.58	338.34	4.27	1.26	110	0.857	0.967	1.27	0.50	1.11	354.40	1.61		1	100	1.00	3.45	1.00	355.7	1.00	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
15.75	341.10	4.54	1.33	110	0.866	0.967	1.33	0.50	1.11	355.42	1.63		1	100	1.00	3.45	1.00	356.7	1.00	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
15.91	335.06	4.41	1.32	110	0.875	0.967	1.32	0.50	1.10	347.30	1.63		1	100	1.00	3.45	1.00	348.6	1.00	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
16.08	339.73	3.85	1.13	110	0.884	0.966	1.14	0.50	1.09	350.34	1.58		1	100	1.00	3.45	1.00	351.6	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
16.24	339.17	3.94	1.16	110	0.893	0.966	1.16	0.50	1.09	347.98	1.59		1	100	1.00	3.45	1.00	349.3	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
16.40	304.89	4.11	1.35	110	0.902	0.966	1.35	0.51	1.08	311.54	1.67		1	100	1.02	3.45	1.00	317.6	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
16.57	240.39	3.63	1.51	110	0.911	0.965	1.51	0.54	1.08	245.31	1.77		1	100	1.08	3.45	1.00	267.0	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
16.73	200.85	3.97	1.97	110	0.920	0.965	1.98	0.58	1.08	204.91	1.91		1	100	1.20	3.45	1.00	246.3	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
16.90	186.05	3.36	1.80	110	0.929	0.965	1.81	0.58	1.08	188.60	1.90		1	100	1.19	3.45	1.00	225.2	1.00	Infin.	0.000	0.468		**Non-Liq.**	Non-Liq.	**0.00**
17.06	145.35	4.55	3.13	110	0.938	0.964	3.15	0.65	1.08	147.65	2.15		1	93	1.56		1.00	230.8	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
17.22	137.21	1.70	1.24	110	0.947	0.964	1.25	0.57	1.06	137.16	1.87		1	90	1.16	1.00	1.00	160.3	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
17.39	195.13	2.67	1.37	110	0.956	0.963	1.37	0.55	1.06	193.97	1.80		1	100	1.11	1.05	1.00	215.5	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
17.55	375.11	3.14	0.84	110	0.965	0.963	0.84	0.50	1.05	370.21	1.46		1	100	1.00	1.10	1.00	371.6	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
17.72	366.40	3.61	0.98	110	0.974	0.963	0.99	0.50	1.04	359.90	1.52		1	100	1.00	1.15	1.00	361.2	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
17.88	334.19	2.48	0.74	110	0.983	0.962	0.75	0.50	1.04	326.66	1.45		1	100	1.00	1.20	1.00	327.9	1.00	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
18.04	253.24	2.71	1.07	110	0.992	0.962	1.08	0.50	1.03	246.22	1.65		1	100	1.00	1.25	1.00	248.4	1.00	Infin.	0.000	0.466		**Non-Liq.**	Non-Liq.	**0.00**
18.21	169.29	2.90	1.71	110	1.001	0.962	1.72	0.58	1.03	164.25	1.92		1	97	1.21	1.30	1.00	199.5	1.00	Infin.	0.000	0.466		**Non-Liq.**	Non-Liq.	**0.00**
18.37	135.74	2.18	1.61	110	1.010	0.961	1.62	0.60	1.03	130.89	1.97		1	88	1.26	1.35	1.00	165.6	1.00	Infin.	0.000	0.466		**Non-Liq.**	Non-Liq.	**0.00**
18.54	258.73	2.13	0.82	110	1.020	0.961	0.83	0.50	1.02	248.14	1.56		1	100	1.00	1.40	1.00	249.1	1.00	Infin.	0.000	0.466		**Non-Liq.**	Non-Liq.	**0.00**
18.70	348.17	2.48	0.71	110	1.029	0.960	0.71	0.50	1.01	332.78	1.43		1	100	1.00	1.45	1.00	334.0	1.00	Infin.	0.000	0.466		**Non-Liq.**	Non-Liq.	**0.00**
18.86	379.90	3.61	0.95	110	1.038	0.960	0.95	0.50	1.01	361.60	1.51		1	100	1.00	1.50	1.00	363.0	1.00	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
19.03	419.21	3.90	0.93	110	1.047	0.960	0.93	0.50	1.01	397.39	1.47		1	100	1.00	1.55	1.00	398.9	1.00	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
19.19	396.96	4.58	1.15	110	1.056	0.959	1.16	0.50	1.00	374.62	1.57		1	100	1.00	1.60	1.00	376.0	1.00	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
19.36	387.05	4.64	1.20	110	1.065	0.959	1.20	0.50	1.00	363.69	1.59		1	100	1.00	1.65	1.00	365.0	1.00	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
19.52	368.81	4.55	1.23	110	1.074	0.958	1.24	0.50	0.99	345.03	1.61		1	100	1.00	1.70	1.00	346.3	0.99	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
19.69	354.61	3.09	0.87	110	1.083	0.958	0.87	0.50	0.99	330.32	1.50		1	100	1.00	1.75	1.00	331.6	0.99	Infin.	0.000	0.464		**Non-Liq.**	Non-Liq.	**0.00**
19.85	342.37	2.52	0.74	110	1.092	0.957	0.74	0.50	0.98	317.55	1.46		1	100	1.00	1.80	1.00	318.7	0.99	Infin.	0.000	0.464		**Non-Liq.**	Non-Liq.	**0.00**
20.01	342.04	2.21	0.65	110	1.101	0.957	0.65	0.50	0.98	315.93	1.42		1	100	1.00	1.85	1.00	317.1	0.98	Infin.	0.000	0.464		**Non-Liq.**	Non-Liq.	**0.00**
20.18	348.47	2.02	0.58	110	1.107	0.957	0.58	0.50	0.98	321.00	1.38		1	100	1.00	1.90	1.00	322.2	0.98	Infin.	0.000	0.465		**Non-Liq.**	Non-Liq.	**0.00**
20.34	358.46	2.21	0.62	110	1.111	0.956	0.62	0.50	0.98	329.65	1.39		1	100	1.00	1.95	1.00	330.9	0.98	Infin.	0.000	0.467		**Non-Liq.**	Non-Liq.	**0.00**
20.51	366.69	2.31	0.63	110	1.115	0.956	0.63	0.50	0.97	336.65	1.39		1	100	1.00	2.00	1.00	337.9	0.98	Infin.	0.000	0.469		**Non-Liq.**	Non-Liq.	**0.00**
20.67	400.46	2.25	0.56	110	1.118	0.955	0.56	0.50	0.97	367.10	1.33		1	100	1.00	2.05	1.00	368.5	0.98	Infin.	0.000	0.471		**Non-Liq.**	Non-Liq.	**0.00**
20.83	398.65	2.07	0.52	110	1.122	0.955	0.52	0.50	0.97	364.80	1.31		1	100	1.00	2.10	1.00	366.2	0.98	Infin.	0.000	0.473		**Non-Liq.**	Non-Liq.	**0.00**
21.00	411.19	1.95	0.47	110	1.126	0.954	0.48	0.50	0.97	375.65	1.27		1	100	1.00	2.15	1.00	377.1	0.98	Infin.	0.000	0.474		**Non-Liq.**	Non-Liq.	**0.00**
21.16	402.69	3.64	0.90	110	1.130	0.954	0.91	0.50	0.97	367.22	1.48		1	100	1.00	2.20	1.00	368.6	0.97	Infin.	0.000	0.476		**Non-Liq.**	Non-Liq.	**0.00**
21.33	432.94	4.66	1.08	110	1.134	0.954	1.08	0.50	0.97	394.20	1.53		1	100	1.00	2.25	1.00	395.7	0.97	Infin.	0.000	0.478		**Non-Liq.**	Non-Liq.	**0.00**
21.49	469.69	5.29	1.13	110	1.138	0.953	1.13	0.50	0.96	427.01	1.52		1	100	1.00	2.30	1.00	428.6	0.97	Infin.	0.000	0.480		**Non-Liq.**	Non-Liq.	**0.00**
21.65	374.94	3.56	0.95	110	1.142	0.953	0.95	0.50	0.96	340.08	1.52		1	100	1.00	2.35	1.00	341.3	0.97	Infin.	0.000	0.482		**Non-Liq.**	Non-Liq.	**0.00**
21.82	335.23	2.37	0.71	110	1.146	0.952	0.71	0.50	0.96	303.43	1.46		1	100	1.00	2.40	1.00	304.6	0.97	Infin.	0.000	0.483		**Non-Liq.**	Non-Liq.	**0.00**
21.98	327.25	1.94	0.59	110	1.150	0.952	0.59	0.50	0.96	295.67	1.41		1	100	1.00	2.45	1.00	296.8	0.97	Infin.	0.000	0.485		**Non-Liq.**	Non-Liq.	**0.00**
22.15	329.21	1.70	0.51	110	1.154	0.951	0.52	0.50	0.96	296.94	1.37		1	100	1.00	2.50	1.00	298.1	0.97	Infin.	0.000	0.487		**Non-Liq.**	Non-Liq.	**0.00**
22.31	336.57	1.69	0.50	110	1.158	0.951	0.50	0.50	0.96	303.09	1.35		1	100	1.00	2.55	1.00	304.2	0.96	Infin.	0.000	0.489		**Non-Liq.**	Non-Liq.	**0.00**
22.47	342.42	1.62	0.47	110	1.161	0.950	0.48	0.50	0.95	307.85	1.33		1	100	1.00	2.60	1.00	309.0	0.96	Infin.	0.000	0.490		**Non-Liq.**	Non-Liq.	**0.00**
22.64	357.21	1.50	0.42	110	1.165	0.950	0.42	0.50	0.95	320.65	1.28		1	100	1.00	2.65	1.00	321.9	0.96	Infin.	0.000	0.492		**Non-Liq.**	Non-Liq.	**0.00**
22.80	365.13	1.60	0.44	110	1.169	0.949	0.44	0.50	0.95	327.23	1.29		1	100	1.00	2.70	1.00	328.5	0.96	Infin.	0.000	0.494		**Non-Liq.**	Non-Liq.	**0.00**
22.97	275.06	1.75	0.64	110	1.173	0.949	0.64	0.50	0.95	245.84	1.49		1	100	1.00	2.75	1.00	246.8	0.96	Infin.	0.000	0.495		**Non-Liq.**	Non-Liq.	**0.00**
23.13	359.31	1.67	0.47	110	1.177	0.948	0.47	0.50	0.95	320.93	1.31		1	100	1.00	2.80	1.00	322.1	0.96	Infin.	0.000	0.497		**Non-Liq.**	Non-Liq.	**0.00**
23.29	360.37	1.63	0.45	110	1.181	0.948	0.45	0.50	0.95	321.34	1.30		1	100	1.00	2.85	1.00	322.5	0.96	Infin.	0.000	0.498		**Non-Liq.**	Non-Liq.	**0.00**
23.46	371.26	1.97	0.53	110	1.185	0.947	0.53	0.50	0.94	330.53	1.34		1	100	1.00	2.90	1.00	331.8	0.96	Infin.	0.000	0.500		**Non-Liq.**	Non-Liq.	**0.00**
23.62	356.90	1.94	0.54	110	1.189	0.947	0.54	0.50	0.94	317.18	1.36		1	100	1.00	2.95	1.00	318.4	0.95	Infin.	0.000	0.502		**Non-Liq.**	Non-Liq.	**0.00**
23.79	361.74	2.11	0.58	110	1.193	0.946	0.58	0.50	0.94	320.97	1.38		1	100	1.00	3.00	1.00	322.2	0.95	Infin.	0.000	0.503		**Non-Liq.**	Non-Liq.	**0.00**
23.95	364.42	2.28	0.63	110	1.197	0.946	0.63	0.50	0.94	322.82	1.40		1	100	1.00	3.05	1.00	324.0	0.95	Infin.	0.000	0.505		**Non-Liq.**	Non-Liq.	**0.00**
24.11	368.01	2.35	0.64	110	1.200	0.945	0.64	0.50	0.94	325.48	1.40		1	100	1.00	3.10	1.00	326.7	0.95	Infin.	0.000	0.506		**Non-Liq.**	Non-Liq.	**0.00**
24.28	376.81	2.30	0.61	110	1.204	0.945	0.61	0.50	0.94	332.74	1.38		1	100	1.00	3.15	1.00	334.0	0.95	Infin.	0.000	0.508		**Non-Liq.**	Non-Liq.	**0.00**
24.44	395.44	2.76	0.70	110	1.208	0.944	0.70	0.50	0.94	348.68	1.41		1	100	1.00	3.20	1.00	350.0	0.95	Infin.	0.000	0.509		**Non-Liq.**	Non-Liq.	**0.00**
24.61	439.09	2.71	0.62	110	1.212	0.943	0.62	0.50	0.93	386.66	1.34		1	100	1.00	3.25	1.00	388.1	0.95	Infin.	0.000	0.511		**Non-Liq.**	Non-Liq.	**0.00**
24.77	490.41	3.14	0.64	110	1.216	0.943	0.64	0.50	0.93	431.28	1.32		1	100	1.00	3.30	1.00	432.9	0.95	Infin.	0.000	0.512		**Non-Liq.**	Non-Liq.	**0.00**
24.93	529.94	3.64	0.69	110	1.220	0.942	0.69	0.50	0.93	465.38	1.33		1	100	1.00	3.35	1.00	467.1	0.94	Infin.	0.000	0.514		**Non-Liq.**	Non-Liq.	**0.00**
25.10	499.75	2.73	0.55	110	1.224	0.942	0.55	0.50	0.93	438.10	1.27		1	100	1.00	3.40	1.00	439.7	0.94	Infin.	0.000	0.515		**Non-Liq.**	Non-Liq.	**0.00**
25.26	478.20	2.89	0.60	110	1.228	0.941	0.61	0.50	0.93	418.49	1.31		1	100	1.00	3.45	1.00	420.1	0.94	Infin.	0.000	0.516		**Non-Liq.**	Non-Liq.	**0.00**
25.43	506.69	3.13	0.62	110	1.232	0.941	0.62	0.50	0.93	442.78	1.30		1	100	1.00	3.50	1.00	444.4	0.94	Infin.	0.000	0.518		**Non-Liq.**	Non-Liq.	**0.00**
25.59	475.10	3.98	0.84	110	1.236	0.940	0.84	0.50	0.93	414.45	1.43		1	100	1.00	3.55	1.00	416.0	0.94	Infin.	0.000	0.519		**Non-Liq.**	Non-Liq.	**0.00**
25.75	412.87	3.59	0.87	110	1.240	0.939	0.87	0.50	0.92	359.45	1.48		1	100	1.00	3.60	1.00	360.8	0.94	Infin.	0.000	0.520		**Non-Liq.**	Non-Liq.	**0.00**
25.92	387.95	2.71	0.70	110	1.243	0.939	0.70	0.50	0.92	337.15	1.42		1	100	1.00	3.65	1.00	338.4	0.94	Infin.	0.000	0.522		**Non-Liq.**	Non-Liq.	**0.00**
26.08	382.12	2.49	0.65	110	1.247	0.938	0.65	0.50	0.92	331.55	1.40		1	100	1.00	3.65	1.00	332.8	0.94	Infin.	0.000	0.523		**Non-Liq.**	Non-Liq.	**0.00**
26.25	377.33	2.13	0.56	110	1.251	0.938	0.57	0.50	0.92	326.86	1.36		1	100	1.00	3.65	1.00	328.1	0.94	Infin.	0.000	0.524		**Non-Liq.**	Non-Liq.	**0.00**
26.41	378.71	2.10	0.56	110	1.255	0.937	0.56	0.50	0.92	327.55	1.36		1	100	1.00	3.65	1.00	328.8	0.93	Infin.	0.000	0.526		**Non-Liq.**	Non-Liq.	**0.00**
26.57	368.97	2.20	0.60	110	1.259	0.936	0.60	0.50	0.92	318.60	1.39		1	100	1.00	3.65	1.00	319.8	0.93	Infin.	0.000	0.527		**Non-Liq.**	Non-Liq.	**0.00**
26.74	347.99	2.18	0.63	110	1.263	0.936	0.63	0.50	0.92	299.95	1.42		1	100	1.00	3.65	1.00	301.1	0.93	Infin.	0.000	0.528		**Non-Liq.**	Non-Liq.	**0.00**
26.90	340.27	1.97	0.58	110	1.267	0.935	0.58	0.50	0.91	292.82	1.41		1	100	1.00	3.65	1.00	293.9	0.93	Infin.	0.000	0.529		**Non-Liq.**	Non-Liq.	**0.00**
27.07	342.93	1.87	0.55	110	1.271	0.934	0.55	0.50	0.91	294.66	1.39		1	100	1.00	3.65	1.00	295.8	0.93	Infin.	0.000	0.531		**Non-Liq.**	Non-Liq.	**0.00**
27.23	348.32	2.14	0.62	110	1.275	0.934	0.62	0.50	0.91	298.85	1.42		1	100	1.00	3.65	1.00	300.0	0.93	Infin.	0.000	0.532		**Non-Liq.**	Non-Liq.	**0.00**
27.40	349.36	2.35	0.67	110	1.279	0.933	0.68	0.50	0.91	299.28	1.45		1	100	1.00	3.65	1.00	300.4	0.93	Infin.	0.000	0.533		**Non-Liq.**	Non-Liq.	**0.00**
27.56	359.08	2.55	0.71	110	1.282	0.932	0.71	0.50	0.91	307.17	1.46		1	100	1.00	3.65	1.00	308.3	0.93	Infin.	0.000	0.534		**Non-Liq.**	Non-Liq.	**0.00**
27.72	348.61	2.28	0.65	110	1.286	0.932	0.66	0.50	0.91	297.72	1.44		1	100	1.00	3.65	1.00	298.8	0.92	Infin.	0.000	0.535		**Non-Liq.**	Non-Liq.	**0.00**
27.89	328.38	2.28	0.69	110	1.290	0.931	0.70	0.50	0.91	279.95	1.47		1	100	1.00	3.65	1.00	281.0	0.92	Infin.	0.000	0.536		**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
28.05	318.21	2.37	0.75	110	1.294	0.930	0.75	0.50	0.90	270.83	1.51		1	100	1.00	3.65	1.00	271.8	0.92	Infin.	0.000	0.538	**Non-Liq.**	Non-Liq.	**0.00**
28.22	301.08	2.13	0.71	110	1.298	0.929	0.71	0.50	0.90	255.81	1.51		1	100	1.00	3.65	1.00	256.8	0.92	Infin.	0.000	0.539	**Non-Liq.**	Non-Liq.	**0.00**
28.38	284.36	2.03	0.71	110	1.302	0.929	0.72	0.50	0.90	241.17	1.53		1	100	1.00	3.65	1.00	242.1	0.92	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
28.54	233.79	1.73	0.74	110	1.306	0.928	0.74	0.50	0.90	197.79	1.60		1	100	1.00	3.65	1.00	198.5	0.92	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
28.71	198.59	1.43	0.72	110	1.310	0.927	0.72	0.50	0.90	167.50	1.65		1	98	1.00	3.65	1.00	168.5	0.92	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
28.87	159.05	1.23	0.77	110	1.314	0.926	0.78	0.53	0.89	132.88	1.75		1	89	1.07	3.65	1.00	142.6	0.92	0.349	0.320	0.543	**0.59**	85%	**1.00**
29.04	114.83	1.31	1.14	110	1.318	0.926	1.15	0.60	0.88	94.08	1.97		1	74	1.26	3.65	1.00	119.2	0.92	0.238	0.218	0.544	**0.40**	95%	**1.24**
29.20	70.90	1.32	1.86	110	1.322	0.925	1.90	0.69	0.86	56.38	2.28		1	53	1.89		1.00	106.3	0.94	0.192	0.179	0.545	**0.33**	98%	**1.41**
29.36	37.97	1.25	3.30	110	1.325	0.924	3.42	0.81	0.83	28.87	2.67		0						0.96			0.546	**Non-Liq.**	Non-Liq.	**0.00**
29.53	27.93	1.04	3.72	110	1.329	0.923	3.91	0.85	0.82	20.70	2.81		0						0.96			0.547	**Non-Liq.**	Non-Liq.	**0.00**
29.69	18.87	0.73	3.87	110	1.333	0.923	4.16	0.90	0.81	13.46	2.98		0						0.95			0.548	**Non-Liq.**	Non-Liq.	**0.00**
29.86	13.89	0.49	3.53	110	1.337	0.922	3.90	0.93	0.80	9.54	3.08		0						0.95			0.549	**Non-Liq.**	Non-Liq.	**0.00**
30.02	9.76	0.66	6.75	110	1.341	0.921	7.83	1.00	0.79	6.28	3.41		0						0.95			0.550	**Non-Liq.**	Non-Liq.	**0.00**
30.18	57.63	0.77	1.33	110	1.345	0.920	1.36	0.69	0.85	45.11	2.26		1	44	1.84		1.00	83.0	0.95	0.133	0.127	0.551	**0.23**	99%	**1.77**
30.35	117.53	0.99	0.84	110	1.349	0.919	0.85	0.57	0.87	95.56	1.88		1	75	1.17	0.45	1.26	141.6	0.91	0.344	0.312	0.551	**0.57**	87%	**1.00**
30.51	114.11	1.23	1.08	110	1.353	0.918	1.09	0.60	0.86	92.04	1.96		1	73	1.25	0.50	1.26	146.0	0.91	0.369	0.335	0.552	**0.61**	84%	**0.87**
30.68	61.97	1.48	2.39	110	1.357	0.918	2.44	0.73	0.83	47.78	2.41		1	46	2.34		1.00	111.8	0.95	0.210	0.200	0.553	**0.36**	97%	**1.34**
30.84	26.16	1.22	4.64	110	1.361	0.917	4.90	0.88	0.80	18.78	2.91		0						0.95			0.554	**Non-Liq.**	Non-Liq.	**0.00**
31.00	14.26	0.26	1.81	110	1.364	0.916	2.00	0.88	0.80	9.74	2.91		0						0.95			0.555	**Non-Liq.**	Non-Liq.	**0.00**
31.17	13.19	0.23	1.73	110	1.368	0.915	1.93	0.89	0.80	8.89	2.94		0						0.95			0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.33	12.49	0.36	2.88	110	1.372	0.914	3.24	0.93	0.78	8.24	3.08		0						0.95			0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.50	17.25	0.69	3.98	110	1.376	0.913	4.33	0.92	0.79	11.79	3.03		0						0.95			0.557	**Non-Liq.**	Non-Liq.	**0.00**
31.66	38.57	0.92	2.37	110	1.380	0.912	2.46	0.78	0.81	28.56	2.58		1	25	3.20		1.00	91.5	0.95	0.151	0.143	0.558	**0.26**	99%	**1.63**
31.82	35.69	1.30	3.63	110	1.384	0.911	3.78	0.83	0.80	25.97	2.73		0						0.95			0.559	**Non-Liq.**	Non-Liq.	**0.00**
31.99	58.47	1.43	2.44	110	1.388	0.910	2.50	0.74	0.82	44.14	2.44		1	43	2.48		1.00	109.5	0.95	0.202	0.191	0.559	**0.34**	97%	**1.37**
32.15	153.79	1.76	1.14	110	1.392	0.909	1.15	0.57	0.85	123.10	1.88		1	85	1.17	1.00	1.00	145.0	0.90	0.363	0.326	0.560	**0.58**	86%	**1.00**
32.32	250.44	2.28	0.91	110	1.396	0.908	0.91	0.50	0.87	204.70	1.65		1	100	1.01	1.05	1.00	206.8	0.90	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.48	286.97	2.91	1.02	110	1.400	0.907	1.02	0.50	0.87	234.50	1.65		1	100	1.00	1.10	1.00	236.0	0.89	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.64	309.86	3.53	1.14	110	1.403	0.906	1.14	0.51	0.87	252.58	1.67		1	100	1.01	1.15	1.00	257.2	0.89	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
32.81	322.36	3.86	1.20	110	1.407	0.905	1.20	0.51	0.86	262.31	1.67		1	100	1.02	1.20	1.00	268.2	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
32.97	328.44	4.15	1.26	110	1.411	0.904	1.27	0.51	0.86	266.57	1.69		1	100	1.03	1.20	1.00	275.1	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
33.14	330.70	3.81	1.15	110	1.415	0.903	1.16	0.50	0.86	268.83	1.65		1	100	1.00	1.20	1.00	271.1	0.89	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
33.30	324.34	3.31	1.02	110	1.419	0.902	1.02	0.50	0.86	263.54	1.62		1	100	1.00	1.20	1.00	264.5	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.46	306.20	3.39	1.11	110	1.423	0.901	1.11	0.51	0.86	247.92	1.66		1	100	1.01	1.20	1.00	251.7	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.63	287.68	3.87	1.35	110	1.427	0.900	1.35	0.53	0.85	230.75	1.75		1	100	1.07	1.20	1.00	247.7	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.79	277.70	4.63	1.67	110	1.431	0.899	1.68	0.56	0.85	220.68	1.83		1	100	1.13	1.20	1.00	250.3	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.96	267.02	5.00	1.87	110	1.435	0.898	1.88	0.57	0.84	210.82	1.88		1	100	1.17	1.20	1.00	248.3	0.89	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.12	262.99	4.90	1.86	110	1.439	0.897	1.87	0.57	0.84	207.23	1.89		1	100	1.18	1.20	1.00	244.7	0.88	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.28	254.98	4.12	1.61	110	1.443	0.896	1.62	0.56	0.84	201.34	1.85		1	100	1.14	1.20	1.00	230.7	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.45	255.22	3.88	1.52	110	1.446	0.895	1.53	0.56	0.84	201.61	1.82		1	100	1.13	1.20	1.00	227.7	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.61	235.40	3.66	1.56	110	1.450	0.894	1.56	0.57	0.84	185.03	1.86		1	100	1.15	1.20	1.00	213.7	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.78	213.23	3.63	1.70	110	1.454	0.893	1.72	0.58	0.83	166.27	1.92		1	98	1.21	1.20	1.00	201.2	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.94	232.64	3.28	1.41	110	1.458	0.892	1.42	0.56	0.84	182.78	1.83		1	100	1.13	1.20	1.00	206.9	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.10	266.61	3.08	1.15	110	1.462	0.890	1.16	0.52	0.84	211.53	1.72		1	100	1.05	1.20	1.00	223.3	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.27	275.08	2.85	1.04	110	1.466	0.889	1.04	0.51	0.85	218.93	1.68		1	100	1.02	1.20	1.00	224.4	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.43	276.58	3.07	1.11	110	1.470	0.888	1.12	0.52	0.84	219.36	1.70		1	100	1.04	1.20	1.00	228.1	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.60	260.34	3.57	1.37	110	1.474	0.887	1.38	0.54	0.83	204.30	1.79		1	100	1.10	1.20	1.00	225.0	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.76	280.13	5.74	2.05	110	1.478	0.886	2.06	0.58	0.82	216.97	1.91		1	100	1.20	1.20	1.00	260.4	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
35.93	323.56	6.58	2.03	110	1.482	0.885	2.04	0.57	0.83	251.42	1.87		1	100	1.16	1.20	1.00	292.6	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.09	191.60	6.05	3.16	110	1.485	0.883	3.18	0.66	0.80	143.75	2.17		1	92	1.59		1.00	228.1	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.25	264.99	3.90	1.47	110	1.489	0.882	1.48	0.55	0.83	206.32	1.81		1	100	1.11	1.00	1.00	230.4	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.42	319.83	3.03	0.95	110	1.493	0.881	0.95	0.50	0.84	253.26	1.60		1	100	1.00	1.05	1.00	254.2	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.58	332.93	3.09	0.93	110	1.497	0.880	0.93	0.50	0.84	263.34	1.59		1	100	1.00	1.10	1.00	264.3	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.75	372.73	3.69	0.99	110	1.501	0.878	0.99	0.50	0.84	294.57	1.58		1	100	1.00	1.15	1.00	295.7	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.91	404.69	4.23	1.05	110	1.505	0.877	1.05	0.50	0.84	319.52	1.57		1	100	1.00	1.20	1.00	320.7	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.07	405.53	3.77	0.93	110	1.509	0.876	0.93	0.50	0.84	319.76	1.53		1	100	1.00	1.25	1.00	321.0	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.24	398.38	4.78	1.20	110	1.513	0.875	1.20	0.50	0.84	313.70	1.62		1	100	1.00	1.30	1.00	314.9	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.40	378.24	5.25	1.39	110	1.517	0.873	1.39	0.52	0.83	295.75	1.69		1	100	1.03	1.35	1.00	306.3	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.57	281.40	4.91	1.75	110	1.521	0.872	1.75	0.56	0.81	215.59	1.85		1	100	1.15	1.40	1.00	248.4	0.86	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.73	240.64	3.31	1.37	110	1.525	0.871	1.38	0.55	0.82	184.66	1.82		1	100	1.12	1.45	1.00	207.4	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
37.89	240.96	2.46	1.02	110	1.528	0.869	1.03	0.52	0.82	186.65	1.72		1	100	1.05	1.50	1.00	196.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.06	258.07	2.27	0.88	110	1.532	0.868	0.88	0.50	0.83	201.28	1.65		1	100	1.00	1.55	1.00	202.6	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.22	239.78	2.30	0.96	110	1.536	0.867	0.97	0.52	0.82	185.59	1.70		1	100	1.04	1.60	1.00	193.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.39	218.69	1.98	0.90	110	1.540	0.865	0.91	0.52	0.82	168.72	1.71		1	99	1.05	1.65	1.00	177.3	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.55	264.47	1.94	0.73	110	1.544	0.864	0.74	0.50	0.83	205.71	1.59		1	100	1.00	1.70	1.00	206.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.71	297.09	1.85	0.62	110	1.548	0.863	0.63	0.50	0.83	230.94	1.50		1	100	1.00	1.75	1.00	231.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.88	312.92	1.80	0.57	110	1.552	0.861	0.58	0.50	0.83	243.00	1.46		1	100	1.00	1.80	1.00	243.9	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.04	327.85	2.06	0.63	110	1.556	0.860	0.63	0.50	0.82	254.33	1.47		1	100	1.00	1.85	1.00	255.3	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.21	337.25	2.27	0.67	110	1.560	0.859	0.67	0.50	0.82	261.32	1.49		1	100	1.00	1.90	1.00	262.3	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.37	350.08	2.32	0.66	110	1.564	0.857	0.67	0.50	0.82	270.97	1.47		1	100	1.00	1.95	1.00	272.0	0.86	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.53	354.11	2.14	0.60	110	1.567	0.856	0.61	0.50	0.82	273.76	1.44		1	100	1.00	2.00	1.00	274.8	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.70	359.55	2.27	0.63	110	1.571	0.854	0.63	0.50	0.82	277.64	1.45		1	100	1.00	2.05	1.00	278.7	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.86	355.78	2.53	0.71	110	1.575	0.853	0.72	0.50	0.82	274.37	1.49		1	100	1.00	2.10	1.00	275.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.03	334.77	2.75	0.82	110	1.579	0.852	0.83	0.50	0.82	257.77	1.55		1	100	1.00	2.15	1.00	258.7	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.19	342.17	2.95	0.86	110	1.583	0.850	0.86	0.50	0.82	263.17	1.56		1	100	1.00	2.20	1.00	264.2	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.35	344.05	2.87	0.83	110	1.587	0.849	0.84	0.50	0.82	264.29	1.55		1	100	1.00	2.25	1.00	265.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.52	335.17	2.88	0.86	110	1.591	0.847	0.86	0.50	0.82	257.12	1.57		1	100	1.00	2.30	1.00	258.1	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.68	320.89	2.72	0.85	110	1.595	0.846	0.85	0.50	0.81	245.81	1.58		1	100	1.00	2.35	1.00	246.7	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.85	339.05	1.89	0.56	110	1.599	0.844	0.56	0.50	0.81	259.47	1.43		1	100	1.00	2.40	1.00	260.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.01	382.25	2.92	0.76	110	1.603	0.843	0.77	0.50	0.81	292.33	1.49		1	100	1.00	2.45	1.00	293.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.17	403.21	3.03	0.75	110	1.607	0.841	0.76	0.50	0.81	308.04	1.47		1	100	1.00	2.50	1.00	309.2	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.34	379.57	3.67	0.97	110	1.610	0.840	0.97	0.50	0.81	289.56	1.57		1	100	1.00	2.55	1.00	290.6	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.50	396.71	3.17	0.80	110	1.614	0.838	0.80	0.50	0.81	302.32	1.50		1	100	1.00	2.60	1.00	303.4	0.84	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.67	391.23	3.14	0.80	110	1.618	0.837	0.81	0.50	0.81	297.76	1.50		1	100	1.00	2.65	1.00	298.9	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.83	390.72	3.06	0.78	110	1.622	0.835	0.79	0.50	0.81	297.01	1.50		1	100	1.00	2.70	1.00	298.1	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.99	382.61	2.95	0.77	110	1.626	0.834	0.78	0.50	0.81	290.47	1.50		1	100	1.00	2.75	1.00	291.6	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.16	380.43	2.84	0.75	110	1.630	0.832	0.75	0.50	0.81	288.46	1.49		1	100	1.00	2.80	1.00	289.5	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.32	381.27	2.80	0.73	110	1.634	0.831	0.74	0.50	0.80	288.75	1.48		1	100	1.00	2.85	1.00	289.8	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.49	383.78	2.53	0.66	110	1.638	0.829	0.66	0.50	0.80	290.31	1.45		1	100	1.00	2.90	1.00	291.4	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.65	395.93	2.51	0.63	110	1.642	0.827	0.64	0.50	0.80	299.18	1.43		1	100	1.00	2.95	1.00	300.3	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.81	401.54	2.69	0.67	110	1.646	0.826	0.67	0.50	0.80	303.07	1.44		1	100	1.00	3.00	1.00	304.2	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.98	408.28	2.41	0.59	110	1.649	0.824	0.59	0.50	0.80	307.81	1.40		1	100	1.00	3.05	1.00	309.0	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	410.18	2.68	0.65	110	1.653	0.823	0.66	0.50	0.80	308.88	1.43		1	100	1.00	3.10	1.00	310.0	0.84	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
43.31	413.71	2.73	0.66	110	1.657	0.821	0.66	0.50	0.80	311.18	1.43		1	100	1.00	3.15	1.00	312.3	0.84	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
43.47	420.65	2.58	0.61	110	1.661	0.820	0.62	0.50	0.80	316.05	1.40		1	100	1.00	3.20	1.00	317.2	0.83	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
43.64	425.34	3.15	0.74	110	1.665	0.818	0.74	0.50	0.80	319.21	1.46		1	100	1.00	3.25	1.00	320.4	0.83	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
43.80	433.25	2.87	0.66	110	1.669	0.816	0.67	0.50	0.80	324.78	1.42		1	100	1.00	3.30	1.00	326.0	0.83	Infin.	0.000	0.571	Non-Liq.	Non-Liq.	0.00
43.96	445.49	2.84	0.64	110	1.673	0.815	0.64	0.50	0.80	333.60	1.40		1	100	1.00	3.35	1.00	334.8	0.83	Infin.	0.000	0.571	Non-Liq.	Non-Liq.	0.00
44.13	458.14	2.05	0.45	110	1.677	0.813	0.45	0.50	0.79	342.71	1.28		1	100	1.00	3.40	1.00	344.0	0.83	Infin.	0.000	0.571	Non-Liq.	Non-Liq.	0.00
44.29	407.19	2.23	0.55	110	1.681	0.811	0.55	0.50	0.79	304.10	1.38		1	100	1.00	3.45	1.00	305.2	0.83	Infin.	0.000	0.570	Non-Liq.	Non-Liq.	0.00
44.46	318.78	4.85	1.52	110	1.685	0.810	1.53	0.54	0.78	232.72	1.79		1	100	1.10	3.50	1.00	256.2	0.83	Infin.	0.000	0.570	Non-Liq.	Non-Liq.	0.00
44.62	311.01	4.70	1.51	110	1.689	0.808	1.52	0.55	0.77	226.57	1.79		1	100	1.10	3.55	1.00	250.2	0.83	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
44.78	390.54	5.84	1.50	110	1.692	0.807	1.50	0.53	0.78	287.14	1.72		1	100	1.05	3.60	1.00	303.9	0.83	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
44.95	419.57	5.18	1.23	110	1.696	0.805	1.24	0.50	0.79	311.92	1.64		1	100	1.00	3.65	1.00	313.1	0.83	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
45.11	377.69	3.17	0.84	110	1.700	0.803	0.84	0.50	0.79	280.34	1.54		1	100	1.00	3.70	1.00	281.4	0.83	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
45.28	407.75	4.13	1.01	110	1.704	0.802	1.02	0.50	0.79	302.40	1.58		1	100	1.00	3.75	1.00	303.5	0.83	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
45.44	392.74	3.86	0.98	110	1.708	0.800	0.99	0.50	0.79	290.89	1.58		1	100	1.00	3.80	1.00	292.0	0.83	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
45.60	382.50	3.90	1.02	110	1.712	0.798	1.02	0.50	0.79	282.94	1.60		1	100	1.00	3.85	1.00	284.0	0.82	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
45.77	373.19	3.69	0.99	110	1.716	0.797	0.99	0.50	0.79	275.71	1.59		1	100	1.00	3.90	1.00	276.7	0.82	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
45.93	367.93	3.54	0.96	110	1.720	0.795	0.97	0.50	0.78	271.49	1.59		1	100	1.00	3.90	1.00	272.5	0.82	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
46.10	369.72	3.36	0.91	110	1.724	0.793	0.91	0.50	0.78	272.51	1.57		1	100	1.00	3.90	1.00	273.5	0.82	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
46.26	381.32	3.27	0.86	110	1.728	0.792	0.86	0.50	0.78	280.78	1.54		1	100	1.00	3.90	1.00	281.8	0.82	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
46.42	386.91	3.19	0.82	110	1.731	0.790	0.83	0.50	0.78	284.59	1.53		1	100	1.00	3.90	1.00	285.7	0.82	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
46.59	380.97	3.15	0.83	110	1.735	0.788	0.83	0.50	0.78	279.88	1.53		1	100	1.00	3.90	1.00	280.9	0.82	Infin.	0.000	0.564	Non-Liq.	Non-Liq.	0.00
46.75	341.92	3.27	0.96	110	1.739	0.787	0.96	0.50	0.78	250.78	1.61		1	100	1.00	3.90	1.00	251.7	0.82	Infin.	0.000	0.564	Non-Liq.	Non-Liq.	0.00
46.92	315.47	3.20	1.01	110	1.743	0.785	1.02	0.50	0.78	230.52	1.65		1	100	1.01	3.90	1.00	232.8	0.82	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
47.08	363.49	3.46	0.95	110	1.747	0.783	0.96	0.50	0.78	266.07	1.59		1	100	1.00	3.90	1.00	267.1	0.82	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
47.24	379.91	4.34	1.14	110	1.751	0.782	1.15	0.50	0.78	277.81	1.64		1	100	1.00	3.90	1.00	277.9	0.82	Infin.	0.000	0.562	Non-Liq.	Non-Liq.	0.00
47.41	382.41	5.30	1.38	110	1.755	0.780	1.39	0.52	0.77	276.50	1.71		1	100	1.04	3.90	1.00	289.5	0.82	Infin.	0.000	0.562	Non-Liq.	Non-Liq.	0.00
47.57	369.25	5.87	1.59	110	1.759	0.778	1.60	0.54	0.76	264.21	1.77		1	100	1.08	3.90	1.00	287.4	0.82	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
47.74	359.68	5.73	1.59	110	1.763	0.777	1.60	0.54	0.76	256.70	1.78		1	100	1.09	3.90	1.00	280.7	0.82	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
47.90	383.68	4.97	1.29	110	1.767	0.775	1.30	0.51	0.77	277.49	1.68		1	100	1.03	3.90	1.00	285.9	0.81	Infin.	0.000	0.560	Non-Liq.	Non-Liq.	0.00
48.06	403.15	4.67	1.16	110	1.770	0.773	1.16	0.50	0.77	293.27	1.63		1	100	1.00	3.90	1.00	294.4	0.81	Infin.	0.000	0.560	Non-Liq.	Non-Liq.	0.00
48.23	405.14	3.95	0.97	110	1.774	0.772	0.98	0.50	0.77	294.40	1.57		1	100	1.00	3.90	1.00	295.5	0.81	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
48.39	369.68	3.01	0.81	110	1.778	0.770	0.82	0.50	0.77	268.22	1.54		1	100	1.00	3.90	1.00	269.2	0.81	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
48.56	336.91	2.26	0.67	110	1.782	0.768	0.67	0.50	0.77	244.06	1.51		1	100	1.00	3.90	1.00	245.0	0.81	Infin.	0.000	0.558	Non-Liq.	Non-Liq.	0.00
48.72	299.19	1.63	0.55	110	1.786	0.767	0.55	0.50	0.77	216.35	1.49		1	100	1.00	3.90	1.00	217.2	0.81	Infin.	0.000	0.558	Non-Liq.	Non-Liq.	0.00
48.88	236.26	1.38	0.58	110	1.790	0.765	0.59	0.50	0.77	170.38	1.58		1	99	1.00	3.90	1.00	171.0	0.81	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
49.05	139.68	1.94	1.39	110	1.794	0.763	1.41	0.62	0.72	94.13	2.03		1	74	1.34		1.00	125.9	0.81	0.265	0.215	0.556	**0.39**	96%	**1.16**
49.21	65.30	2.32	3.55	110	1.798	0.762	3.65	0.78	0.66	39.62	2.58		1	38	3.23		1.00	128.1	0.90	0.276	0.248	0.556	**0.45**	93%	**1.14**
49.38	49.82	2.01	4.03	110	1.802	0.760	4.18	0.82	0.64	29.26	2.72		0						0.90			0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.54	44.18	1.88	4.26	110	1.806	0.758	4.44	0.84	0.64	25.53	2.78		0						0.90			0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.70	52.54	2.11	4.01	110	1.810	0.757	4.15	0.82	0.64	30.90	2.70		0						0.90			0.554	**Non-Liq.**	Non-Liq.	**0.00**
49.87	96.95	2.31	2.38	110	1.813	0.755	2.42	0.71	0.68	61.49	2.32		1	57	2.03		1.00	124.7	0.85	0.260	0.222	0.553	**0.40**	95%	**1.18**
50.03	125.29	2.02	1.61	110	1.817	0.753	1.64	0.64	0.71	82.44	2.11		1	69	1.48		1.00	122.2	0.85	0.250	0.212	0.553	**0.38**	96%	**1.21**
50.20	125.58	2.07	1.65	110	1.821	0.752	1.67	0.64	0.70	82.44	2.12		1	69	1.49		1.00	123.1	0.85	0.253	0.215	0.552	**0.39**	96%	**1.19**
50.36	128.65	2.24	1.74	110	1.825	0.750	1.77	0.65	0.70	84.23	2.13		1	70	1.51		1.00	127.4	0.85	0.272	0.231	0.552	**0.42**	95%	**1.14**
50.52	128.05	2.41	1.88	110	1.829	0.748	1.91	0.66	0.70	83.35	2.16		1	69	1.57		1.00	130.7	0.85	0.288	0.244	0.551	**0.44**	94%	**1.11**
50.69	127.87	2.55	1.99	110	1.833	0.747	2.02	0.66	0.70	82.85	2.18		1	69	1.61		1.00	133.4	0.85	0.301	0.255	0.550	**0.46**	93%	**1.08**
50.85	127.22	2.50	1.97	110	1.837	0.745	2.00	0.66	0.69	82.33	2.17		1	69	1.61		1.00	132.2	0.85	0.295	0.250	0.550	**0.45**	93%	**1.09**
51.02	120.78	2.43	2.02	110	1.841	0.743	2.05	0.67	0.69	77.65	2.20		1	66	1.67		1.00	129.4	0.85	0.282	0.239	0.549	**0.43**	94%	**1.12**
51.18	116.72	2.42	2.07	110	1.845	0.742	2.11	0.67	0.69	74.63	2.22		1	65	1.72		1.00	128.3	0.85	0.277	0.234	0.549	**0.43**	94%	**1.13**
51.35	117.01	2.42	2.07	110	1.849	0.740	2.10	0.67	0.69	74.72	2.22		1	65	1.72		1.00	128.4	0.85	0.277	0.234	0.548	**0.43**	94%	**1.13**
51.51	117.05	2.54	2.17	110	1.852	0.738	2.20	0.68	0.68	74.45	2.24		1	65	1.76		1.00	130.9	0.85	0.289	0.244	0.547	**0.45**	94%	**1.10**
51.67	118.36	2.51	2.12	110	1.856	0.737	2.15	0.68	0.68	75.32	2.22		1	65	1.73		1.00	130.3	0.84	0.286	0.241	0.547	**0.44**	94%	**1.11**
51.84	121.19	2.58	2.13	110	1.860	0.735	2.16	0.67	0.68	77.11	2.22		1	66	1.71		1.00	132.2	0.84	0.295	0.249	0.546	**0.46**	93%	**1.09**
52.00	128.21	2.29	1.78	110	1.864	0.733	1.81	0.65	0.69	82.58	2.14		1	69	1.54		1.00	127.2	0.84	0.271	0.229	0.545	**0.42**	95%	**1.15**
52.17	129.58	2.67	2.06	110	1.868	0.732	2.09	0.66	0.69	82.75	2.19		1	69	1.64		1.00	135.4	0.84	0.311	0.262	0.545	**0.48**	92%	**1.06**
52.33	98.86	2.96	2.99	110	1.872	0.730	3.05	0.73	0.66	60.52	2.40		1	56	2.31		1.00	139.7	0.84	0.333	0.281	0.544	**0.52**	90%	**1.01**
52.49	61.64	2.40	3.89	110	1.876	0.728	4.02	0.80	0.63	35.69	2.65		0						0.89			0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.66	47.03	1.60	3.41	110	1.880	0.727	3.55	0.82	0.62	26.65	2.70		0						0.89			0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.82	25.94	1.33	5.12	110	1.884	0.725	5.52	0.93	0.59	13.33	3.06		0						0.89			0.542	**Non-Liq.**	Non-Liq.	**0.00**
52.99	23.82	1.09	4.58	110	1.888	0.724	4.98	0.93	0.58	12.13	3.06		0						0.89			0.542	**Non-Liq.**	Non-Liq.	**0.00**
53.15	25.73	0.89	3.46	110	1.892	0.722	3.74	0.89	0.60	13.41	2.95		0						0.89			0.541	**Non-Liq.**	Non-Liq.	**0.00**
53.31	17.66	0.88	4.99	110	1.895	0.720	5.59	0.97	0.57	8.45	3.22		0						0.89			0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.48	15.40	0.79	5.10	110	1.899	0.719	5.81	0.99	0.56	7.14	3.28		0						0.89			0.540	**Non-Liq.**	Non-Liq.	**0.00**
53.64	16.91	0.99	5.82	110	1.903	0.717	6.56	0.99	0.56	7.92	3.28		0						0.89			0.539	**Non-Liq.**	Non-Liq.	**0.00**
53.81	21.62	1.39	6.41	110	1.907	0.716	7.03	0.97	0.56	10.53	3.20		0						0.89			0.538	**Non-Liq.**	Non-Liq.	**0.00**
53.97	61.80	1.89	3.06	110	1.911	0.714	3.16	0.78	0.63	35.67	2.58		1	34	3.18		1.00	113.6	0.89	0.216	0.192	0.538	**0.36**	97%	**1.31**
54.13	169.40	2.67	1.58	110	1.915	0.712	1.60	0.61	0.70	110.04	2.02		1	81	1.32		1.00	145.4	0.79	0.366	0.289	0.537	**0.54**	89%	**0.88**
54.30	205.29	3.08	1.50	110	1.919	0.711	1.51	0.59	0.70	135.35	1.94		1	89	1.23	0.25	1.46	242.4	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.46	216.51	3.54	1.63	110	1.923	0.709	1.65	0.59	0.70	142.34	1.95		1	91	1.24	0.25	1.46	257.6	0.79	Infin.	0.000	0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.63	226.53	3.84	1.70	110	1.927	0.708	1.71	0.59	0.70	148.83	1.95		1	93	1.24	0.25	1.46	269.2	0.79	Infin.	0.000	0.535	**Non-Liq.**	Non-Liq.	**0.00**
54.79	253.78	4.49	1.77	110	1.931	0.706	1.78	0.59	0.70	167.28	1.93		1	98	1.22	0.25	1.46	297.4	0.79	Infin.	0.000	0.534	**Non-Liq.**	Non-Liq.	**0.00**
54.95	261.07	5.47	2.09	110	1.934	0.705	2.11	0.60	0.70	170.33	1.98		1	99	1.27	0.25	1.46	317.1	0.79	Infin.	0.000	0.534	**Non-Liq.**	Non-Liq.	**0.00**
55.12	254.36	6.20	2.44	110	1.938	0.703	2.46	0.62	0.69	163.85	2.04		1	97	1.36		1.00	222.6	0.78	Infin.	0.000	0.533	**Non-Liq.**	Non-Liq.	**0.00**
55.28	242.98	6.44	2.65	110	1.942	0.701	2.67	0.63	0.68	155.04	2.09		1	95	1.43		1.00	221.5	0.78	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.45	210.76	5.98	2.84	110	1.946	0.700	2.86	0.65	0.67	132.53	2.15		1	89	1.56		1.00	206.2	0.78	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.61	179.72	5.45	3.03	110	1.950	0.698	3.06	0.67	0.66	111.22	2.22		1	81	1.72		1.00	191.6	0.78	Infin.	0.000	0.531	**Non-Liq.**	Non-Liq.	**0.00**
55.77	154.42	4.96	3.21	110	1.954	0.697	3.26	0.69	0.65	94.09	2.29		1	74	1.92		1.00	180.2	0.78	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
55.94	130.91	4.35	3.32	110	1.958	0.695	3.37	0.71	0.64	78.55	2.35		1	67	2.13		1.00	167.3	0.83	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
56.10	111.46	3.85	3.45	110	1.962	0.694	3.52	0.73	0.64	65.80	2.42		1	59	2.39		1.00	157.1	0.83	0.441	0.366	0.529	**0.69**	77%	**0.60**
56.27	89.53	3.08	3.44	110	1.966	0.692	3.52	0.76	0.63	51.85	2.49		1	50	2.72		1.00	140.9	0.88	0.340	0.301	0.528	**0.57**	87%	**1.00**
56.43	70.63	2.41	3.41	110	1.970	0.691	3.51	0.78	0.62	39.99	2.57		1	39	3.15		1.00	125.9	0.88	0.266	0.235	0.528	**0.44**	94%	**1.16**
56.59	55.06	1.89	3.43	110	1.974	0.689	3.55	0.81	0.60	30.35	2.66		0						0.88			0.527	**Non-Liq.**	Non-Liq.	**0.00**
56.76	39.94	1.59	3.99	110	1.977	0.688	4.19	0.86	0.59	20.99	2.83		0						0.88			0.526	**Non-Liq.**	Non-Liq.	**0.00**
56.92	26.94	1.16	4.32	110	1.981	0.686	4.66	0.91	0.56	13.32	3.01		0						0.88			0.526	**Non-Liq.**	Non-Liq.	**0.00**
57.09	24.31	0.74	3.02	110	1.985	0.685	3.29	0.89	0.57	12.02	2.95		0						0.88			0.525	**Non-Liq.**	Non-Liq.	**0.00**
57.25	17.67	0.69	3.89	110	1.989	0.683	4.39	0.96	0.55	8.09	3.17		0						0.88			0.524	**Non-Liq.**	Non-Liq.	**0.00**
57.41	17.34	0.73	4.18	110	1.993	0.682	4.72	0.97	0.54	7.86	3.20		0						0.88			0.524	**Non-Liq.**	Non-Liq.	**0.00**
57.58	19.61	0.61	3.11	110	1.997	0.680	3.46	0.93	0.56	9.24	3.06		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.74	24.98	0.61	2.45	110	2.001	0.679	2.67	0.88	0.57	12.44	2.89		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.91	19.44	0.61	3.14	110	2.005	0.678	3.50	0.93	0.55	9.10	3.07		0						0.88			0.522	**Non-Liq.**	Non-Liq.	**0.00**
58.07	18.43	0.58	3.12	110	2.009	0.676	3.50	0.94	0.55	8.52	3.09		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
58.23	17.22	0.56	3.23	110	2.013	0.675	3.66	0.95	0.54	7.81	3.13		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**
58.40	17.30	0.55	3.17	110	2.016	0.673	3.59	0.95	0.54	7.85	3.13		0						0.88			0.520	**Non-Liq.**	Non-Liq.	**0.00**
58.56	18.04	0.54	2.97	110	2.020	0.672	3.35	0.94	0.55	8.27	3.09		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.73	16.07	0.52	3.22	110	2.024	0.671	3.69	0.96	0.54	7.13	3.17		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.89	15.75	0.49	3.08	110	2.028	0.669	3.53	0.96	0.54	6.95	3.17		0						0.88			0.518	**Non-Liq.**	Non-Liq.	**0.00**
59.06	15.86	0.51	3.23	110	2.032	0.668	3.71	0.96	0.53	6.98	3.18		0						0.88			0.517	**Non-Liq.**	Non-Liq.	**0.00**
59.22	17.14	0.64	3.71	110	2.036	0.666	4.21	0.96	0.53	7.61	3.18		0						0.88			0.517	**Non-Liq.**	Non-Liq.	**0.00**
59.38	19.02	1.05	5.54	110	2.040	0.665	6.21	0.98	0.53	8.43	3.24		0						0.88			0.516	**Non-Liq.**	Non-Liq.	**0.00**
59.55	50.85	1.55	3.04	110	2.044	0.664	3.17	0.81	0.59	27.10	2.67		0						0.88			0.516	**Non-Liq.**	Non-Liq.	**0.00**
59.71	71.44	1.83	2.56	110	2.048	0.662	2.64	0.75	0.61	39.86	2.49		1	39	2.71		1.00	107.9	0.88	0.197	0.172	0.515	**0.33**	97%	**1.38**
59.88	152.33	2.73	1.79	110	2.052	0.661	1.81	0.64	0.65	92.95	2.11		1	74	1.47		1.00	136.5	0.77	0.316	0.243	0.514	**0.47**	92%	**1.04**
60.04	157.44	0.00	0.00	110	2.055	0.660	0.00	0.75	0.61	88.95	2.49		1	72	1.00		1.00	89.0	0.77	0.145	0.112	0.514	**0.22**	99%	**1.66**
60.20	137.47	0.00	0.00	110	2.059	0.658	0.00	0.75	0.61	77.55	2.48		1	66	1.00		1.00	77.6	0.82	0.123	0.101	0.513	**0.20**	100%	**1.86**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-4
Plot: 4

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
3.8

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.24
Avg SF of Liquefiable Layers: 0.05

Probab	Total Induced Subsidence (inches)
Avg	3%
Max	99%
	0.5

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	92.62	1.11	1.20	110	0.009	1.000	1.20	0.56	1.70	148.81	1.84		1	93	1.13	0.25	1.00	168.8	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.33	130.04	2.02	1.55	110	0.018	1.000	1.55	0.55	1.70	208.92	1.82		1	100	1.12	0.25	1.00	234.3	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.49	152.39	3.01	1.98	110	0.027	1.000	1.98	0.57	1.70	244.82	1.86		1	100	1.16	0.25	1.00	282.8	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.66	146.45	3.22	2.20	110	0.036	1.000	2.20	0.58	1.70	235.26	1.91		1	100	1.20	0.25	1.00	282.0	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.82	125.63	2.97	2.36	110	0.045	1.000	2.36	0.60	1.70	201.79	1.97		1	100	1.27	0.25	1.00	255.7	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
0.98	97.23	2.48	2.55	110	0.054	1.000	2.55	0.63	1.70	156.14	2.07		1	95	1.40		1.00	218.4	1.00	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
1.15	63.94	1.59	2.49	110	0.063	0.999	2.50	0.66	1.70	102.64	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.484	Non-Liq.	Non-Liq.	0.00
1.31	63.94	1.59	2.49	110	0.072	0.999	2.50	0.66	1.70	102.62	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.484	Non-Liq.	Non-Liq.	0.00
1.48	41.59	1.09	2.61	110	0.081	0.999	2.62	0.70	1.70	66.70	2.32		1	60	2.02		1.00	134.8	1.00	0.308	0.308	0.484	Non-Liq.	Non-Liq.	0.00
1.64	28.11	0.74	2.64	110	0.090	0.998	2.64	0.74	1.70	45.02	2.45		1	44	2.52		1.00	113.6	1.00	0.216	0.216	0.484	Non-Liq.	Non-Liq.	0.00
1.80	20.76	0.53	2.55	110	0.099	0.998	2.57	0.77	1.70	33.20	2.54		1	31	2.98		1.00	98.9	1.00	0.170	0.170	0.484	Non-Liq.	Non-Liq.	0.00
1.97	21.63	0.56	2.58	110	0.108	0.998	2.60	0.77	1.70	34.58	2.53		1	33	2.92		1.00	101.1	1.00	0.176	0.176	0.484	Non-Liq.	Non-Liq.	0.00
2.13	34.59	0.78	2.25	110	0.117	0.997	2.26	0.71	1.70	55.39	2.34		1	52	2.07		1.00	114.6	1.00	0.220	0.220	0.483	Non-Liq.	Non-Liq.	0.00
2.30	34.08	0.89	2.61	110	0.126	0.997	2.62	0.72	1.70	54.56	2.39		1	52	2.25		1.00	123.0	1.00	0.253	0.253	0.483	Non-Liq.	Non-Liq.	0.00
2.46	31.06	0.81	2.60	110	0.135	0.996	2.61	0.73	1.70	49.69	2.41		1	48	2.37		1.00	117.7	1.00	0.231	0.231	0.483	Non-Liq.	Non-Liq.	0.00
2.62	26.71	0.71	2.65	110	0.144	0.996	2.67	0.75	1.70	42.69	2.47		1	42	2.62		1.00	111.6	1.00	0.209	0.209	0.483	Non-Liq.	Non-Liq.	0.00
2.79	24.66	0.64	2.61	110	0.153	0.996	2.62	0.76	1.70	39.38	2.49		1	38	2.72		1.00	107.1	1.00	0.194	0.194	0.483	Non-Liq.	Non-Liq.	0.00
2.95	22.66	0.59	2.60	110	0.162	0.995	2.62	0.76	1.70	36.15	2.52		1	35	2.86		1.00	103.4	1.00	0.183	0.183	0.482	Non-Liq.	Non-Liq.	0.00
3.12	21.79	0.57	2.60	110	0.171	0.995	2.62	0.77	1.70	34.74	2.53		1	33	2.93		1.00	101.7	1.00	0.178	0.178	0.482	Non-Liq.	Non-Liq.	0.00
3.28	20.52	0.55	2.69	110	0.180	0.994	2.72	0.78	1.70	32.68	2.56		1	30	3.10		1.00	101.3	1.00	0.177	0.177	0.482	Non-Liq.	Non-Liq.	0.00
3.44	18.85	0.54	2.86	110	0.189	0.994	2.89	0.79	1.70	29.98	2.61		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	16.96	0.52	3.05	110	0.198	0.994	3.09	0.81	1.70	26.93	2.66		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.77	15.22	0.50	3.30	110	0.208	0.993	3.34	0.82	1.70	24.12	2.72		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.94	13.60	0.54	3.97	110	0.217	0.993	4.03	0.85	1.70	21.50	2.81		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.10	13.10	0.56	4.31	110	0.226	0.993	4.38	0.86	1.70	20.69	2.85		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.27	13.76	0.61	4.45	110	0.235	0.992	4.52	0.86	1.70	21.73	2.84		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.43	12.78	0.63	4.94	110	0.244	0.992	5.03	0.88	1.70	20.14	2.90		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.59	9.82	0.62	6.32	110	0.253	0.991	6.49	0.93	1.70	15.37	3.06		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.76	9.11	0.58	6.39	110	0.262	0.991	6.58	0.93	1.70	14.22	3.09		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
4.92	9.64	0.67	6.94	110	0.271	0.991	7.14	0.94	1.70	15.05	3.09		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
5.09	11.05	0.51	4.60	110	0.280	0.990	4.72	0.89	1.70	17.31	2.93		0						1.00			0.480	Non-Liq.	Non-Liq.	0.00
5.25	26.79	0.51	1.91	110	0.289	0.990	1.93	0.72	1.70	42.58	2.38		1	41	2.22		1.00	94.7	1.00	0.159	0.159	0.480	Non-Liq.	Non-Liq.	0.00
5.41	43.87	0.61	1.40	110	0.298	0.989	1.41	0.65	1.70	70.01	2.12		1	62	1.50		1.00	105.0	1.00	0.188	0.188	0.480	Non-Liq.	Non-Liq.	0.00
5.58	61.57	0.87	1.42	110	0.307	0.989	1.42	0.61	1.70	98.44	2.02		1	76	1.32		1.00	130.2	1.00	0.285	0.285	0.479	Non-Liq.	Non-Liq.	0.00
5.74	81.48	1.27	1.55	110	0.316	0.989	1.56	0.60	1.70	130.42	1.96		1	88	1.25	1.00	1.00	163.4	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
5.91	104.49	1.77	1.69	110	0.325	0.988	1.70	0.58	1.70	167.37	1.91		1	98	1.20	1.05	1.00	201.7	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.07	121.74	2.26	1.85	110	0.334	0.988	1.86	0.58	1.70	195.08	1.90		1	100	1.19	1.10	1.00	232.8	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.23	129.40	2.54	1.96	110	0.343	0.988	1.97	0.58	1.70	207.37	1.90		1	100	1.19	1.15	1.00	248.1	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.40	133.71	2.63	1.97	110	0.352	0.987	1.98	0.58	1.70	214.28	1.90		1	100	1.18	1.20	1.00	254.9	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	136.13	2.67	1.96	110	0.361	0.987	1.97	0.57	1.70	218.15	1.89		1	100	1.18	1.20	1.00	258.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	137.04	2.50	1.82	110	0.370	0.986	1.83	0.57	1.70	219.60	1.86		1	100	1.16	1.20	1.00	254.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	134.61	2.27	1.69	110	0.379	0.986	1.69	0.56	1.70	215.68	1.84		1	100	1.14	1.20	1.00	246.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	133.55	2.02	1.51	110	0.388	0.986	1.52	0.55	1.70	213.97	1.81		1	100	1.11	1.20	1.00	238.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	130.84	1.92	1.47	110	0.397	0.985	1.47	0.55	1.70	209.60	1.80		1	100	1.11	1.20	1.00	233.0	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	125.34	1.72	1.37	110	0.406	0.985	1.38	0.55	1.69	199.24	1.79		1	100	1.10	1.20	1.00	220.4	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	121.32	1.59	1.31	110	0.415	0.985	1.32	0.55	1.67	190.42	1.79		1	100	1.10	1.20	1.00	210.4	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	121.32	1.59	1.31	110	0.424	0.984	1.32	0.55	1.65	188.35	1.80		1	100	1.10	1.20	1.00	208.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	117.69	1.47	1.25	110	0.433	0.984	1.25	0.55	1.63	180.43	1.79		1	100	1.10	1.20	1.00	199.4	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	112.60	1.37	1.22	110	0.442	0.984	1.22	0.55	1.61	170.99	1.80		1	99	1.11	1.20	1.00	189.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	105.92	1.25	1.18	110	0.451	0.983	1.19	0.55	1.60	159.50	1.81		1	96	1.12	1.20	1.00	178.5	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.37	94.02	1.10	1.17	110	0.460	0.983	1.18	0.56	1.60	141.18	1.85		1	91	1.14	1.20	1.00	161.8	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.53	82.35	0.71	0.86	110	0.469	0.982	0.86	0.55	1.56	121.02	1.81		1	85	1.11	1.20	1.00	135.0	1.00	0.309	0.309	0.476	Non-Liq.	Non-Liq.	0.00
8.69	75.19	0.69	0.91	110	0.478	0.982	0.92	0.56	1.56	110.51	1.85		1	81	1.15	1.20	1.00	127.3	1.00	0.272	0.272	0.476	Non-Liq.	Non-Liq.	0.00
8.86	63.26	0.61	0.97	110	0.487	0.982	0.97	0.59	1.57	93.45	1.93		1	74	1.21	1.20	1.00	113.9	1.00	0.217	0.217	0.476	Non-Liq.	Non-Liq.	0.00
9.02	59.99	0.57	0.95	110	0.496	0.981	0.96	0.59	1.56	87.95	1.94		1	71	1.23	1.20	1.00	108.8	1.00	0.200	0.200	0.476	Non-Liq.	Non-Liq.	0.00
9.19	56.32	0.53	0.94	110	0.505	0.981	0.94	0.60	1.55	81.99	1.96		1	69	1.25	1.20	1.00	103.2	1.00	0.182	0.182	0.476	Non-Liq.	Non-Liq.	0.00
9.35	53.37	0.45	0.85	110	0.514	0.981	0.86	0.60	1.54	76.78	1.96		1	66	1.25	1.20	1.00	96.4	1.00	0.163	0.163	0.475	Non-Liq.	Non-Liq.	0.00
9.51	48.12	0.39	0.82	110	0.523	0.980	0.83	0.60	1.53	68.86	1.99		1	61	1.29	1.20	1.00	88.9	1.00	0.145	0.145	0.475	Non-Liq.	Non-Liq.	0.00
9.68	43.46	0.35	0.81	110	0.532	0.980	0.82	0.62	1.53	61.93	2.03		1	57	1.34		1.00	82.7	1.00	0.133	0.133	0.475	Non-Liq.	Non-Liq.	0.00
9.84	43.28	0.29	0.68	110	0.541	0.980	0.69	0.61	1.50	60.60	1.99		1	56	1.29	0.05	1.71	133.7	1.00	0.302	0.302	0.475	Non-Liq.	Non-Liq.	0.00
10.01	40.37	0.42	1.04	110	0.550	0.979	1.05	0.64	1.52	57.28	2.12		1	54	1.48		1.00	84.9	1.00	0.137	0.137	0.475	Non-Liq.	Non-Liq.	0.00
10.17	38.85	0.35	0.91	110	0.559	0.979	0.92	0.64	1.50	54.36	2.10		1	52	1.46		1.00	79.2	1.00	0.126	0.126	0.475	Non-Liq.	Non-Liq.	0.00
10.33	35.99	0.37	1.03	110	0.568	0.979	1.05	0.66	1.50	50.33	2.16		1	48	1.58		1.00	79.3	1.00	0.126	0.126	0.474	Non-Liq.	Non-Liq.	0.00
10.50	35.23	0.33	0.94	110	0.577	0.978	0.96	0.65	1.48	48.64	2.15		1	47	1.55		1.00	75.5	1.00	0.120	0.120	0.474	Non-Liq.	Non-Liq.	0.00
10.66	32.68	0.32	0.98	110	0.586	0.978	0.99	0.66	1.48	44.89	2.19		1	44	1.64		1.00	73.5	1.00	0.117	0.117	0.474	Non-Liq.	Non-Liq.	0.00
10.83	29.98	0.30	0.99	110	0.595	0.978	1.01	0.68	1.47	40.94	2.22		1	40	1.73		1.00	70.8	1.00	0.113	0.113	0.474	Non-Liq.	Non-Liq.	0.00
10.99	26.35	0.27	1.02	110	0.604	0.977	1.04	0.69	1.47	35.85	2.28		1	34	1.89		1.00	67.7	1.00	0.109	0.109	0.474	Non-Liq.	Non-Liq.	0.00
11.15	21.42	0.31	1.43	110	0.614	0.977	1.48	0.74	1.50	29.41	2.44		1	26	2.47		1.00	72.5	1.00	0.115	0.115	0.474	Non-Liq.	Non-Liq.	0.00
11.32	14.65	0.21	1.40	110	0.623	0.977	1.46	0.78	1.51	20.05	2.57		1	10	3.16		1.00	63.4	1.00	0.104	0.104	0.473	Non-Liq.	Non-Liq.	0.00
11.48	9.05	0.21	2.30	110	0.632	0.976	2.47	0.87	1.57	12.46	2.87		0						1.00			0.473	Non-Liq.	Non-Liq.	0.00
11.65	7.19	0.20	2.77	110	0.641	0.976	3.04	0.91	1.58	9.77	3.01		0						1.00			0.473	Non-Liq.	Non-Liq.	0.00
11.81	2.70	0.13	4.89	110	0.650	0.975	6.44	1.00	1.63	3.16	3.60		0						1.00			0.473	Non-Liq.	Non-Liq.	0.00
11.98	2.65	0.12	4.64	110	0.659	0.975	6.18	1.00	1.61	3.02	3.60		0						1.00			0.473	Non-Liq.	Non-Liq.	0.00
12.14	3.48	0.11	3.10	110	0.668	0.975	3.84	1.00	1.58	4.21	3.37		0						1.00			0.473	Non-Liq.	Non-Liq.	0.00
12.30	2.50	0.10	3.84	110	0.677	0.974	5.27	1.00	1.56	2.69	3.61		0						1.00			0.472	Non-Liq.	Non-Liq.	0.00
12.47	1.85	0.11	5.73	110	0.686	0.974	9.10	1.00	1.54	1.70	3.90		0						1.00			0.472	Non-Liq.	Non-Liq.	0.00
12.63	1.79	0.13	7.43	110	0.695	0.974	12.14	1.00	1.52	1.58	4.00		0						1.00			0.472	Non-Liq.	Non-Liq.	0.00
12.80	5.10	0.29	5.59	110	0.704	0.973	6.48	1.00	1.50	6.25	3.36		0						1.00			0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	30.82	0.58	1.88	110	0.713	0.973	1.92	0.73	1.34	38.00	2.42		1	37	2.37		1.00	90.3	1.00	0.148	0.148	0.472	Non-Liq.	Non-Liq.	0.00
13.12	81.21	1.11	1.36	110	0.722	0.973	1.37	0.61	1.26	96.14	2.01		1	75	1.32		1.00	126.7	1.00	0.269	0.269	0.472	Non-Liq.	Non-Liq.	0.00
13.29	92.10	1.26	1.37	110	0.731	0.972	1.38	0.60	1.25	107.89	1.98		1	80	1.27	1.00	1.00	137.9	1.00	0.324	0.324	0.471	Non-Liq.	Non-Liq.	0.00
13.45	131.97	1.30	0.99	110	0.740	0.972	0.99	0.54	1.21	150.49	1.77		1	94	1.09	1.05	1.00	164.4	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.62	176.29	1.68	0.95	110	0.749	0.972	0.96	0.51	1.19	198.00	1.68		1	100	1.02	1.10	1.00	203.4	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.78	208.26	2.28	1.09	110	0.758	0.971	1.10	0.51	1.19	232.55	1.68		1	100	1.02	1.15	1.00	238.3	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.94	234.75	2.60	1.11	110	0.767	0.971	1.11	0.50	1.18	259.95	1.65		1	100	1.00	1.20	1.00	261.3	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.11	244.80	2.82	1.15	110	0.776	0.971	1.16	0.50	1.17	269.60	1.65		1	100	1.00	1.25	1.00	271.7	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.27	272.06	2.98	1.09	110	0.785	0.970	1.10	0.50	1.16	297.68	1.61		1	100	1.00	1.30	1.00	298.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.44	294.29	3.35	1.14	110	0.794	0.970	1.14	0.50	1.15	320.23	1.60		1	100	1.00	1.35	1.00	321.4	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.60	316.23	3.17	1.00	110	0.803	0.970	1.00	0.50	1.15	342.22	1.54		1	100	1.00	1.40	1.00	343.5	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.76	316.63	3.35	1.06	110	0.812	0.969	1.06	0.50	1.14	340.73	1.56		1	100	1.00	1.45	1.00	342.0	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.93	294.75	3.41	1.16	110	0.821	0.969	1.16	0.50	1.14	315.37	1.61		1	100	1.00	1.50	1.00	316.5	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.09	278.02	3.48	1.25	110	0.830	0.969	1.25	0.50	1.13	296.09	1.65		1	100	1.01	1.55	1.00	299.0	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.26	279.30	3.53	1.26	110	0.839	0.968	1.27	0.51	1.12	295.90	1.66		1	100	1.01	1.55	1.00	299.6	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.42	288.00	3.58	1.24	110	0.848	0.968	1.25	0.50	1.12	303.25	1.65		1	100	1.00	1.55	1.00	304.4	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.58	292.46	3.59	1.23	110	0.857	0.967	1.23	0.50	1.11	306.22	1.64		1	100	1.00	1.55	1.00	307.4	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.75	272.56	3.89	1.43	110	0.866	0.967	1.43	0.52	1.11	285.01	1.71		1	100	1.04	1.55	1.00	298.8	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.91	276.67	3.59	1.30	110	0.875	0.967	1.30	0.51	1.10	287.18	1.67		1	100	1.02	1.55	1.00	294.2	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
16.08	273.17	3.92	1.44	110	0.884	0.966	1.44	0.52	1.10	282.65	1.71		1	100	1.05	1.55	1.00	297.2	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.24	281.27	3.86	1.37	110	0.893	0.966	1.38	0.52	1.09	289.18	1.69		1	100	1.03	1.55	1.00	299.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.40	308.06	4.92	1.60	110	0.902	0.966	1.60	0.53	1.09	315.65	1.72		1	100	1.05	1.55	1.00	334.0	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.57	298.32	4.41	1.48	110	0.911	0.965	1.48	0.52	1.08	303.79	1.71		1	100	1.04	1.55	1.00	317.6	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.73	317.60	4.08	1.28	110	0.920	0.965	1.29	0.50	1.07	320.96	1.64		1	100	1.00	1.55	1.00	321.4	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.90	332.36	5.17	1.56	110	0.929	0.965	1.56	0.52	1.07	335.03	1.70		1	100	1.04	1.55	1.00	349.0	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
17.06	338.43	6.36	1.88	110	0.938	0.964	1.88	0.54	1.07	340.25	1.76		1	100	1.08	1.55	1.00	369.5	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.22	307.99	5.82	1.89	110	0.947	0.964	1.90	0.55	1.06	308.23	1.79		1	100	1.10	1.55	1.00	340.3	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.39	269.28	4.43	1.64	110	0.956	0.963	1.65	0.54	1.06	267.85	1.78		1	100	1.09	1.55	1.00	292.8	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.55	257.64	3.38	1.31	110	0.965	0.963	1.32	0.52	1.05	254.47	1.71		1	100	1.05	1.55	1.00	267.0	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.72	229.45	3.27	1.42	110	0.974	0.963	1.43	0.54	1.05	225.75	1.77		1	100	1.09	1.55	1.00	246.1	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.88	185.15	3.15	1.70	110	0.983	0.962	1.71	0.58	1.04	181.55	1.89		1	100	1.18	1.55	1.00	215.2	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
18.04	157.27	2.43	1.54	110	0.992	0.962	1.55	0.58	1.04	153.30	1.91		1	95	1.20	1.55	1.00	184.1	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.21	172.27	2.97	1.72	110	1.001	0.962	1.73	0.58	1.03	167.15	1.92		1	98	1.21	1.55	1.00	202.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.37	148.03	3.30	2.23	110	1.010	0.961	2.24	0.62	1.03	142.99	2.05		1	92	1.37		1.00	195.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.54	212.42	3.34	1.57	110	1.020	0.961	1.58	0.56	1.02	203.98	1.83		1	100	1.13	1.00	1.00	231.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.70	249.14	2.81	1.13	110	1.029	0.960	1.13	0.51	1.01	237.92	1.68		1	100	1.02	1.05	1.00	244.5	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.86	254.49	2.69	1.06	110	1.038	0.960	1.06	0.50	1.01	241.92	1.65		1	100	1.01	1.10	1.00	244.0	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.03	249.73	2.74	1.10	110	1.047	0.960	1.10	0.51	1.01	236.35	1.67		1	100	1.02	1.15	1.00	241.6	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.19	253.62	2.91	1.15	110	1.056	0.959	1.15	0.51	1.00	239.00	1.68		1	100	1.03	1.20	1.00	246.3	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.36	260.64	3.02	1.16	110	1.065	0.959	1.16	0.51	1.00	244.56	1.68		1	100	1.02	1.25	1.00	251.5	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.52	261.87	3.10	1.18	110	1.074	0.958	1.19	0.51	0.99	244.64	1.69		1	100	1.03	1.30	1.00	252.7	0.99	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.69	270.64	2.97	1.10	110	1.083	0.958	1.10	0.50	0.99	251.84	1.65		1	100	1.01	1.35	1.00	254.3	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
19.85	280.85	3.04	1.08	110	1.092	0.957	1.09	0.50	0.98	260.31	1.64		1	100	1.00	1.40	1.00	261.3	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.01	294.22	3.15	1.07	110	1.101	0.957	1.07	0.50	0.98	271.62	1.62		1	100	1.00	1.45	1.00	272.6	0.98	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.18	298.62	3.34	1.12	110	1.107	0.957	1.12	0.50	0.98	274.94	1.64		1	100	1.00	1.50	1.00	276.0	0.98	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
20.34	302.63	3.48	1.15	110	1.111	0.956	1.15	0.50	0.98	278.14	1.64		1	100	1.00	1.55	1.00	278.4	0.98	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
20.51	308.19	3.65	1.18	110	1.115	0.956	1.19	0.50	0.97	282.74	1.65		1	100	1.00	1.60	1.00	284.3	0.98	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
20.67	305.25	4.01	1.31	110	1.118	0.955	1.32	0.51	0.97	279.36	1.69		1	100	1.03	1.65	1.00	288.4	0.98	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
20.83	298.17	3.98	1.33	110	1.122	0.955	1.34	0.52	0.97	272.31	1.70		1	100	1.04	1.70	1.00	283.4	0.98	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
21.00	287.29	3.36	1.17	110	1.126	0.954	1.17	0.51	0.97	262.03	1.66		1	100	1.01	1.75	1.00	266.4	0.98	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
21.16	276.16	2.37	0.86	110	1.130	0.954	0.86	0.50	0.97	251.51	1.57		1	100	1.00	1.80	1.00	252.5	0.97	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
21.33	269.03	2.09	0.78	110	1.134	0.954	0.78	0.50	0.97	244.57	1.55		1	100	1.00	1.85	1.00	245.5	0.97	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
21.49	271.73	1.47	0.54	110	1.138	0.953	0.54	0.50	0.96	246.60	1.44		1	100	1.00	1.90	1.00	247.5	0.97	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
21.65	275.51	1.48	0.54	110	1.142	0.953	0.54	0.50	0.96	249.62	1.43		1	100	1.00	1.95	1.00	250.6	0.97	Infin.	0.000	0.482	Non-Liq.	Non-Liq.	0.00
21.82	269.27	1.33	0.49	110	1.146	0.952	0.50	0.50	0.96	243.52	1.42		1	100	1.00	2.00	1.00	244.4	0.97	Infin.	0.000	0.483	Non-Liq.	Non-Liq.	0.00
21.98	254.35	1.56	0.61	110	1.150	0.952	0.61	0.50	0.96	229.58	1.50		1	100	1.00	2.05	1.00	230.4	0.97	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
22.15	231.17	1.90	0.82	110	1.154	0.951	0.82	0.50	0.96	208.20	1.62		1	100	1.00	2.10	1.00	209.0	0.97	Infin.	0.000	0.487	Non-Liq.	Non-Liq.	0.00
22.31	179.26	2.62	1.46	110	1.158	0.951	1.47	0.57	0.95	159.91	1.88		1	96	1.17	2.15	1.00	187.7	0.96	Infin.	0.000	0.489	Non-Liq.	Non-Liq.	0.00
22.47	221.58	3.22	1.45	110	1.161	0.950	1.46	0.55	0.95	197.87	1.82		1	100	1.12	2.20	1.00	222.0	0.96	Infin.	0.000	0.490	Non-Liq.	Non-Liq.	0.00
22.64	225.46	3.74	1.66	110	1.165	0.950	1.67	0.56	0.95	200.74	1.86		1	100	1.15	2.25	1.00	231.7	0.96	Infin.	0.000	0.492	Non-Liq.	Non-Liq.	0.00
22.80	232.74	4.18	1.79	110	1.169	0.949	1.80	0.57	0.94	206.75	1.87		1	100	1.17	2.30	1.00	241.8	0.96	Infin.	0.000	0.494	Non-Liq.	Non-Liq.	0.00
22.97	236.02	4.51	1.91	110	1.173	0.949	1.92	0.58	0.94	209.15	1.89		1	100	1.18	2.35	1.00	248.2	0.96	Infin.	0.000	0.495	Non-Liq.	Non-Liq.	0.00
23.13	239.32	4.59	1.92	110	1.177	0.948	1.93	0.58	0.94	211.70	1.89		1	100	1.18	2.40	1.00	250.8	0.96	Infin.	0.000	0.497	Non-Liq.	Non-Liq.	0.00
23.29	244.53	4.64	1.90	110	1.181	0.948	1.91	0.57	0.94	215.98	1.88		1	100	1.17	2.45	1.00	254.0	0.96	Infin.	0.000	0.498	Non-Liq.	Non-Liq.	0.00
23.46	258.17	4.62	1.79	110	1.185	0.947	1.80	0.56	0.94	227.92	1.85		1	100	1.14	2.50	1.00	261.4	0.96	Infin.	0.000	0.500	Non-Liq.	Non-Liq.	0.00
23.62	286.18	4.32	1.51	110	1.189	0.947	1.51	0.54	0.94	253.05	1.76		1	100	1.08	2.55	1.00	274.0	0.95	Infin.	0.000	0.502	Non-Liq.	Non-Liq.	0.00
23.79	333.44	4.00	1.20	110	1.193	0.946	1.20	0.50	0.94	295.77	1.64		1	100	1.00	2.60	1.00	295.8	0.95	Infin.	0.000	0.503	Non-Liq.	Non-Liq.	0.00
23.95	392.53	3.80	0.97	110	1.197	0.946	0.97	0.50	0.94	347.80	1.52		1	100	1.00	2.65	1.00	349.1	0.95	Infin.	0.000	0.505	Non-Liq.	Non-Liq.	0.00
24.11	462.47	4.16	0.90	110	1.200	0.945	0.90	0.50	0.94	409.29	1.45		1	100	1.00	2.70	1.00	410.8	0.95	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
24.28	467.10	5.33	1.14	110	1.204	0.945	1.14	0.50	0.94	412.73	1.54		1	100	1.00	2.75	1.00	414.3	0.95	Infin.	0.000	0.508	Non-Liq.	Non-Liq.	0.00
24.44	447.32	4.90	1.09	110	1.208	0.944	1.10	0.50	0.94	394.56	1.53		1	100	1.00	2.80	1.00	396.0	0.95	Infin.	0.000	0.509	Non-Liq.	Non-Liq.	0.00
24.61	439.29	6.79	1.54	110	1.212	0.943	1.55	0.51	0.93	386.46	1.66		1	100	1.01	2.85	1.00	392.9	0.95	Infin.	0.000	0.511	Non-Liq.	Non-Liq.	0.00
24.77	455.61	4.85	1.07	110	1.216	0.943	1.07	0.50	0.93	400.60	1.52		1	100	1.00	2.90	1.00	402.1	0.95	Infin.	0.000	0.512	Non-Liq.	Non-Liq.	0.00
24.93	451.26	5.70	1.26	110	1.220	0.942	1.27	0.50	0.93	396.12	1.58		1	100	1.00	2.95	1.00	397.6	0.94	Infin.	0.000	0.514	Non-Liq.	Non-Liq.	0.00
25.10	407.93	4.55	1.11	110	1.224	0.942	1.12	0.50	0.93	357.41	1.57		1	100	1.00	3.00	1.00	358.7	0.94	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
25.26	378.75	4.01	1.06	110	1.228	0.941	1.06	0.50	0.93	331.23	1.57		1	100	1.00	3.05	1.00	332.5	0.94	Infin.	0.000	0.516	Non-Liq.	Non-Liq.	0.00
25.43	353.85	3.37	0.95	110	1.232	0.941	0.96	0.50	0.93	308.89	1.55		1	100	1.00	3.10	1.00	310.0	0.94	Infin.	0.000	0.518	Non-Liq.	Non-Liq.	0.00
25.59	340.03	2.76	0.81	110	1.236	0.940	0.81	0.50	0.93	296.31	1.51		1	100	1.00	3.15	1.00	297.4	0.94	Infin.	0.000	0.519	Non-Liq.	Non-Liq.	0.00
25.75	328.46	3.20	0.97	110	1.240	0.939	0.98	0.50	0.92	285.74	1.58		1	100	1.00	3.20	1.00	286.8	0.94	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
25.92	319.84	3.29	1.03	110	1.243	0.939	1.03	0.50	0.92	277.77	1.60		1	100	1.00	3.20	1.00	278.8	0.94	Infin.	0.000	0.522	Non-Liq.	Non-Liq.	0.00
26.08	333.74	3.88	1.16	110	1.247	0.938	1.17	0.50	0.92	289.43	1.64		1	100	1.00	3.20	1.00	290.5	0.94	Infin.	0.000	0.523	Non-Liq.	Non-Liq.	0.00
26.25	351.56	3.87	1.10	110	1.251	0.938	1.10	0.50	0.92	304.47	1.60		1	100	1.00	3.20	1.00	305.6	0.94	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
26.41	345.28	4.26	1.23	110	1.255	0.937	1.24	0.50	0.92	298.43	1.65		1	100	1.00	3.20	1.00	300.0	0.93	Infin.	0.000	0.526	Non-Liq.	Non-Liq.	0.00
26.57	347.75	3.84	1.10	110	1.259	0.936	1.11	0.50	0.92	300.21	1.61		1	100	1.00	3.20	1.00	301.3	0.93	Infin.	0.000	0.527	Non-Liq.	Non-Liq.	0.00
26.74	367.05	3.31	0.90	110	1.263	0.936	0.90	0.50	0.92	316.44	1.52		1	100	1.00	3.20	1.00	317.6	0.93	Infin.	0.000	0.528	Non-Liq.	Non-Liq.	0.00
26.90	372.59	3.04	0.82	110	1.267	0.935	0.82	0.50	0.91	320.74	1.49		1	100	1.00	3.20	1.00	321.9	0.93	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
27.07	374.52	2.86	0.76	110	1.271	0.934	0.77	0.50	0.91	321.90	1.47		1	100	1.00	3.20	1.00	323.1	0.93	Infin.	0.000	0.531	Non-Liq.	Non-Liq.	0.00
27.23	377.61	3.03	0.80	110	1.275	0.934	0.80	0.50	0.91	324.07	1.48		1	100	1.00	3.20	1.00	325.3	0.93	Infin.	0.000	0.532	Non-Liq.	Non-Liq.	0.00
27.40	381.19	3.93	1.03	110	1.279	0.933	1.03	0.50	0.91	326.65	1.56		1	100	1.00	3.20	1.00	327.9	0.93	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
27.56	399.40	5.08	1.27	110	1.282	0.932	1.28	0.50	0.91	341.78	1.62		1	100	1.00	3.20	1.00	343.1	0.93	Infin.	0.000	0.534	Non-Liq.	Non-Liq.	0.00
27.72	375.52	4.69	1.25	110	1.286	0.932	1.25	0.50	0.91	320.79	1.63		1	100	1.00	3.20	1.00	322.0	0.92	Infin.	0.000	0.535	Non-Liq.	Non-Liq.	0.00
27.89	347.76	3.01	0.86	110	1.290	0.931	0.87	0.50	0.91	296.54	1.53		1	100	1.00	3.20	1.00	297.6	0.92	Infin.	0.000	0.536	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	312.31	2.46	0.79	110	1.294	0.930	0.79	0.50	0.90	265.79	1.53		1	100	1.00	3.20	1.00	266.8	0.92	Infin.	0.000	0.538	Non-Liq.	Non-Liq.	0.00
28.22	307.37	2.94	0.96	110	1.298	0.929	0.96	0.50	0.90	261.17	1.60		1	100	1.00	3.20	1.00	262.2	0.92	Infin.	0.000	0.539	Non-Liq.	Non-Liq.	0.00
28.38	341.79	2.65	0.78	110	1.302	0.929	0.78	0.50	0.90	290.11	1.50		1	100	1.00	3.20	1.00	291.2	0.92	Infin.	0.000	0.540	Non-Liq.	Non-Liq.	0.00
28.54	292.80	2.77	0.95	110	1.306	0.928	0.95	0.50	0.90	247.99	1.61		1	100	1.00	3.20	1.00	248.9	0.92	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
28.71	257.96	2.84	1.10	110	1.310	0.927	1.11	0.52	0.90	217.21	1.70		1	100	1.04	3.20	1.00	226.0	0.92	Infin.	0.000	0.542	Non-Liq.	Non-Liq.	0.00
28.87	193.75	1.91	0.99	110	1.314	0.926	0.99	0.53	0.89	162.04	1.75		1	97	1.07	3.20	1.00	174.6	0.92	Infin.	0.000	0.543	Non-Liq.	Non-Liq.	0.00
29.04	110.13	2.95	2.68	110	1.318	0.926	2.71	0.68	0.86	88.55	2.25		1	72	1.79		1.00	158.7	0.92	0.452	0.414	0.544	0.76	71%	0.57
29.20	64.38	2.45	3.80	110	1.322	0.925	3.88	0.77	0.84	50.25	2.53		1	48	2.93		1.00	147.0	0.96	0.376	0.359	0.545	0.66	80%	0.84
29.36	90.04	3.19	3.54	110	1.325	0.924	3.60	0.73	0.85	71.15	2.40		1	63	2.32		1.00	165.2	0.93	Infin.	0.000	0.546	Non-Liq.	Non-Liq.	0.00
29.53	118.08	3.29	2.78	110	1.329	0.923	2.82	0.68	0.86	94.48	2.24		1	74	1.77		1.00	167.5	0.91	Infin.	0.000	0.547	Non-Liq.	Non-Liq.	0.00
29.69	115.86	2.76	2.38	110	1.333	0.923	2.41	0.67	0.86	92.78	2.20		1	74	1.66		1.00	153.8	0.91	0.418	0.381	0.548	0.70	77%	0.68
29.86	274.31	1.51	0.55	110	1.337	0.922	0.55	0.50	0.89	229.50	1.47		1	100	1.00	0.30	1.41	322.9	0.91	Infin.	0.000	0.549	Non-Liq.	Non-Liq.	0.00
30.02	311.77	1.67	0.53	110	1.341	0.921	0.54	0.50	0.89	260.62	1.42		1	100	1.00	0.35	1.41	366.6	0.91	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
30.18	315.95	1.19	0.38	110	1.345	0.920	0.38	0.50	0.89	263.74	1.32		1	100	1.00	0.40	1.41	371.0	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.35	297.70	0.86	0.29	110	1.349	0.919	0.29	0.50	0.89	248.08	1.27		1	100	1.00	0.45	1.41	349.0	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.51	257.40	1.00	0.39	110	1.353	0.918	0.39	0.50	0.88	214.03	1.40		1	100	1.00	0.50	1.41	301.1	0.91	Infin.	0.000	0.552	Non-Liq.	Non-Liq.	0.00
30.68	200.41	1.87	0.93	110	1.357	0.918	0.94	0.53	0.88	165.04	1.73		1	98	1.06	0.55	1.41	245.6	0.91	Infin.	0.000	0.553	Non-Liq.	Non-Liq.	0.00
30.84	117.72	2.01	1.71	110	1.361	0.917	1.73	0.63	0.85	93.75	2.09		1	74	1.44		1.00	134.7	0.90	0.307	0.278	0.554	0.50	91%	1.06
31.00	42.32	1.90	4.50	110	1.364	0.916	4.65	0.83	0.81	31.36	2.73		0						0.95			0.555	Non-Liq.	Non-Liq.	0.00
31.17	31.82	1.64	5.14	110	1.368	0.915	5.37	0.87	0.80	23.01	2.87		0						0.95			0.556	Non-Liq.	Non-Liq.	0.00
31.33	41.78	1.18	2.82	110	1.372	0.914	2.92	0.79	0.81	31.12	2.60		1	28	3.31		1.00	103.1	0.95	0.182	0.173	0.556	0.31	98%	1.45
31.50	54.16	1.35	2.48	110	1.376	0.913	2.55	0.75	0.82	40.98	2.47		1	40	2.62		1.00	107.2	0.95	0.194	0.185	0.557	0.33	97%	1.40
31.66	56.06	1.68	3.00	110	1.380	0.912	3.07	0.76	0.82	42.21	2.51		1	41	2.84		1.00	119.8	0.95	0.240	0.227	0.558	0.41	95%	1.24
31.82	60.54	2.05	3.38	110	1.384	0.911	3.46	0.77	0.81	45.52	2.53		1	44	2.90		1.00	132.1	0.95	0.294	0.279	0.559	0.50	91%	1.09
31.99	82.92	2.20	2.65	110	1.388	0.910	2.70	0.71	0.82	63.52	2.35		1	58	2.11		1.00	133.8	0.92	0.303	0.279	0.559	0.50	91%	1.07
32.15	148.83	1.99	1.34	110	1.392	0.909	1.35	0.59	0.85	118.52	1.94		1	84	1.23	1.00	1.00	146.5	0.90	0.372	0.334	0.560	0.60	85%	0.86
32.32	268.70	2.23	0.83	110	1.396	0.908	0.83	0.50	0.87	219.97	1.60		1	100	1.00	1.05	1.00	220.8	0.90	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.48	308.62	2.97	0.96	110	1.400	0.907	0.97	0.50	0.87	252.47	1.61		1	100	1.00	1.10	1.00	253.4	0.89	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.64	309.13	3.57	1.16	110	1.403	0.906	1.16	0.51	0.87	251.87	1.67		1	100	1.02	1.15	1.00	257.4	0.89	Infin.	0.000	0.562	Non-Liq.	Non-Liq.	0.00
32.81	309.47	4.46	1.44	110	1.407	0.905	1.45	0.53	0.86	250.13	1.75		1	100	1.07	1.20	1.00	268.7	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
32.97	308.84	5.13	1.66	110	1.411	0.904	1.67	0.55	0.85	248.16	1.80		1	100	1.11	1.25	1.00	275.4	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
33.14	317.27	5.82	1.84	110	1.415	0.903	1.84	0.56	0.85	253.92	1.83		1	100	1.13	1.30	1.00	287.4	0.89	Infin.	0.000	0.564	Non-Liq.	Non-Liq.	0.00
33.30	316.07	6.46	2.04	110	1.419	0.902	2.05	0.57	0.85	251.67	1.87		1	100	1.16	1.35	1.00	293.2	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.46	306.67	6.63	2.16	110	1.423	0.901	2.17	0.58	0.84	243.15	1.90		1	100	1.19	1.40	1.00	289.5	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.63	295.70	6.52	2.20	110	1.427	0.900	2.21	0.58	0.84	233.68	1.91		1	100	1.20	1.45	1.00	282.0	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.79	287.84	6.15	2.14	110	1.431	0.899	2.15	0.58	0.84	227.15	1.91		1	100	1.20	1.50	1.00	273.3	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.96	286.58	5.47	1.91	110	1.435	0.898	1.92	0.57	0.84	226.60	1.87		1	100	1.16	1.55	1.00	264.5	0.89	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.12	285.14	4.97	1.74	110	1.439	0.897	1.75	0.56	0.84	225.74	1.84		1	100	1.14	1.55	1.00	257.8	0.88	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.28	290.96	4.93	1.70	110	1.443	0.896	1.70	0.56	0.84	230.34	1.83		1	100	1.13	1.55	1.00	260.3	0.88	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.45	290.25	5.14	1.77	110	1.446	0.895	1.78	0.56	0.84	229.07	1.84		1	100	1.14	1.55	1.00	261.8	0.88	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.61	288.91	4.35	1.51	110	1.450	0.894	1.51	0.54	0.84	228.85	1.79		1	100	1.10	1.55	1.00	252.1	0.88	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
34.78	290.18	4.30	1.48	110	1.454	0.893	1.49	0.54	0.84	229.67	1.78		1	100	1.09	1.55	1.00	251.9	0.88	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
34.94	286.57	4.37	1.53	110	1.458	0.892	1.53	0.55	0.84	226.16	1.79		1	100	1.10	1.55	1.00	250.3	0.88	Infin.	0.000	0.570	Non-Liq.	Non-Liq.	0.00
35.10	285.33	4.63	1.62	110	1.462	0.890	1.63	0.55	0.84	224.33	1.82		1	100	1.12	1.55	1.00	252.2	0.88	Infin.	0.000	0.570	Non-Liq.	Non-Liq.	0.00
35.27	282.90	4.65	1.64	110	1.466	0.889	1.65	0.56	0.83	221.92	1.83		1	100	1.13	1.55	1.00	250.7	0.88	Infin.	0.000	0.570	Non-Liq.	Non-Liq.	0.00
35.43	284.23	4.21	1.48	110	1.470	0.888	1.49	0.54	0.84	223.46	1.79		1	100	1.10	1.55	1.00	246.3	0.88	Infin.	0.000	0.571	Non-Liq.	Non-Liq.	0.00
35.60	291.38	3.88	1.33	110	1.474	0.887	1.34	0.53	0.84	229.77	1.74		1	100	1.07	1.55	1.00	246.2	0.88	Infin.	0.000	0.571	Non-Liq.	Non-Liq.	0.00
35.76	294.00	3.53	1.20	110	1.478	0.886	1.21	0.52	0.84	232.40	1.71		1	100	1.04	1.55	1.00	243.1	0.87	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
35.93	283.22	2.96	1.05	110	1.482	0.885	1.05	0.51	0.84	224.32	1.67		1	100	1.02	1.55	1.00	229.3	0.87	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
36.09	264.79	3.14	1.18	110	1.485	0.883	1.19	0.53	0.84	208.03	1.73		1	100	1.06	1.55	1.00	221.5	0.87	Infin.	0.000	0.572	Non-Liq.	Non-Liq.	0.00
36.25	239.70	2.92	1.22	110	1.489	0.882	1.23	0.54	0.83	187.17	1.77		1	100	1.09	1.55	1.00	204.4	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.42	190.73	2.49	1.30	110	1.493	0.881	1.31	0.57	0.82	147.05	1.87		1	93	1.16	1.55	1.00	171.2	0.87	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
36.58	172.32	1.04	0.60	110	1.497	0.880	0.61	0.51	0.84	135.25	1.67		1	89	1.02	1.55	1.00	138.5	0.87	0.327	0.285	0.573	0.50	91%	1.03
36.75	139.82	0.84	0.60	110	1.501	0.878	0.61	0.53	0.83	108.50	1.75		1	80	1.07	1.55	1.00	116.7	0.87	0.228	0.198	0.573	0.35	97%	1.28
36.91	130.14	1.01	0.77	110	1.505	0.877	0.78	0.56	0.82	99.75	1.85		1	77	1.14	1.55	1.00	114.3	0.87	0.219	0.190	0.574	0.33	97%	1.31
37.07	111.04	0.59	0.53	110	1.509	0.876	0.54	0.55	0.82	85.14	1.81		1	70	1.11	1.55	1.00	95.2	0.87	0.160	0.139	0.574	0.24	99%	1.57
37.24	70.92	1.49	2.10	110	1.513	0.875	2.14	0.71	0.78	50.84	2.35		1	49	2.12		1.00	107.6	0.93	0.196	0.182	0.574	0.32	98%	1.39
37.40	56.54	1.73	3.06	110	1.517	0.873	3.15	0.77	0.76	39.40	2.54		1	38	2.99		1.00	117.9	0.93	0.232	0.216	0.574	0.38	96%	1.26
37.57	26.06	1.68	6.46	110	1.521	0.872	6.86	0.92	0.72	16.60	3.05		0						0.93			0.574	Non-Liq.	Non-Liq.	0.00
37.73	18.93	1.02	5.39	110	1.525	0.871	5.87	0.94	0.71	11.65	3.12		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
37.89	12.92	0.63	4.91	110	1.528	0.869	5.57	0.98	0.70	7.50	3.26		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.06	14.23	0.52	3.65	110	1.532	0.868	4.09	0.95	0.70	8.45	3.13		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.22	18.57	0.45	2.40	110	1.536	0.867	2.61	0.88	0.72	11.59	2.91		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.39	10.40	0.40	3.83	110	1.540	0.865	4.49	1.00	0.69	5.76	3.29		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.55	8.61	0.33	3.87	110	1.544	0.864	4.71	1.00	0.69	4.58	3.39		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.71	9.61	0.33	3.43	110	1.548	0.863	4.09	1.00	0.68	5.21	3.31		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
38.88	9.33	0.35	3.71	110	1.552	0.861	4.45	1.00	0.68	5.01	3.34		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
39.04	8.70	0.42	4.84	110	1.556	0.860	5.89	1.00	0.68	4.59	3.44		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
39.21	12.90	0.44	3.42	110	1.560	0.859	3.89	0.96	0.69	7.39	3.17		0						0.93			0.575	Non-Liq.	Non-Liq.	0.00
39.37	17.45	0.56	3.19	110	1.564	0.857	3.50	0.91	0.70	10.51	3.02		0						0.92			0.576	Non-Liq.	Non-Liq.	0.00
39.53	20.31	0.80	3.94	110	1.567	0.856	4.27	0.91	0.70	12.38	3.01		0						0.92			0.576	Non-Liq.	Non-Liq.	0.00
39.70	31.28	0.98	3.12	110	1.571	0.854	3.29	0.84	0.72	20.13	2.78		0						0.92			0.576	Non-Liq.	Non-Liq.	0.00
39.86	28.06	0.97	3.45	110	1.575	0.853	3.65	0.86	0.71	17.76	2.85		0						0.92			0.575	Non-Liq.	Non-Liq.	0.00
40.03	65.29	1.25	1.91	110	1.579	0.852	1.95	0.72	0.75	45.20	2.36		1	44	2.16		1.00	97.7	0.92	0.167	0.154	0.575	0.27	99%	1.53
40.19	75.32	1.52	2.02	110	1.583	0.850	2.06	0.71	0.75	52.43	2.33		1	50	2.04		1.00	106.9	0.89	0.194	0.172	0.575	0.30	98%	1.40
40.35	68.28	1.42	2.08	110	1.587	0.849	2.12	0.72	0.75	47.09	2.37		1	46	2.20		1.00	103.6	0.92	0.183	0.169	0.575	0.29	98%	1.45
40.52	76.08	1.52	2.00	110	1.591	0.847	2.04	0.70	0.75	52.82	2.32		1	50	2.02		1.00	106.8	0.88	0.193	0.171	0.575	0.30	98%	1.40
40.68	80.77	1.39	1.72	110	1.595	0.846	1.75	0.69	0.75	56.49	2.26		1	53	1.82		1.00	102.7	0.88	0.181	0.160	0.575	0.28	99%	1.46
40.85	107.08	1.51	1.41	110	1.599	0.844	1.43	0.64	0.77	76.62	2.10		1	66	1.45		1.00	111.4	0.88	0.208	0.184	0.575	0.32	98%	1.34
41.01	126.77	2.12	1.67	110	1.603	0.843	1.69	0.64	0.77	90.84	2.09		1	73	1.44		1.00	131.1	0.85	0.290	0.245	0.575	0.43	94%	1.11
41.17	204.50	2.61	1.28	110	1.607	0.841	1.29	0.56	0.79	151.55	1.85		1	94	1.15	1.00	1.00	174.4	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.34	221.25	3.11	1.41	110	1.610	0.840	1.42	0.57	0.79	163.68	1.86		1	97	1.15	1.05	1.00	189.4	0.85	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.50	230.53	3.66	1.59	110	1.614	0.838	1.60	0.57	0.78	169.74	1.89		1	99	1.18	1.10	1.00	200.7	0.84	Infin.	0.000	0.575	Non-Liq.	Non-Liq.	0.00
41.67	236.49	4.16	1.76	110	1.618	0.837	1.77	0.58	0.78	173.29	1.92		1	100	1.20	1.15	1.00	209.5	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
41.83	238.11	4.55	1.91	110	1.622	0.835	1.92	0.59	0.78	173.63	1.94		1	100	1.23	1.15	1.00	214.8	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
41.99	239.78	3.88	1.62	110	1.626	0.834	1.63	0.57	0.78	175.95	1.88		1	100	1.17	1.15	1.00	207.4	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.16	274.29	3.22	1.17	110	1.630	0.832	1.18	0.53	0.80	205.09	1.74		1	100	1.06	1.15	1.00	218.5	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.32	291.71	2.41	0.83	110	1.634	0.831	0.83	0.50	0.80	220.63	1.60		1	100	1.00	1.15	1.00	221.5	0.84	Infin.	0.000	0.574	Non-Liq.	Non-Liq.	0.00
42.49	285.46	2.18	0.76	110	1.638	0.829	0.77	0.50	0.80	215.62	1.59		1	100	1.00	1.15	1.00	216.4	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.65	273.88	2.74	1.00	110	1.642	0.827	1.01	0.51	0.80	205.39	1.68		1	100	1.03	1.15	1.00	211.6	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.81	343.04	4.15	1.21	110	1.646	0.826	1.21	0.51	0.80	257.35	1.68		1	100	1.02	1.15	1.00	264.6	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00
42.98	408.63	5.08	1.24	110	1.649	0.824	1.25	0.50	0.80	307.99	1.64		1	100	1.00	1.15	1.00	308.4	0.84	Infin.	0.000	0.573	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
43.14	577.81	9.13	1.58	110	1.653	0.823	1.59	0.50	0.80	435.30	1.65		1	100	1.00	1.15	1.00	437.0	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.31	597.92	9.45	1.58	110	1.657	0.821	1.58	0.50	0.80	450.30	1.64		1	100	1.00	1.15	1.00	452.0	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.47	392.43	8.74	2.23	110	1.661	0.820	2.24	0.57	0.77	285.78	1.87		1	100	1.16	1.15	1.00	332.9	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.64	395.33	5.19	1.31	110	1.665	0.818	1.32	0.51	0.79	295.31	1.67		1	100	1.02	1.15	1.00	302.0	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.80	397.94	3.38	0.85	110	1.669	0.816	0.85	0.50	0.80	298.21	1.52		1	100	1.00	1.15	1.00	299.3	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
43.96	401.09	1.69	0.42	110	1.673	0.815	0.42	0.50	0.80	300.23	1.30		1	100	1.00	1.15	1.00	301.4	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.13	389.81	1.87	0.48	110	1.677	0.813	0.48	0.50	0.79	291.41	1.35		1	100	1.00	1.15	1.00	292.5	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.29	358.36	1.92	0.53	110	1.681	0.811	0.54	0.50	0.79	267.48	1.41		1	100	1.00	1.15	1.00	268.5	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.46	351.76	2.17	0.62	110	1.685	0.810	0.62	0.50	0.79	262.22	1.46		1	100	1.00	1.15	1.00	263.2	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.62	367.06	3.54	0.96	110	1.689	0.808	0.97	0.50	0.79	273.36	1.59		1	100	1.00	1.15	1.00	274.4	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.78	396.02	5.60	1.41	110	1.692	0.807	1.42	0.52	0.78	292.17	1.70		1	100	1.04	1.15	1.00	304.5	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.95	497.62	0.00	0.00	110	1.696	0.805	0.00	0.80	0.68	320.55	2.66		0		1.00				0.91			0.569	**Non-Liq.**	Non-Liq.	**0.00**
45.11	534.51	0.00	0.00	110	1.700	0.803	0.00	0.81	0.68	342.84	2.68		0		1.00				0.91			0.568	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-5
Plot: 5

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
1.8

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.40
Avg SF of Liquefiable Layers: 0.03

Probab	Total Induced Subsidence (inches)
Avg	0
1%	0
Max	0
95%	0.2

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	7.20	0.07	0.96	110	0.009	1.000	0.96	0.82	1.70	11.55	2.69		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
0.33	11.97	0.11	0.92	110	0.018	1.000	0.92	0.75	1.70	19.20	2.49		1	8	2.70		1.00	51.9	1.00	0.093	0.093	0.485	Non-Liq.	Non-Liq.	0.00
0.49	16.98	0.15	0.86	110	0.027	1.000	0.86	0.71	1.70	27.24	2.34		1	23	2.08		1.00	56.7	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.66	18.41	0.17	0.90	110	0.036	1.000	0.90	0.70	1.70	29.52	2.32		1	26	2.01		1.00	59.5	1.00	0.100	0.100	0.485	Non-Liq.	Non-Liq.	0.00
0.82	16.13	0.16	1.01	110	0.045	1.000	1.01	0.73	1.70	25.85	2.40		1	21	2.29		1.00	59.2	1.00	0.099	0.099	0.485	Non-Liq.	Non-Liq.	0.00
0.98	12.95	0.14	1.06	110	0.054	1.000	1.06	0.75	1.70	20.72	2.49		1	12	2.71		1.00	56.1	1.00	0.096	0.096	0.485	Non-Liq.	Non-Liq.	0.00
1.15	10.49	0.11	1.05	110	0.063	0.999	1.05	0.78	1.70	16.75	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.484	Non-Liq.	Non-Liq.	0.00
1.31	10.49	0.11	1.05	110	0.072	0.999	1.06	0.78	1.70	16.74	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.484	Non-Liq.	Non-Liq.	0.00
1.48	9.50	0.14	1.52	110	0.081	0.999	1.53	0.81	1.70	15.13	2.69		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.64	11.89	0.21	1.77	110	0.090	0.998	1.79	0.80	1.70	18.96	2.64		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.80	17.29	0.33	1.93	110	0.099	0.998	1.94	0.77	1.70	27.62	2.53		1	23	2.91		1.00	80.4	1.00	0.128	0.128	0.484	Non-Liq.	Non-Liq.	0.00
1.97	29.55	0.52	1.75	110	0.108	0.998	1.76	0.70	1.70	47.31	2.32		1	46	2.00		1.00	94.8	1.00	0.159	0.159	0.484	Non-Liq.	Non-Liq.	0.00
2.13	29.26	0.52	1.76	110	0.117	0.997	1.77	0.70	1.70	46.83	2.32		1	45	2.02		1.00	94.6	1.00	0.159	0.159	0.483	Non-Liq.	Non-Liq.	0.00
2.30	27.77	0.48	1.74	110	0.126	0.997	1.75	0.71	1.70	44.42	2.34		1	43	2.07		1.00	92.1	1.00	0.153	0.153	0.483	Non-Liq.	Non-Liq.	0.00
2.46	25.48	0.44	1.74	110	0.135	0.996	1.75	0.72	1.70	40.72	2.37		1	40	2.18		1.00	88.8	1.00	0.145	0.145	0.483	Non-Liq.	Non-Liq.	0.00
2.62	22.54	0.40	1.76	110	0.144	0.996	1.77	0.73	1.70	35.99	2.41		1	34	2.36		1.00	85.1	1.00	0.137	0.137	0.483	Non-Liq.	Non-Liq.	0.00
2.79	20.15	0.37	1.83	110	0.153	0.996	1.85	0.75	1.70	32.13	2.46		1	30	2.58		1.00	83.0	1.00	0.133	0.133	0.483	Non-Liq.	Non-Liq.	0.00
2.95	17.63	0.42	2.37	110	0.162	0.995	2.39	0.78	1.70	28.07	2.58		1	24	3.19		1.00	89.5	1.00	0.147	0.147	0.482	Non-Liq.	Non-Liq.	0.00
3.12	13.94	0.43	3.06	110	0.171	0.995	3.10	0.83	1.70	22.12	2.73		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.28	11.33	0.42	3.69	110	0.180	0.994	3.75	0.86	1.70	17.92	2.85		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.44	10.79	0.35	3.27	110	0.189	0.994	3.33	0.86	1.70	17.03	2.84		0						1.00			0.482	Non-Liq.	Non-Liq.	0.00
3.61	19.14	0.32	1.69	110	0.198	0.994	1.71	0.75	1.70	30.44	2.46		1	27	2.58		1.00	78.4	1.00	0.125	0.125	0.482	Non-Liq.	Non-Liq.	0.00
3.77	28.87	0.35	1.20	110	0.208	0.993	1.21	0.68	1.70	46.06	2.23		1	45	1.74		1.00	79.9	1.00	0.127	0.127	0.482	Non-Liq.	Non-Liq.	0.00
3.94	37.13	0.44	1.18	110	0.217	0.993	1.19	0.65	1.70	59.31	2.13		1	55	1.52		1.00	90.2	1.00	0.148	0.148	0.481	Non-Liq.	Non-Liq.	0.00
4.10	42.19	0.52	1.24	110	0.226	0.993	1.25	0.64	1.70	67.43	2.10		1	60	1.46		1.00	98.5	1.00	0.169	0.169	0.481	Non-Liq.	Non-Liq.	0.00
4.27	42.88	0.62	1.43	110	0.235	0.992	1.44	0.65	1.70	68.52	2.14		1	61	1.53		1.00	104.7	1.00	0.187	0.187	0.481	Non-Liq.	Non-Liq.	0.00
4.43	42.87	0.65	1.51	110	0.244	0.992	1.52	0.65	1.70	68.49	2.15		1	61	1.56		1.00	106.9	1.00	0.194	0.194	0.481	Non-Liq.	Non-Liq.	0.00
4.59	43.05	0.62	1.44	110	0.253	0.991	1.44	0.65	1.70	68.77	2.14		1	61	1.53		1.00	105.0	1.00	0.188	0.188	0.481	Non-Liq.	Non-Liq.	0.00
4.76	40.55	0.64	1.58	110	0.262	0.991	1.59	0.66	1.70	64.74	2.18		1	59	1.63		1.00	105.4	1.00	0.189	0.189	0.480	Non-Liq.	Non-Liq.	0.00
4.92	37.17	0.59	1.58	110	0.271	0.991	1.60	0.67	1.70	59.29	2.21		1	55	1.70		1.00	101.0	1.00	0.176	0.176	0.480	Non-Liq.	Non-Liq.	0.00
5.09	45.41	0.55	1.21	110	0.280	0.990	1.22	0.63	1.70	72.52	2.07		1	63	1.41		1.00	102.1	1.00	0.179	0.179	0.480	Non-Liq.	Non-Liq.	0.00
5.25	49.21	0.55	1.12	110	0.289	0.990	1.13	0.62	1.70	78.61	2.02		1	67	1.33		1.00	104.9	1.00	0.187	0.187	0.480	Non-Liq.	Non-Liq.	0.00
5.41	48.56	0.56	1.16	110	0.298	0.989	1.16	0.62	1.70	77.55	2.04		1	66	1.35		1.00	104.9	1.00	0.187	0.187	0.480	Non-Liq.	Non-Liq.	0.00
5.58	48.19	0.59	1.22	110	0.307	0.989	1.23	0.62	1.70	76.94	2.06		1	66	1.38		1.00	106.1	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
5.74	48.82	0.59	1.20	110	0.316	0.989	1.21	0.62	1.70	77.94	2.05		1	66	1.37		1.00	106.5	1.00	0.192	0.192	0.479	Non-Liq.	Non-Liq.	0.00
5.91	49.59	0.58	1.17	110	0.325	0.988	1.18	0.62	1.70	79.16	2.03		1	67	1.35		1.00	106.6	1.00	0.193	0.193	0.479	Non-Liq.	Non-Liq.	0.00
6.07	49.01	0.58	1.19	110	0.334	0.988	1.19	0.62	1.70	78.21	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
6.23	48.87	0.58	1.19	110	0.343	0.988	1.20	0.62	1.70	77.97	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.479	Non-Liq.	Non-Liq.	0.00
6.40	48.92	0.59	1.20	110	0.352	0.987	1.21	0.62	1.70	78.04	2.05		1	67	1.37		1.00	106.5	1.00	0.192	0.192	0.479	Non-Liq.	Non-Liq.	0.00
6.56	50.19	0.62	1.23	110	0.361	0.987	1.24	0.62	1.70	80.07	2.04		1	68	1.36		1.00	109.1	1.00	0.201	0.201	0.478	Non-Liq.	Non-Liq.	0.00
6.73	54.54	0.64	1.17	110	0.370	0.986	1.17	0.61	1.70	87.04	2.00		1	71	1.30		1.00	113.3	1.00	0.215	0.215	0.478	Non-Liq.	Non-Liq.	0.00
6.89	60.79	0.78	1.29	110	0.379	0.986	1.29	0.61	1.70	97.07	1.99		1	76	1.29	0.90	1.02	127.9	1.00	0.275	0.275	0.478	Non-Liq.	Non-Liq.	0.00
7.05	70.21	1.20	1.71	110	0.388	0.986	1.72	0.62	1.70	112.19	2.03		1	82	1.35		1.00	151.2	1.00	0.401	0.401	0.478	Non-Liq.	Non-Liq.	0.00
7.22	86.10	1.28	1.49	110	0.397	0.985	1.49	0.59	1.70	137.71	1.93		1	90	1.22	1.00	1.00	168.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	112.25	1.15	1.02	110	0.406	0.985	1.02	0.53	1.66	175.45	1.74		1	100	1.06	1.05	1.00	187.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	123.77	1.31	1.06	110	0.415	0.985	1.06	0.52	1.63	190.49	1.72		1	100	1.05	1.10	1.00	201.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	123.77	1.31	1.06	110	0.424	0.984	1.06	0.53	1.62	188.51	1.73		1	100	1.05	1.15	1.00	199.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	137.24	1.24	0.90	110	0.433	0.984	0.90	0.50	1.57	202.88	1.65		1	100	1.01	1.20	1.00	204.9	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	143.26	1.17	0.82	110	0.442	0.984	0.82	0.50	1.55	208.83	1.61		1	100	1.00	1.25	1.00	209.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	133.59	0.95	0.71	110	0.451	0.983	0.72	0.50	1.53	192.72	1.60		1	100	1.00	1.30	1.00	193.4	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.37	119.63	0.65	0.54	110	0.460	0.983	0.54	0.50	1.52	170.80	1.56		1	99	1.00	1.35	1.00	171.4	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.53	108.61	0.64	0.59	110	0.469	0.982	0.59	0.50	1.50	153.49	1.62		1	95	1.00	1.40	1.00	154.1	1.00	0.420	0.420	0.476	Non-Liq.	Non-Liq.	0.00
8.69	97.77	0.53	0.54	110	0.478	0.982	0.54	0.50	1.49	136.81	1.64		1	90	1.00	1.45	1.00	136.9	1.00	0.318	0.318	0.476	Non-Liq.	Non-Liq.	0.00
8.86	91.00	0.48	0.52	110	0.487	0.982	0.53	0.51	1.48	126.66	1.66		1	87	1.01	1.50	1.00	128.5	1.00	0.277	0.277	0.476	Non-Liq.	Non-Liq.	0.00
9.02	88.06	0.54	0.61	110	0.496	0.981	0.62	0.52	1.48	122.80	1.71		1	85	1.05	1.55	1.00	128.8	1.00	0.279	0.279	0.476	Non-Liq.	Non-Liq.	0.00
9.19	80.39	0.53	0.66	110	0.505	0.981	0.66	0.54	1.49	112.21	1.76		1	82	1.08	1.60	1.00	121.5	1.00	0.247	0.247	0.476	Non-Liq.	Non-Liq.	0.00
9.35	57.91	0.50	0.87	110	0.514	0.981	0.88	0.59	1.53	83.01	1.94		1	69	1.23	1.65	1.00	102.3	1.00	0.180	0.180	0.475	Non-Liq.	Non-Liq.	0.00
9.51	67.62	0.54	0.79	110	0.523	0.980	0.80	0.57	1.49	94.64	1.87		1	75	1.16	1.70	1.00	110.3	1.00	0.205	0.205	0.475	Non-Liq.	Non-Liq.	0.00
9.68	67.40	0.52	0.77	110	0.532	0.980	0.78	0.57	1.48	93.34	1.87		1	74	1.16	1.75	1.00	108.5	1.00	0.199	0.199	0.475	Non-Liq.	Non-Liq.	0.00
9.84	67.98	0.51	0.75	110	0.541	0.980	0.76	0.57	1.46	93.14	1.86		1	74	1.15	1.80	1.00	107.8	1.00	0.197	0.197	0.475	Non-Liq.	Non-Liq.	0.00
10.01	65.93	0.45	0.68	110	0.550	0.979	0.69	0.56	1.44	89.29	1.85		1	72	1.15	1.85	1.00	102.7	1.00	0.181	0.181	0.475	Non-Liq.	Non-Liq.	0.00
10.17	65.84	0.44	0.67	110	0.559	0.979	0.68	0.56	1.43	88.34	1.85		1	72	1.15	1.90	1.00	101.6	1.00	0.178	0.178	0.475	Non-Liq.	Non-Liq.	0.00
10.33	64.79	0.46	0.70	110	0.568	0.979	0.71	0.57	1.42	86.44	1.87		1	71	1.16	1.95	1.00	100.8	1.00	0.175	0.175	0.474	Non-Liq.	Non-Liq.	0.00
10.50	65.15	0.49	0.74	110	0.577	0.978	0.75	0.57	1.42	86.37	1.88		1	71	1.17	2.00	1.00	101.9	1.00	0.178	0.178	0.474	Non-Liq.	Non-Liq.	0.00
10.66	65.57	0.48	0.74	110	0.586	0.978	0.74	0.57	1.40	86.12	1.88		1	71	1.17	2.05	1.00	101.4	1.00	0.177	0.177	0.474	Non-Liq.	Non-Liq.	0.00
10.83	66.76	0.49	0.73	110	0.595	0.978	0.74	0.57	1.39	86.85	1.88		1	71	1.17	2.10	1.00	101.9	1.00	0.178	0.178	0.474	Non-Liq.	Non-Liq.	0.00
10.99	69.51	0.50	0.72	110	0.604	0.977	0.73	0.57	1.37	89.46	1.86		1	72	1.16	2.15	1.00	103.8	1.00	0.184	0.184	0.474	Non-Liq.	Non-Liq.	0.00
11.15	72.61	0.54	0.74	110	0.614	0.977	0.74	0.57	1.36	92.59	1.86		1	74	1.15	2.20	1.00	107.0	1.00	0.194	0.194	0.474	Non-Liq.	Non-Liq.	0.00
11.32	77.76	0.57	0.73	110	0.623	0.977	0.73	0.56	1.34	98.03	1.83		1	76	1.13	2.25	1.00	111.4	1.00	0.209	0.209	0.473	Non-Liq.	Non-Liq.	0.00
11.48	84.82	0.65	0.76	110	0.632	0.976	0.77	0.55	1.33	105.90	1.82		1	79	1.12	2.30	1.00	119.2	1.00	0.238	0.238	0.473	Non-Liq.	Non-Liq.	0.00
11.65	92.40	0.51	0.55	110	0.641	0.976	0.56	0.52	1.30	112.72	1.72		1	82	1.05	2.35	1.00	118.6	1.00	0.235	0.235	0.473	Non-Liq.	Non-Liq.	0.00
11.81	100.55	0.65	0.64	110	0.650	0.975	0.65	0.53	1.29	122.02	1.73		1	85	1.06	2.40	1.00	129.2	1.00	0.281	0.281	0.473	Non-Liq.	Non-Liq.	0.00
11.98	108.89	0.74	0.67	110	0.659	0.975	0.68	0.52	1.28	131.02	1.71		1	88	1.05	2.45	1.00	137.7	1.00	0.323	0.323	0.473	Non-Liq.	Non-Liq.	0.00
12.14	120.07	0.79	0.66	110	0.668	0.975	0.66	0.51	1.27	142.80	1.68		1	92	1.02	2.50	1.00	146.6	1.00	0.373	0.373	0.473	Non-Liq.	Non-Liq.	0.00
12.30	132.01	0.89	0.68	110	0.677	0.974	0.68	0.50	1.25	155.55	1.66		1	95	1.01	2.55	1.00	157.3	1.00	0.442	0.442	0.472	Non-Liq.	Non-Liq.	0.00
12.47	144.08	1.04	0.72	110	0.686	0.974	0.72	0.50	1.24	168.48	1.65		1	98	1.00	2.60	1.00	169.2	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.63	152.23	1.19	0.78	110	0.695	0.974	0.79	0.50	1.24	177.08	1.65		1	100	1.01	2.65	1.00	178.9	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.80	162.83	1.20	0.74	110	0.704	0.973	0.74	0.50	1.23	187.89	1.62		1	100	1.00	2.70	1.00	188.6	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	K_σ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	177.02	1.56	0.88	110	0.713	0.973	0.88	0.50	1.22	203.18	1.65		1	100	1.00	2.75	1.00	204.1	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.12	188.21	1.70	0.90	110	0.722	0.973	0.90	0.50	1.21	214.55	1.64		1	100	1.00	2.80	1.00	215.4	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.29	199.52	1.82	0.91	110	0.731	0.972	0.92	0.50	1.20	226.07	1.63		1	100	1.00	2.85	1.00	226.9	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.45	206.33	1.96	0.95	110	0.740	0.972	0.95	0.50	1.20	232.38	1.63		1	100	1.00	2.90	1.00	233.2	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.62	209.22	1.92	0.92	110	0.749	0.972	0.92	0.50	1.19	234.21	1.62		1	100	1.00	2.95	1.00	235.1	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.78	216.92	2.11	0.97	110	0.758	0.971	0.98	0.50	1.18	241.40	1.63		1	100	1.00	3.00	1.00	242.3	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.94	220.68	1.88	0.85	110	0.767	0.971	0.85	0.50	1.17	244.14	1.58		1	100	1.00	3.05	1.00	245.1	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.11	225.50	2.72	1.21	110	0.776	0.971	1.21	0.51	1.17	249.15	1.69		1	100	1.03	3.10	1.00	257.6	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.27	226.97	2.77	1.22	110	0.785	0.970	1.22	0.52	1.17	249.35	1.69		1	100	1.03	3.15	1.00	258.3	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.44	260.76	3.44	1.32	110	0.794	0.970	1.32	0.51	1.16	284.70	1.68		1	100	1.03	3.20	1.00	293.3	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.60	273.34	5.44	1.99	110	0.803	0.970	2.00	0.55	1.16	300.02	1.82		1	100	1.12	3.25	1.00	336.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.76	293.55	5.65	1.92	110	0.812	0.969	1.93	0.54	1.15	319.57	1.79		1	100	1.10	3.30	1.00	352.3	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.93	441.40	7.59	1.72	110	0.821	0.969	1.72	0.51	1.14	473.40	1.66		1	100	1.01	3.35	1.00	479.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.09	347.82	7.25	2.09	110	0.830	0.969	2.09	0.54	1.14	374.13	1.78		1	100	1.09	3.40	1.00	410.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.26	302.88	7.87	2.60	110	0.839	0.968	2.61	0.58	1.14	326.31	1.90		1	100	1.18	3.45	1.00	387.9	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.42	275.99	6.43	2.33	110	0.848	0.968	2.34	0.57	1.13	295.07	1.88		1	100	1.17	3.50	1.00	346.0	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.58	376.75	5.16	1.37	110	0.857	0.967	1.37	0.50	1.11	394.73	1.61		1	100	1.00	3.55	1.00	396.2	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.75	321.62	5.68	1.76	110	0.866	0.967	1.77	0.53	1.11	337.17	1.74		1	100	1.07	3.60	1.00	361.3	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.91	321.75	3.28	1.02	110	0.875	0.967	1.02	0.50	1.10	333.46	1.55		1	100	1.00	3.65	1.00	334.7	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
16.08	344.32	3.11	0.90	110	0.884	0.966	0.90	0.50	1.09	355.08	1.49		1	100	1.00	3.70	1.00	356.4	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.24	348.92	2.94	0.84	110	0.893	0.966	0.84	0.50	1.09	358.01	1.47		1	100	1.00	3.75	1.00	359.3	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.40	351.59	2.77	0.79	110	0.902	0.966	0.79	0.50	1.08	358.94	1.44		1	100	1.00	3.80	1.00	360.3	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.57	366.52	2.53	0.69	110	0.911	0.965	0.69	0.50	1.08	372.35	1.39		1	100	1.00	3.85	1.00	373.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.73	381.08	3.05	0.80	110	0.920	0.965	0.80	0.50	1.07	385.27	1.43		1	100	1.00	3.90	1.00	386.7	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.90	413.82	3.60	0.87	110	0.929	0.965	0.87	0.50	1.07	416.40	1.44		1	100	1.00	3.95	1.00	418.0	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
17.06	452.15	4.24	0.94	110	0.938	0.964	0.94	0.50	1.06	452.86	1.44		1	100	1.00	4.00	1.00	454.6	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.22	427.40	3.95	0.92	110	0.947	0.964	0.93	0.50	1.06	425.97	1.45		1	100	1.00	4.05	1.00	427.6	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.39	404.51	3.69	0.91	110	0.956	0.963	0.91	0.50	1.05	401.19	1.46		1	100	1.00	4.10	1.00	402.7	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.55	425.81	4.21	0.99	110	0.965	0.963	0.99	0.50	1.05	420.37	1.48		1	100	1.00	4.15	1.00	421.9	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.72	438.64	4.22	0.96	110	0.974	0.963	0.96	0.50	1.04	431.05	1.47		1	100	1.00	4.20	1.00	432.7	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.88	461.57	3.57	0.77	110	0.983	0.962	0.78	0.50	1.04	451.54	1.38		1	100	1.00	4.25	1.00	453.2	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
18.04	498.99	4.53	0.91	110	0.992	0.962	0.91	0.50	1.03	485.99	1.42		1	100	1.00	4.30	1.00	487.8	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.21	579.29	5.58	0.96	110	1.001	0.962	0.96	0.50	1.03	561.80	1.40		1	100	1.00	4.35	1.00	563.9	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.37	590.35	3.67	0.62	110	1.010	0.961	0.62	0.50	1.02	569.97	1.24		1	100	1.00	4.40	1.00	572.1	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.54	576.43	4.80	0.83	110	1.020	0.961	0.83	0.50	1.02	554.03	1.35		1	100	1.00	4.45	1.00	556.1	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.70	606.56	5.65	0.93	110	1.029	0.960	0.93	0.50	1.01	580.47	1.38		1	100	1.00	4.50	1.00	582.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.86	565.11	6.10	1.08	110	1.038	0.960	1.08	0.50	1.01	538.37	1.46		1	100	1.00	4.55	1.00	540.4	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.03	544.74	8.59	1.58	110	1.047	0.960	1.58	0.50	1.01	516.68	1.61		1	100	1.00	4.60	1.00	518.6	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.19	567.96	6.47	1.14	110	1.056	0.959	1.14	0.50	1.00	536.43	1.48		1	100	1.00	4.65	1.00	538.4	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.36	526.36	6.42	1.22	110	1.065	0.959	1.22	0.50	1.00	494.95	1.52		1	100	1.00	4.70	1.00	496.8	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.52	450.76	4.60	1.02	110	1.074	0.958	1.02	0.50	0.99	421.92	1.49		1	100	1.00	4.75	1.00	423.5	0.99	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.69	418.45	3.90	0.93	110	1.083	0.958	0.94	0.50	0.99	389.97	1.48		1	100	1.00	4.80	1.00	391.4	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
19.85	376.34	3.82	1.02	110	1.092	0.957	1.02	0.50	0.98	349.16	1.54		1	100	1.00	4.85	1.00	350.5	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.01	355.23	3.87	1.09	110	1.101	0.957	1.09	0.50	0.98	328.16	1.58		1	100	1.00	4.90	1.00	329.4	0.98	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.18	380.08	4.45	1.17	110	1.107	0.957	1.17	0.50	0.98	350.22	1.59		1	100	1.00	4.95	1.00	351.5	0.98	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
20.34	440.83	4.85	1.10	110	1.111	0.956	1.10	0.50	0.98	405.64	1.53		1	100	1.00	5.00	1.00	407.2	0.98	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
20.51	486.23	4.83	0.99	110	1.115	0.956	1.00	0.50	0.97	446.73	1.47		1	100	1.00	5.05	1.00	448.4	0.98	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
20.67	520.20	4.75	0.91	110	1.118	0.955	0.92	0.50	0.97	477.17	1.42		1	100	1.00	5.10	1.00	479.0	0.98	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
20.83	532.02	4.83	0.91	110	1.122	0.955	0.91	0.50	0.97	487.19	1.41		1	100	1.00	5.15	1.00	489.0	0.98	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
21.00	551.58	5.24	0.95	110	1.126	0.954	0.95	0.50	0.97	504.26	1.42		1	100	1.00	5.20	1.00	506.1	0.98	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
21.16	555.09	5.57	1.00	110	1.130	0.954	1.00	0.50	0.97	506.59	1.44		1	100	1.00	5.25	1.00	508.5	0.97	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
21.33	541.40	4.23	0.78	110	1.134	0.954	0.78	0.50	0.97	493.22	1.36		1	100	1.00	5.30	1.00	495.1	0.97	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
21.49	529.93	3.90	0.74	110	1.138	0.953	0.74	0.50	0.96	481.91	1.34		1	100	1.00	5.35	1.00	483.7	0.97	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
21.65	514.51	3.55	0.69	110	1.142	0.953	0.69	0.50	0.96	467.06	1.33		1	100	1.00	5.40	1.00	468.8	0.97	Infin.	0.000	0.482	Non-Liq.	Non-Liq.	0.00
21.82	465.36	3.51	0.75	110	1.146	0.952	0.76	0.50	0.96	421.62	1.39		1	100	1.00	5.45	1.00	423.2	0.97	Infin.	0.000	0.483	Non-Liq.	Non-Liq.	0.00
21.98	477.52	3.41	0.71	110	1.150	0.952	0.72	0.50	0.96	431.92	1.36		1	100	1.00	5.50	1.00	433.5	0.97	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
22.15	498.55	3.95	0.79	110	1.154	0.951	0.79	0.50	0.96	450.22	1.39		1	100	1.00	5.55	1.00	451.9	0.97	Infin.	0.000	0.487	Non-Liq.	Non-Liq.	0.00
22.31	488.77	4.36	0.89	110	1.158	0.951	0.89	0.50	0.96	440.62	1.43		1	100	1.00	5.60	1.00	442.3	0.96	Infin.	0.000	0.489	Non-Liq.	Non-Liq.	0.00
22.47	467.81	4.12	0.88	110	1.161	0.950	0.88	0.50	0.95	420.97	1.44		1	100	1.00	5.65	1.00	422.5	0.96	Infin.	0.000	0.490	Non-Liq.	Non-Liq.	0.00
22.64	430.22	3.45	0.80	110	1.165	0.950	0.80	0.50	0.95	386.41	1.43		1	100	1.00	5.70	1.00	387.9	0.96	Infin.	0.000	0.492	Non-Liq.	Non-Liq.	0.00
22.80	388.20	3.02	0.78	110	1.169	0.949	0.78	0.50	0.95	347.98	1.45		1	100	1.00	5.75	1.00	349.3	0.96	Infin.	0.000	0.494	Non-Liq.	Non-Liq.	0.00
22.97	382.78	2.72	0.71	110	1.173	0.949	0.71	0.50	0.95	342.53	1.42		1	100	1.00	5.80	1.00	343.8	0.96	Infin.	0.000	0.495	Non-Liq.	Non-Liq.	0.00
23.13	356.17	2.68	0.75	110	1.177	0.948	0.75	0.50	0.95	318.11	1.46		1	100	1.00	5.85	1.00	319.3	0.96	Infin.	0.000	0.497	Non-Liq.	Non-Liq.	0.00
23.29	356.43	2.35	0.66	110	1.181	0.948	0.66	0.50	0.95	317.81	1.42		1	100	1.00	5.90	1.00	319.0	0.96	Infin.	0.000	0.498	Non-Liq.	Non-Liq.	0.00
23.46	343.88	1.99	0.58	110	1.185	0.947	0.58	0.50	0.94	306.08	1.39		1	100	1.00	5.95	1.00	307.2	0.96	Infin.	0.000	0.500	Non-Liq.	Non-Liq.	0.00
23.62	344.88	1.60	0.46	110	1.189	0.947	0.47	0.50	0.94	306.46	1.33		1	100	1.00	6.00	1.00	307.6	0.95	Infin.	0.000	0.502	Non-Liq.	Non-Liq.	0.00
23.79	352.04	1.86	0.53	110	1.193	0.946	0.53	0.50	0.94	312.33	1.36		1	100	1.00	6.05	1.00	313.5	0.95	Infin.	0.000	0.503	Non-Liq.	Non-Liq.	0.00
23.95	379.12	2.56	0.68	110	1.197	0.946	0.68	0.50	0.94	335.89	1.41		1	100	1.00	6.10	1.00	337.1	0.95	Infin.	0.000	0.505	Non-Liq.	Non-Liq.	0.00
24.11	381.50	2.41	0.63	110	1.200	0.945	0.63	0.50	0.94	337.45	1.39		1	100	1.00	6.15	1.00	338.7	0.95	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
24.28	382.45	2.59	0.68	110	1.204	0.945	0.68	0.50	0.94	337.74	1.41		1	100	1.00	6.20	1.00	339.0	0.95	Infin.	0.000	0.508	Non-Liq.	Non-Liq.	0.00
24.44	362.80	2.22	0.61	110	1.208	0.944	0.61	0.50	0.94	319.81	1.40		1	100	1.00	6.25	1.00	321.0	0.95	Infin.	0.000	0.509	Non-Liq.	Non-Liq.	0.00
24.61	345.67	1.84	0.53	110	1.212	0.943	0.53	0.50	0.93	304.16	1.37		1	100	1.00	6.30	1.00	305.3	0.95	Infin.	0.000	0.511	Non-Liq.	Non-Liq.	0.00
24.77	352.36	1.35	0.38	110	1.216	0.943	0.39	0.50	0.93	309.57	1.27		1	100	1.00	6.35	1.00	310.7	0.95	Infin.	0.000	0.512	Non-Liq.	Non-Liq.	0.00
24.93	361.66	1.81	0.50	110	1.220	0.942	0.50	0.50	0.93	317.26	1.34		1	100	1.00	6.40	1.00	318.4	0.94	Infin.	0.000	0.514	Non-Liq.	Non-Liq.	0.00
25.10	368.75	1.84	0.50	110	1.224	0.942	0.50	0.50	0.93	322.98	1.33		1	100	1.00	6.45	1.00	324.2	0.94	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
25.26	366.01	1.90	0.52	110	1.228	0.941	0.52	0.50	0.93	320.06	1.35		1	100	1.00	6.50	1.00	321.3	0.94	Infin.	0.000	0.516	Non-Liq.	Non-Liq.	0.00
25.43	371.63	1.81	0.49	110	1.232	0.941	0.49	0.50	0.93	324.47	1.32		1	100	1.00	6.55	1.00	325.7	0.94	Infin.	0.000	0.518	Non-Liq.	Non-Liq.	0.00
25.59	377.11	1.91	0.51	110	1.236	0.940	0.51	0.50	0.93	328.74	1.33		1	100	1.00	6.60	1.00	330.0	0.94	Infin.	0.000	0.519	Non-Liq.	Non-Liq.	0.00
25.75	376.28	2.06	0.55	110	1.240	0.939	0.55	0.50	0.92	327.50	1.35		1	100	1.00	6.65	1.00	328.7	0.94	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
25.92	388.18	2.48	0.64	110	1.243	0.939	0.64	0.50	0.92	337.36	1.39		1	100	1.00	6.70	1.00	338.6	0.94	Infin.	0.000	0.522	Non-Liq.	Non-Liq.	0.00
26.08	387.53	2.18	0.56	110	1.247	0.938	0.57	0.50	0.92	336.26	1.35		1	100	1.00	6.75	1.00	337.5	0.94	Infin.	0.000	0.523	Non-Liq.	Non-Liq.	0.00
26.25	390.12	1.95	0.50	110	1.251	0.938	0.50	0.50	0.92	337.98	1.32		1	100	1.00	6.80	1.00	339.2	0.94	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
26.41	385.52	1.93	0.50	110	1.255	0.937	0.50	0.50	0.92	333.46	1.32		1	100	1.00	6.85	1.00	334.7	0.93	Infin.	0.000	0.526	Non-Liq.	Non-Liq.	0.00
26.57	386.49	1.78	0.46	110	1.259	0.936	0.46	0.50	0.92	333.78	1.30		1	100	1.00	6.90	1.00	335.0	0.93	Infin.	0.000	0.527	Non-Liq.	Non-Liq.	0.00
26.74	384.18	1.88	0.49	110	1.263	0.936	0.49	0.50	0.92	331.26	1.32		1	100	1.00	6.95	1.00	332.5	0.93	Infin.	0.000	0.528	Non-Liq.	Non-Liq.	0.00
26.90	381.61	1.93	0.51	110	1.267	0.935	0.51	0.50	0.91	328.53	1.33		1	100	1.00	7.00	1.00	329.8	0.93	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
27.07	376.27	1.93	0.51	110	1.271	0.934	0.51	0.50	0.91	323.41	1.34		1	100	1.00	7.05	1.00	324.6	0.93	Infin.	0.000	0.531	Non-Liq.	Non-Liq.	0.00
27.23	373.66	1.90	0.51	110	1.275	0.934	0.51	0.50	0.91	320.67	1.34		1	100	1.00	7.10	1.00	321.9	0.93	Infin.	0.000	0.532	Non-Liq.	Non-Liq.	0.00
27.40	376.94	1.90	0.51	110	1.279	0.933	0.51	0.50	0.91	322.99	1.33		1	100	1.00	7.15	1.00	324.2	0.93	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
27.56	386.83	3.91	1.01	110	1.282	0.932	1.01	0.50	0.91	330.99	1.55		1	100	1.00	7.20	1.00	332.2	0.93	Infin.	0.000	0.534	Non-Liq.	Non-Liq.	0.00
27.72	393.44	4.16	1.06	110	1.286	0.932	1.06	0.50	0.91	336.15	1.56		1	100	1.00	7.25	1.00	337.4	0.92	Infin.	0.000	0.535	Non-Liq.	Non-Liq.	0.00
27.89	437.24	5.53	1.26	110	1.290	0.931	1.27	0.50	0.91	373.12	1.60		1	100	1.00	7.30	1.00	374.5	0.92	Infin.	0.000	0.536	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	525.83	5.33	1.01	110	1.294	0.930	1.02	0.50	0.90	448.27	1.48		1	100	1.00	7.35	1.00	449.9	0.92	Infin.	0.000	0.538	Non-Liq.	Non-Liq.	0.00
28.22	485.02	4.40	0.91	110	1.298	0.929	0.91	0.50	0.90	412.76	1.46		1	100	1.00	7.40	1.00	414.3	0.92	Infin.	0.000	0.539	Non-Liq.	Non-Liq.	0.00
28.38	366.91	3.58	0.98	110	1.302	0.929	0.98	0.50	0.90	311.51	1.56		1	100	1.00	7.45	1.00	312.7	0.92	Infin.	0.000	0.540	Non-Liq.	Non-Liq.	0.00
28.54	359.69	4.34	1.21	110	1.306	0.928	1.21	0.50	0.90	304.90	1.63		1	100	1.00	7.50	1.00	306.0	0.92	Infin.	0.000	0.541	Non-Liq.	Non-Liq.	0.00
28.71	376.46	4.11	1.09	110	1.310	0.927	1.09	0.50	0.90	318.68	1.59		1	100	1.00	7.55	1.00	319.9	0.92	Infin.	0.000	0.542	Non-Liq.	Non-Liq.	0.00
28.87	396.64	4.96	1.25	110	1.314	0.926	1.25	0.50	0.90	335.32	1.62		1	100	1.00	7.60	1.00	336.6	0.92	Infin.	0.000	0.543	Non-Liq.	Non-Liq.	0.00
29.04	393.61	3.29	0.83	110	1.318	0.926	0.84	0.50	0.90	332.26	1.49		1	100	1.00	7.65	1.00	333.5	0.92	Infin.	0.000	0.544	Non-Liq.	Non-Liq.	0.00
29.20	387.79	2.93	0.76	110	1.322	0.925	0.76	0.50	0.89	326.84	1.46		1	100	1.00	7.70	1.00	328.1	0.91	Infin.	0.000	0.545	Non-Liq.	Non-Liq.	0.00
29.36	376.30	2.51	0.67	110	1.325	0.924	0.67	0.50	0.89	316.65	1.43		1	100	1.00	7.75	1.00	317.8	0.91	Infin.	0.000	0.546	Non-Liq.	Non-Liq.	0.00
29.53	377.25	2.25	0.60	110	1.329	0.923	0.60	0.50	0.89	316.99	1.39		1	100	1.00	7.80	1.00	318.2	0.91	Infin.	0.000	0.547	Non-Liq.	Non-Liq.	0.00
29.69	384.97	2.36	0.61	110	1.333	0.923	0.62	0.50	0.89	323.02	1.39		1	100	1.00	7.85	1.00	324.2	0.91	Infin.	0.000	0.548	Non-Liq.	Non-Liq.	0.00
29.86	387.70	2.46	0.64	110	1.337	0.922	0.64	0.50	0.89	324.84	1.40		1	100	1.00	7.90	1.00	326.1	0.91	Infin.	0.000	0.549	Non-Liq.	Non-Liq.	0.00
30.02	389.61	2.68	0.69	110	1.341	0.921	0.69	0.50	0.89	325.97	1.43		1	100	1.00	7.95	1.00	327.2	0.91	Infin.	0.000	0.550	Non-Liq.	Non-Liq.	0.00
30.18	389.44	2.61	0.67	110	1.345	0.920	0.67	0.50	0.89	325.35	1.42		1	100	1.00	8.00	1.00	326.6	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.35	385.84	2.70	0.70	110	1.349	0.919	0.70	0.50	0.89	321.86	1.44		1	100	1.00	8.05	1.00	323.1	0.91	Infin.	0.000	0.551	Non-Liq.	Non-Liq.	0.00
30.51	373.85	2.74	0.73	110	1.353	0.918	0.74	0.50	0.88	311.37	1.46		1	100	1.00	8.10	1.00	312.5	0.91	Infin.	0.000	0.552	Non-Liq.	Non-Liq.	0.00
30.68	373.81	2.42	0.65	110	1.357	0.918	0.65	0.50	0.88	310.88	1.42		1	100	1.00	8.15	1.00	312.0	0.91	Infin.	0.000	0.553	Non-Liq.	Non-Liq.	0.00
30.84	390.03	2.25	0.58	110	1.361	0.917	0.58	0.50	0.88	323.95	1.37		1	100	1.00	8.20	1.00	325.2	0.90	Infin.	0.000	0.554	Non-Liq.	Non-Liq.	0.00
31.00	396.06	2.07	0.52	110	1.364	0.916	0.53	0.50	0.88	328.50	1.34		1	100	1.00	8.25	1.00	329.7	0.90	Infin.	0.000	0.555	Non-Liq.	Non-Liq.	0.00
31.17	382.13	2.25	0.59	110	1.368	0.915	0.59	0.50	0.88	316.45	1.39		1	100	1.00	8.30	1.00	317.6	0.90	Infin.	0.000	0.556	Non-Liq.	Non-Liq.	0.00
31.33	375.82	2.42	0.64	110	1.372	0.914	0.65	0.50	0.88	310.76	1.42		1	100	1.00	8.35	1.00	311.9	0.90	Infin.	0.000	0.556	Non-Liq.	Non-Liq.	0.00
31.50	391.03	2.99	0.77	110	1.376	0.913	0.77	0.50	0.88	322.92	1.46		1	100	1.00	8.40	1.00	324.1	0.90	Infin.	0.000	0.557	Non-Liq.	Non-Liq.	0.00
31.66	400.92	2.99	0.74	110	1.380	0.912	0.75	0.50	0.88	330.65	1.45		1	100	1.00	8.45	1.00	331.9	0.90	Infin.	0.000	0.558	Non-Liq.	Non-Liq.	0.00
31.82	406.82	3.52	0.87	110	1.384	0.911	0.87	0.50	0.87	335.05	1.50		1	100	1.00	8.45	1.00	336.3	0.90	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
31.99	418.90	4.27	1.02	110	1.388	0.910	1.02	0.50	0.87	344.55	1.54		1	100	1.00	8.45	1.00	345.8	0.90	Infin.	0.000	0.559	Non-Liq.	Non-Liq.	0.00
32.15	377.63	3.97	1.05	110	1.392	0.909	1.05	0.50	0.87	310.05	1.58		1	100	1.00	8.45	1.00	311.2	0.90	Infin.	0.000	0.560	Non-Liq.	Non-Liq.	0.00
32.32	379.13	2.48	0.65	110	1.396	0.908	0.66	0.50	0.87	310.85	1.43		1	100	1.00	8.45	1.00	312.0	0.90	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.48	383.08	2.56	0.67	110	1.400	0.907	0.67	0.50	0.87	313.66	1.43		1	100	1.00	8.45	1.00	314.8	0.89	Infin.	0.000	0.561	Non-Liq.	Non-Liq.	0.00
32.64	374.12	2.93	0.78	110	1.403	0.906	0.79	0.50	0.87	305.87	1.49		1	100	1.00	8.45	1.00	307.0	0.89	Infin.	0.000	0.562	Non-Liq.	Non-Liq.	0.00
32.81	381.30	3.49	0.92	110	1.407	0.905	0.92	0.50	0.87	311.32	1.53		1	100	1.00	8.45	1.00	312.5	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
32.97	408.55	3.13	0.77	110	1.411	0.904	0.77	0.50	0.87	333.19	1.46		1	100	1.00	8.45	1.00	334.4	0.89	Infin.	0.000	0.563	Non-Liq.	Non-Liq.	0.00
33.14	382.63	3.51	0.92	110	1.415	0.903	0.92	0.50	0.86	311.54	1.53		1	100	1.00	8.45	1.00	312.7	0.89	Infin.	0.000	0.564	Non-Liq.	Non-Liq.	0.00
33.30	380.84	3.52	0.93	110	1.419	0.902	0.93	0.50	0.86	309.65	1.54		1	100	1.00	8.45	1.00	310.8	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.46	373.57	2.42	0.65	110	1.423	0.901	0.65	0.50	0.86	303.30	1.43		1	100	1.00	8.45	1.00	304.4	0.89	Infin.	0.000	0.565	Non-Liq.	Non-Liq.	0.00
33.63	348.56	2.29	0.66	110	1.427	0.900	0.66	0.50	0.86	282.52	1.46		1	100	1.00	8.45	1.00	283.6	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.79	339.90	1.86	0.55	110	1.431	0.899	0.55	0.50	0.86	275.10	1.41		1	100	1.00	8.45	1.00	276.1	0.89	Infin.	0.000	0.566	Non-Liq.	Non-Liq.	0.00
33.96	325.76	1.16	0.36	110	1.435	0.898	0.36	0.50	0.86	263.24	1.30		1	100	1.00	8.45	1.00	264.2	0.89	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.12	318.65	1.04	0.33	110	1.439	0.897	0.33	0.50	0.86	257.12	1.29		1	100	1.00	8.45	1.00	258.1	0.88	Infin.	0.000	0.567	Non-Liq.	Non-Liq.	0.00
34.28	302.21	0.98	0.32	110	1.443	0.896	0.33	0.50	0.86	243.46	1.31		1	100	1.00	8.45	1.00	244.4	0.88	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.45	271.69	0.85	0.31	110	1.446	0.895	0.31	0.50	0.86	218.46	1.34		1	100	1.00	8.45	1.00	219.3	0.88	Infin.	0.000	0.568	Non-Liq.	Non-Liq.	0.00
34.61	230.31	1.74	0.76	110	1.450	0.894	0.76	0.50	0.85	184.75	1.63		1	100	1.00	8.45	1.00	185.4	0.88	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
34.78	172.13	2.62	1.52	110	1.454	0.893	1.53	0.59	0.83	133.65	1.94		1	89	1.23	8.45	1.00	165.6	0.88	Infin.	0.000	0.569	Non-Liq.	Non-Liq.	0.00
34.94	115.70	2.67	2.31	110	1.458	0.892	2.34	0.67	0.81	87.10	2.21		1	71	1.68		1.00	146.4	0.88	0.372	0.327	0.570	**0.57**	86%	**0.86**
35.10	77.37	2.49	3.21	110	1.462	0.890	3.28	0.74	0.79	56.46	2.44		1	53	2.49		1.00	140.7	0.91	0.339	0.308	0.570	**0.54**	88%	**1.00**
35.27	43.09	2.75	6.39	110	1.466	0.889	6.62	0.86	0.75	29.67	2.86		0						0.94			0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.43	41.07	3.05	7.42	110	1.470	0.888	7.70	0.88	0.75	27.99	2.92		0						0.94			0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.60	117.22	3.50	2.98	110	1.474	0.887	3.02	0.69	0.79	86.91	2.29		1	71	1.91		1.00	166.1	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.76	102.95	2.85	2.77	110	1.478	0.886	2.81	0.70	0.79	75.92	2.30		1	65	1.96		1.00	149.1	0.90	0.389	0.351	0.572	**0.61**	83%	**0.80**
35.93	60.37	2.54	4.20	110	1.482	0.885	4.31	0.79	0.77	42.64	2.61		0						0.93			0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.09	66.61	1.85	2.78	110	1.485	0.883	2.84	0.74	0.78	47.83	2.45		1	46	2.53		1.00	121.1	0.93	0.245	0.229	0.572	**0.40**	95%	**1.22**
36.25	123.04	2.42	1.97	110	1.489	0.882	1.99	0.65	0.80	92.00	2.14		1	73	1.53		1.00	140.7	0.87	0.339	0.296	0.573	**0.52**	90%	**1.00**
36.42	104.40	2.38	2.28	110	1.493	0.881	2.31	0.68	0.79	76.94	2.24		1	66	1.77		1.00	136.3	0.90	0.315	0.284	0.573	**0.50**	91%	**1.05**
36.58	92.52	2.48	2.68	110	1.497	0.880	2.72	0.71	0.78	67.30	2.33		1	60	2.05		1.00	138.1	0.90	0.325	0.293	0.573	**0.51**	90%	**1.03**
36.75	72.66	3.21	4.42	110	1.501	0.878	4.52	0.78	0.76	51.20	2.57		1	49	3.16		1.00	161.8	0.93	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.91	123.36	4.33	3.51	110	1.505	0.877	3.55	0.71	0.78	89.76	2.33		1	72	2.05		1.00	184.4	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.07	154.86	4.78	3.09	110	1.509	0.876	3.12	0.67	0.79	114.09	2.22		1	82	1.72		1.00	196.3	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.24	152.31	3.58	2.35	110	1.513	0.875	2.38	0.65	0.79	113.04	2.13		1	82	1.52		1.00	171.8	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.40	132.82	2.22	1.67	110	1.517	0.873	1.69	0.63	0.80	98.98	2.07		1	76	1.40		1.00	138.4	0.87	0.326	0.283	0.574	**0.49**	91%	**1.03**
37.57	105.83	2.40	2.26	110	1.521	0.872	2.30	0.68	0.78	77.06	2.24		1	66	1.76		1.00	135.9	0.90	0.314	0.281	0.574	**0.49**	91%	**1.05**
37.73	67.92	2.37	3.48	110	1.525	0.871	3.56	0.76	0.76	47.47	2.52		1	46	2.88		1.00	136.6	0.93	0.317	0.295	0.575	**0.51**	90%	**1.05**
37.89	210.25	2.15	1.02	110	1.528	0.869	1.03	0.54	0.82	161.91	1.76		1	97	1.08	0.60	1.15	201.7	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.06	301.78	1.89	0.62	110	1.532	0.868	0.63	0.50	0.83	235.81	1.50		1	100	1.00	0.60	1.15	271.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.22	341.56	2.23	0.65	110	1.536	0.867	0.66	0.50	0.83	266.71	1.47		1	100	1.00	0.60	1.15	307.4	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.39	339.90	2.19	0.64	110	1.540	0.865	0.65	0.50	0.83	265.07	1.47		1	100	1.00	0.60	1.15	305.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.55	347.24	2.08	0.60	110	1.544	0.864	0.60	0.50	0.83	270.47	1.44		1	100	1.00	0.60	1.15	311.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.71	371.45	2.18	0.59	110	1.548	0.863	0.59	0.50	0.83	289.04	1.41		1	100	1.00	0.60	1.15	333.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.88	396.18	1.74	0.44	110	1.552	0.861	0.44	0.50	0.83	307.98	1.31		1	100	1.00	0.65	1.15	355.0	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.04	405.84	1.92	0.47	110	1.556	0.860	0.47	0.50	0.82	315.12	1.32		1	100	1.00	0.70	1.15	363.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.21	400.44	2.26	0.57	110	1.560	0.859	0.57	0.50	0.82	310.52	1.38		1	100	1.00	0.70	1.15	357.9	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.37	383.75	3.81	0.99	110	1.564	0.857	1.00	0.50	0.82	297.15	1.57		1	100	1.00	0.70	1.15	342.5	0.86	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.53	290.03	4.33	1.49	110	1.567	0.856	1.50	0.55	0.81	219.94	1.79		1	100	1.10	0.70	1.15	279.6	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.70	204.10	3.79	1.85	110	1.571	0.854	1.87	0.60	0.79	150.99	1.97		1	94	1.27	0.70	1.15	220.3	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.86	126.34	3.03	2.39	110	1.575	0.853	2.42	0.67	0.77	90.32	2.21		1	73	1.68		1.00	151.9	0.85	0.406	0.346	0.575	**0.60**	84%	**0.73**
40.03	296.00	2.40	0.81	110	1.579	0.852	0.82	0.50	0.82	227.78	1.59		1	100	1.00	0.70	1.10	249.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.19	353.59	2.39	0.68	110	1.583	0.850	0.68	0.50	0.82	271.99	1.48		1	100	1.00	0.70	1.10	297.8	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.35	369.58	2.61	0.70	110	1.587	0.849	0.71	0.50	0.82	283.99	1.48		1	100	1.00	0.70	1.10	311.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.52	358.58	2.73	0.76	110	1.591	0.847	0.76	0.50	0.82	275.16	1.51		1	100	1.00	0.70	1.10	301.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.68	360.65	2.12	0.59	110	1.595	0.846	0.59	0.50	0.81	276.42	1.43		1	100	1.00	0.70	1.10	302.7	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.85	364.14	2.43	0.67	110	1.599	0.844	0.67	0.50	0.81	278.76	1.46		1	100	1.00	0.70	1.10	305.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.01	369.03	2.40	0.65	110	1.603	0.843	0.65	0.50	0.81	282.17	1.45		1	100	1.00	0.70	1.10	309.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.17	370.72	2.34	0.63	110	1.607	0.841	0.63	0.50	0.81	283.12	1.44		1	100	1.00	0.70	1.10	310.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.34	386.57	2.08	0.54	110	1.610	0.840	0.54	0.50	0.81	294.92	1.38		1	100	1.00	0.70	1.10	323.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.50	407.71	2.69	0.66	110	1.614	0.838	0.66	0.50	0.81	310.74	1.43		1	100	1.00	0.70	1.10	340.3	0.84	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.67	452.33	3.54	0.78	110	1.618	0.837	0.79	0.50	0.81	344.46	1.45		1	100	1.00	0.70	1.10	377.2	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.83	466.57	3.92	0.84	110	1.622	0.835	0.84	0.50	0.81	354.91	1.47		1	100	1.00	0.70	1.10	388.6	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.99	524.35	3.52	0.67	110	1.626	0.834	0.67	0.50	0.81	398.53	1.36		1	100	1.00	0.70	1.10	436.4	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.16	610.77	2.62	0.43	110	1.630	0.832	0.43	0.50	0.81	463.86	1.17		1	100	1.00	0.70	1.10	508.0	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.32	716.25	0.00	0.00	110	1.634	0.831	0.00	0.83	0.70	470.17	2.75		0		1.00				0.92			0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.49	652.94	0.00	0.00	110	1.638	0.829	0.00	0.83	0.70	429.16	2.73		0		1.00				0.92			0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.65	696.03	0.00	0.00	110	1.642	0.827	0.00	0.83	0.69	455.52	2.74		0		1.00				0.92			0.573	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-6A
Plot: 6

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
2.1

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.36
Avg SF of Liquefiable Layers: 0.03

Probab	Total Induced Subsidence (inches)
Avg	0
3%	0
Max	0
99%	0.3

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	6.69	0.01	0.21	110	0.009	1.000	0.21	0.76	1.70	10.74	2.50		1	0	1.00		1.00	10.7	1.00	0.059	0.059	0.485	Non-Liq.	Non-Liq.	0.00
0.33	14.12	0.04	0.28	110	0.018	1.000	0.28	0.67	1.70	22.66	2.22		1	15	1.00		1.00	22.7	1.00	0.069	0.069	0.485	Non-Liq.	Non-Liq.	0.00
0.49	16.59	0.09	0.55	110	0.027	1.000	0.56	0.69	1.70	26.61	2.26		1	22	1.83		1.00	48.7	1.00	0.091	0.091	0.485	Non-Liq.	Non-Liq.	0.00
0.66	21.13	0.18	0.84	110	0.036	1.000	0.84	0.68	1.70	33.89	2.25		1	32	1.81		1.00	61.3	1.00	0.101	0.101	0.485	Non-Liq.	Non-Liq.	0.00
0.82	29.41	0.29	0.98	110	0.045	1.000	0.98	0.66	1.70	47.18	2.17		1	46	1.59		1.00	75.1	1.00	0.119	0.119	0.485	Non-Liq.	Non-Liq.	0.00
0.98	35.60	0.35	0.99	110	0.054	1.000	0.99	0.64	1.70	57.12	2.10		1	54	1.46		1.00	83.2	1.00	0.134	0.134	0.485	Non-Liq.	Non-Liq.	0.00
1.15	34.08	0.35	1.03	110	0.063	0.999	1.03	0.65	1.70	54.66	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.484	Non-Liq.	Non-Liq.	0.00
1.31	34.08	0.35	1.03	110	0.072	0.999	1.04	0.65	1.70	54.64	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.484	Non-Liq.	Non-Liq.	0.00
1.48	30.11	0.33	1.11	110	0.081	0.999	1.11	0.66	1.70	48.25	2.19		1	47	1.64		1.00	79.2	1.00	0.126	0.126	0.484	Non-Liq.	Non-Liq.	0.00
1.64	28.15	0.27	0.96	110	0.090	0.998	0.96	0.66	1.70	45.09	2.18		1	44	1.62		1.00	72.8	1.00	0.116	0.116	0.484	Non-Liq.	Non-Liq.	0.00
1.80	29.07	0.35	1.20	110	0.099	0.998	1.20	0.67	1.70	46.55	2.22		1	45	1.72		1.00	80.2	1.00	0.128	0.128	0.484	Non-Liq.	Non-Liq.	0.00
1.97	26.19	0.39	1.47	110	0.108	0.998	1.48	0.70	1.70	41.91	2.31		1	41	1.99		1.00	83.4	1.00	0.134	0.134	0.484	Non-Liq.	Non-Liq.	0.00
2.13	20.41	0.42	2.07	110	0.117	0.997	2.08	0.75	1.70	32.61	2.49		1	30	2.72		1.00	88.5	1.00	0.145	0.145	0.483	Non-Liq.	Non-Liq.	0.00
2.30	15.45	0.44	2.83	110	0.126	0.997	2.85	0.81	1.70	24.62	2.67		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.46	12.62	0.37	2.95	110	0.135	0.996	2.98	0.83	1.70	20.06	2.75		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.62	13.50	0.27	2.01	110	0.144	0.996	2.04	0.80	1.70	21.46	2.63		0						1.00			0.483	Non-Liq.	Non-Liq.	0.00
2.79	20.18	0.31	1.56	110	0.153	0.996	1.57	0.73	1.70	32.18	2.42		1	30	2.39		1.00	77.0	1.00	0.123	0.123	0.483	Non-Liq.	Non-Liq.	0.00
2.95	25.28	0.31	1.23	110	0.162	0.995	1.23	0.69	1.70	40.36	2.28		1	39	1.88		1.00	76.0	1.00	0.121	0.121	0.482	Non-Liq.	Non-Liq.	0.00
3.12	31.76	0.36	1.12	110	0.171	0.995	1.13	0.66	1.70	50.76	2.18		1	49	1.61		1.00	81.6	1.00	0.131	0.131	0.482	Non-Liq.	Non-Liq.	0.00
3.28	35.56	0.38	1.08	110	0.180	0.994	1.09	0.65	1.70	56.85	2.13		1	53	1.50		1.00	85.5	1.00	0.138	0.138	0.482	Non-Liq.	Non-Liq.	0.00
3.44	40.16	0.39	0.98	110	0.189	0.994	0.98	0.63	1.70	64.22	2.06		1	58	1.38		1.00	88.8	1.00	0.145	0.145	0.482	Non-Liq.	Non-Liq.	0.00
3.61	45.45	0.46	1.00	110	0.198	0.994	1.01	0.61	1.70	72.71	2.02		1	64	1.33		1.00	96.5	1.00	0.164	0.164	0.482	Non-Liq.	Non-Liq.	0.00
3.77	52.79	0.51	0.96	110	0.208	0.993	0.97	0.60	1.70	84.49	1.96		1	70	1.25	0.65	1.12	118.5	1.00	0.235	0.235	0.482	Non-Liq.	Non-Liq.	0.00
3.94	58.72	0.56	0.95	110	0.217	0.993	0.95	0.58	1.70	94.00	1.92		1	74	1.20	0.70	1.12	127.1	1.00	0.271	0.271	0.481	Non-Liq.	Non-Liq.	0.00
4.10	64.33	0.60	0.94	110	0.226	0.993	0.94	0.57	1.70	103.00	1.88		1	78	1.17	0.75	1.12	135.7	1.00	0.312	0.312	0.481	Non-Liq.	Non-Liq.	0.00
4.27	69.66	0.83	1.19	110	0.235	0.992	1.19	0.59	1.70	111.55	1.93		1	81	1.21	0.80	1.12	151.9	1.00	0.406	0.406	0.481	Non-Liq.	Non-Liq.	0.00
4.43	74.65	1.28	1.71	110	0.244	0.992	1.72	0.61	1.70	119.56	2.01		1	84	1.32		1.00	157.6	1.00	0.444	0.444	0.481	Non-Liq.	Non-Liq.	0.00
4.59	78.74	2.11	2.68	110	0.253	0.991	2.69	0.65	1.70	126.11	2.14		1	86	1.54		1.00	194.3	1.00	Infin.	0.000	0.481	Non-Liq.	Non-Liq.	0.00
4.76	95.41	2.01	2.11	110	0.262	0.991	2.12	0.61	1.70	152.88	2.01		1	94	1.31		1.00	200.9	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
4.92	90.35	1.38	1.53	110	0.271	0.991	1.54	0.58	1.70	144.74	1.92		1	92	1.21	1.00	1.00	175.8	1.00	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
5.09	73.79	0.57	0.78	110	0.280	0.990	0.78	0.54	1.70	118.12	1.79		1	84	1.10	1.05	1.00	130.0	1.00	0.285	0.285	0.480	Non-Liq.	Non-Liq.	0.00
5.25	64.99	0.41	0.63	110	0.289	0.990	0.63	0.54	1.70	103.96	1.78		1	78	1.09	1.10	1.00	113.6	1.00	0.216	0.216	0.480	Non-Liq.	Non-Liq.	0.00
5.41	60.11	0.48	0.80	110	0.298	0.989	0.81	0.57	1.70	96.11	1.87		1	75	1.16	1.15	1.00	111.7	1.00	0.210	0.210	0.480	Non-Liq.	Non-Liq.	0.00
5.58	57.62	0.71	1.23	110	0.307	0.989	1.24	0.61	1.70	92.09	2.00		1	73	1.30	1.20	1.00	120.0	1.00	0.241	0.241	0.479	Non-Liq.	Non-Liq.	0.00
5.74	60.32	0.70	1.16	110	0.316	0.989	1.16	0.60	1.70	96.42	1.97		1	75	1.26	1.25	1.00	121.7	1.00	0.247	0.247	0.479	Non-Liq.	Non-Liq.	0.00
5.91	59.79	0.67	1.11	110	0.325	0.988	1.12	0.60	1.70	95.55	1.96		1	75	1.25	1.30	1.00	119.7	1.00	0.239	0.239	0.479	Non-Liq.	Non-Liq.	0.00
6.07	56.99	0.42	0.74	110	0.334	0.988	0.75	0.57	1.70	91.04	1.86		1	73	1.16	1.35	1.00	105.8	1.00	0.190	0.190	0.479	Non-Liq.	Non-Liq.	0.00
6.23	64.88	0.50	0.77	110	0.343	0.988	0.77	0.56	1.70	103.70	1.83		1	78	1.13	1.40	1.00	117.4	1.00	0.230	0.230	0.479	Non-Liq.	Non-Liq.	0.00
6.40	81.28	0.52	0.64	110	0.352	0.987	0.64	0.52	1.70	130.04	1.70		1	88	1.04	1.45	1.00	135.6	1.00	0.312	0.312	0.479	Non-Liq.	Non-Liq.	0.00
6.56	88.72	0.58	0.65	110	0.361	0.987	0.66	0.51	1.70	141.98	1.68		1	91	1.02	1.50	1.00	145.7	1.00	0.368	0.368	0.478	Non-Liq.	Non-Liq.	0.00
6.73	90.02	0.70	0.78	110	0.370	0.986	0.78	0.52	1.70	144.05	1.72		1	92	1.05	1.55	1.00	151.9	1.00	0.406	0.406	0.478	Non-Liq.	Non-Liq.	0.00
6.89	95.98	0.75	0.78	110	0.379	0.986	0.79	0.52	1.70	153.61	1.70		1	95	1.04	1.60	1.00	160.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	106.17	0.82	0.77	110	0.388	0.986	0.77	0.51	1.67	166.59	1.67		1	98	1.02	1.65	1.00	170.1	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	120.42	0.87	0.72	110	0.397	0.985	0.72	0.50	1.63	185.20	1.62		1	100	1.00	1.70	1.00	185.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	147.55	0.97	0.66	110	0.406	0.985	0.66	0.50	1.61	224.51	1.53		1	100	1.00	1.75	1.00	225.3	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	167.64	1.10	0.66	110	0.415	0.985	0.66	0.50	1.60	252.36	1.49		1	100	1.00	1.80	1.00	253.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	167.64	1.10	0.66	110	0.424	0.984	0.66	0.50	1.58	249.65	1.49		1	100	1.00	1.85	1.00	250.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	175.94	1.23	0.70	110	0.433	0.984	0.70	0.50	1.56	259.28	1.50		1	100	1.00	1.90	1.00	260.3	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	183.17	1.23	0.67	110	0.442	0.984	0.67	0.50	1.55	267.18	1.48		1	100	1.00	1.95	1.00	268.2	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	189.37	0.94	0.50	110	0.451	0.983	0.50	0.50	1.53	273.46	1.38		1	100	1.00	2.00	1.00	274.5	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.37	193.49	1.24	0.64	110	0.460	0.983	0.64	0.50	1.52	276.65	1.45		1	100	1.00	2.05	1.00	277.7	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.53	194.51	1.46	0.75	110	0.469	0.982	0.75	0.50	1.50	275.42	1.51		1	100	1.00	2.10	1.00	276.4	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.69	195.90	1.50	0.77	110	0.478	0.982	0.77	0.50	1.49	274.75	1.51		1	100	1.00	2.15	1.00	275.8	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
8.86	199.53	1.67	0.84	110	0.487	0.982	0.84	0.50	1.47	277.23	1.54		1	100	1.00	2.20	1.00	278.3	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.02	202.65	1.56	0.77	110	0.496	0.981	0.77	0.50	1.46	279.00	1.51		1	100	1.00	2.25	1.00	280.0	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.19	204.68	1.62	0.79	110	0.505	0.981	0.80	0.50	1.45	279.26	1.52		1	100	1.00	2.30	1.00	280.3	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.35	192.88	1.56	0.81	110	0.514	0.981	0.81	0.50	1.43	260.79	1.54		1	100	1.00	2.35	1.00	261.8	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.51	173.28	1.31	0.75	110	0.523	0.980	0.76	0.50	1.42	232.18	1.56		1	100	1.00	2.40	1.00	233.0	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.68	160.53	1.12	0.70	110	0.532	0.980	0.70	0.50	1.41	213.20	1.56		1	100	1.00	2.45	1.00	214.0	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.84	160.48	0.98	0.61	110	0.541	0.980	0.61	0.50	1.40	211.34	1.53		1	100	1.00	2.50	1.00	212.1	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.01	167.93	0.95	0.57	110	0.550	0.979	0.57	0.50	1.39	219.35	1.49		1	100	1.00	2.55	1.00	220.2	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.17	179.44	1.12	0.62	110	0.559	0.979	0.62	0.50	1.38	232.52	1.50		1	100	1.00	2.60	1.00	233.4	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.33	196.39	1.47	0.75	110	0.568	0.979	0.75	0.50	1.36	252.52	1.53		1	100	1.00	2.65	1.00	253.5	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.50	212.87	1.68	0.79	110	0.577	0.978	0.79	0.50	1.35	271.61	1.52		1	100	1.00	2.70	1.00	272.6	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.66	218.59	1.72	0.79	110	0.586	0.978	0.79	0.50	1.34	276.76	1.52		1	100	1.00	2.75	1.00	277.8	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.83	219.09	1.46	0.67	110	0.595	0.978	0.67	0.50	1.33	275.28	1.47		1	100	1.00	2.80	1.00	276.3	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.99	218.78	1.57	0.72	110	0.604	0.977	0.72	0.50	1.32	272.81	1.49		1	100	1.00	2.85	1.00	273.8	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.15	227.29	1.90	0.84	110	0.614	0.977	0.84	0.50	1.31	281.35	1.53		1	100	1.00	2.90	1.00	282.4	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.32	240.17	1.92	0.80	110	0.623	0.977	0.80	0.50	1.30	295.17	1.50		1	100	1.00	2.95	1.00	296.3	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.48	222.62	1.81	0.81	110	0.632	0.976	0.82	0.50	1.29	271.57	1.53		1	100	1.00	3.00	1.00	272.6	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.65	216.62	2.13	0.98	110	0.641	0.976	0.98	0.50	1.29	262.35	1.61		1	100	1.00	3.05	1.00	263.3	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.81	220.47	2.23	1.01	110	0.650	0.975	1.01	0.50	1.28	265.16	1.61		1	100	1.00	3.10	1.00	266.1	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.98	211.90	2.36	1.11	110	0.659	0.975	1.12	0.50	1.27	253.63	1.66		1	100	1.01	3.15	1.00	256.5	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.14	218.21	2.15	0.99	110	0.668	0.975	0.99	0.50	1.26	258.84	1.61		1	100	1.00	3.20	1.00	259.8	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.30	217.25	1.71	0.79	110	0.677	0.974	0.79	0.50	1.25	255.96	1.54		1	100	1.00	3.25	1.00	256.9	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.47	227.19	1.31	0.58	110	0.686	0.974	0.58	0.50	1.24	265.93	1.43		1	100	1.00	3.30	1.00	266.9	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.63	246.00	1.35	0.55	110	0.695	0.974	0.55	0.50	1.23	286.13	1.40		1	100	1.00	3.35	1.00	287.2	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.80	271.55	2.19	0.81	110	0.704	0.973	0.81	0.50	1.23	313.89	1.49		1	100	1.00	3.40	1.00	315.1	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	$K\sigma$	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	298.70	2.19	0.73	110	0.713	0.973	0.74	0.50	1.22	343.15	1.43		1	100	1.00	3.45	1.00	344.4	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.12	297.19	2.53	0.85	110	0.722	0.973	0.85	0.50	1.21	339.26	1.49		1	100	1.00	3.50	1.00	340.5	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
13.29	297.26	2.68	0.90	110	0.731	0.972	0.90	0.50	1.20	337.23	1.51		1	100	1.00	3.55	1.00	338.5	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.45	299.77	2.66	0.89	110	0.740	0.972	0.89	0.50	1.20	337.99	1.50		1	100	1.00	3.60	1.00	339.3	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.62	299.47	2.65	0.88	110	0.749	0.972	0.89	0.50	1.19	335.60	1.50		1	100	1.00	3.65	1.00	336.9	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.78	293.58	3.11	1.06	110	0.758	0.971	1.06	0.50	1.18	327.01	1.57		1	100	1.00	3.70	1.00	328.2	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
13.94	298.13	3.07	1.03	110	0.767	0.971	1.03	0.50	1.17	330.12	1.56		1	100	1.00	3.75	1.00	331.4	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.11	301.85	3.04	1.01	110	0.776	0.971	1.01	0.50	1.17	332.29	1.55		1	100	1.00	3.80	1.00	333.5	1.00	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
14.27	298.45	3.68	1.23	110	0.785	0.970	1.24	0.50	1.16	326.64	1.62		1	100	1.00	3.85	1.00	327.9	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.44	300.98	2.74	0.91	110	0.794	0.970	0.91	0.50	1.15	327.53	1.52		1	100	1.00	3.90	1.00	328.8	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.60	315.50	2.80	0.89	110	0.803	0.970	0.89	0.50	1.15	341.43	1.50		1	100	1.00	3.95	1.00	342.7	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.76	313.59	3.04	0.97	110	0.812	0.969	0.97	0.50	1.14	337.45	1.53		1	100	1.00	4.00	1.00	338.7	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
14.93	322.37	3.47	1.08	110	0.821	0.969	1.08	0.50	1.14	345.00	1.56		1	100	1.00	4.05	1.00	346.3	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.09	336.14	3.51	1.04	110	0.830	0.969	1.05	0.50	1.13	357.81	1.54		1	100	1.00	4.10	1.00	359.1	1.00	Infin.	0.000	0.470	Non-Liq.	Non-Liq.	0.00
15.26	323.66	3.11	0.96	110	0.839	0.968	0.96	0.50	1.12	342.62	1.52		1	100	1.00	4.15	1.00	343.9	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.42	317.94	3.08	0.97	110	0.848	0.968	0.97	0.50	1.12	334.75	1.53		1	100	1.00	4.20	1.00	336.0	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.58	320.07	3.08	0.96	110	0.857	0.967	0.96	0.50	1.11	335.21	1.53		1	100	1.00	4.25	1.00	336.5	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.75	310.52	2.97	0.96	110	0.866	0.967	0.96	0.50	1.11	323.47	1.54		1	100	1.00	4.30	1.00	324.7	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
15.91	314.10	3.02	0.96	110	0.875	0.967	0.96	0.50	1.10	325.51	1.54		1	100	1.00	4.35	1.00	326.7	1.00	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
16.08	315.60	2.97	0.94	110	0.884	0.966	0.94	0.50	1.09	325.39	1.53		1	100	1.00	4.40	1.00	326.6	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.24	327.26	2.77	0.85	110	0.893	0.966	0.85	0.50	1.09	335.73	1.49		1	100	1.00	4.45	1.00	337.0	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.40	328.11	2.94	0.89	110	0.902	0.966	0.90	0.50	1.08	334.91	1.51		1	100	1.00	4.50	1.00	336.2	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.57	357.30	2.93	0.82	110	0.911	0.965	0.82	0.50	1.08	362.96	1.45		1	100	1.00	4.55	1.00	364.3	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.73	379.84	3.02	0.80	110	0.920	0.965	0.80	0.50	1.07	384.01	1.43		1	100	1.00	4.60	1.00	385.4	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
16.90	393.42	4.35	1.11	110	0.929	0.965	1.11	0.50	1.07	395.83	1.54		1	100	1.00	4.65	1.00	397.3	1.00	Infin.	0.000	0.468	Non-Liq.	Non-Liq.	0.00
17.06	393.65	3.67	0.93	110	0.938	0.964	0.93	0.50	1.06	394.14	1.48		1	100	1.00	4.70	1.00	395.6	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.22	403.88	3.66	0.91	110	0.947	0.964	0.91	0.50	1.06	402.47	1.46		1	100	1.00	4.75	1.00	404.0	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.39	384.75	3.06	0.80	110	0.956	0.963	0.80	0.50	1.05	381.54	1.43		1	100	1.00	4.80	1.00	383.0	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.55	418.46	2.70	0.64	110	0.965	0.963	0.65	0.50	1.05	413.10	1.34		1	100	1.00	4.85	1.00	414.6	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.72	426.59	3.76	0.88	110	0.974	0.963	0.88	0.50	1.04	419.18	1.44		1	100	1.00	4.90	1.00	420.8	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
17.88	438.49	4.30	0.98	110	0.983	0.962	0.98	0.50	1.04	428.91	1.47		1	100	1.00	4.95	1.00	430.5	1.00	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
18.04	459.63	3.50	0.76	110	0.992	0.962	0.76	0.50	1.03	447.58	1.37		1	100	1.00	5.00	1.00	449.3	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.21	446.70	3.76	0.84	110	1.001	0.962	0.84	0.50	1.03	432.99	1.42		1	100	1.00	5.05	1.00	434.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.37	433.53	3.52	0.81	110	1.010	0.961	0.81	0.50	1.02	418.31	1.41		1	100	1.00	5.10	1.00	419.9	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.54	420.70	4.05	0.96	110	1.020	0.961	0.96	0.50	1.02	404.09	1.48		1	100	1.00	5.15	1.00	405.6	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.70	427.38	4.04	0.95	110	1.029	0.960	0.95	0.50	1.01	408.71	1.47		1	100	1.00	5.20	1.00	410.2	1.00	Infin.	0.000	0.466	Non-Liq.	Non-Liq.	0.00
18.86	433.11	4.37	1.01	110	1.038	0.960	1.01	0.50	1.01	412.39	1.49		1	100	1.00	5.20	1.00	413.9	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.03	406.01	4.03	0.99	110	1.047	0.960	0.99	0.50	1.01	384.84	1.51		1	100	1.00	5.20	1.00	386.3	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.19	382.11	4.15	1.09	110	1.056	0.959	1.09	0.50	1.00	360.57	1.55		1	100	1.00	5.20	1.00	361.9	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.36	381.05	4.09	1.07	110	1.065	0.959	1.08	0.50	1.00	358.03	1.55		1	100	1.00	5.20	1.00	359.4	1.00	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.52	379.85	4.12	1.08	110	1.074	0.958	1.09	0.50	0.99	355.39	1.56		1	100	1.00	5.20	1.00	356.7	0.99	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
19.69	382.89	4.14	1.08	110	1.083	0.958	1.08	0.50	0.99	356.74	1.55		1	100	1.00	5.20	1.00	358.1	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
19.85	384.60	3.97	1.03	110	1.092	0.957	1.04	0.50	0.98	356.85	1.54		1	100	1.00	5.20	1.00	358.2	0.99	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.01	377.72	4.35	1.15	110	1.101	0.957	1.16	0.50	0.98	349.00	1.58		1	100	1.00	5.20	1.00	350.3	0.98	Infin.	0.000	0.464	Non-Liq.	Non-Liq.	0.00
20.18	371.25	4.23	1.14	110	1.107	0.957	1.14	0.50	0.98	342.06	1.58		1	100	1.00	5.20	1.00	343.3	0.98	Infin.	0.000	0.465	Non-Liq.	Non-Liq.	0.00
20.34	361.72	4.14	1.14	110	1.111	0.956	1.15	0.50	0.98	332.66	1.59		1	100	1.00	5.20	1.00	333.9	0.98	Infin.	0.000	0.467	Non-Liq.	Non-Liq.	0.00
20.51	347.60	4.05	1.16	110	1.115	0.956	1.17	0.50	0.97	319.07	1.61		1	100	1.00	5.20	1.00	320.3	0.98	Infin.	0.000	0.469	Non-Liq.	Non-Liq.	0.00
20.67	339.34	3.76	1.11	110	1.118	0.955	1.11	0.50	0.97	310.92	1.60		1	100	1.00	5.20	1.00	312.1	0.98	Infin.	0.000	0.471	Non-Liq.	Non-Liq.	0.00
20.83	332.14	3.55	1.07	110	1.122	0.955	1.07	0.50	0.97	303.76	1.59		1	100	1.00	5.20	1.00	304.9	0.98	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
21.00	334.58	3.14	0.94	110	1.126	0.954	0.94	0.50	0.97	305.47	1.55		1	100	1.00	5.20	1.00	306.6	0.98	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
21.16	327.20	2.80	0.86	110	1.130	0.954	0.86	0.50	0.97	298.19	1.52		1	100	1.00	5.20	1.00	299.3	0.97	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
21.33	310.59	2.46	0.79	110	1.134	0.954	0.80	0.50	0.97	282.51	1.51		1	100	1.00	5.20	1.00	283.6	0.97	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
21.49	293.79	1.87	0.63	110	1.138	0.953	0.64	0.50	0.96	266.71	1.46		1	100	1.00	5.20	1.00	267.7	0.97	Infin.	0.000	0.480	Non-Liq.	Non-Liq.	0.00
21.65	272.37	1.43	0.52	110	1.142	0.953	0.53	0.50	0.96	246.76	1.43		1	100	1.00	5.20	1.00	247.7	0.97	Infin.	0.000	0.482	Non-Liq.	Non-Liq.	0.00
21.82	224.93	2.27	1.01	110	1.146	0.952	1.01	0.51	0.96	203.01	1.69		1	100	1.03	5.20	1.00	210.1	0.97	Infin.	0.000	0.483	Non-Liq.	Non-Liq.	0.00
21.98	164.58	3.51	2.13	110	1.150	0.952	2.15	0.62	0.95	146.76	2.03		1	93	1.34		1.00	196.2	0.97	Infin.	0.000	0.485	Non-Liq.	Non-Liq.	0.00
22.15	113.74	3.46	3.04	110	1.154	0.951	3.07	0.68	0.94	100.30	2.25		1	77	1.81		1.00	181.0	0.97	Infin.	0.000	0.487	Non-Liq.	Non-Liq.	0.00
22.31	96.23	3.59	3.73	110	1.158	0.951	3.78	0.72	0.94	84.24	2.37		1	70	2.19		1.00	184.7	0.97	Infin.	0.000	0.489	Non-Liq.	Non-Liq.	0.00
22.47	51.22	2.75	5.37	110	1.161	0.950	5.50	0.81	0.93	43.86	2.68		0						0.98			0.490	Non-Liq.	Non-Liq.	0.00
22.64	53.23	1.95	3.66	110	1.165	0.950	3.74	0.77	0.93	45.67	2.55		1	44	3.02		1.00	138.0	0.98	0.324	0.318	0.492	**0.65**	81%	**1.02**
22.80	95.82	1.58	1.65	110	1.169	0.949	1.67	0.64	0.94	83.90	2.11		1	70	1.48		1.00	124.3	0.97	0.258	0.251	0.494	**0.51**	90%	**1.17**
22.97	193.72	2.53	1.30	110	1.173	0.949	1.31	0.55	0.94	171.87	1.82		1	99	1.12	1.00	1.00	193.5	0.96	Infin.	0.000	0.495	Non-Liq.	Non-Liq.	0.00
23.13	228.65	2.09	0.91	110	1.177	0.948	0.92	0.51	0.95	203.73	1.66		1	100	1.01	1.05	1.00	206.2	0.96	Infin.	0.000	0.497	Non-Liq.	Non-Liq.	0.00
23.29	278.92	2.84	1.02	110	1.181	0.948	1.02	0.50	0.95	248.47	1.63		1	100	1.00	1.10	1.00	249.4	0.96	Infin.	0.000	0.498	Non-Liq.	Non-Liq.	0.00
23.46	376.36	2.41	0.64	110	1.185	0.947	0.64	0.50	0.94	335.09	1.40		1	100	1.00	1.15	1.00	336.3	0.96	Infin.	0.000	0.500	Non-Liq.	Non-Liq.	0.00
23.62	310.45	2.46	0.79	110	1.189	0.947	0.80	0.50	0.94	275.76	1.52		1	100	1.00	1.20	1.00	276.8	0.95	Infin.	0.000	0.502	Non-Liq.	Non-Liq.	0.00
23.79	306.26	2.29	0.75	110	1.193	0.946	0.75	0.50	0.94	271.58	1.51		1	100	1.00	1.25	1.00	272.6	0.95	Infin.	0.000	0.503	Non-Liq.	Non-Liq.	0.00
23.95	308.85	2.26	0.73	110	1.197	0.946	0.74	0.50	0.94	273.43	1.50		1	100	1.00	1.30	1.00	274.5	0.95	Infin.	0.000	0.505	Non-Liq.	Non-Liq.	0.00
24.11	306.71	2.22	0.72	110	1.200	0.945	0.73	0.50	0.94	271.08	1.50		1	100	1.00	1.35	1.00	272.1	0.95	Infin.	0.000	0.506	Non-Liq.	Non-Liq.	0.00
24.28	307.77	2.19	0.71	110	1.204	0.945	0.72	0.50	0.94	271.58	1.49		1	100	1.00	1.40	1.00	272.6	0.95	Infin.	0.000	0.508	Non-Liq.	Non-Liq.	0.00
24.44	305.26	1.72	0.56	110	1.208	0.944	0.57	0.50	0.94	268.92	1.42		1	100	1.00	1.45	1.00	269.9	0.95	Infin.	0.000	0.509	Non-Liq.	Non-Liq.	0.00
24.61	305.26	1.99	0.65	110	1.212	0.943	0.65	0.50	0.93	268.48	1.47		1	100	1.00	1.50	1.00	269.5	0.95	Infin.	0.000	0.511	Non-Liq.	Non-Liq.	0.00
24.77	310.72	2.04	0.66	110	1.216	0.943	0.66	0.50	0.93	272.86	1.47		1	100	1.00	1.50	1.00	273.9	0.95	Infin.	0.000	0.512	Non-Liq.	Non-Liq.	0.00
24.93	312.81	1.96	0.63	110	1.220	0.942	0.63	0.50	0.93	274.26	1.45		1	100	1.00	1.50	1.00	275.3	0.94	Infin.	0.000	0.514	Non-Liq.	Non-Liq.	0.00
25.10	329.09	2.01	0.61	110	1.224	0.942	0.61	0.50	0.93	288.12	1.43		1	100	1.00	1.50	1.00	289.2	0.94	Infin.	0.000	0.515	Non-Liq.	Non-Liq.	0.00
25.26	344.97	1.95	0.57	110	1.228	0.941	0.57	0.50	0.93	301.60	1.39		1	100	1.00	1.50	1.00	302.7	0.94	Infin.	0.000	0.516	Non-Liq.	Non-Liq.	0.00
25.43	351.08	2.30	0.65	110	1.232	0.941	0.66	0.50	0.93	306.47	1.43		1	100	1.00	1.50	1.00	307.6	0.94	Infin.	0.000	0.518	Non-Liq.	Non-Liq.	0.00
25.59	363.90	2.26	0.62	110	1.236	0.940	0.62	0.50	0.93	317.19	1.40		1	100	1.00	1.50	1.00	318.4	0.94	Infin.	0.000	0.519	Non-Liq.	Non-Liq.	0.00
25.75	366.29	2.65	0.72	110	1.240	0.939	0.72	0.50	0.92	318.77	1.45		1	100	1.00	1.50	1.00	320.0	0.94	Infin.	0.000	0.520	Non-Liq.	Non-Liq.	0.00
25.92	360.95	2.59	0.72	110	1.243	0.939	0.72	0.50	0.92	313.61	1.45		1	100	1.00	1.50	1.00	314.8	0.94	Infin.	0.000	0.522	Non-Liq.	Non-Liq.	0.00
26.08	355.58	2.62	0.74	110	1.247	0.938	0.74	0.50	0.92	308.45	1.47		1	100	1.00	1.50	1.00	309.6	0.94	Infin.	0.000	0.523	Non-Liq.	Non-Liq.	0.00
26.25	351.54	2.85	0.81	110	1.251	0.938	0.81	0.50	0.92	304.45	1.50		1	100	1.00	1.50	1.00	305.6	0.94	Infin.	0.000	0.524	Non-Liq.	Non-Liq.	0.00
26.41	345.76	2.67	0.77	110	1.255	0.937	0.77	0.50	0.92	298.96	1.49		1	100	1.00	1.50	1.00	300.1	0.93	Infin.	0.000	0.526	Non-Liq.	Non-Liq.	0.00
26.57	331.98	2.56	0.77	110	1.259	0.936	0.77	0.50	0.92	286.55	1.50		1	100	1.00	1.50	1.00	287.6	0.93	Infin.	0.000	0.527	Non-Liq.	Non-Liq.	0.00
26.74	322.29	2.19	0.68	110	1.263	0.936	0.68	0.50	0.92	277.72	1.47		1	100	1.00	1.50	1.00	278.8	0.93	Infin.	0.000	0.528	Non-Liq.	Non-Liq.	0.00
26.90	314.01	1.96	0.62	110	1.267	0.935	0.63	0.50	0.91	270.14	1.45		1	100	1.00	1.50	1.00	271.1	0.93	Infin.	0.000	0.529	Non-Liq.	Non-Liq.	0.00
27.07	312.94	1.77	0.57	110	1.271	0.934	0.57	0.50	0.91	268.79	1.43		1	100	1.00	1.50	1.00	269.8	0.93	Infin.	0.000	0.531	Non-Liq.	Non-Liq.	0.00
27.23	297.68	2.06	0.69	110	1.275	0.934	0.69	0.50	0.91	255.24	1.50		1	100	1.00	1.50	1.00	256.2	0.93	Infin.	0.000	0.532	Non-Liq.	Non-Liq.	0.00
27.40	274.32	1.97	0.72	110	1.279	0.933	0.72	0.50	0.91	234.76	1.54		1	100	1.00	1.50	1.00	235.6	0.93	Infin.	0.000	0.533	Non-Liq.	Non-Liq.	0.00
27.56	243.92	1.79	0.73	110	1.282	0.932	0.74	0.50	0.91	208.30	1.58		1	100	1.00	1.50	1.00	209.1	0.93	Infin.	0.000	0.534	Non-Liq.	Non-Liq.	0.00
27.72	203.86	2.06	1.01	110	1.286	0.932	1.02	0.53	0.90	172.64	1.74		1	99	1.06	1.50	1.00	184.4	0.92	Infin.	0.000	0.535	Non-Liq.	Non-Liq.	0.00
27.89	128.56	2.20	1.71	110	1.290	0.931	1.73	0.62	0.88	106.29	2.05		1	79	1.37		1.00	146.0	0.92	0.370	0.341	0.536	**0.64**	82%	**0.86**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	M=7.5 CSR	Induced Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	101.99	2.28	2.23	110	1.294	0.930	2.26	0.67	0.87	83.14	2.21		1	69	1.69		1.00	140.6	0.94	0.338	0.318	0.538	**0.59**	85%	**1.00**
28.22	51.11	1.80	3.51	110	1.298	0.929	3.60	0.78	0.85	40.13	2.58		1	39	3.19		1.00	128.0	0.96	0.275	0.264	0.539	**0.49**	91%	**1.14**
28.38	52.32	1.72	3.29	110	1.302	0.929	3.37	0.77	0.85	41.07	2.55		1	40	3.03		1.00	124.6	0.96	0.260	0.249	0.540	**0.46**	93%	**1.18**
28.54	56.72	1.37	2.42	110	1.306	0.928	2.47	0.74	0.86	44.85	2.43		1	44	2.44		1.00	109.6	0.96	0.202	0.194	0.541	**0.36**	97%	**1.36**
28.71	70.59	1.56	2.21	110	1.310	0.927	2.25	0.71	0.86	56.31	2.33		1	53	2.05		1.00	115.3	0.94	0.223	0.209	0.542	**0.39**	96%	**1.29**
28.87	114.33	1.68	1.47	110	1.314	0.926	1.49	0.62	0.87	93.36	2.05		1	74	1.37		1.00	127.5	0.92	0.273	0.250	0.543	**0.46**	93%	**1.14**
29.04	212.27	1.59	0.75	110	1.318	0.926	0.76	0.50	0.90	178.67	1.64		1	100	1.00	1.00	1.00	178.6	0.92	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
29.20	270.62	2.46	0.91	110	1.322	0.925	0.91	0.50	0.89	227.75	1.62		1	100	1.00	1.05	1.00	228.6	0.91	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
29.36	330.54	2.18	0.66	110	1.325	0.924	0.66	0.50	0.89	278.01	1.46		1	100	1.00	1.10	1.00	279.0	0.91	Infin.	0.000	0.546	**Non-Liq.**	Non-Liq.	**0.00**
29.53	349.39	1.96	0.56	110	1.329	0.923	0.56	0.50	0.89	293.49	1.39		1	100	1.00	1.15	1.00	294.6	0.91	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
29.69	360.66	1.80	0.50	110	1.333	0.923	0.50	0.50	0.89	302.55	1.35		1	100	1.00	1.20	1.00	303.7	0.91	Infin.	0.000	0.548	**Non-Liq.**	Non-Liq.	**0.00**
29.86	367.26	1.69	0.46	110	1.337	0.922	0.46	0.50	0.89	307.65	1.32		1	100	1.00	1.25	1.00	308.8	0.91	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
30.02	360.19	1.58	0.44	110	1.341	0.921	0.44	0.50	0.89	301.27	1.32		1	100	1.00	1.30	1.00	302.4	0.91	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
30.18	364.67	1.25	0.34	110	1.345	0.920	0.34	0.50	0.89	304.58	1.24		1	100	1.00	1.35	1.00	305.7	0.91	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
30.35	376.58	1.54	0.41	110	1.349	0.919	0.41	0.50	0.89	314.11	1.28		1	100	1.00	1.40	1.00	315.3	0.91	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
30.51	377.16	1.63	0.43	110	1.353	0.918	0.43	0.50	0.88	314.13	1.30		1	100	1.00	1.45	1.00	315.3	0.91	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
30.68	333.76	1.64	0.49	110	1.357	0.918	0.49	0.50	0.88	277.45	1.37		1	100	1.00	1.50	1.00	278.5	0.91	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
30.84	317.96	1.81	0.57	110	1.361	0.917	0.57	0.50	0.88	263.88	1.43		1	100	1.00	1.55	1.00	264.9	0.90	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
31.00	293.92	1.53	0.52	110	1.364	0.916	0.52	0.50	0.88	243.49	1.43		1	100	1.00	1.60	1.00	244.4	0.90	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
31.17	298.19	1.57	0.53	110	1.368	0.915	0.53	0.50	0.88	246.69	1.43		1	100	1.00	1.65	1.00	247.6	0.90	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.33	299.06	1.55	0.52	110	1.372	0.914	0.52	0.50	0.88	247.06	1.43		1	100	1.00	1.70	1.00	248.0	0.90	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.50	301.92	1.67	0.55	110	1.376	0.913	0.55	0.50	0.88	249.07	1.44		1	100	1.00	1.75	1.00	250.0	0.90	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
31.66	296.78	1.60	0.54	110	1.380	0.912	0.54	0.50	0.88	244.47	1.44		1	100	1.00	1.80	1.00	245.4	0.90	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
31.82	282.25	1.66	0.59	110	1.384	0.911	0.59	0.50	0.87	232.11	1.48		1	100	1.00	1.85	1.00	233.0	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
31.99	283.26	2.04	0.72	110	1.388	0.910	0.73	0.50	0.87	232.61	1.54		1	100	1.00	1.90	1.00	233.5	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
32.15	279.05	2.52	0.90	110	1.392	0.909	0.91	0.50	0.87	228.81	1.62		1	100	1.00	1.95	1.00	229.7	0.90	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
32.32	264.05	3.05	1.15	110	1.396	0.908	1.16	0.52	0.87	214.79	1.72		1	100	1.05	2.00	1.00	226.1	0.90	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.48	250.59	3.28	1.31	110	1.400	0.907	1.32	0.54	0.86	202.48	1.77		1	100	1.09	2.05	1.00	221.2	0.89	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.64	244.23	3.15	1.29	110	1.403	0.906	1.30	0.54	0.86	196.97	1.78		1	100	1.09	2.10	1.00	215.6	0.89	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
32.81	239.79	3.02	1.26	110	1.407	0.905	1.27	0.54	0.86	193.10	1.78		1	100	1.09	2.15	1.00	211.1	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
32.97	240.83	2.74	1.14	110	1.411	0.904	1.14	0.53	0.86	194.23	1.74		1	100	1.07	2.20	1.00	207.7	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
33.14	267.29	2.26	0.85	110	1.415	0.903	0.85	0.50	0.86	217.28	1.61		1	100	1.00	2.25	1.00	218.1	0.89	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
33.30	269.49	1.86	0.69	110	1.419	0.902	0.69	0.50	0.86	218.78	1.55		1	100	1.00	2.30	1.00	219.6	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.46	270.31	2.15	0.80	110	1.423	0.901	0.80	0.50	0.86	219.14	1.59		1	100	1.00	2.35	1.00	220.0	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.63	241.91	2.18	0.90	110	1.427	0.900	0.90	0.51	0.86	195.27	1.67		1	100	1.01	2.40	1.00	198.8	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.79	219.65	2.12	0.96	110	1.431	0.899	0.97	0.52	0.85	176.09	1.72		1	100	1.05	2.45	1.00	185.7	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.96	236.69	2.44	1.03	110	1.435	0.898	1.04	0.52	0.85	189.61	1.72		1	100	1.05	2.50	1.00	199.7	0.89	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.12	253.42	2.64	1.04	110	1.439	0.897	1.05	0.52	0.85	203.12	1.70		1	100	1.04	2.55	1.00	211.6	0.88	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.28	273.96	3.02	1.10	110	1.443	0.896	1.11	0.52	0.85	219.46	1.70		1	100	1.03	2.60	1.00	227.9	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.45	296.13	3.44	1.16	110	1.446	0.895	1.17	0.51	0.85	237.10	1.69		1	100	1.03	2.65	1.00	245.4	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.61	315.65	3.90	1.24	110	1.450	0.894	1.24	0.52	0.85	252.37	1.69		1	100	1.03	2.70	1.00	261.8	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.78	329.54	4.18	1.27	110	1.454	0.893	1.28	0.52	0.85	263.22	1.69		1	100	1.03	2.75	1.00	272.6	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.94	341.71	4.12	1.21	110	1.458	0.892	1.21	0.51	0.85	273.33	1.66		1	100	1.01	2.80	1.00	277.8	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.10	357.73	3.87	1.08	110	1.462	0.890	1.08	0.50	0.85	286.45	1.61		1	100	1.00	2.85	1.00	287.5	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.27	368.55	3.45	0.94	110	1.466	0.889	0.94	0.50	0.85	294.76	1.56		1	100	1.00	2.90	1.00	295.9	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.43	371.34	3.32	0.89	110	1.470	0.888	0.90	0.50	0.85	296.60	1.54		1	100	1.00	2.95	1.00	297.7	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.60	374.83	3.14	0.84	110	1.474	0.887	0.84	0.50	0.85	299.00	1.52		1	100	1.00	3.00	1.00	300.1	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.76	374.45	2.75	0.73	110	1.478	0.886	0.74	0.50	0.85	298.29	1.47		1	100	1.00	3.05	1.00	299.4	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
35.93	379.11	2.45	0.65	110	1.482	0.885	0.65	0.50	0.85	301.62	1.43		1	100	1.00	3.10	1.00	302.7	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.09	370.12	2.21	0.60	110	1.485	0.883	0.60	0.50	0.84	294.05	1.41		1	100	1.00	3.15	1.00	295.1	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.25	350.96	2.32	0.66	110	1.489	0.882	0.66	0.50	0.84	278.40	1.46		1	100	1.00	3.20	1.00	279.4	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.42	332.11	2.24	0.67	110	1.493	0.881	0.68	0.50	0.84	263.03	1.49		1	100	1.00	3.25	1.00	264.0	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.58	320.02	4.38	1.37	110	1.497	0.880	1.38	0.53	0.83	250.73	1.73		1	100	1.06	3.30	1.00	266.2	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.75	314.68	4.59	1.46	110	1.501	0.878	1.47	0.54	0.83	245.47	1.76		1	100	1.08	3.35	1.00	265.3	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.91	323.64	4.64	1.43	110	1.505	0.877	1.44	0.53	0.83	252.50	1.74		1	100	1.07	3.40	1.00	270.5	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.07	352.97	4.40	1.25	110	1.509	0.876	1.25	0.51	0.83	277.26	1.67		1	100	1.02	3.45	1.00	283.2	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.24	339.32	4.58	1.35	110	1.513	0.875	1.36	0.52	0.83	265.01	1.71		1	100	1.04	3.50	1.00	277.9	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.40	311.75	3.95	1.27	110	1.517	0.873	1.27	0.52	0.83	243.01	1.71		1	100	1.05	3.55	1.00	255.1	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.57	316.65	3.97	1.25	110	1.521	0.872	1.26	0.52	0.83	246.71	1.70		1	100	1.04	3.60	1.00	257.7	0.86	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.73	324.98	4.11	1.27	110	1.525	0.871	1.27	0.52	0.83	253.00	1.70		1	100	1.04	3.65	1.00	263.7	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
37.89	313.50	4.12	1.31	110	1.528	0.869	1.32	0.53	0.82	243.07	1.72		1	100	1.05	3.70	1.00	257.1	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.06	336.26	4.69	1.39	110	1.532	0.868	1.40	0.53	0.82	260.39	1.73		1	100	1.06	3.75	1.00	275.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.22	355.50	7.68	2.16	110	1.536	0.867	2.17	0.57	0.81	270.57	1.87		1	100	1.16	3.80	1.00	315.7	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.39	365.48	7.76	2.12	110	1.540	0.865	2.13	0.57	0.81	278.20	1.86		1	100	1.15	3.85	1.00	321.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.55	420.69	8.65	2.06	110	1.544	0.864	2.06	0.55	0.81	321.61	1.81		1	100	1.12	3.90	1.00	360.0	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.71	390.62	7.43	1.90	110	1.548	0.863	1.91	0.55	0.81	298.48	1.80		1	100	1.11	3.95	1.00	331.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.88	316.05	7.07	2.24	110	1.552	0.861	2.25	0.58	0.80	237.81	1.91		1	100	1.20	4.00	1.00	287.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.04	282.97	4.44	1.57	110	1.556	0.860	1.58	0.55	0.81	214.87	1.82		1	100	1.12	4.05	1.00	241.6	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.21	275.95	3.83	1.39	110	1.560	0.859	1.39	0.54	0.81	210.08	1.78		1	100	1.09	4.10	1.00	230.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.37	269.76	4.26	1.58	110	1.564	0.857	1.59	0.56	0.80	203.82	1.83		1	100	1.13	4.15	1.00	231.8	0.86	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.53	267.47	4.03	1.51	110	1.567	0.856	1.51	0.55	0.80	202.11	1.82		1	100	1.12	4.20	1.00	227.7	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.70	286.57	4.17	1.45	110	1.571	0.854	1.46	0.54	0.81	217.15	1.79		1	100	1.10	4.25	1.00	239.5	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.86	266.83	3.87	1.45	110	1.575	0.853	1.46	0.55	0.80	201.34	1.81		1	100	1.11	4.30	1.00	225.1	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.03	266.44	3.65	1.37	110	1.579	0.852	1.38	0.55	0.80	201.22	1.79		1	100	1.10	4.35	1.00	222.2	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.19	264.65	3.64	1.38	110	1.583	0.850	1.38	0.55	0.80	199.50	1.79		1	100	1.10	4.40	1.00	220.9	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.35	262.76	3.62	1.38	110	1.587	0.849	1.38	0.55	0.80	197.73	1.80		1	100	1.10	4.45	1.00	219.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.52	263.40	3.68	1.40	110	1.591	0.847	1.40	0.55	0.80	197.84	1.80		1	100	1.11	4.50	1.00	220.0	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.68	268.30	2.97	1.11	110	1.595	0.846	1.11	0.52	0.81	203.34	1.72		1	100	1.05	4.55	1.00	214.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.85	273.61	3.26	1.19	110	1.599	0.844	1.20	0.53	0.80	206.64	1.74		1	100	1.06	4.60	1.00	220.5	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.01	279.17	3.44	1.23	110	1.603	0.843	1.24	0.53	0.80	210.44	1.74		1	100	1.07	4.65	1.00	225.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.17	277.56	3.52	1.27	110	1.607	0.841	1.27	0.53	0.80	208.63	1.76		1	100	1.08	4.70	1.00	225.1	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.34	264.17	3.63	1.38	110	1.610	0.840	1.38	0.55	0.79	197.18	1.80		1	100	1.11	4.75	1.00	218.8	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.50	267.65	3.48	1.30	110	1.614	0.838	1.31	0.54	0.80	200.10	1.78		1	100	1.09	4.80	1.00	218.7	0.84	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.67	269.53	3.45	1.28	110	1.618	0.837	1.29	0.54	0.80	201.42	1.77		1	100	1.08	4.85	1.00	219.2	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.83	264.07	3.42	1.30	110	1.622	0.835	1.30	0.54	0.79	196.79	1.78		1	100	1.09	4.90	1.00	215.7	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.99	253.52	3.32	1.31	110	1.626	0.834	1.32	0.55	0.79	188.24	1.80		1	100	1.10	4.95	1.00	208.4	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.16	253.46	3.37	1.33	110	1.630	0.832	1.34	0.55	0.79	187.81	1.80		1	100	1.11	5.00	1.00	208.7	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.32	248.94	3.31	1.33	110	1.634	0.831	1.34	0.55	0.79	184.04	1.81		1	100	1.11	5.05	1.00	205.4	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.49	240.19	3.20	1.33	110	1.638	0.829	1.34	0.55	0.79	177.01	1.82		1	100	1.12	5.10	1.00	199.2	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.65	239.26	3.01	1.26	110	1.642	0.827	1.27	0.55	0.79	176.50	1.80		1	100	1.11	5.15	1.00	196.2	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.81	235.68	3.23	1.37	110	1.646	0.826	1.38	0.56	0.78	172.84	1.84		1	100	1.13	5.20	1.00	196.6	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.98	234.20	2.85	1.22	110	1.649	0.824	1.23	0.55	0.78	172.36	1.80		1	99	1.11	5.25	1.00	191.3	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
43.14	238.08	3.09	1.30	110	1.653	0.823	1.31	0.55	0.78	174.63	1.81		1	100	1.12	5.30	1.00	195.8	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.31	216.71	3.13	1.45	110	1.657	0.821	1.46	0.57	0.77	157.24	1.88		1	96	1.17	5.35	1.00	184.8	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.47	215.92	2.85	1.32	110	1.661	0.820	1.33	0.56	0.78	157.06	1.85		1	96	1.15	5.40	1.00	180.7	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.64	228.43	2.91	1.27	110	1.665	0.818	1.28	0.55	0.78	166.65	1.82		1	98	1.12	5.45	1.00	188.0	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.80	245.66	2.77	1.13	110	1.669	0.816	1.14	0.54	0.78	180.61	1.76		1	100	1.08	5.50	1.00	195.6	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
43.96	253.66	2.83	1.12	110	1.673	0.815	1.12	0.53	0.78	186.64	1.75		1	100	1.07	5.55	1.00	200.4	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.13	255.03	2.26	0.89	110	1.677	0.813	0.89	0.51	0.79	189.39	1.67		1	100	1.02	5.60	1.00	193.6	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.29	249.25	2.48	0.99	110	1.681	0.811	1.00	0.52	0.79	183.72	1.72		1	100	1.05	5.65	1.00	193.3	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.46	256.60	2.83	1.10	110	1.685	0.810	1.11	0.53	0.78	188.29	1.74		1	100	1.06	5.70	1.00	201.3	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.62	265.56	3.34	1.26	110	1.689	0.808	1.26	0.54	0.78	193.76	1.77		1	100	1.09	5.75	1.00	211.6	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.78	290.32	3.34	1.15	110	1.692	0.807	1.16	0.52	0.78	213.36	1.72		1	100	1.05	5.75	1.00	224.7	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.95	335.88	3.42	1.02	110	1.696	0.805	1.02	0.50	0.79	249.45	1.63		1	100	1.00	5.75	1.00	250.4	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
45.11	394.83	2.84	0.72	110	1.700	0.803	0.72	0.50	0.79	293.12	1.47		1	100	1.00	5.75	1.00	294.2	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.28	449.80	3.22	0.72	110	1.704	0.802	0.72	0.50	0.79	333.72	1.43		1	100	1.00	5.75	1.00	335.0	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.44	447.17	4.13	0.92	110	1.708	0.800	0.93	0.50	0.79	331.38	1.52		1	100	1.00	5.75	1.00	332.6	0.83	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.60	452.93	3.89	0.86	110	1.712	0.798	0.86	0.50	0.79	335.27	1.49		1	100	1.00	5.75	1.00	336.5	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.77	475.52	3.64	0.77	110	1.716	0.797	0.77	0.50	0.79	351.66	1.44		1	100	1.00	5.75	1.00	353.0	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.93	444.46	2.97	0.67	110	1.720	0.795	0.67	0.50	0.78	328.23	1.42		1	100	1.00	5.75	1.00	329.5	0.82	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.10	446.58	2.40	0.54	110	1.724	0.793	0.54	0.50	0.78	329.42	1.35		1	100	1.00	5.75	1.00	330.7	0.82	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.26	425.00	2.48	0.58	110	1.728	0.792	0.59	0.50	0.78	313.09	1.39		1	100	1.00	5.75	1.00	314.3	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.42	414.92	2.66	0.64	110	1.731	0.790	0.64	0.50	0.78	305.28	1.42		1	100	1.00	5.75	1.00	306.4	0.82	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
46.59	394.40	2.71	0.69	110	1.735	0.788	0.69	0.50	0.78	289.79	1.46		1	100	1.00	5.75	1.00	290.9	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.75	375.24	2.77	0.74	110	1.739	0.787	0.74	0.50	0.78	275.34	1.50		1	100	1.00	5.75	1.00	276.4	0.82	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
46.92	360.27	2.57	0.71	110	1.743	0.785	0.72	0.50	0.78	264.00	1.50		1	100	1.00	5.75	1.00	265.0	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.08	348.31	2.26	0.65	110	1.747	0.783	0.65	0.50	0.78	254.91	1.48		1	100	1.00	5.75	1.00	255.9	0.82	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
47.24	321.44	1.84	0.57	110	1.751	0.782	0.58	0.50	0.78	234.88	1.47		1	100	1.00	5.75	1.00	235.8	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.41	279.99	1.88	0.67	110	1.755	0.780	0.68	0.50	0.78	204.20	1.56		1	100	1.00	5.75	1.00	205.0	0.82	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
47.57	223.67	1.59	0.71	110	1.759	0.778	0.71	0.50	0.77	162.29	1.66		1	97	1.01	5.75	1.00	164.1	0.82	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
47.74	164.82	2.03	1.23	110	1.763	0.777	1.25	0.59	0.74	114.21	1.93		1	82	1.22	5.75	1.00	139.7	0.82	0.334	0.272	0.561	**0.48**	92%	**1.01**
47.90	121.59	2.53	2.08	110	1.767	0.775	2.11	0.67	0.71	80.43	2.20		1	68	1.66		1.00	133.7	0.86	0.302	0.259	0.560	**0.46**	93%	**1.08**
48.06	91.32	2.37	2.60	110	1.770	0.773	2.65	0.72	0.69	58.48	2.37		1	55	2.18		1.00	127.5	0.86	0.273	0.234	0.560	**0.42**	95%	**1.14**
48.23	116.79	2.86	2.45	110	1.774	0.772	2.48	0.69	0.70	76.18	2.27		1	66	1.84		1.00	140.3	0.86	0.337	0.289	0.559	**0.52**	90%	**1.01**
48.39	231.35	2.98	1.29	110	1.778	0.770	1.30	0.56	0.75	162.37	1.83		1	97	1.13	1.00	1.00	184.6	0.81	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
48.56	280.33	2.88	1.03	110	1.782	0.768	1.03	0.52	0.76	201.01	1.70		1	100	1.04	1.05	1.00	209.2	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.72	300.38	2.56	0.85	110	1.786	0.767	0.86	0.50	0.77	217.21	1.62		1	100	1.00	1.10	1.00	218.0	0.81	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
48.88	311.53	2.58	0.83	110	1.790	0.765	0.83	0.50	0.77	225.07	1.60		1	100	1.00	1.15	1.00	225.9	0.81	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
49.05	325.26	2.50	0.77	110	1.794	0.763	0.77	0.50	0.77	234.79	1.56		1	100	1.00	1.20	1.00	235.7	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.21	339.47	2.81	0.83	110	1.798	0.762	0.83	0.50	0.77	244.84	1.57		1	100	1.00	1.25	1.00	245.8	0.81	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
49.38	344.98	3.24	0.94	110	1.802	0.760	0.94	0.50	0.77	248.56	1.61		1	100	1.00	1.30	1.00	249.5	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.54	351.47	3.83	1.09	110	1.806	0.758	1.09	0.50	0.76	252.53	1.65		1	100	1.00	1.35	1.00	254.5	0.81	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
49.70	357.74	3.92	1.10	110	1.810	0.757	1.10	0.50	0.76	256.89	1.65		1	100	1.00	1.40	1.00	258.4	0.81	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
49.87	374.88	3.72	0.99	110	1.813	0.755	1.00	0.50	0.76	269.33	1.60		1	100	1.00	1.45	1.00	270.3	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.03	395.53	3.14	0.79	110	1.817	0.753	0.80	0.50	0.76	283.93	1.51		1	100	1.00	1.50	1.00	285.0	0.81	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
50.20	406.66	2.61	0.64	110	1.821	0.752	0.64	0.50	0.76	291.65	1.44		1	100	1.00	1.50	1.00	292.7	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.36	421.58	2.63	0.62	110	1.825	0.750	0.63	0.50	0.76	302.07	1.42		1	100	1.00	1.50	1.00	303.2	0.80	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
50.52	433.35	2.55	0.59	110	1.829	0.748	0.59	0.50	0.76	310.20	1.39		1	100	1.00	1.50	1.00	311.4	0.80	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
50.69	439.99	2.57	0.58	110	1.833	0.747	0.59	0.50	0.76	314.64	1.39		1	100	1.00	1.50	1.00	315.8	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
50.85	441.89	2.61	0.59	110	1.837	0.745	0.59	0.50	0.76	315.66	1.39		1	100	1.00	1.50	1.00	316.8	0.80	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
51.02	455.49	2.77	0.61	110	1.841	0.743	0.61	0.50	0.76	325.07	1.39		1	100	1.00	1.50	1.00	326.3	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.18	472.21	3.30	0.70	110	1.845	0.742	0.70	0.50	0.76	336.69	1.42		1	100	1.00	1.50	1.00	338.0	0.80	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
51.35	504.84	3.77	0.75	110	1.849	0.740	0.75	0.50	0.76	359.67	1.43		1	100	1.00	1.50	1.00	361.0	0.80	Infin.	0.000	0.548	**Non-Liq.**	Non-Liq.	**0.00**
51.51	459.09	4.28	0.93	110	1.852	0.738	0.94	0.50	0.76	326.60	1.53		1	100	1.00	1.50	1.00	327.8	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.67	422.99	4.23	1.00	110	1.856	0.737	1.00	0.50	0.75	300.50	1.57		1	100	1.00	1.50	1.00	301.6	0.80	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
51.84	454.99	5.33	1.17	110	1.860	0.735	1.18	0.50	0.75	322.99	1.61		1	100	1.00	1.50	1.00	324.2	0.80	Infin.	0.000	0.546	**Non-Liq.**	Non-Liq.	**0.00**
52.00	493.38	5.94	1.20	110	1.864	0.733	1.21	0.50	0.75	349.99	1.60		1	100	1.00	1.50	1.00	351.3	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.17	477.89	5.21	1.09	110	1.868	0.732	1.09	0.50	0.75	338.60	1.57		1	100	1.00	1.50	1.00	339.9	0.80	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
52.33	440.86	3.78	0.86	110	1.872	0.730	0.86	0.50	0.75	311.93	1.51		1	100	1.00	1.50	1.00	313.1	0.80	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
52.49	459.07	3.21	0.70	110	1.876	0.728	0.70	0.50	0.75	324.53	1.43		1	100	1.00	1.50	1.00	325.7	0.80	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.66	325.12	2.21	0.68	110	1.880	0.727	0.68	0.50	0.75	229.21	1.53		1	100	1.00	1.50	1.00	230.1	0.79	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
52.82	240.31	2.13	0.89	110	1.884	0.725	0.89	0.52	0.74	166.81	1.71		1	98	1.05	1.50	1.00	175.1	0.79	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
52.99	196.52	2.05	1.05	110	1.888	0.724	1.06	0.56	0.72	133.20	1.83		1	89	1.13	1.50	1.00	151.2	0.79	0.401	0.318	0.542	**0.59**	85%	**0.74**
53.15	141.14	1.74	1.23	110	1.892	0.722	1.25	0.61	0.70	92.47	2.00		1	74	1.30	1.50	1.00	120.5	0.79	0.243	0.192	0.541	**0.36**	97%	**1.22**
53.31	110.78	1.92	1.73	110	1.895	0.720	1.76	0.66	0.68	69.84	2.19		1	62	1.64		1.00	114.7	0.84	0.220	0.185	0.540	**0.34**	97%	**1.30**
53.48	75.09	1.81	2.41	110	1.899	0.719	2.47	0.74	0.65	44.95	2.43		1	44	2.44		1.00	109.6	0.89	0.202	0.180	0.540	**0.33**	97%	**1.36**
53.64	58.78	1.67	2.83	110	1.903	0.717	2.93	0.78	0.63	34.03	2.57		1	32	3.14		1.00	107.0	0.89	0.194	0.172	0.539	**0.32**	98%	**1.40**
53.81	71.04	1.45	2.05	110	1.907	0.716	2.10	0.73	0.65	42.53	2.40		1	41	2.32		1.00	98.7	0.89	0.170	0.151	0.538	**0.28**	99%	**1.51**
53.97	81.60	1.36	1.67	110	1.911	0.714	1.71	0.70	0.66	49.93	2.29		1	48	1.92		1.00	95.8	0.89	0.162	0.144	0.538	**0.27**	99%	**1.56**
54.13	70.69	1.16	1.64	110	1.915	0.712	1.69	0.71	0.66	42.65	2.34		1	41	2.09		1.00	89.0	0.89	0.146	0.129	0.537	**0.24**	99%	**1.66**
54.30	44.26	1.08	2.45	110	1.919	0.711	2.56	0.80	0.62	24.87	2.64		0						0.89			0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.46	37.41	1.01	2.69	110	1.923	0.709	2.84	0.83	0.61	20.46	2.73		0						0.89			0.536	**Non-Liq.**	Non-Liq.	**0.00**
54.63	29.79	1.23	4.12	110	1.927	0.708	4.40	0.89	0.59	15.43	2.95		0						0.89			0.535	**Non-Liq.**	Non-Liq.	**0.00**
54.79	31.13	1.67	5.36	110	1.931	0.706	5.72	0.91	0.58	15.96	3.01		0						0.89			0.534	**Non-Liq.**	Non-Liq.	**0.00**
54.95	44.13	1.70	3.85	110	1.934	0.705	4.02	0.84	0.60	24.02	2.77		0						0.89			0.534	**Non-Liq.**	Non-Liq.	**0.00**
55.12	95.31	2.21	2.32	110	1.938	0.703	2.37	0.71	0.65	57.43	2.34		1	54	2.08		1.00	119.4	0.83	0.238	0.199	0.533	**0.37**	96%	**1.24**
55.28	136.83	2.52	1.84	110	1.942	0.701	1.87	0.65	0.67	85.88	2.14		1	71	1.53		1.00	131.8	0.78	0.293	0.230	0.532	**0.43**	94%	**1.09**
55.45	185.97	2.78	1.49	110	1.946	0.700	1.51	0.60	0.69	120.71	1.97		1	85	1.26	0.45	1.26	192.9	0.78	Infin.	0.000	0.532	**Non-Liq.**	Non-Liq.	**0.00**
55.61	219.92	3.19	1.45	110	1.950	0.698	1.47	0.58	0.70	144.48	1.91		1	92	1.20	0.45	1.26	218.4	0.78	Infin.	0.000	0.531	**Non-Liq.**	Non-Liq.	**0.00**
55.77	244.90	3.67	1.50	110	1.954	0.697	1.51	0.57	0.70	161.53	1.88		1	97	1.17	0.45	1.26	239.9	0.78	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
55.94	256.05	3.99	1.56	110	1.958	0.695	1.57	0.57	0.70	168.76	1.88		1	99	1.17	0.45	1.26	250.5	0.78	Infin.	0.000	0.530	**Non-Liq.**	Non-Liq.	**0.00**
56.10	257.95	4.20	1.63	110	1.962	0.694	1.64	0.58	0.70	169.41	1.90		1	99	1.19	0.45	1.26	254.1	0.78	Infin.	0.000	0.529	**Non-Liq.**	Non-Liq.	**0.00**
56.27	260.48	4.35	1.67	110	1.966	0.692	1.68	0.58	0.70	170.70	1.90		1	99	1.19	0.45	1.26	257.2	0.78	Infin.	0.000	0.528	**Non-Liq.**	Non-Liq.	**0.00**
56.43	262.97	4.01	1.52	110	1.970	0.691	1.54	0.57	0.70	173.23	1.87		1	100	1.16	0.45	1.26	254.4	0.78	Infin.	0.000	0.528	**Non-Liq.**	Non-Liq.	**0.00**
56.59	252.09	3.88	1.54	110	1.974	0.689	1.55	0.57	0.70	165.32	1.89		1	98	1.18	0.45	1.26	245.7	0.78	Infin.	0.000	0.527	**Non-Liq.**	Non-Liq.	**0.00**
56.76	232.68	3.79	1.63	110	1.977	0.688	1.64	0.59	0.69	151.04	1.93		1	94	1.22	0.45	1.26	232.8	0.78	Infin.	0.000	0.526	**Non-Liq.**	Non-Liq.	**0.00**
56.92	183.02	3.54	1.93	110	1.981	0.686	1.95	0.63	0.67	115.43	2.06		1	83	1.39		1.00	161.0	0.78	Infin.	0.000	0.526	**Non-Liq.**	Non-Liq.	**0.00**
57.09	160.88	2.83	1.76	110	1.985	0.685	1.78	0.63	0.67	100.96	2.08		1	77	1.41		1.00	142.7	0.78	0.350	0.272	0.525	**0.52**	90%	**1.00**
57.25	152.41	2.48	1.63	110	1.989	0.683	1.65	0.63	0.67	95.58	2.07		1	75	1.40		1.00	134.1	0.78	0.304	0.236	0.524	**0.45**	93%	**1.07**
57.41	121.85	2.08	1.70	110	1.993	0.682	1.73	0.66	0.66	74.74	2.16		1	65	1.58		1.00	118.0	0.83	0.233	0.193	0.524	**0.37**	96%	**1.25**
57.58	78.30	1.74	2.23	110	1.997	0.680	2.28	0.73	0.63	45.38	2.40		1	44	2.33		1.00	105.7	0.88	0.190	0.167	0.523	**0.32**	98%	**1.41**
57.74	46.88	1.34	2.86	110	2.001	0.679	2.99	0.81	0.60	25.32	2.67		0						0.88			0.523	**Non-Liq.**	Non-Liq.	**0.00**
57.91	32.55	1.03	3.17	110	2.005	0.678	3.38	0.86	0.58	16.63	2.85		0						0.88			0.522	**Non-Liq.**	Non-Liq.	**0.00**
58.07	26.44	0.80	3.01	110	2.009	0.676	3.26	0.88	0.57	13.10	2.92		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_D	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	$K\sigma$	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
58.23	32.25	0.58	1.80	110	2.013	0.675	1.92	0.82	0.59	16.89	2.70		0						0.88			0.521	**Non-Liq.**	Non-Liq.	**0.00**
58.40	30.59	0.70	2.28	110	2.016	0.673	2.44	0.84	0.58	15.67	2.79		0						0.88			0.520	**Non-Liq.**	Non-Liq.	**0.00**
58.56	19.12	0.58	3.04	110	2.020	0.672	3.40	0.93	0.55	8.86	3.07		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.73	20.40	0.44	2.17	110	2.024	0.671	2.41	0.89	0.56	9.72	2.95		0						0.88			0.519	**Non-Liq.**	Non-Liq.	**0.00**
58.89	29.72	0.45	1.52	110	2.028	0.669	1.63	0.82	0.59	15.38	2.70		0						0.88			0.518	**Non-Liq.**	Non-Liq.	**0.00**
59.06	18.72	0.48	2.57	110	2.032	0.668	2.89	0.92	0.55	8.65	3.04		0						0.88			0.517	**Non-Liq.**	Non-Liq.	**0.00**
59.22	15.04	0.45	2.97	110	2.036	0.666	3.44	0.96	0.53	6.54	3.18		0						0.88			0.517	**Non-Liq.**	Non-Liq.	**0.00**
59.38	14.96	0.42	2.81	110	2.040	0.665	3.25	0.96	0.53	6.50	3.17		0						0.88			0.516	**Non-Liq.**	Non-Liq.	**0.00**
59.55	14.95	0.43	2.89	110	2.044	0.664	3.35	0.96	0.53	6.47	3.18		0						0.88			0.516	**Non-Liq.**	Non-Liq.	**0.00**
59.71	15.06	0.48	3.17	110	2.048	0.662	3.67	0.97	0.53	6.49	3.20		0						0.88			0.515	**Non-Liq.**	Non-Liq.	**0.00**
59.88	16.51	0.00	0.01	110	2.052	0.661	0.01	0.83	0.58	7.89	2.74		0		1.00				0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.04	19.45	0.00	0.01	110	2.055	0.660	0.01	0.82	0.58	9.57	2.69		0		1.00				0.88			0.514	**Non-Liq.**	Non-Liq.	**0.00**
60.20	26.53	0.00	0.00	110	2.059	0.658	0.00	0.79	0.59	13.65	2.61		0		1.00				0.88			0.513	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-7
Plot: 7

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
1.3

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.97 (0.75)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.33
Avg SF of Liquefiable Layers: 0.03

Probab	Total Induced Subsidence (inches)
Avg	0
1%	0
Max	0
97%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	7.32	0.09	1.28	110	0.009	1.000	1.29	0.83	1.70	11.75	2.74		0						1.00			0.485			
0.33	12.26	0.12	1.00	110	0.018	1.000	1.00	0.76	1.70	19.67	2.50		1	9	2.75		1.00	54.0	1.00	0.095	0.095	0.485	Non-Liq.	Non-Liq.	0.00
0.49	14.26	0.15	1.02	110	0.027	1.000	1.03	0.74	1.70	22.87	2.44		1	16	2.50		1.00	57.1	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.66	13.52	0.15	1.09	110	0.036	1.000	1.10	0.75	1.70	21.67	2.48		1	13	2.66		1.00	57.7	1.00	0.098	0.098	0.485	Non-Liq.	Non-Liq.	0.00
0.82	11.35	0.14	1.22	110	0.045	1.000	1.22	0.78	1.70	18.16	2.57		1	6	3.14		1.00	57.0	1.00	0.097	0.097	0.485	Non-Liq.	Non-Liq.	0.00
0.98	9.04	0.12	1.33	110	0.054	1.000	1.34	0.81	1.70	14.44	2.67		0						1.00			0.485	Non-Liq.	Non-Liq.	0.00
1.15	7.13	0.08	1.07	110	0.063	0.999	1.08	0.82	1.70	11.36	2.72		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.31	7.13	0.08	1.07	110	0.072	0.999	1.08	0.82	1.70	11.34	2.72		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.48	6.14	0.08	1.27	110	0.081	0.999	1.29	0.85	1.70	9.74	2.82		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.64	6.75	0.14	2.01	110	0.090	0.998	2.04	0.87	1.70	10.70	2.88		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.80	12.03	0.25	2.04	110	0.099	0.998	2.05	0.81	1.70	19.17	2.67		0						1.00			0.484	Non-Liq.	Non-Liq.	0.00
1.97	26.83	0.46	1.71	110	0.108	0.998	1.72	0.71	1.70	42.94	2.34		1	42	2.10		1.00	90.0	1.00	0.148	0.148	0.484	Non-Liq.	Non-Liq.	0.00
2.13	27.70	0.58	2.10	110	0.117	0.997	2.11	0.72	1.70	44.32	2.39		1	43	2.27		1.00	100.6	1.00	0.175	0.175	0.483	Non-Liq.	Non-Liq.	0.00
2.30	30.71	0.62	2.02	110	0.126	0.997	2.02	0.71	1.70	49.14	2.34		1	47	2.10		1.00	103.0	1.00	0.182	0.182	0.483	Non-Liq.	Non-Liq.	0.00
2.46	35.14	0.59	1.69	110	0.135	0.996	1.70	0.68	1.70	56.25	2.25		1	53	1.80		1.00	101.0	1.00	0.176	0.176	0.483	Non-Liq.	Non-Liq.	0.00
2.62	34.66	0.52	1.49	110	0.144	0.996	1.49	0.67	1.70	55.46	2.22		1	52	1.71		1.00	95.1	1.00	0.160	0.160	0.483	Non-Liq.	Non-Liq.	0.00
2.79	30.29	0.43	1.42	110	0.153	0.996	1.43	0.68	1.70	48.42	2.25		1	47	1.81		1.00	87.5	1.00	0.142	0.142	0.483	Non-Liq.	Non-Liq.	0.00
2.95	25.72	0.37	1.42	110	0.162	0.995	1.43	0.70	1.70	41.07	2.31		1	40	1.98		1.00	81.4	1.00	0.130	0.130	0.482	Non-Liq.	Non-Liq.	0.00
3.12	22.47	0.33	1.49	110	0.171	0.995	1.50	0.72	1.70	35.83	2.37		1	34	2.19		1.00	78.6	1.00	0.125	0.125	0.482	Non-Liq.	Non-Liq.	0.00
3.28	20.80	0.31	1.47	110	0.180	0.994	1.48	0.73	1.70	33.13	2.40		1	31	2.29		1.00	76.0	1.00	0.121	0.121	0.482	Non-Liq.	Non-Liq.	0.00
3.44	20.45	0.30	1.47	110	0.189	0.994	1.48	0.73	1.70	32.55	2.40		1	30	2.32		1.00	75.4	1.00	0.120	0.120	0.482	Non-Liq.	Non-Liq.	0.00
3.61	20.73	0.30	1.45	110	0.198	0.994	1.47	0.73	1.70	32.99	2.39		1	31	2.29		1.00	75.5	1.00	0.120	0.120	0.482	Non-Liq.	Non-Liq.	0.00
3.77	19.90	0.31	1.58	110	0.208	0.993	1.59	0.74	1.70	31.64	2.43		1	29	2.44		1.00	77.1	1.00	0.123	0.123	0.482	Non-Liq.	Non-Liq.	0.00
3.94	17.21	0.35	2.05	110	0.217	0.993	2.08	0.77	1.70	27.31	2.55		1	23	3.03		1.00	82.8	1.00	0.133	0.133	0.481	Non-Liq.	Non-Liq.	0.00
4.10	11.84	0.37	3.08	110	0.226	0.993	3.14	0.85	1.70	18.66	2.79		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.27	7.47	0.32	4.24	110	0.235	0.992	4.38	0.92	1.70	11.63	3.04		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.43	7.87	0.27	3.41	110	0.244	0.992	3.51	0.90	1.70	12.25	2.96		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.59	13.03	0.25	1.89	110	0.253	0.991	1.93	0.80	1.70	20.53	2.63		0						1.00			0.481	Non-Liq.	Non-Liq.	0.00
4.76	17.56	0.20	1.13	110	0.262	0.991	1.15	0.73	1.70	27.80	2.40		1	24	2.30		1.00	63.9	1.00	0.104	0.104	0.480	Non-Liq.	Non-Liq.	0.00
4.92	25.00	0.25	0.99	110	0.271	0.991	1.00	0.68	1.70	39.74	2.23		1	39	1.75		1.00	69.6	1.00	0.111	0.111	0.480	Non-Liq.	Non-Liq.	0.00
5.09	28.21	0.27	0.97	110	0.280	0.990	0.98	0.66	1.70	44.88	2.18		1	44	1.63		1.00	73.1	1.00	0.116	0.116	0.480	Non-Liq.	Non-Liq.	0.00
5.25	26.74	0.32	1.19	110	0.289	0.990	1.20	0.68	1.70	42.50	2.25		1	41	1.81		1.00	76.9	1.00	0.122	0.122	0.480	Non-Liq.	Non-Liq.	0.00
5.41	27.54	0.33	1.20	110	0.298	0.989	1.21	0.68	1.70	43.77	2.25		1	43	1.79		1.00	78.2	1.00	0.124	0.124	0.480	Non-Liq.	Non-Liq.	0.00
5.58	30.42	0.33	1.08	110	0.307	0.989	1.10	0.66	1.70	48.39	2.18		1	47	1.63		1.00	78.9	1.00	0.126	0.126	0.479	Non-Liq.	Non-Liq.	0.00
5.74	35.07	0.33	0.95	110	0.316	0.989	0.96	0.64	1.70	55.84	2.10		1	53	1.46		1.00	81.3	1.00	0.130	0.130	0.479	Non-Liq.	Non-Liq.	0.00
5.91	42.76	0.43	0.99	110	0.325	0.988	1.00	0.62	1.70	68.19	2.04		1	61	1.36		1.00	92.6	1.00	0.154	0.154	0.479	Non-Liq.	Non-Liq.	0.00
6.07	59.96	0.60	1.00	110	0.334	0.988	1.01	0.59	1.70	95.81	1.93		1	75	1.22	1.00	1.00	116.9	1.00	0.228	0.228	0.479	Non-Liq.	Non-Liq.	0.00
6.23	82.48	0.78	0.94	110	0.343	0.988	0.94	0.55	1.70	131.98	1.80		1	88	1.11	1.05	1.00	146.8	1.00	0.374	0.374	0.479	Non-Liq.	Non-Liq.	0.00
6.40	98.15	0.89	0.91	110	0.352	0.987	0.91	0.53	1.70	157.14	1.74		1	96	1.06	1.10	1.00	167.6	1.00	Infin.	0.000	0.479	Non-Liq.	Non-Liq.	0.00
6.56	106.99	1.01	0.94	110	0.361	0.987	0.95	0.52	1.70	171.33	1.72		1	99	1.05	1.15	1.00	180.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.73	112.07	1.09	0.97	110	0.370	0.986	0.98	0.52	1.70	179.48	1.72		1	100	1.05	1.20	1.00	188.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
6.89	112.25	1.18	1.05	110	0.379	0.986	1.05	0.53	1.70	179.76	1.74		1	100	1.06	1.25	1.00	191.9	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.05	111.68	1.25	1.12	110	0.388	0.986	1.13	0.54	1.70	178.82	1.76		1	100	1.08	1.30	1.00	193.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.22	113.57	1.36	1.19	110	0.397	0.985	1.20	0.54	1.70	181.71	1.78		1	100	1.09	1.35	1.00	198.6	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.38	110.25	1.39	1.26	110	0.406	0.985	1.27	0.55	1.69	175.63	1.80		1	100	1.11	1.40	1.00	195.5	1.00	Infin.	0.000	0.478	Non-Liq.	Non-Liq.	0.00
7.55	100.97	1.35	1.34	110	0.415	0.985	1.34	0.56	1.69	160.87	1.85		1	97	1.14	1.45	1.00	184.6	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.71	100.97	1.35	1.34	110	0.424	0.984	1.34	0.56	1.67	159.07	1.85		1	96	1.15	1.50	1.00	183.0	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
7.87	95.77	1.34	1.40	110	0.433	0.984	1.40	0.57	1.67	150.26	1.88		1	94	1.17	1.55	1.00	176.7	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.04	92.93	1.31	1.41	110	0.442	0.984	1.42	0.58	1.65	144.62	1.90		1	92	1.19	1.60	1.00	172.1	1.00	Infin.	0.000	0.477	Non-Liq.	Non-Liq.	0.00
8.20	90.79	1.03	1.14	110	0.451	0.983	1.14	0.56	1.61	137.80	1.85		1	90	1.14	1.65	1.00	157.8	1.00	0.446	0.446	0.477	Non-Liq.	Non-Liq.	0.00
8.37	87.38	1.00	1.14	110	0.460	0.983	1.15	0.57	1.60	131.65	1.86		1	88	1.15	1.70	1.00	152.6	1.00	0.410	0.410	0.476	Non-Liq.	Non-Liq.	0.00
8.53	82.47	0.96	1.17	110	0.469	0.982	1.18	0.57	1.60	123.63	1.89		1	86	1.18	1.75	1.00	146.1	1.00	0.370	0.370	0.476	Non-Liq.	Non-Liq.	0.00
8.69	86.06	1.00	1.17	110	0.478	0.982	1.17	0.57	1.57	127.32	1.88		1	87	1.17	1.80	1.00	149.3	1.00	0.390	0.390	0.476	Non-Liq.	Non-Liq.	0.00
8.86	93.45	1.08	1.15	110	0.487	0.982	1.16	0.56	1.55	136.07	1.85		1	90	1.15	1.85	1.00	156.8	1.00	0.439	0.439	0.476	Non-Liq.	Non-Liq.	0.00
9.02	102.02	1.14	1.12	110	0.496	0.981	1.13	0.55	1.52	146.04	1.82		1	93	1.12	1.90	1.00	164.7	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.19	107.28	1.17	1.09	110	0.505	0.981	1.10	0.55	1.50	151.44	1.80		1	94	1.11	1.95	1.00	168.7	1.00	Infin.	0.000	0.476	Non-Liq.	Non-Liq.	0.00
9.35	109.34	1.18	1.07	110	0.514	0.981	1.08	0.55	1.48	152.59	1.80		1	94	1.10	2.00	1.00	169.1	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.51	111.98	1.16	1.04	110	0.523	0.980	1.04	0.54	1.47	154.35	1.78		1	95	1.09	2.05	1.00	169.5	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.68	118.26	1.20	1.01	110	0.532	0.980	1.02	0.54	1.45	160.83	1.76		1	97	1.08	2.10	1.00	174.2	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
9.84	127.36	1.25	0.98	110	0.541	0.980	0.99	0.53	1.42	170.74	1.73		1	99	1.06	2.15	1.00	181.7	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.01	137.13	1.33	0.97	110	0.550	0.979	0.97	0.52	1.41	181.45	1.71		1	100	1.04	2.20	1.00	190.2	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.17	144.79	1.41	0.98	110	0.559	0.979	0.98	0.52	1.39	189.61	1.70		1	100	1.04	2.25	1.00	197.4	1.00	Infin.	0.000	0.475	Non-Liq.	Non-Liq.	0.00
10.33	155.29	1.57	1.01	110	0.568	0.979	1.02	0.52	1.38	201.47	1.69		1	100	1.03	2.30	1.00	208.8	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.50	160.35	1.65	1.03	110	0.577	0.978	1.03	0.51	1.37	206.27	1.69		1	100	1.03	2.35	1.00	213.4	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.66	162.80	1.74	1.07	110	0.586	0.978	1.07	0.52	1.36	208.10	1.70		1	100	1.04	2.40	1.00	216.7	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.83	163.62	1.48	0.90	110	0.595	0.978	0.91	0.50	1.34	205.78	1.65		1	100	1.00	2.45	1.00	207.4	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
10.99	165.03	1.59	0.96	110	0.604	0.977	0.96	0.51	1.33	206.59	1.67		1	100	1.02	2.50	1.00	210.8	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.15	165.44	1.62	0.98	110	0.614	0.977	0.98	0.51	1.32	205.76	1.68		1	100	1.02	2.55	1.00	210.9	1.00	Infin.	0.000	0.474	Non-Liq.	Non-Liq.	0.00
11.32	170.54	1.67	0.98	110	0.623	0.977	0.98	0.51	1.31	210.31	1.67		1	100	1.02	2.60	1.00	214.5	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.48	193.35	1.66	0.86	110	0.632	0.976	0.86	0.50	1.29	235.76	1.59		1	100	1.00	2.65	1.00	236.6	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.65	234.30	1.88	0.80	110	0.641	0.976	0.81	0.50	1.29	283.83	1.52		1	100	1.00	2.70	1.00	284.9	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.81	311.45	1.81	0.58	110	0.650	0.975	0.58	0.50	1.28	374.90	1.33		1	100	1.00	2.75	1.00	376.3	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
11.98	345.03	2.01	0.58	110	0.659	0.975	0.58	0.50	1.27	412.54	1.30		1	100	1.00	2.80	1.00	414.1	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.14	350.57	2.01	0.57	110	0.668	0.975	0.58	0.50	1.26	416.32	1.30		1	100	1.00	2.85	1.00	417.9	1.00	Infin.	0.000	0.473	Non-Liq.	Non-Liq.	0.00
12.30	323.89	2.04	0.63	110	0.677	0.974	0.63	0.50	1.25	381.99	1.35		1	100	1.00	2.90	1.00	383.4	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.47	284.79	2.15	0.75	110	0.686	0.974	0.76	0.50	1.24	333.56	1.45		1	100	1.00	2.95	1.00	334.8	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.63	272.50	2.15	0.79	110	0.695	0.974	0.79	0.50	1.23	317.04	1.48		1	100	1.00	3.00	1.00	318.2	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00
12.80	284.55	2.13	0.75	110	0.704	0.973	0.75	0.50	1.23	328.95	1.45		1	100	1.00	3.05	1.00	330.2	1.00	Infin.	0.000	0.472	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	288.27	2.12	0.73	110	0.713	0.973	0.74	0.50	1.22	331.14	1.44		1	100	1.00	3.10	1.00	332.4	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
13.12	289.02	2.14	0.74	110	0.722	0.973	0.74	0.50	1.21	329.91	1.45		1	100	1.00	3.15	1.00	331.1	1.00	Infin.	0.000	0.472	**Non-Liq.**	Non-Liq.	**0.00**
13.29	293.05	2.33	0.80	110	0.731	0.972	0.80	0.50	1.20	332.44	1.47		1	100	1.00	3.15	1.00	333.7	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.45	289.11	2.34	0.81	110	0.740	0.972	0.81	0.50	1.20	325.94	1.48		1	100	1.00	3.15	1.00	327.2	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.62	286.16	2.38	0.83	110	0.749	0.972	0.83	0.50	1.19	320.65	1.49		1	100	1.00	3.15	1.00	321.8	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.78	285.79	2.45	0.86	110	0.758	0.971	0.86	0.50	1.18	318.31	1.51		1	100	1.00	3.15	1.00	319.5	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
13.94	290.46	3.11	1.07	110	0.767	0.971	1.07	0.50	1.17	321.61	1.58		1	100	1.00	3.15	1.00	322.8	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
14.11	293.63	3.14	1.07	110	0.776	0.971	1.07	0.50	1.17	323.22	1.58		1	100	1.00	3.15	1.00	324.4	1.00	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
14.27	305.18	2.93	0.96	110	0.785	0.970	0.96	0.50	1.16	334.02	1.53		1	100	1.00	3.15	1.00	335.3	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.44	274.68	2.47	0.90	110	0.794	0.970	0.90	0.50	1.15	298.83	1.54		1	100	1.00	3.15	1.00	299.9	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.60	264.68	1.89	0.71	110	0.803	0.970	0.72	0.50	1.15	286.29	1.48		1	100	1.00	3.15	1.00	287.4	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.76	260.78	1.87	0.72	110	0.812	0.969	0.72	0.50	1.14	280.48	1.48		1	100	1.00	3.15	1.00	281.5	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
14.93	254.73	1.85	0.73	110	0.821	0.969	0.73	0.50	1.14	272.43	1.50		1	100	1.00	3.15	1.00	273.4	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
15.09	243.62	1.72	0.71	110	0.830	0.969	0.71	0.50	1.13	259.08	1.50		1	100	1.00	3.15	1.00	260.0	1.00	Infin.	0.000	0.470	**Non-Liq.**	Non-Liq.	**0.00**
15.26	247.90	1.73	0.70	110	0.839	0.968	0.70	0.50	1.12	262.22	1.50		1	100	1.00	3.15	1.00	263.2	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.42	243.67	1.34	0.55	110	0.848	0.968	0.55	0.50	1.12	256.34	1.43		1	100	1.00	3.15	1.00	257.3	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.58	240.87	1.85	0.77	110	0.857	0.967	0.77	0.50	1.11	252.04	1.54		1	100	1.00	3.15	1.00	253.0	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.75	227.67	1.80	0.79	110	0.866	0.967	0.79	0.50	1.11	236.93	1.57		1	100	1.00	3.15	1.00	237.8	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
15.91	215.03	1.51	0.70	110	0.875	0.967	0.71	0.50	1.10	222.56	1.55		1	100	1.00	3.15	1.00	223.4	1.00	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
16.08	169.50	0.84	0.50	110	0.884	0.966	0.50	0.50	1.09	174.33	1.53		1	100	1.00	3.15	1.00	175.0	1.00	Infin.	0.000	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.24	113.63	0.81	0.71	110	0.893	0.966	0.72	0.54	1.10	116.73	1.77		1	83	1.08	3.15	1.00	127.1	1.00	0.271	0.271	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.40	74.42	0.94	1.26	110	0.902	0.966	1.28	0.63	1.11	76.80	2.07		1	66	1.40		1.00	107.3	1.00	0.195	0.195	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.57	41.55	1.04	2.51	110	0.911	0.965	2.57	0.74	1.12	42.93	2.46		1	42	2.56		1.00	109.7	1.00	0.203	0.203	0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.73	20.49	1.00	4.87	110	0.920	0.965	5.10	0.87	1.13	20.90	2.89		0						1.00			0.468	**Non-Liq.**	Non-Liq.	**0.00**
16.90	17.66	0.87	4.92	110	0.929	0.965	5.19	0.89	1.12	17.75	2.95		0						1.00			0.468	**Non-Liq.**	Non-Liq.	**0.00**
17.06	17.13	0.80	4.64	110	0.938	0.964	4.91	0.89	1.11	17.03	2.94		0						1.00			0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.22	45.69	0.87	1.91	110	0.947	0.964	1.95	0.71	1.08	45.77	2.36		1	44	2.14		1.00	98.1	1.00	0.168	0.168	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.39	85.88	0.98	1.14	110	0.956	0.963	1.15	0.61	1.06	85.36	2.00		1	70	1.30		1.00	111.2	1.00	0.208	0.208	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.55	131.32	1.21	0.92	110	0.965	0.963	0.93	0.55	1.05	129.57	1.80		1	88	1.11	1.00	1.00	144.3	1.00	0.360	0.360	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.72	175.08	1.51	0.86	110	0.974	0.963	0.87	0.52	1.04	171.70	1.69		1	99	1.03	1.05	1.00	178.1	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
17.88	212.23	1.86	0.88	110	0.983	0.962	0.88	0.50	1.04	207.10	1.64		1	100	1.00	1.10	1.00	207.9	1.00	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
18.04	246.62	1.63	0.66	110	0.992	0.962	0.66	0.50	1.03	239.71	1.51		1	100	1.00	1.10	1.00	240.6	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.21	274.39	2.22	0.81	110	1.001	0.962	0.81	0.50	1.03	265.59	1.54		1	100	1.00	1.10	1.00	266.6	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.37	300.69	2.46	0.82	110	1.010	0.961	0.82	0.50	1.02	289.83	1.52		1	100	1.00	1.10	1.00	290.9	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.54	310.01	2.49	0.80	110	1.020	0.961	0.81	0.50	1.02	297.51	1.50		1	100	1.00	1.10	1.00	298.6	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.70	331.14	2.83	0.85	110	1.029	0.960	0.86	0.50	1.01	316.45	1.51		1	100	1.00	1.10	1.00	317.6	1.00	Infin.	0.000	0.466	**Non-Liq.**	Non-Liq.	**0.00**
18.86	350.78	3.15	0.90	110	1.038	0.960	0.90	0.50	1.01	333.81	1.51		1	100	1.00	1.10	1.00	335.1	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.03	364.85	3.25	0.89	110	1.047	0.960	0.89	0.50	1.01	345.73	1.50		1	100	1.00	1.10	1.00	347.0	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.19	366.79	3.32	0.91	110	1.056	0.959	0.91	0.50	1.00	346.08	1.50		1	100	1.00	1.10	1.00	347.4	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.36	364.13	3.25	0.89	110	1.065	0.959	0.89	0.50	1.00	342.09	1.50		1	100	1.00	1.10	1.00	343.4	1.00	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.52	351.02	3.25	0.92	110	1.074	0.958	0.93	0.50	0.99	328.34	1.52		1	100	1.00	1.10	1.00	329.6	0.99	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
19.69	348.92	2.58	0.74	110	1.083	0.958	0.74	0.50	0.99	325.00	1.45		1	100	1.00	1.10	1.00	326.2	0.99	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
19.85	359.19	3.47	0.97	110	1.092	0.957	0.97	0.50	0.98	333.20	1.53		1	100	1.00	1.10	1.00	334.4	0.99	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
20.01	376.67	4.05	1.08	110	1.101	0.957	1.08	0.50	0.98	348.02	1.56		1	100	1.00	1.10	1.00	349.3	0.98	Infin.	0.000	0.464	**Non-Liq.**	Non-Liq.	**0.00**
20.18	404.77	4.12	1.02	110	1.107	0.957	1.02	0.50	0.98	373.03	1.52		1	100	1.00	1.10	1.00	374.4	0.98	Infin.	0.000	0.465	**Non-Liq.**	Non-Liq.	**0.00**
20.34	377.36	4.95	1.31	110	1.111	0.956	1.32	0.50	0.98	347.09	1.63		1	100	1.00	1.10	1.00	348.4	0.98	Infin.	0.000	0.467	**Non-Liq.**	Non-Liq.	**0.00**
20.51	335.46	4.86	1.45	110	1.115	0.956	1.45	0.52	0.97	307.62	1.70		1	100	1.04	1.10	1.00	319.6	0.98	Infin.	0.000	0.469	**Non-Liq.**	Non-Liq.	**0.00**
20.67	292.50	6.92	2.37	110	1.118	0.955	2.37	0.58	0.97	266.67	1.91		1	100	1.20	1.10	1.00	320.0	0.98	Infin.	0.000	0.471	**Non-Liq.**	Non-Liq.	**0.00**
20.83	287.91	3.88	1.35	110	1.122	0.955	1.35	0.52	0.97	262.84	1.71		1	100	1.05	1.10	1.00	275.8	0.98	Infin.	0.000	0.473	**Non-Liq.**	Non-Liq.	**0.00**
21.00	326.82	2.70	0.82	110	1.126	0.954	0.83	0.50	0.97	298.36	1.51		1	100	1.00	1.10	1.00	299.5	0.98	Infin.	0.000	0.474	**Non-Liq.**	Non-Liq.	**0.00**
21.16	125.71	3.38	2.69	110	1.130	0.954	2.71	0.66	0.96	112.72	2.18		1	82	1.62		1.00	182.1	0.97	Infin.	0.000	0.476	**Non-Liq.**	Non-Liq.	**0.00**
21.33	116.66	3.47	2.97	110	1.134	0.954	3.00	0.68	0.95	104.17	2.23		1	79	1.75		1.00	182.7	0.97	Infin.	0.000	0.478	**Non-Liq.**	Non-Liq.	**0.00**
21.49	242.49	3.92	1.62	110	1.138	0.953	1.63	0.55	0.96	219.08	1.82		1	100	1.12	1.00	1.00	247.1	0.97	Infin.	0.000	0.480	**Non-Liq.**	Non-Liq.	**0.00**
21.65	336.70	4.03	1.20	110	1.142	0.953	1.20	0.50	0.96	305.29	1.63		1	100	1.00	1.05	1.00	306.4	0.97	Infin.	0.000	0.482	**Non-Liq.**	Non-Liq.	**0.00**
21.82	383.91	3.24	0.84	110	1.146	0.952	0.85	0.50	0.96	347.64	1.48		1	100	1.00	1.10	1.00	348.9	0.97	Infin.	0.000	0.483	**Non-Liq.**	Non-Liq.	**0.00**
21.98	357.67	2.57	0.72	110	1.150	0.952	0.72	0.50	0.96	323.25	1.44		1	100	1.00	1.15	1.00	324.5	0.97	Infin.	0.000	0.485	**Non-Liq.**	Non-Liq.	**0.00**
22.15	353.56	1.87	0.53	110	1.154	0.951	0.53	0.50	0.96	318.98	1.35		1	100	1.00	1.20	1.00	320.2	0.97	Infin.	0.000	0.487	**Non-Liq.**	Non-Liq.	**0.00**
22.31	349.51	1.82	0.52	110	1.158	0.951	0.52	0.50	0.96	314.78	1.35		1	100	1.00	1.25	1.00	316.0	0.96	Infin.	0.000	0.489	**Non-Liq.**	Non-Liq.	**0.00**
22.47	344.99	1.95	0.56	110	1.161	0.950	0.57	0.50	0.95	310.17	1.38		1	100	1.00	1.30	1.00	311.3	0.96	Infin.	0.000	0.490	**Non-Liq.**	Non-Liq.	**0.00**
22.64	338.66	2.25	0.67	110	1.165	0.950	0.67	0.50	0.95	303.95	1.44		1	100	1.00	1.35	1.00	305.1	0.96	Infin.	0.000	0.492	**Non-Liq.**	Non-Liq.	**0.00**
22.80	324.89	2.52	0.78	110	1.169	0.949	0.78	0.50	0.95	291.06	1.50		1	100	1.00	1.40	1.00	292.1	0.96	Infin.	0.000	0.494	**Non-Liq.**	Non-Liq.	**0.00**
22.97	321.85	2.86	0.89	110	1.173	0.949	0.89	0.50	0.95	287.84	1.55		1	100	1.00	1.40	1.00	288.9	0.96	Infin.	0.000	0.495	**Non-Liq.**	Non-Liq.	**0.00**
23.13	325.14	3.11	0.96	110	1.177	0.948	0.96	0.50	0.95	290.31	1.57		1	100	1.00	1.40	1.00	291.4	0.96	Infin.	0.000	0.497	**Non-Liq.**	Non-Liq.	**0.00**
23.29	321.77	3.23	1.00	110	1.181	0.948	1.01	0.50	0.95	286.81	1.59		1	100	1.00	1.40	1.00	287.9	0.96	Infin.	0.000	0.498	**Non-Liq.**	Non-Liq.	**0.00**
23.46	319.42	3.46	1.08	110	1.185	0.947	1.09	0.50	0.94	284.23	1.62		1	100	1.00	1.40	1.00	285.3	0.96	Infin.	0.000	0.500	**Non-Liq.**	Non-Liq.	**0.00**
23.62	320.77	3.46	1.08	110	1.189	0.947	1.08	0.50	0.94	284.96	1.61		1	100	1.00	1.40	1.00	286.0	0.95	Infin.	0.000	0.502	**Non-Liq.**	Non-Liq.	**0.00**
23.79	324.18	3.64	1.12	110	1.193	0.946	1.13	0.50	0.94	287.53	1.62		1	100	1.00	1.40	1.00	288.6	0.95	Infin.	0.000	0.503	**Non-Liq.**	Non-Liq.	**0.00**
23.95	329.34	3.59	1.09	110	1.197	0.946	1.09	0.50	0.94	291.64	1.61		1	100	1.00	1.40	1.00	292.7	0.95	Infin.	0.000	0.505	**Non-Liq.**	Non-Liq.	**0.00**
24.11	336.72	2.85	0.85	110	1.200	0.945	0.85	0.50	0.94	297.71	1.52		1	100	1.00	1.40	1.00	298.8	0.95	Infin.	0.000	0.506	**Non-Liq.**	Non-Liq.	**0.00**
24.28	342.31	2.38	0.69	110	1.204	0.945	0.70	0.50	0.94	302.18	1.45		1	100	1.00	1.40	1.00	303.3	0.95	Infin.	0.000	0.508	**Non-Liq.**	Non-Liq.	**0.00**
24.44	363.48	2.12	0.58	110	1.208	0.944	0.58	0.50	0.94	320.41	1.38		1	100	1.00	1.40	1.00	321.6	0.95	Infin.	0.000	0.509	**Non-Liq.**	Non-Liq.	**0.00**
24.61	368.92	1.84	0.50	110	1.212	0.943	0.50	0.50	0.93	324.69	1.33		1	100	1.00	1.40	1.00	325.9	0.95	Infin.	0.000	0.511	**Non-Liq.**	Non-Liq.	**0.00**
24.77	350.00	2.34	0.67	110	1.216	0.943	0.67	0.50	0.93	307.49	1.43		1	100	1.00	1.40	1.00	308.6	0.95	Infin.	0.000	0.512	**Non-Liq.**	Non-Liq.	**0.00**
24.93	320.76	2.58	0.80	110	1.220	0.942	0.81	0.50	0.93	281.26	1.52		1	100	1.00	1.40	1.00	282.3	0.94	Infin.	0.000	0.514	**Non-Liq.**	Non-Liq.	**0.00**
25.10	290.38	2.75	0.95	110	1.224	0.942	0.95	0.50	0.93	254.11	1.60		1	100	1.00	1.40	1.00	255.1	0.94	Infin.	0.000	0.515	**Non-Liq.**	Non-Liq.	**0.00**
25.26	281.78	2.86	1.02	110	1.228	0.941	1.02	0.50	0.93	246.15	1.63		1	100	1.00	1.40	1.00	247.1	0.94	Infin.	0.000	0.516	**Non-Liq.**	Non-Liq.	**0.00**
25.43	270.13	2.52	0.93	110	1.232	0.941	0.94	0.50	0.93	235.55	1.62		1	100	1.00	1.40	1.00	236.4	0.94	Infin.	0.000	0.518	**Non-Liq.**	Non-Liq.	**0.00**
25.59	259.39	2.62	1.01	110	1.236	0.940	1.01	0.51	0.92	225.59	1.66		1	100	1.01	1.40	1.00	228.5	0.94	Infin.	0.000	0.519	**Non-Liq.**	Non-Liq.	**0.00**
25.75	232.66	2.59	1.11	110	1.240	0.939	1.12	0.52	0.92	201.29	1.72		1	100	1.05	1.40	1.00	212.8	0.94	Infin.	0.000	0.520	**Non-Liq.**	Non-Liq.	**0.00**
25.92	153.15	2.60	1.70	110	1.243	0.939	1.71	0.60	0.91	130.23	1.99		1	88	1.28	1.40	1.00	167.9	0.94	Infin.	0.000	0.522	**Non-Liq.**	Non-Liq.	**0.00**
26.08	77.71	1.98	2.55	110	1.247	0.938	2.59	0.71	0.89	64.33	2.33		1	59	2.05		1.00	131.9	0.95	0.293	0.279	0.523	**0.53**	89%	**1.09**
26.25	33.55	1.53	4.55	110	1.251	0.938	4.72	0.84	0.87	26.49	2.79		0						0.97			0.524	**Non-Liq.**	Non-Liq.	**0.00**
26.41	22.88	0.79	3.47	110	1.255	0.937	3.67	0.86	0.86	17.64	2.85		0						0.97			0.526	**Non-Liq.**	Non-Liq.	**0.00**
26.57	18.15	0.50	2.75	110	1.259	0.936	2.95	0.87	0.86	13.72	2.88		0						0.97			0.527	**Non-Liq.**	Non-Liq.	**0.00**
26.74	18.25	0.55	3.03	110	1.263	0.936	3.26	0.88	0.86	13.74	2.91		0						0.97			0.528	**Non-Liq.**	Non-Liq.	**0.00**
26.90	17.74	0.85	4.80	110	1.267	0.935	5.17	0.92	0.85	13.19	3.04		0						0.96			0.529	**Non-Liq.**	Non-Liq.	**0.00**
27.07	23.20	1.17	5.05	110	1.271	0.934	5.34	0.90	0.85	17.59	2.96		0						0.96			0.531	**Non-Liq.**	Non-Liq.	**0.00**
27.23	36.59	1.63	4.44	110	1.275	0.934	4.60	0.84	0.86	28.57	2.76		0						0.96			0.532	**Non-Liq.**	Non-Liq.	**0.00**
27.40	72.79	1.23	1.69	110	1.279	0.933	1.72	0.68	0.88	59.44	2.24		1	55	1.76		1.00	104.4	0.94	0.186	0.176	0.533	**0.33**	97%	**1.43**
27.56	107.63	1.36	1.26	110	1.282	0.932	1.28	0.61	0.89	89.34	2.02		1	72	1.32		1.00	118.1	0.93	0.233	0.216	0.534	**0.40**	95%	**1.25**
27.72	139.45	1.46	1.05	110	1.286	0.932	1.06	0.57	0.89	116.81	1.88		1	83	1.17	1.00	1.00	136.8	0.92	0.318	0.294	0.535	**0.55**	88%	**1.04**
27.89	170.39	1.41	0.83	110	1.290	0.931	0.83	0.53	0.90	143.88	1.74		1	92	1.06	1.05	1.00	153.6	0.92	0.417	0.385	0.536	**0.72**	75%	**0.68**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
28.05	178.25	1.31	0.74	110	1.294	0.930	0.74	0.52	0.90	150.76	1.69		1	94	1.03	1.10	1.00	156.1	0.92	0.434	0.400	0.538	**0.74**	73%	**0.63**
28.22	181.74	1.30	0.71	110	1.298	0.929	0.72	0.51	0.90	153.64	1.68		1	95	1.02	1.15	1.00	157.5	0.92	0.443	0.408	0.539	**0.76**	71%	**0.60**
28.38	186.28	1.33	0.71	110	1.302	0.929	0.72	0.51	0.90	157.35	1.67		1	96	1.01	1.20	1.00	160.3	0.92	Infin.	0.000	0.540	**Non-Liq.**	Non-Liq.	**0.00**
28.54	196.98	1.43	0.73	110	1.306	0.928	0.73	0.50	0.90	166.32	1.65		1	98	1.01	1.25	1.00	168.0	0.92	Infin.	0.000	0.541	**Non-Liq.**	Non-Liq.	**0.00**
28.71	209.17	1.48	0.71	110	1.310	0.927	0.71	0.50	0.90	176.57	1.63		1	100	1.00	1.30	1.00	177.2	0.92	Infin.	0.000	0.542	**Non-Liq.**	Non-Liq.	**0.00**
28.87	214.42	1.53	0.71	110	1.314	0.926	0.72	0.50	0.90	180.76	1.62		1	100	1.00	1.35	1.00	181.4	0.92	Infin.	0.000	0.543	**Non-Liq.**	Non-Liq.	**0.00**
29.04	222.85	1.72	0.77	110	1.318	0.926	0.78	0.50	0.90	187.63	1.63		1	100	1.00	1.40	1.00	188.3	0.92	Infin.	0.000	0.544	**Non-Liq.**	Non-Liq.	**0.00**
29.20	230.47	3.36	1.46	110	1.322	0.925	1.47	0.56	0.88	191.40	1.83		1	100	1.13	1.45	1.00	216.3	0.91	Infin.	0.000	0.545	**Non-Liq.**	Non-Liq.	**0.00**
29.36	237.69	3.39	1.42	110	1.325	0.924	1.43	0.55	0.88	197.33	1.81		1	100	1.11	1.50	1.00	220.6	0.91	Infin.	0.000	0.546	**Non-Liq.**	Non-Liq.	**0.00**
29.53	254.47	3.24	1.27	110	1.329	0.923	1.28	0.53	0.89	211.82	1.75		1	100	1.07	1.55	1.00	228.1	0.91	Infin.	0.000	0.547	**Non-Liq.**	Non-Liq.	**0.00**
29.69	245.50	3.18	1.29	110	1.333	0.923	1.30	0.54	0.88	203.76	1.77		1	100	1.08	1.60	1.00	221.8	0.91	Infin.	0.000	0.548	**Non-Liq.**	Non-Liq.	**0.00**
29.86	248.87	2.73	1.10	110	1.337	0.922	1.10	0.52	0.89	207.09	1.71		1	100	1.04	1.65	1.00	217.2	0.91	Infin.	0.000	0.549	**Non-Liq.**	Non-Liq.	**0.00**
30.02	247.02	3.01	1.22	110	1.341	0.921	1.23	0.53	0.88	204.68	1.75		1	100	1.07	1.70	1.00	219.8	0.91	Infin.	0.000	0.550	**Non-Liq.**	Non-Liq.	**0.00**
30.18	244.70	3.20	1.31	110	1.345	0.920	1.32	0.54	0.88	202.04	1.77		1	100	1.09	1.75	1.00	220.8	0.91	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
30.35	244.48	3.08	1.26	110	1.349	0.919	1.27	0.54	0.88	201.72	1.76		1	100	1.08	1.80	1.00	218.7	0.91	Infin.	0.000	0.551	**Non-Liq.**	Non-Liq.	**0.00**
30.51	237.74	3.15	1.33	110	1.353	0.918	1.33	0.54	0.87	195.44	1.79		1	100	1.10	1.85	1.00	215.5	0.91	Infin.	0.000	0.552	**Non-Liq.**	Non-Liq.	**0.00**
30.68	224.10	2.76	1.23	110	1.357	0.918	1.24	0.54	0.87	183.96	1.78		1	100	1.09	1.90	1.00	202.0	0.91	Infin.	0.000	0.553	**Non-Liq.**	Non-Liq.	**0.00**
30.84	259.52	1.36	0.53	110	1.361	0.917	0.53	0.50	0.88	215.17	1.48		1	100	1.00	1.95	1.00	216.0	0.90	Infin.	0.000	0.554	**Non-Liq.**	Non-Liq.	**0.00**
31.00	304.23	2.26	0.74	110	1.364	0.916	0.75	0.50	0.88	252.07	1.53		1	100	1.00	2.00	1.00	253.0	0.90	Infin.	0.000	0.555	**Non-Liq.**	Non-Liq.	**0.00**
31.17	162.49	2.09	1.29	110	1.368	0.915	1.30	0.58	0.86	131.26	1.90		1	88	1.19	2.05	1.00	156.5	0.90	0.437	0.394	0.556	**0.71**	76%	**0.62**
31.33	321.89	2.01	0.63	110	1.372	0.914	0.63	0.50	0.88	266.01	1.46		1	100	1.00	2.10	1.00	267.0	0.90	Infin.	0.000	0.556	**Non-Liq.**	Non-Liq.	**0.00**
31.50	318.50	1.97	0.62	110	1.376	0.913	0.62	0.50	0.88	262.82	1.46		1	100	1.00	2.15	1.00	263.8	0.90	Infin.	0.000	0.557	**Non-Liq.**	Non-Liq.	**0.00**
31.66	313.67	1.90	0.60	110	1.380	0.912	0.61	0.50	0.88	258.44	1.46		1	100	1.00	2.20	1.00	259.4	0.90	Infin.	0.000	0.558	**Non-Liq.**	Non-Liq.	**0.00**
31.82	300.42	1.85	0.62	110	1.384	0.911	0.62	0.50	0.87	247.13	1.48		1	100	1.00	2.25	1.00	248.0	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
31.99	281.46	1.96	0.70	110	1.388	0.910	0.70	0.50	0.87	231.13	1.54		1	100	1.00	2.30	1.00	232.0	0.90	Infin.	0.000	0.559	**Non-Liq.**	Non-Liq.	**0.00**
32.15	265.77	2.01	0.76	110	1.392	0.909	0.76	0.50	0.87	217.87	1.58		1	100	1.00	2.35	1.00	218.7	0.90	Infin.	0.000	0.560	**Non-Liq.**	Non-Liq.	**0.00**
32.32	254.71	2.22	0.87	110	1.396	0.908	0.88	0.50	0.87	208.46	1.64		1	100	1.00	2.40	1.00	209.2	0.90	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.48	258.16	2.21	0.86	110	1.400	0.907	0.86	0.50	0.87	211.00	1.63		1	100	1.00	2.45	1.00	211.8	0.89	Infin.	0.000	0.561	**Non-Liq.**	Non-Liq.	**0.00**
32.64	281.06	1.84	0.66	110	1.403	0.906	0.66	0.50	0.87	229.50	1.52		1	100	1.00	2.50	1.00	230.4	0.89	Infin.	0.000	0.562	**Non-Liq.**	Non-Liq.	**0.00**
32.81	311.55	1.75	0.56	110	1.407	0.905	0.56	0.50	0.87	254.16	1.44		1	100	1.00	2.55	1.00	255.1	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
32.97	355.20	1.77	0.50	110	1.411	0.904	0.50	0.50	0.87	289.53	1.36		1	100	1.00	2.60	1.00	290.6	0.89	Infin.	0.000	0.563	**Non-Liq.**	Non-Liq.	**0.00**
33.14	376.15	1.82	0.48	110	1.415	0.903	0.48	0.50	0.86	306.25	1.34		1	100	1.00	2.65	1.00	307.4	0.89	Infin.	0.000	0.564	**Non-Liq.**	Non-Liq.	**0.00**
33.30	382.53	1.72	0.45	110	1.419	0.902	0.45	0.50	0.86	311.03	1.31		1	100	1.00	2.70	1.00	312.2	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.46	385.73	1.70	0.44	110	1.423	0.901	0.44	0.50	0.86	313.21	1.30		1	100	1.00	2.75	1.00	314.4	0.89	Infin.	0.000	0.565	**Non-Liq.**	Non-Liq.	**0.00**
33.63	388.54	1.78	0.46	110	1.427	0.900	0.46	0.50	0.86	315.06	1.31		1	100	1.00	2.80	1.00	316.2	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.79	373.85	1.92	0.51	110	1.431	0.899	0.52	0.50	0.86	302.69	1.36		1	100	1.00	2.85	1.00	303.8	0.89	Infin.	0.000	0.566	**Non-Liq.**	Non-Liq.	**0.00**
33.96	360.84	2.35	0.65	110	1.435	0.898	0.65	0.50	0.86	291.71	1.44		1	100	1.00	2.90	1.00	292.8	0.89	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.12	336.62	1.68	0.50	110	1.439	0.897	0.50	0.50	0.86	271.68	1.39		1	100	1.00	2.95	1.00	272.7	0.88	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
34.28	305.48	2.24	0.73	110	1.443	0.896	0.74	0.50	0.86	246.11	1.53		1	100	1.00	3.00	1.00	247.0	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.45	270.74	2.54	0.94	110	1.446	0.895	0.94	0.50	0.85	217.56	1.65		1	100	1.00	3.05	1.00	218.5	0.88	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
34.61	265.04	2.75	1.04	110	1.450	0.894	1.04	0.51	0.85	211.86	1.69		1	100	1.03	3.10	1.00	218.7	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.78	265.84	2.71	1.02	110	1.454	0.893	1.03	0.51	0.85	212.34	1.68		1	100	1.02	3.15	1.00	218.2	0.88	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
34.94	292.81	2.65	0.91	110	1.458	0.892	0.91	0.50	0.85	234.57	1.61		1	100	1.00	3.20	1.00	235.4	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.10	308.71	2.64	0.85	110	1.462	0.890	0.86	0.50	0.85	247.04	1.58		1	100	1.00	3.25	1.00	248.0	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.27	337.12	3.28	0.97	110	1.466	0.889	0.98	0.50	0.85	269.52	1.59		1	100	1.00	3.30	1.00	270.5	0.88	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
35.43	331.83	3.25	0.98	110	1.470	0.888	0.98	0.50	0.85	264.91	1.60		1	100	1.00	3.35	1.00	265.9	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.60	342.49	4.15	1.21	110	1.474	0.887	1.22	0.51	0.85	272.40	1.67		1	100	1.01	3.40	1.00	277.4	0.88	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
35.76	363.18	4.86	1.34	110	1.478	0.886	1.34	0.51	0.84	287.98	1.69		1	100	1.03	3.45	1.00	297.1	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
35.93	393.50	4.20	1.07	110	1.482	0.885	1.07	0.50	0.85	313.11	1.58		1	100	1.00	3.50	1.00	314.3	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.09	486.11	3.26	0.67	110	1.485	0.883	0.67	0.50	0.84	386.57	1.37		1	100	1.00	3.55	1.00	388.0	0.87	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
36.25	452.81	3.01	0.66	110	1.489	0.882	0.67	0.50	0.84	359.53	1.39		1	100	1.00	3.60	1.00	360.9	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.42	475.07	3.03	0.64	110	1.493	0.881	0.64	0.50	0.84	376.77	1.36		1	100	1.00	3.65	1.00	378.2	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.58	497.46	2.63	0.53	110	1.497	0.880	0.53	0.50	0.84	394.06	1.29		1	100	1.00	3.70	1.00	395.5	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.75	519.74	2.73	0.52	110	1.501	0.878	0.53	0.50	0.84	411.23	1.27		1	100	1.00	3.75	1.00	412.8	0.87	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
36.91	525.93	2.68	0.51	110	1.505	0.877	0.51	0.50	0.84	415.60	1.26		1	100	1.00	3.80	1.00	417.1	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.07	555.81	2.96	0.53	110	1.509	0.876	0.53	0.50	0.84	438.70	1.26		1	100	1.00	3.85	1.00	440.3	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.24	576.13	3.26	0.57	110	1.513	0.875	0.57	0.50	0.84	454.20	1.27		1	100	1.00	3.90	1.00	455.9	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.40	579.03	2.97	0.51	110	1.517	0.873	0.51	0.50	0.84	455.90	1.23		1	100	1.00	3.95	1.00	457.6	0.87	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.57	555.02	2.54	0.46	110	1.521	0.872	0.46	0.50	0.83	436.38	1.21		1	100	1.00	4.00	1.00	438.0	0.86	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
37.73	538.68	2.11	0.39	110	1.525	0.871	0.39	0.50	0.83	422.95	1.17		1	100	1.00	4.05	1.00	424.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
37.89	534.75	2.52	0.47	110	1.528	0.869	0.47	0.50	0.83	419.32	1.23		1	100	1.00	4.10	1.00	420.9	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.06	523.23	3.08	0.59	110	1.532	0.868	0.59	0.50	0.83	409.73	1.31		1	100	1.00	4.15	1.00	411.3	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.22	482.86	4.31	0.89	110	1.536	0.867	0.90	0.50	0.83	377.54	1.47		1	100	1.00	4.20	1.00	379.0	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.39	499.56	3.91	0.78	110	1.540	0.865	0.78	0.50	0.83	390.14	1.42		1	100	1.00	4.25	1.00	391.6	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.55	504.10	3.38	0.67	110	1.544	0.864	0.67	0.50	0.83	393.20	1.36		1	100	1.00	4.30	1.00	394.7	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.71	443.92	3.01	0.68	110	1.548	0.863	0.68	0.50	0.83	345.67	1.41		1	100	1.00	4.35	1.00	347.0	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
38.88	474.86	3.10	0.65	110	1.552	0.861	0.65	0.50	0.83	369.38	1.37		1	100	1.00	4.40	1.00	370.8	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.04	482.80	3.73	0.77	110	1.556	0.860	0.77	0.50	0.82	375.10	1.43		1	100	1.00	4.45	1.00	376.5	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.21	449.71	3.94	0.88	110	1.560	0.859	0.88	0.50	0.82	348.87	1.49		1	100	1.00	4.50	1.00	350.2	0.86	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
39.37	400.90	3.48	0.87	110	1.564	0.857	0.87	0.50	0.82	310.48	1.52		1	100	1.00	4.55	1.00	311.6	0.86	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.53	328.20	3.74	1.14	110	1.567	0.856	1.15	0.51	0.82	252.87	1.67		1	100	1.01	4.60	1.00	257.5	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.70	242.12	2.76	1.14	110	1.571	0.854	1.15	0.54	0.81	183.97	1.76		1	100	1.08	4.65	1.00	198.8	0.85	Infin.	0.000	0.576	**Non-Liq.**	Non-Liq.	**0.00**
39.86	241.13	3.50	1.45	110	1.575	0.853	1.46	0.56	0.80	181.19	1.84		1	100	1.14	4.70	1.00	206.7	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.03	216.57	3.02	1.39	110	1.579	0.852	1.40	0.57	0.80	161.99	1.86		1	97	1.15	4.75	1.00	187.5	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.19	226.70	2.34	1.03	110	1.583	0.850	1.04	0.53	0.81	171.70	1.75		1	99	1.07	4.80	1.00	184.4	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.35	302.13	1.99	0.66	110	1.587	0.849	0.66	0.50	0.82	231.94	1.52		1	100	1.00	4.85	1.00	232.8	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.52	323.21	1.80	0.56	110	1.591	0.847	0.56	0.50	0.82	247.90	1.45		1	100	1.00	4.90	1.00	248.8	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.68	290.82	1.95	0.67	110	1.595	0.846	0.67	0.50	0.81	222.66	1.54		1	100	1.00	4.95	1.00	223.5	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
40.85	234.61	2.52	1.08	110	1.599	0.844	1.08	0.53	0.80	176.69	1.75		1	100	1.07	5.00	1.00	190.3	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.01	223.18	3.14	1.41	110	1.603	0.843	1.42	0.56	0.79	165.64	1.86		1	98	1.15	5.05	1.00	191.2	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.17	246.49	3.45	1.40	110	1.607	0.841	1.41	0.56	0.79	183.54	1.82		1	100	1.12	5.10	1.00	207.2	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.34	236.31	3.97	1.68	110	1.610	0.840	1.69	0.58	0.78	174.01	1.90		1	100	1.19	5.15	1.00	207.6	0.85	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.50	209.85	2.42	1.15	110	1.614	0.838	1.16	0.55	0.79	155.90	1.81		1	95	1.12	5.20	1.00	174.5	0.84	Infin.	0.000	0.575	**Non-Liq.**	Non-Liq.	**0.00**
41.67	228.87	2.31	1.01	110	1.618	0.837	1.01	0.53	0.80	171.46	1.74		1	99	1.07	5.25	1.00	183.4	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.83	272.51	1.92	0.70	110	1.622	0.835	0.71	0.50	0.81	206.78	1.57		1	100	1.00	5.30	1.00	207.6	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
41.99	324.45	1.75	0.54	110	1.626	0.834	0.54	0.50	0.81	246.13	1.44		1	100	1.00	5.35	1.00	247.0	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.16	358.84	1.94	0.54	110	1.630	0.832	0.54	0.50	0.81	272.02	1.41		1	100	1.00	5.40	1.00	273.0	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.32	372.30	2.11	0.57	110	1.634	0.831	0.57	0.50	0.80	281.93	1.41		1	100	1.00	5.45	1.00	283.0	0.84	Infin.	0.000	0.574	**Non-Liq.**	Non-Liq.	**0.00**
42.49	381.00	2.00	0.52	110	1.638	0.829	0.53	0.50	0.80	288.20	1.38		1	100	1.00	5.50	1.00	289.3	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.65	390.56	2.06	0.53	110	1.642	0.827	0.53	0.50	0.80	295.10	1.37		1	100	1.00	5.55	1.00	296.2	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.81	394.48	2.14	0.54	110	1.646	0.826	0.54	0.50	0.80	297.72	1.38		1	100	1.00	5.55	1.00	298.8	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**
42.98	391.94	2.30	0.59	110	1.649	0.824	0.59	0.50	0.80	295.44	1.41		1	100	1.00	5.55	1.00	296.5	0.84	Infin.	0.000	0.573	**Non-Liq.**	Non-Liq.	**0.00**

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
43.14	388.72	2.40	0.62	110	1.653	0.823	0.62	0.50	0.80	292.66	1.43		1	100	1.00	5.55	1.00	293.8	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.31	387.56	2.49	0.64	110	1.657	0.821	0.65	0.50	0.80	291.43	1.44		1	100	1.00	5.55	1.00	292.5	0.84	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.47	388.39	2.43	0.62	110	1.661	0.820	0.63	0.50	0.80	291.71	1.43		1	100	1.00	5.55	1.00	292.8	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.64	394.80	2.34	0.59	110	1.665	0.818	0.60	0.50	0.80	296.20	1.41		1	100	1.00	5.55	1.00	297.3	0.83	Infin.	0.000	0.572	**Non-Liq.**	Non-Liq.	**0.00**
43.80	409.10	2.46	0.60	110	1.669	0.816	0.60	0.50	0.80	306.61	1.40		1	100	1.00	5.55	1.00	307.8	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
43.96	411.66	2.41	0.59	110	1.673	0.815	0.59	0.50	0.80	308.17	1.39		1	100	1.00	5.55	1.00	309.3	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.13	423.11	2.33	0.55	110	1.677	0.813	0.55	0.50	0.79	316.41	1.37		1	100	1.00	5.55	1.00	317.6	0.83	Infin.	0.000	0.571	**Non-Liq.**	Non-Liq.	**0.00**
44.29	427.48	3.38	0.79	110	1.681	0.811	0.79	0.50	0.79	319.31	1.48		1	100	1.00	5.55	1.00	320.5	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.46	465.12	8.79	1.89	110	1.685	0.810	1.90	0.54	0.78	341.03	1.77		1	100	1.08	5.55	1.00	370.8	0.83	Infin.	0.000	0.570	**Non-Liq.**	Non-Liq.	**0.00**
44.62	532.93	7.53	1.41	110	1.689	0.808	1.42	0.50	0.79	397.46	1.62		1	100	1.00	5.55	1.00	399.0	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.78	591.21	6.48	1.10	110	1.692	0.807	1.10	0.50	0.79	440.56	1.51		1	100	1.00	5.55	1.00	442.2	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
44.95	507.18	5.63	1.11	110	1.696	0.805	1.11	0.50	0.79	377.32	1.55		1	100	1.00	5.55	1.00	378.7	0.83	Infin.	0.000	0.569	**Non-Liq.**	Non-Liq.	**0.00**
45.11	476.27	2.22	0.47	110	1.700	0.803	0.47	0.50	0.79	353.84	1.28		1	100	1.00	5.55	1.00	355.2	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.28	485.36	1.77	0.36	110	1.704	0.802	0.37	0.50	0.79	360.20	1.20		1	100	1.00	5.55	1.00	361.5	0.83	Infin.	0.000	0.568	**Non-Liq.**	Non-Liq.	**0.00**
45.44	498.42	2.45	0.49	110	1.708	0.800	0.49	0.50	0.79	369.50	1.28		1	100	1.00	5.55	1.00	370.9	0.83	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.60	485.91	5.77	1.19	110	1.712	0.798	1.19	0.50	0.79	359.78	1.59		1	100	1.00	5.55	1.00	361.1	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.77	460.62	7.80	1.69	110	1.716	0.797	1.70	0.53	0.78	336.16	1.73		1	100	1.06	5.55	1.00	357.1	0.82	Infin.	0.000	0.567	**Non-Liq.**	Non-Liq.	**0.00**
45.93	491.30	0.00	0.00	110	1.720	0.795	0.00	0.80	0.68	313.04	2.66		0		1.00				0.91			0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.10	606.17	0.00	0.00	110	1.724	0.793	0.00	0.82	0.67	382.66	2.71		0		1.00				0.91			0.566	**Non-Liq.**	Non-Liq.	**0.00**
46.26	616.78	0.00	0.00	110	1.728	0.792	0.00	0.82	0.67	388.36	2.72		0		1.00				0.91			0.565	**Non-Liq.**	Non-Liq.	**0.00**

Seismically Induced Settlement of Dry Sand Analysis – Groundwater at 8 feet

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-1
Plot: 1

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total
Avg	Induced
0%	Subsidence
Max	(inches)
0%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	82.43	1.01	1.22	100	0.008	1.000	1.22	0.57	1.70	132.44	1.88		1	88	1.17	0.05	1.00	154.7	1.00	0.424	0.424	0.323	Non-Liq.	Non-Liq.	0.00
0.33	77.94	1.37	1.76	100	0.016	1.000	1.76	0.61	1.70	125.21	2.01		1	86	1.31		1.00	164.0	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.49	66.43	1.48	2.23	100	0.025	1.000	2.23	0.65	1.70	106.70	2.13		1	80	1.51		1.00	161.4	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.66	56.46	1.33	2.35	100	0.033	1.000	2.35	0.67	1.70	90.67	2.20		1	73	1.65		1.00	150.0	1.00	0.394	0.394	0.323	Non-Liq.	Non-Liq.	0.00
0.82	50.54	1.16	2.30	100	0.041	1.000	2.30	0.67	1.70	81.14	2.22		1	68	1.72		1.00	139.9	1.00	0.334	0.334	0.323	Non-Liq.	Non-Liq.	0.00
0.98	45.66	1.04	2.28	100	0.049	1.000	2.28	0.68	1.70	73.29	2.25		1	64	1.80		1.00	132.1	1.00	0.294	0.294	0.323	Non-Liq.	Non-Liq.	0.00
1.15	40.24	0.94	2.33	100	0.057	0.999	2.33	0.70	1.70	64.57	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.323	Non-Liq.	Non-Liq.	0.00
1.31	40.24	0.94	2.33	100	0.066	0.999	2.33	0.70	1.70	64.55	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.323	Non-Liq.	Non-Liq.	0.00
1.48	34.62	0.81	2.34	100	0.074	0.999	2.34	0.71	1.70	55.51	2.35		1	52	2.11		1.00	117.0	1.00	0.229	0.229	0.323	Non-Liq.	Non-Liq.	0.00
1.64	31.09	0.64	2.05	100	0.082	0.998	2.06	0.71	1.70	49.82	2.34		1	48	2.10		1.00	104.5	1.00	0.186	0.186	0.323	Non-Liq.	Non-Liq.	0.00
1.80	30.58	0.62	2.01	100	0.090	0.998	2.02	0.71	1.70	48.99	2.34		1	47	2.10		1.00	102.7	1.00	0.181	0.181	0.323	Non-Liq.	Non-Liq.	0.00
1.97	32.03	0.75	2.33	100	0.098	0.998	2.34	0.72	1.70	51.31	2.37		1	49	2.20		1.00	112.8	1.00	0.213	0.213	0.322	Non-Liq.	Non-Liq.	0.00
2.13	31.02	0.74	2.40	100	0.107	0.997	2.41	0.72	1.70	49.67	2.39		1	48	2.27		1.00	112.8	1.00	0.214	0.214	0.322	Non-Liq.	Non-Liq.	0.00
2.30	29.95	0.70	2.34	100	0.115	0.997	2.35	0.73	1.70	47.94	2.39		1	46	2.29		1.00	109.8	1.00	0.203	0.203	0.322	Non-Liq.	Non-Liq.	0.00
2.46	29.19	0.66	2.26	100	0.123	0.996	2.27	0.73	1.70	46.70	2.39		1	45	2.28		1.00	106.7	1.00	0.193	0.193	0.322	Non-Liq.	Non-Liq.	0.00
2.62	29.17	0.63	2.17	100	0.131	0.996	2.18	0.72	1.70	46.66	2.38		1	45	2.24		1.00	104.4	1.00	0.186	0.186	0.322	Non-Liq.	Non-Liq.	0.00
2.79	29.42	0.62	2.12	100	0.139	0.996	2.13	0.72	1.70	47.05	2.37		1	46	2.20		1.00	103.6	1.00	0.183	0.183	0.322	Non-Liq.	Non-Liq.	0.00
2.95	29.77	0.62	2.08	100	0.148	0.995	2.09	0.72	1.70	47.60	2.36		1	46	2.17		1.00	103.3	1.00	0.182	0.182	0.322	Non-Liq.	Non-Liq.	0.00
3.12	29.70	0.60	2.02	100	0.156	0.995	2.03	0.71	1.70	47.47	2.36		1	46	2.14		1.00	101.7	1.00	0.178	0.178	0.322	Non-Liq.	Non-Liq.	0.00
3.28	28.88	0.57	1.96	100	0.164	0.994	1.97	0.72	1.70	46.14	2.36		1	45	2.15		1.00	99.1	1.00	0.170	0.170	0.321	Non-Liq.	Non-Liq.	0.00
3.44	26.80	0.52	1.95	100	0.172	0.994	1.96	0.72	1.70	42.79	2.38		1	42	2.24		1.00	95.7	1.00	0.162	0.162	0.321	Non-Liq.	Non-Liq.	0.00
3.61	26.96	0.49	1.80	100	0.180	0.994	1.81	0.72	1.70	43.03	2.36		1	42	2.15		1.00	92.3	1.00	0.153	0.153	0.321	Non-Liq.	Non-Liq.	0.00
3.77	29.75	0.49	1.63	100	0.189	0.993	1.64	0.70	1.70	47.50	2.30		1	46	1.94		1.00	92.2	1.00	0.153	0.153	0.321	Non-Liq.	Non-Liq.	0.00
3.94	32.57	0.49	1.50	100	0.197	0.993	1.51	0.68	1.70	52.02	2.24		1	50	1.78		1.00	92.7	1.00	0.154	0.154	0.321	Non-Liq.	Non-Liq.	0.00
4.10	34.78	0.51	1.46	100	0.205	0.993	1.47	0.67	1.70	55.56	2.21		1	52	1.70		1.00	94.6	1.00	0.159	0.159	0.321	Non-Liq.	Non-Liq.	0.00
4.27	36.24	0.53	1.47	100	0.213	0.992	1.48	0.67	1.70	57.89	2.20		1	54	1.67		1.00	96.7	1.00	0.164	0.164	0.321	Non-Liq.	Non-Liq.	0.00
4.43	38.86	0.57	1.47	100	0.221	0.992	1.48	0.66	1.70	62.08	2.18		1	57	1.62		1.00	100.3	1.00	0.174	0.174	0.321	Non-Liq.	Non-Liq.	0.00
4.59	44.03	0.63	1.44	100	0.230	0.991	1.45	0.65	1.70	70.38	2.13		1	62	1.51		1.00	106.5	1.00	0.192	0.192	0.320	Non-Liq.	Non-Liq.	0.00
4.76	50.25	0.69	1.36	100	0.238	0.991	1.37	0.63	1.70	80.36	2.07		1	68	1.40		1.00	112.9	1.00	0.214	0.214	0.320	Non-Liq.	Non-Liq.	0.00
4.92	56.32	0.74	1.31	100	0.246	0.991	1.31	0.61	1.70	90.10	2.02		1	73	1.33		1.00	119.7	1.00	0.240	0.240	0.320	Non-Liq.	Non-Liq.	0.00
5.09	62.37	0.74	1.19	110	0.255	0.990	1.19	0.60	1.70	99.81	1.96		1	77	1.25	0.55	1.19	148.2	1.00	0.383	0.383	0.320	Non-Liq.	Non-Liq.	0.00
5.25	67.00	0.84	1.26	110	0.264	0.990	1.26	0.59	1.70	107.23	1.95		1	80	1.24	0.60	1.19	158.4	1.00	0.450	0.450	0.320	Non-Liq.	Non-Liq.	0.00
5.41	67.37	0.89	1.32	110	0.273	0.989	1.32	0.60	1.70	107.81	1.97		1	80	1.26	0.65	1.19	160.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.58	67.34	0.91	1.35	110	0.282	0.989	1.36	0.60	1.70	107.75	1.97		1	80	1.27	0.70	1.19	162.0	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.74	67.46	0.93	1.37	110	0.291	0.989	1.38	0.60	1.70	107.93	1.98		1	80	1.27	0.75	1.19	162.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.91	67.82	0.93	1.37	110	0.300	0.988	1.38	0.60	1.70	108.49	1.98		1	80	1.27	0.80	1.19	163.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.07	65.23	0.93	1.42	110	0.309	0.988	1.42	0.61	1.70	104.32	2.00		1	79	1.30	0.85	1.19	160.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.23	63.78	0.93	1.46	110	0.318	0.988	1.47	0.61	1.70	101.97	2.01		1	78	1.32		1.00	134.5	1.00	0.306	0.306	0.319	Non-Liq.	Non-Liq.	0.00
6.40	65.72	0.95	1.45	110	0.327	0.987	1.45	0.61	1.70	105.07	2.00		1	79	1.30		1.00	136.9	1.00	0.319	0.319	0.319	Non-Liq.	Non-Liq.	0.00
6.56	71.05	1.00	1.40	110	0.336	0.987	1.41	0.60	1.70	113.62	1.97		1	82	1.26	1.00	1.00	143.9	1.00	0.357	0.357	0.319	Non-Liq.	Non-Liq.	0.00
6.73	77.49	1.08	1.39	110	0.345	0.986	1.40	0.59	1.70	123.96	1.94		1	86	1.23	1.05	1.00	152.8	1.00	0.412	0.412	0.319	Non-Liq.	Non-Liq.	0.00
6.89	86.69	1.16	1.34	110	0.354	0.986	1.34	0.58	1.70	138.72	1.89		1	90	1.18	1.10	1.00	164.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	98.48	1.28	1.30	110	0.363	0.986	1.31	0.56	1.70	157.65	1.85		1	96	1.14	1.15	1.00	180.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	114.53	1.41	1.23	110	0.372	0.985	1.23	0.54	1.70	183.43	1.78		1	100	1.09	1.20	1.00	201.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	122.82	1.49	1.21	110	0.381	0.985	1.21	0.53	1.70	196.73	1.76		1	100	1.08	1.25	1.00	212.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	128.68	1.53	1.19	110	0.390	0.985	1.19	0.53	1.70	205.54	1.74		1	100	1.06	1.30	1.00	219.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	128.68	1.53	1.19	110	0.399	0.984	1.19	0.53	1.68	203.25	1.74		1	100	1.07	1.35	1.00	217.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	134.06	1.56	1.17	110	0.408	0.984	1.17	0.53	1.65	208.44	1.73		1	100	1.06	1.40	1.00	221.0	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	139.69	1.63	1.16	110	0.417	0.984	1.17	0.52	1.63	214.20	1.72		1	100	1.05	1.45	1.00	225.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-2A
Plot: 2

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*$K\sigma$/CSR

Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	
0%	
Max	
0%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	8.00	0.09	1.13	100	0.008	1.000	1.13	0.81	1.70	12.84	2.68		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
0.33	11.37	0.11	0.97	100	0.016	1.000	0.97	0.76	1.70	18.24	2.52		1	6	2.85		1.00	52.1	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
0.49	14.06	0.14	1.00	100	0.025	1.000	1.00	0.74	1.70	22.55	2.44		1	15	2.50		1.00	56.3	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.66	15.85	0.14	0.90	100	0.033	1.000	0.90	0.72	1.70	25.42	2.38		1	20	2.22		1.00	56.4	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.82	15.82	0.14	0.88	100	0.041	1.000	0.89	0.72	1.70	25.35	2.37		1	20	2.21		1.00	55.9	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
0.98	15.42	0.12	0.78	100	0.049	1.000	0.79	0.72	1.70	24.70	2.36		1	19	2.15		1.00	53.1	1.00	0.094	0.094	0.323	Non-Liq.	Non-Liq.	0.00
1.15	12.24	0.10	0.81	100	0.057	0.999	0.81	0.74	1.70	19.58	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.323	Non-Liq.	Non-Liq.	0.00
1.31	12.24	0.10	0.81	100	0.066	0.999	0.81	0.74	1.70	19.56	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.323	Non-Liq.	Non-Liq.	0.00
1.48	10.64	0.13	1.17	100	0.074	0.999	1.18	0.78	1.70	16.98	2.59		1	3	3.25		1.00	55.1	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
1.64	11.63	0.20	1.72	100	0.082	0.998	1.73	0.80	1.70	18.56	2.64		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.80	19.13	0.29	1.53	100	0.090	0.998	1.53	0.74	1.70	30.59	2.43		1	28	2.45		1.00	74.9	1.00	0.119	0.119	0.323	Non-Liq.	Non-Liq.	0.00
1.97	35.11	0.52	1.48	100	0.098	0.998	1.48	0.67	1.70	56.26	2.21		1	53	1.70		1.00	95.4	1.00	0.161	0.161	0.322	Non-Liq.	Non-Liq.	0.00
2.13	43.24	0.60	1.40	100	0.107	0.997	1.40	0.65	1.70	69.31	2.13		1	62	1.50		1.00	104.3	1.00	0.185	0.185	0.322	Non-Liq.	Non-Liq.	0.00
2.30	43.08	0.62	1.43	100	0.115	0.997	1.44	0.65	1.70	69.04	2.13		1	61	1.52		1.00	105.0	1.00	0.188	0.188	0.322	Non-Liq.	Non-Liq.	0.00
2.46	41.08	0.60	1.46	100	0.123	0.996	1.46	0.65	1.70	65.81	2.16		1	59	1.56		1.00	102.9	1.00	0.181	0.181	0.322	Non-Liq.	Non-Liq.	0.00
2.62	38.58	0.56	1.46	100	0.131	0.996	1.46	0.66	1.70	61.78	2.18		1	57	1.61		1.00	99.6	1.00	0.172	0.172	0.322	Non-Liq.	Non-Liq.	0.00
2.79	35.25	0.53	1.50	100	0.139	0.996	1.50	0.67	1.70	56.42	2.21		1	53	1.70		1.00	96.1	1.00	0.163	0.163	0.322	Non-Liq.	Non-Liq.	0.00
2.95	32.60	0.49	1.50	100	0.148	0.995	1.51	0.68	1.70	52.14	2.24		1	50	1.78		1.00	92.6	1.00	0.154	0.154	0.322	Non-Liq.	Non-Liq.	0.00
3.12	29.61	0.45	1.52	100	0.156	0.995	1.52	0.69	1.70	47.33	2.28		1	46	1.88		1.00	89.0	1.00	0.146	0.146	0.322	Non-Liq.	Non-Liq.	0.00
3.28	26.41	0.40	1.51	100	0.164	0.994	1.52	0.70	1.70	42.17	2.32		1	41	2.01		1.00	84.6	1.00	0.136	0.136	0.321	Non-Liq.	Non-Liq.	0.00
3.44	23.64	0.34	1.44	100	0.172	0.994	1.45	0.71	1.70	37.71	2.34		1	36	2.10		1.00	79.2	1.00	0.126	0.126	0.321	Non-Liq.	Non-Liq.	0.00
3.61	21.08	0.29	1.36	100	0.180	0.994	1.37	0.72	1.70	33.58	2.37		1	32	2.20		1.00	73.8	1.00	0.117	0.117	0.321	Non-Liq.	Non-Liq.	0.00
3.77	18.23	0.30	1.67	100	0.189	0.993	1.69	0.75	1.70	28.99	2.47		1	25	2.64		1.00	76.6	1.00	0.122	0.122	0.321	Non-Liq.	Non-Liq.	0.00
3.94	15.34	0.30	1.98	100	0.197	0.993	2.00	0.78	1.70	24.33	2.58		1	18	3.21		1.00	78.0	1.00	0.124	0.124	0.321	Non-Liq.	Non-Liq.	0.00
4.10	12.99	0.35	2.73	100	0.205	0.993	2.77	0.83	1.70	20.54	2.72		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.27	11.82	0.38	3.20	100	0.213	0.992	3.26	0.85	1.70	18.65	2.80		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.43	10.34	0.34	3.30	100	0.221	0.992	3.37	0.86	1.70	16.26	2.86		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.59	11.89	0.24	2.04	100	0.230	0.991	2.08	0.81	1.70	18.74	2.68		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.76	26.79	0.25	0.93	100	0.238	0.991	0.94	0.67	1.70	42.66	2.19		1	41	1.65		1.00	70.3	1.00	0.112	0.112	0.320	Non-Liq.	Non-Liq.	0.00
4.92	35.67	0.30	0.84	100	0.246	0.991	0.85	0.63	1.70	56.92	2.06		1	53	1.39		1.00	79.2	1.00	0.126	0.126	0.320	Non-Liq.	Non-Liq.	0.00
5.09	41.25	0.36	0.88	110	0.255	0.990	0.89	0.61	1.70	65.87	2.02		1	60	1.33		1.00	87.7	1.00	0.143	0.143	0.320	Non-Liq.	Non-Liq.	0.00
5.25	44.28	0.41	0.92	110	0.264	0.990	0.92	0.61	1.70	70.72	2.01		1	62	1.31		1.00	92.7	1.00	0.154	0.154	0.320	Non-Liq.	Non-Liq.	0.00
5.41	46.60	0.44	0.94	110	0.273	0.989	0.95	0.61	1.70	74.44	2.00		1	65	1.30	1.00	1.00	96.8	1.00	0.164	0.164	0.320	Non-Liq.	Non-Liq.	0.00
5.58	50.22	0.47	0.93	110	0.282	0.989	0.94	0.60	1.70	80.24	1.97		1	68	1.26	1.05	1.00	101.4	1.00	0.177	0.177	0.320	Non-Liq.	Non-Liq.	0.00
5.74	54.67	0.47	0.87	110	0.291	0.989	0.87	0.58	1.70	87.38	1.92		1	71	1.21	1.10	1.00	105.9	1.00	0.190	0.190	0.320	Non-Liq.	Non-Liq.	0.00
5.91	56.65	0.48	0.85	110	0.300	0.988	0.86	0.58	1.70	90.54	1.90		1	73	1.19	1.15	1.00	108.2	1.00	0.198	0.198	0.319	Non-Liq.	Non-Liq.	0.00
6.07	56.48	0.50	0.89	110	0.309	0.988	0.90	0.58	1.70	90.26	1.92		1	73	1.20	1.20	1.00	109.1	1.00	0.201	0.201	0.319	Non-Liq.	Non-Liq.	0.00
6.23	58.52	0.53	0.91	110	0.318	0.988	0.92	0.58	1.70	93.52	1.91		1	74	1.20	1.25	1.00	112.4	1.00	0.212	0.212	0.319	Non-Liq.	Non-Liq.	0.00
6.40	61.73	0.57	0.92	110	0.327	0.987	0.93	0.58	1.70	98.66	1.89		1	76	1.18	1.30	1.00	117.3	1.00	0.230	0.230	0.319	Non-Liq.	Non-Liq.	0.00
6.56	65.05	0.55	0.84	110	0.336	0.987	0.85	0.56	1.70	103.98	1.85		1	78	1.15	1.35	1.00	119.7	1.00	0.239	0.239	0.319	Non-Liq.	Non-Liq.	0.00
6.73	67.42	0.56	0.83	110	0.345	0.986	0.83	0.56	1.70	107.78	1.84		1	80	1.13	1.40	1.00	122.6	1.00	0.252	0.252	0.319	Non-Liq.	Non-Liq.	0.00
6.89	72.04	0.64	0.89	110	0.354	0.986	0.89	0.56	1.70	115.18	1.83		1	83	1.13	1.45	1.00	130.7	1.00	0.287	0.287	0.319	Non-Liq.	Non-Liq.	0.00
7.05	79.98	0.56	0.70	110	0.363	0.986	0.71	0.53	1.70	127.93	1.73		1	87	1.06	1.50	1.00	136.1	1.00	0.314	0.314	0.319	Non-Liq.	Non-Liq.	0.00
7.22	84.69	0.74	0.87	110	0.372	0.985	0.88	0.54	1.70	135.48	1.77		1	89	1.09	1.55	1.00	147.8	1.00	0.380	0.380	0.318	Non-Liq.	Non-Liq.	0.00
7.38	84.27	0.71	0.84	110	0.381	0.985	0.84	0.54	1.70	134.79	1.76		1	89	1.08	1.60	1.00	146.2	1.00	0.370	0.370	0.318	Non-Liq.	Non-Liq.	0.00
7.55	88.99	0.71	0.80	110	0.390	0.985	0.81	0.53	1.69	141.78	1.73		1	91	1.06	1.65	1.00	151.0	1.00	0.400	0.400	0.318	Non-Liq.	Non-Liq.	0.00
7.71	88.99	0.71	0.80	110	0.399	0.984	0.81	0.53	1.67	140.22	1.74		1	91	1.06	1.70	1.00	149.6	1.00	0.392	0.392	0.318	Non-Liq.	Non-Liq.	0.00
7.87	97.16	0.72	0.74	110	0.408	0.984	0.74	0.52	1.63	149.46	1.69		1	94	1.03	1.75	1.00	155.1	1.00	0.427	0.427	0.318	Non-Liq.	Non-Liq.	0.00
8.04	104.13	0.76	0.73	110	0.417	0.984	0.73	0.51	1.61	157.45	1.67		1	96	1.02	1.80	1.00	161.0	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-3
Plot: 3

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	
0%	
Max	
0%	0.0

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	**Liquefac. Safety Factor**	Probab. P_L	***Volumetric Strain (%)***
0.16	61.63	0.93	1.50	100	0.008	1.000	1.50	0.62	1.70	99.01	2.03		1	76	1.34		1.00	133.0	1.00	0.299	0.299	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.33	79.05	1.53	1.94	100	0.016	1.000	1.94	0.62	1.70	126.99	2.03		1	87	1.35		1.00	171.2	1.00	Infin.	0.000	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.49	78.13	1.93	2.46	100	0.025	1.000	2.46	0.64	1.70	125.50	2.12		1	86	1.48		1.00	186.4	1.00	Infin.	0.000	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.66	68.31	1.84	2.70	100	0.033	1.000	2.70	0.66	1.70	109.71	2.18		1	81	1.63		1.00	178.6	1.00	Infin.	0.000	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.82	54.87	1.52	2.77	100	0.041	1.000	2.77	0.68	1.70	88.10	2.26		1	72	1.82		1.00	159.9	1.00	0.460	0.460	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.98	47.14	1.21	2.56	100	0.049	1.000	2.57	0.69	1.70	75.67	2.28		1	65	1.88		1.00	142.1	1.00	0.347	0.347	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.15	39.47	1.02	2.57	100	0.057	0.999	2.58	0.71	1.70	63.33	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.31	39.47	1.02	2.57	100	0.066	0.999	2.58	0.71	1.70	63.32	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.48	31.24	0.82	2.63	100	0.074	0.999	2.64	0.73	1.70	50.08	2.41		1	48	2.37		1.00	118.7	1.00	0.236	0.236	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.64	24.89	0.66	2.65	100	0.082	0.998	2.66	0.75	1.70	39.86	2.49		1	39	2.72		1.00	108.3	1.00	0.198	0.198	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.80	19.86	0.33	1.65	100	0.090	0.998	1.66	0.74	1.70	31.77	2.44		1	29	2.48		1.00	78.7	1.00	0.125	0.125	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.97	20.55	0.42	2.06	100	0.098	0.998	2.07	0.75	1.70	32.86	2.49		1	31	2.70		1.00	88.6	1.00	0.145	0.145	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.13	20.42	0.47	2.29	100	0.107	0.997	2.30	0.76	1.70	32.64	2.52		1	30	2.85		1.00	93.0	1.00	0.155	0.155	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.30	19.65	0.48	2.45	100	0.115	0.997	2.46	0.77	1.70	31.39	2.55		1	29	3.02		1.00	94.8	1.00	0.159	0.159	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.46	18.16	0.52	2.85	100	0.123	0.996	2.87	0.79	1.70	28.98	2.62		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.62	15.20	0.57	3.77	100	0.131	0.996	3.80	0.83	1.70	24.21	2.76		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.79	13.95	0.57	4.06	100	0.139	0.996	4.10	0.85	1.70	22.19	2.81		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.95	11.38	0.56	4.92	100	0.148	0.995	4.99	0.89	1.70	18.05	2.93		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.12	12.18	0.59	4.85	100	0.156	0.995	4.92	0.88	1.70	19.32	2.90		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.28	12.71	0.60	4.68	100	0.164	0.994	4.74	0.87	1.70	20.16	2.88		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.44	11.57	0.62	5.32	100	0.172	0.994	5.40	0.89	1.70	18.31	2.95		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.61	11.06	0.51	4.57	100	0.180	0.994	4.64	0.88	1.70	17.48	2.92		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.77	20.97	0.48	2.28	100	0.189	0.993	2.30	0.76	1.70	33.39	2.51		1	31	2.81		1.00	93.8	1.00	0.157	0.157	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.94	29.22	0.55	1.88	100	0.197	0.993	1.90	0.71	1.70	46.63	2.34		1	45	2.09		1.00	97.6	1.00	0.166	0.166	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.10	37.87	0.68	1.79	100	0.205	0.993	1.80	0.68	1.70	60.52	2.24		1	56	1.77		1.00	107.4	1.00	0.195	0.195	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.27	45.79	0.82	1.80	100	0.213	0.992	1.81	0.66	1.70	73.23	2.18		1	64	1.62		1.00	118.8	1.00	0.236	0.236	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.43	52.76	0.97	1.84	100	0.221	0.992	1.85	0.65	1.70	84.42	2.14		1	70	1.54		1.00	129.9	1.00	0.284	0.284	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.59	58.36	1.00	1.72	100	0.230	0.991	1.73	0.64	1.70	93.40	2.09		1	74	1.44		1.00	134.3	1.00	0.306	0.306	0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.76	62.10	1.17	1.89	100	0.238	0.991	1.90	0.64	1.70	99.40	2.10		1	77	1.46		1.00	144.7	1.00	0.362	0.362	0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.92	64.35	1.31	2.03	100	0.246	0.991	2.04	0.64	1.70	103.00	2.11		1	78	1.48		1.00	152.2	1.00	0.408	0.408	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.09	68.21	1.45	2.13	110	0.255	0.990	2.14	0.64	1.70	109.19	2.11		1	80	1.47		1.00	160.8	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.25	72.78	1.57	2.16	110	0.264	0.990	2.17	0.64	1.70	116.52	2.10		1	83	1.45		1.00	168.6	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.41	77.81	1.63	2.10	110	0.273	0.989	2.11	0.63	1.70	124.59	2.07		1	86	1.40		1.00	174.2	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.58	85.70	1.64	1.91	110	0.282	0.989	1.92	0.61	1.70	137.25	2.01		1	90	1.31		1.00	179.9	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.74	100.29	1.65	1.65	110	0.291	0.989	1.65	0.58	1.70	160.68	1.91		1	97	1.20	1.00	1.00	193.9	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.91	115.78	1.63	1.41	110	0.300	0.988	1.41	0.55	1.70	185.55	1.82		1	100	1.12	1.05	1.00	209.1	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.07	127.60	1.61	1.26	110	0.309	0.988	1.27	0.54	1.70	204.53	1.76		1	100	1.08	1.10	1.00	221.2	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.23	135.25	1.64	1.21	110	0.318	0.988	1.22	0.53	1.70	216.81	1.73		1	100	1.06	1.15	1.00	230.1	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.40	142.84	1.69	1.18	110	0.327	0.987	1.19	0.52	1.70	228.99	1.71		1	100	1.04	1.20	1.00	239.3	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.56	144.87	1.70	1.18	110	0.336	0.987	1.18	0.52	1.70	232.24	1.70		1	100	1.04	1.25	1.00	241.8	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.73	154.10	1.74	1.13	110	0.345	0.986	1.13	0.51	1.70	247.05	1.67		1	100	1.02	1.30	1.00	251.9	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.89	159.66	1.81	1.14	110	0.354	0.986	1.14	0.51	1.70	255.97	1.66		1	100	1.01	1.35	1.00	259.7	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.05	165.12	1.78	1.08	110	0.363	0.986	1.08	0.50	1.70	264.73	1.63		1	100	1.00	1.40	1.00	265.7	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.22	169.35	1.74	1.02	110	0.372	0.985	1.03	0.50	1.69	269.21	1.61		1	100	1.00	1.45	1.00	270.2	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.38	177.82	1.68	0.94	110	0.381	0.985	0.95	0.50	1.67	279.33	1.57		1	100	1.00	1.50	1.00	280.4	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.55	173.84	1.63	0.94	110	0.390	0.985	0.94	0.50	1.65	269.88	1.58		1	100	1.00	1.55	1.00	270.9	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.71	173.84	1.63	0.94	110	0.399	0.984	0.94	0.50	1.63	266.80	1.59		1	100	1.00	1.60	1.00	267.8	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.87	174.47	1.63	0.94	110	0.408	0.984	0.94	0.50	1.61	264.78	1.59		1	100	1.00	1.65	1.00	265.8	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
8.04	179.36	1.92	1.07	110	0.417	0.984	1.07	0.50	1.59	269.25	1.63		1	100	1.00	1.70	1.00	270.3	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-4
Plot: 4

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0.0
0%	
Max	
0%	0.0

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	92.62	1.11	1.20	100	0.008	1.000	1.20	0.56	1.70	148.81	1.84		1	93	1.13	0.25	1.00	168.8	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.33	130.04	2.02	1.55	100	0.016	1.000	1.55	0.55	1.70	208.92	1.82		1	100	1.12	0.25	1.00	234.3	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.49	152.39	3.01	1.98	100	0.025	1.000	1.98	0.57	1.70	244.82	1.86		1	100	1.16	0.25	1.00	282.8	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.66	146.45	3.22	2.20	100	0.033	1.000	2.20	0.58	1.70	235.26	1.91		1	100	1.20	0.25	1.00	282.0	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.82	125.63	2.97	2.36	100	0.041	1.000	2.36	0.60	1.70	201.80	1.97		1	100	1.27	0.25	1.00	255.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.98	97.23	2.48	2.55	100	0.049	1.000	2.55	0.63	1.70	156.15	2.07		1	95	1.40		1.00	218.4	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.15	63.94	1.59	2.49	100	0.057	0.999	2.50	0.66	1.70	102.65	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.31	63.94	1.59	2.49	100	0.066	0.999	2.50	0.66	1.70	102.63	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.48	41.59	1.09	2.61	100	0.074	0.999	2.62	0.70	1.70	66.71	2.32		1	60	2.02		1.00	134.8	1.00	0.308	0.308	0.323	Non-Liq.	Non-Liq.	0.00
1.64	28.11	0.74	2.64	100	0.082	0.998	2.64	0.74	1.70	45.04	2.45		1	44	2.52		1.00	113.6	1.00	0.216	0.216	0.323	Non-Liq.	Non-Liq.	0.00
1.80	20.76	0.53	2.55	100	0.090	0.998	2.56	0.77	1.70	33.21	2.54		1	31	2.98		1.00	98.9	1.00	0.170	0.170	0.323	Non-Liq.	Non-Liq.	0.00
1.97	21.63	0.56	2.58	100	0.098	0.998	2.60	0.77	1.70	34.60	2.53		1	33	2.92		1.00	101.1	1.00	0.176	0.176	0.322	Non-Liq.	Non-Liq.	0.00
2.13	34.59	0.78	2.25	100	0.107	0.997	2.26	0.71	1.70	55.41	2.34		1	52	2.07		1.00	114.6	1.00	0.220	0.220	0.322	Non-Liq.	Non-Liq.	0.00
2.30	34.08	0.89	2.61	100	0.115	0.997	2.62	0.72	1.70	54.58	2.39		1	52	2.25		1.00	123.0	1.00	0.253	0.253	0.322	Non-Liq.	Non-Liq.	0.00
2.46	31.06	0.81	2.60	100	0.123	0.996	2.61	0.73	1.70	49.71	2.41		1	48	2.37		1.00	117.7	1.00	0.231	0.231	0.322	Non-Liq.	Non-Liq.	0.00
2.62	26.71	0.71	2.65	100	0.131	0.996	2.67	0.75	1.70	42.71	2.47		1	42	2.61		1.00	111.6	1.00	0.209	0.209	0.322	Non-Liq.	Non-Liq.	0.00
2.79	24.66	0.64	2.61	100	0.139	0.996	2.62	0.75	1.70	39.40	2.49		1	38	2.72		1.00	107.1	1.00	0.194	0.194	0.322	Non-Liq.	Non-Liq.	0.00
2.95	22.66	0.59	2.60	100	0.148	0.995	2.62	0.76	1.70	36.17	2.52		1	35	2.86		1.00	103.3	1.00	0.183	0.183	0.322	Non-Liq.	Non-Liq.	0.00
3.12	21.79	0.57	2.60	100	0.156	0.995	2.62	0.77	1.70	34.76	2.53		1	33	2.93		1.00	101.7	1.00	0.178	0.178	0.322	Non-Liq.	Non-Liq.	0.00
3.28	20.52	0.55	2.69	100	0.164	0.994	2.72	0.78	1.70	32.71	2.56		1	30	3.10		1.00	101.3	1.00	0.177	0.177	0.321	Non-Liq.	Non-Liq.	0.00
3.44	18.85	0.54	2.86	100	0.172	0.994	2.89	0.79	1.70	30.01	2.61		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.61	16.96	0.52	3.05	100	0.180	0.994	3.09	0.81	1.70	26.96	2.66		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.77	15.22	0.50	3.30	100	0.189	0.993	3.34	0.82	1.70	24.15	2.72		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.94	13.60	0.54	3.97	100	0.197	0.993	4.03	0.85	1.70	21.54	2.81		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.10	13.10	0.56	4.31	100	0.205	0.993	4.37	0.86	1.70	20.72	2.85		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.27	13.76	0.61	4.45	100	0.213	0.992	4.52	0.86	1.70	21.77	2.84		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.43	12.78	0.63	4.94	100	0.221	0.992	5.02	0.88	1.70	20.18	2.89		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.59	9.82	0.62	6.32	100	0.230	0.991	6.48	0.92	1.70	15.41	3.06		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.76	9.11	0.58	6.39	100	0.238	0.991	6.56	0.93	1.70	14.26	3.08		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.92	9.64	0.67	6.94	100	0.246	0.991	7.12	0.93	1.70	15.09	3.09		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
5.09	11.05	0.51	4.60	110	0.255	0.990	4.71	0.89	1.70	17.35	2.93		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
5.25	26.79	0.51	1.91	110	0.264	0.990	1.93	0.72	1.70	42.62	2.38		1	41	2.22		1.00	94.7	1.00	0.159	0.159	0.320	Non-Liq.	Non-Liq.	0.00
5.41	43.87	0.61	1.40	110	0.273	0.989	1.41	0.65	1.70	70.05	2.12		1	62	1.50		1.00	105.1	1.00	0.188	0.188	0.320	Non-Liq.	Non-Liq.	0.00
5.58	61.57	0.87	1.42	110	0.282	0.989	1.42	0.61	1.70	98.48	2.02		1	76	1.32		1.00	130.2	1.00	0.285	0.285	0.320	Non-Liq.	Non-Liq.	0.00
5.74	81.48	1.27	1.55	110	0.291	0.989	1.56	0.60	1.70	130.45	1.96		1	88	1.25	1.00	1.00	163.5	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.91	104.49	1.77	1.69	110	0.300	0.988	1.70	0.58	1.70	167.41	1.91		1	98	1.20	1.05	1.00	201.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.07	121.74	2.26	1.85	110	0.309	0.988	1.86	0.58	1.70	195.12	1.90		1	100	1.19	1.10	1.00	232.8	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.23	129.40	2.54	1.96	110	0.318	0.988	1.97	0.58	1.70	207.41	1.90		1	100	1.19	1.15	1.00	248.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.40	133.71	2.63	1.97	110	0.327	0.987	1.97	0.58	1.70	214.32	1.90		1	100	1.18	1.20	1.00	254.9	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.56	136.13	2.67	1.96	110	0.336	0.987	1.97	0.57	1.70	218.19	1.89		1	100	1.18	1.20	1.00	258.3	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.73	137.04	2.50	1.82	110	0.345	0.986	1.83	0.57	1.70	219.64	1.86		1	100	1.16	1.20	1.00	254.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.89	134.61	2.27	1.69	110	0.354	0.986	1.69	0.56	1.70	215.72	1.84		1	100	1.14	1.20	1.00	246.3	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	133.55	2.02	1.51	110	0.363	0.986	1.52	0.55	1.70	214.01	1.81		1	100	1.11	1.20	1.00	238.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	130.84	1.92	1.47	110	0.372	0.985	1.47	0.55	1.70	209.64	1.80		1	100	1.11	1.20	1.00	233.0	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	125.34	1.72	1.37	110	0.381	0.985	1.38	0.55	1.70	200.78	1.79		1	100	1.10	1.20	1.00	221.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	121.32	1.59	1.31	110	0.390	0.985	1.32	0.54	1.70	194.31	1.79		1	100	1.10	1.20	1.00	213.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	121.32	1.59	1.31	110	0.399	0.984	1.32	0.54	1.70	194.14	1.79		1	100	1.10	1.20	1.00	213.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	117.69	1.47	1.25	110	0.408	0.984	1.25	0.54	1.68	185.85	1.78		1	100	1.09	1.20	1.00	204.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	112.60	1.37	1.22	110	0.417	0.984	1.22	0.55	1.66	176.05	1.79		1	100	1.10	1.20	1.00	194.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-5
Plot: 5

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab Avg	Total Induced Subsidence (inches)
0%	Max
0%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	7.20	0.07	0.96	100	0.008	1.000	0.96	0.82	1.70	11.56	2.69		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
0.33	11.97	0.11	0.92	100	0.016	1.000	0.92	0.75	1.70	19.21	2.49		1	8	2.70		1.00	51.9	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
0.49	16.98	0.15	0.86	100	0.025	1.000	0.86	0.71	1.70	27.24	2.34		1	23	2.08		1.00	56.7	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.66	18.41	0.17	0.90	100	0.033	1.000	0.90	0.70	1.70	29.53	2.32		1	26	2.01		1.00	59.5	1.00	0.100	0.100	0.323	Non-Liq.	Non-Liq.	0.00
0.82	16.13	0.16	1.01	100	0.041	1.000	1.01	0.73	1.70	25.85	2.39		1	21	2.29		1.00	59.2	1.00	0.099	0.099	0.323	Non-Liq.	Non-Liq.	0.00
0.98	12.95	0.14	1.06	100	0.049	1.000	1.06	0.75	1.70	20.73	2.49		1	12	2.71		1.00	56.1	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
1.15	10.49	0.11	1.05	100	0.057	0.999	1.05	0.78	1.70	16.76	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
1.31	10.49	0.11	1.05	100	0.066	0.999	1.06	0.78	1.70	16.75	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
1.48	9.50	0.14	1.52	100	0.074	0.999	1.53	0.81	1.70	15.15	2.69		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.64	11.89	0.21	1.77	100	0.082	0.998	1.79	0.80	1.70	18.97	2.64		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.80	17.29	0.33	1.93	100	0.090	0.998	1.94	0.77	1.70	27.64	2.53		1	23	2.91		1.00	80.4	1.00	0.128	0.128	0.323	Non-Liq.	Non-Liq.	0.00
1.97	29.55	0.52	1.75	100	0.098	0.998	1.76	0.70	1.70	47.32	2.32		1	46	2.00		1.00	94.8	1.00	0.159	0.159	0.322	Non-Liq.	Non-Liq.	0.00
2.13	29.26	0.52	1.76	100	0.107	0.997	1.77	0.70	1.70	46.84	2.32		1	45	2.02		1.00	94.6	1.00	0.159	0.159	0.322	Non-Liq.	Non-Liq.	0.00
2.30	27.77	0.48	1.74	100	0.115	0.997	1.75	0.71	1.70	44.44	2.34		1	43	2.07		1.00	92.1	1.00	0.153	0.153	0.322	Non-Liq.	Non-Liq.	0.00
2.46	25.48	0.44	1.74	100	0.123	0.996	1.75	0.72	1.70	40.74	2.37		1	40	2.18		1.00	88.8	1.00	0.145	0.145	0.322	Non-Liq.	Non-Liq.	0.00
2.62	22.54	0.40	1.76	100	0.131	0.996	1.77	0.73	1.70	36.01	2.41		1	34	2.36		1.00	85.1	1.00	0.137	0.137	0.322	Non-Liq.	Non-Liq.	0.00
2.79	20.15	0.37	1.83	100	0.139	0.996	1.84	0.75	1.70	32.15	2.46		1	30	2.58		1.00	83.0	1.00	0.133	0.133	0.322	Non-Liq.	Non-Liq.	0.00
2.95	17.63	0.42	2.37	100	0.148	0.995	2.39	0.78	1.70	28.09	2.58		1	24	3.19		1.00	89.5	1.00	0.147	0.147	0.322	Non-Liq.	Non-Liq.	0.00
3.12	13.94	0.43	3.06	100	0.156	0.995	3.10	0.83	1.70	22.15	2.73		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
3.28	11.33	0.42	3.69	100	0.164	0.994	3.74	0.86	1.70	17.94	2.85		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.44	10.79	0.35	3.27	100	0.172	0.994	3.32	0.86	1.70	17.06	2.84		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.61	19.14	0.32	1.69	100	0.180	0.994	1.70	0.75	1.70	30.46	2.46		1	28	2.57		1.00	78.4	1.00	0.125	0.125	0.321	Non-Liq.	Non-Liq.	0.00
3.77	28.87	0.35	1.20	100	0.189	0.993	1.21	0.68	1.70	46.09	2.23		1	45	1.73		1.00	79.9	1.00	0.127	0.127	0.321	Non-Liq.	Non-Liq.	0.00
3.94	37.13	0.44	1.18	100	0.197	0.993	1.19	0.65	1.70	59.34	2.13		1	55	1.52		1.00	90.2	1.00	0.148	0.148	0.321	Non-Liq.	Non-Liq.	0.00
4.10	42.19	0.52	1.24	100	0.205	0.993	1.25	0.64	1.70	67.46	2.10		1	60	1.46		1.00	98.5	1.00	0.169	0.169	0.321	Non-Liq.	Non-Liq.	0.00
4.27	42.88	0.62	1.43	100	0.213	0.992	1.44	0.65	1.70	68.56	2.14		1	61	1.53		1.00	104.7	1.00	0.187	0.187	0.321	Non-Liq.	Non-Liq.	0.00
4.43	42.87	0.65	1.51	100	0.221	0.992	1.52	0.65	1.70	68.53	2.15		1	61	1.56		1.00	106.9	1.00	0.194	0.194	0.321	Non-Liq.	Non-Liq.	0.00
4.59	43.05	0.62	1.44	100	0.230	0.991	1.44	0.65	1.70	68.80	2.14		1	61	1.53		1.00	105.0	1.00	0.188	0.188	0.320	Non-Liq.	Non-Liq.	0.00
4.76	40.55	0.64	1.58	100	0.238	0.991	1.59	0.66	1.70	64.77	2.18		1	59	1.63		1.00	105.4	1.00	0.189	0.189	0.320	Non-Liq.	Non-Liq.	0.00
4.92	37.17	0.59	1.58	100	0.246	0.991	1.60	0.67	1.70	59.33	2.21		1	55	1.70		1.00	101.0	1.00	0.176	0.176	0.320	Non-Liq.	Non-Liq.	0.00
5.09	45.41	0.55	1.21	110	0.255	0.990	1.22	0.63	1.70	72.56	2.07		1	64	1.41		1.00	102.1	1.00	0.179	0.179	0.320	Non-Liq.	Non-Liq.	0.00
5.25	49.21	0.55	1.12	110	0.264	0.990	1.13	0.62	1.70	78.65	2.02		1	67	1.33		1.00	104.9	1.00	0.187	0.187	0.320	Non-Liq.	Non-Liq.	0.00
5.41	48.56	0.56	1.16	110	0.273	0.989	1.16	0.62	1.70	77.59	2.04		1	66	1.35		1.00	104.9	1.00	0.187	0.187	0.320	Non-Liq.	Non-Liq.	0.00
5.58	48.19	0.59	1.22	110	0.282	0.989	1.23	0.62	1.70	76.98	2.06		1	66	1.38		1.00	106.1	1.00	0.191	0.191	0.320	Non-Liq.	Non-Liq.	0.00
5.74	48.82	0.59	1.20	110	0.291	0.989	1.21	0.62	1.70	77.98	2.05		1	67	1.37		1.00	106.5	1.00	0.192	0.192	0.320	Non-Liq.	Non-Liq.	0.00
5.91	49.59	0.58	1.17	110	0.300	0.988	1.18	0.62	1.70	79.20	2.03		1	67	1.35		1.00	106.6	1.00	0.193	0.193	0.319	Non-Liq.	Non-Liq.	0.00
6.07	49.01	0.58	1.19	110	0.309	0.988	1.19	0.62	1.70	78.25	2.04		1	67	1.36		1.00	106.2	1.00	0.192	0.192	0.319	Non-Liq.	Non-Liq.	0.00
6.23	48.87	0.58	1.19	110	0.318	0.988	1.20	0.62	1.70	78.01	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.319	Non-Liq.	Non-Liq.	0.00
6.40	48.92	0.59	1.20	110	0.327	0.987	1.21	0.62	1.70	78.08	2.05		1	67	1.36		1.00	106.6	1.00	0.193	0.193	0.319	Non-Liq.	Non-Liq.	0.00
6.56	50.19	0.62	1.23	110	0.336	0.987	1.24	0.62	1.70	80.11	2.04		1	68	1.36		1.00	109.1	1.00	0.201	0.201	0.319	Non-Liq.	Non-Liq.	0.00
6.73	54.54	0.64	1.17	110	0.345	0.986	1.17	0.61	1.70	87.08	2.00		1	71	1.30		1.00	113.3	1.00	0.215	0.215	0.319	Non-Liq.	Non-Liq.	0.00
6.89	60.79	0.78	1.29	110	0.354	0.986	1.29	0.61	1.70	97.11	1.99		1	76	1.29	0.90	1.02	128.0	1.00	0.275	0.275	0.319	Non-Liq.	Non-Liq.	0.00
7.05	70.21	1.20	1.71	110	0.363	0.986	1.72	0.62	1.70	112.23	2.03		1	82	1.35		1.00	151.2	1.00	0.401	0.401	0.319	Non-Liq.	Non-Liq.	0.00
7.22	86.10	1.28	1.49	110	0.372	0.985	1.49	0.59	1.70	137.75	1.93		1	90	1.22	1.00	1.00	168.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	112.25	1.15	1.02	110	0.381	0.985	1.02	0.53	1.70	179.75	1.73		1	100	1.06	1.05	1.00	190.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	123.77	1.31	1.06	110	0.390	0.985	1.06	0.52	1.68	196.22	1.71		1	100	1.05	1.10	1.00	206.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	123.77	1.31	1.06	110	0.399	0.984	1.06	0.52	1.66	194.07	1.72		1	100	1.05	1.15	1.00	204.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	137.24	1.24	0.90	110	0.408	0.984	0.90	0.50	1.61	208.49	1.65		1	100	1.00	1.20	1.00	209.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	143.26	1.17	0.82	110	0.417	0.984	0.82	0.50	1.59	214.93	1.61		1	100	1.00	1.25	1.00	215.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-6A
Plot: 6

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 8.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0%
Max	0%

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	6.69	0.01	0.21	100	0.008	1.000	0.21	0.76	1.70	10.74	2.50		1	0	1.00		1.00	10.7	1.00	0.059	0.059	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.33	14.12	0.04	0.28	100	0.016	1.000	0.28	0.67	1.70	22.66	2.22		1	15	1.00		1.00	22.7	1.00	0.069	0.069	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.49	16.59	0.09	0.55	100	0.025	1.000	0.56	0.69	1.70	26.62	2.26		1	22	1.83		1.00	48.7	1.00	0.091	0.091	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.66	21.13	0.18	0.84	100	0.033	1.000	0.84	0.68	1.70	33.90	2.25		1	32	1.81		1.00	61.3	1.00	0.101	0.101	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.82	29.41	0.29	0.98	100	0.041	1.000	0.98	0.66	1.70	47.19	2.17		1	46	1.59		1.00	75.1	1.00	0.119	0.119	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.98	35.60	0.35	0.99	100	0.049	1.000	0.99	0.64	1.70	57.12	2.10		1	54	1.46		1.00	83.2	1.00	0.134	0.134	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.15	34.08	0.35	1.03	100	0.057	0.999	1.03	0.65	1.70	54.67	2.13		1	52	1.51		1.00	82.4	1.00	0.132	0.132	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.31	34.08	0.35	1.03	100	0.066	0.999	1.03	0.65	1.70	54.65	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.48	30.11	0.33	1.11	100	0.074	0.999	1.11	0.66	1.70	48.26	2.19		1	47	1.64		1.00	79.2	1.00	0.126	0.126	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.64	28.15	0.27	0.96	100	0.082	0.998	0.96	0.66	1.70	45.10	2.18		1	44	1.62		1.00	72.8	1.00	0.116	0.116	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.80	29.07	0.35	1.20	100	0.090	0.998	1.20	0.67	1.70	46.56	2.22		1	45	1.72		1.00	80.2	1.00	0.128	0.128	0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.97	26.19	0.39	1.47	100	0.098	0.998	1.48	0.70	1.70	41.92	2.31		1	41	1.99		1.00	83.3	1.00	0.134	0.134	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.13	20.41	0.42	2.07	100	0.107	0.997	2.08	0.75	1.70	32.62	2.49		1	30	2.71		1.00	88.5	1.00	0.145	0.145	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.30	15.45	0.44	2.83	100	0.115	0.997	2.85	0.81	1.70	24.64	2.67		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.46	12.62	0.37	2.95	100	0.123	0.996	2.98	0.83	1.70	20.08	2.75		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.62	13.50	0.27	2.01	100	0.131	0.996	2.03	0.80	1.70	21.48	2.63		0						1.00			0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.79	20.18	0.31	1.56	100	0.139	0.996	1.57	0.73	1.70	32.20	2.42		1	30	2.39		1.00	77.0	1.00	0.123	0.123	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.95	25.28	0.31	1.23	100	0.148	0.995	1.23	0.69	1.70	40.38	2.28		1	39	1.88		1.00	76.0	1.00	0.121	0.121	0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.12	31.76	0.36	1.12	100	0.156	0.995	1.13	0.66	1.70	50.78	2.17		1	49	1.61		1.00	81.6	1.00	0.131	0.131	0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.28	35.56	0.38	1.08	100	0.164	0.994	1.08	0.65	1.70	56.87	2.13		1	53	1.50		1.00	85.5	1.00	0.138	0.138	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.44	40.16	0.39	0.98	100	0.172	0.994	0.98	0.63	1.70	64.25	2.06		1	58	1.38		1.00	88.8	1.00	0.145	0.145	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.61	45.45	0.46	1.00	100	0.180	0.994	1.01	0.61	1.70	72.74	2.02		1	64	1.33		1.00	96.5	1.00	0.164	0.164	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.77	52.79	0.51	0.96	100	0.189	0.993	0.97	0.60	1.70	84.52	1.96		1	70	1.25	0.65	1.12	118.5	1.00	0.235	0.235	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.94	58.72	0.56	0.95	100	0.197	0.993	0.95	0.58	1.70	94.04	1.92		1	74	1.20	0.70	1.12	127.1	1.00	0.271	0.271	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.10	64.33	0.60	0.94	100	0.205	0.993	0.94	0.57	1.70	103.04	1.88		1	78	1.17	0.75	1.12	135.7	1.00	0.313	0.313	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.27	69.66	0.83	1.19	100	0.213	0.992	1.19	0.59	1.70	111.59	1.92		1	81	1.21	0.80	1.12	151.9	1.00	0.406	0.406	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.43	74.65	1.28	1.71	100	0.221	0.992	1.72	0.61	1.70	119.59	2.01		1	84	1.32		1.00	157.6	1.00	0.444	0.444	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.59	78.74	2.11	2.68	100	0.230	0.991	2.69	0.65	1.70	126.15	2.14		1	86	1.54		1.00	194.3	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.76	95.41	2.01	2.11	100	0.238	0.991	2.12	0.61	1.70	152.92	2.01		1	94	1.31		1.00	200.9	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.92	90.35	1.38	1.53	100	0.246	0.991	1.53	0.58	1.70	144.78	1.92		1	92	1.21	1.00	1.00	175.8	1.00	Infin.	0.000	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.09	73.79	0.57	0.78	110	0.255	0.990	0.78	0.54	1.70	118.16	1.79		1	84	1.10	1.05	1.00	130.1	1.00	0.285	0.285	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.25	64.99	0.41	0.63	110	0.264	0.990	0.63	0.54	1.70	104.00	1.78		1	78	1.09	1.10	1.00	113.7	1.00	0.217	0.217	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.41	60.11	0.48	0.80	110	0.273	0.989	0.81	0.57	1.70	96.15	1.87		1	75	1.16	1.15	1.00	111.7	1.00	0.210	0.210	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.58	57.62	0.71	1.23	110	0.282	0.989	1.24	0.61	1.70	92.13	2.00		1	73	1.30	1.20	1.00	120.0	1.00	0.241	0.241	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.74	60.32	0.70	1.16	110	0.291	0.989	1.16	0.60	1.70	96.45	1.97		1	75	1.26	1.25	1.00	121.7	1.00	0.248	0.248	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.91	59.79	0.67	1.11	110	0.300	0.988	1.12	0.60	1.70	95.59	1.96		1	75	1.25	1.30	1.00	119.7	1.00	0.239	0.239	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.07	56.99	0.42	0.74	110	0.309	0.988	0.75	0.57	1.70	91.07	1.86		1	73	1.16	1.35	1.00	105.8	1.00	0.190	0.190	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.23	64.88	0.50	0.77	110	0.318	0.988	0.77	0.56	1.70	103.74	1.83		1	78	1.13	1.40	1.00	117.4	1.00	0.231	0.231	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.40	81.28	0.52	0.64	110	0.327	0.987	0.64	0.52	1.70	130.08	1.70		1	88	1.04	1.45	1.00	135.6	1.00	0.312	0.312	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.56	88.72	0.58	0.65	110	0.336	0.987	0.66	0.51	1.70	142.02	1.68		1	91	1.02	1.50	1.00	145.7	1.00	0.368	0.368	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.73	90.02	0.70	0.78	110	0.345	0.986	0.78	0.52	1.70	144.09	1.72		1	92	1.05	1.55	1.00	151.9	1.00	0.406	0.406	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.89	95.98	0.75	0.78	110	0.354	0.986	0.79	0.52	1.70	153.65	1.70		1	95	1.04	1.60	1.00	160.1	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.05	106.17	0.82	0.77	110	0.363	0.986	0.77	0.51	1.70	170.01	1.66		1	99	1.01	1.65	1.00	172.8	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.22	120.42	0.87	0.72	110	0.372	0.985	0.72	0.50	1.69	191.26	1.61		1	100	1.00	1.70	1.00	192.0	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.38	147.55	0.97	0.66	110	0.381	0.985	0.66	0.50	1.67	231.68	1.52		1	100	1.00	1.75	1.00	232.5	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.55	167.64	1.10	0.66	110	0.390	0.985	0.66	0.50	1.65	260.23	1.48		1	100	1.00	1.80	1.00	261.2	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.71	167.64	1.10	0.66	110	0.399	0.984	0.66	0.50	1.63	257.26	1.48		1	100	1.00	1.85	1.00	258.2	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.87	175.94	1.23	0.70	110	0.408	0.984	0.70	0.50	1.61	267.01	1.49		1	100	1.00	1.90	1.00	268.0	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
8.04	183.17	1.23	0.67	110	0.417	0.984	0.67	0.50	1.59	274.98	1.47		1	100	1.00	1.95	1.00	276.0	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-7
Plot: 7

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	8.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 100 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0.2
0%	
Max	
0%	

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	7.32	0.09	1.28	100	0.008	1.000	1.29	0.83	1.70	11.75	2.74		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.33	12.26	0.12	1.00	100	0.016	1.000	1.00	0.76	1.70	19.67	2.50		1	9	2.75		1.00	54.0	1.00	0.095	0.095	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.49	14.26	0.15	1.02	100	0.025	1.000	1.03	0.74	1.70	22.87	2.44		1	16	2.50		1.00	57.1	1.00	0.097	0.097	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.66	13.52	0.15	1.09	100	0.033	1.000	1.10	0.75	1.70	21.67	2.48		1	13	2.66		1.00	57.7	1.00	0.098	0.098	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.82	11.35	0.14	1.22	100	0.041	1.000	1.22	0.78	1.70	18.17	2.57		1	6	3.14		1.00	57.0	1.00	0.097	0.097	0.323	**Non-Liq.**	Non-Liq.	**0.00**
0.98	9.04	0.12	1.33	100	0.049	1.000	1.33	0.81	1.70	14.45	2.67		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.15	7.13	0.08	1.07	100	0.057	0.999	1.07	0.82	1.70	11.36	2.72		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.31	7.13	0.08	1.07	100	0.066	0.999	1.08	0.82	1.70	11.35	2.72		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.48	6.14	0.08	1.27	100	0.074	0.999	1.29	0.85	1.70	9.75	2.81		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.64	6.75	0.14	2.01	100	0.082	0.998	2.04	0.87	1.70	10.71	2.88		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.80	12.03	0.25	2.04	100	0.090	0.998	2.05	0.81	1.70	19.18	2.67		0						1.00			0.323	**Non-Liq.**	Non-Liq.	**0.00**
1.97	26.83	0.46	1.71	100	0.098	0.998	1.72	0.71	1.70	42.95	2.34		1	42	2.10		1.00	90.0	1.00	0.148	0.148	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.13	27.70	0.58	2.10	100	0.107	0.997	2.11	0.72	1.70	44.34	2.39		1	43	2.27		1.00	100.6	1.00	0.175	0.175	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.30	30.71	0.62	2.02	100	0.115	0.997	2.02	0.71	1.70	49.16	2.34		1	47	2.10		1.00	103.0	1.00	0.182	0.182	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.46	35.14	0.59	1.69	100	0.123	0.996	1.70	0.68	1.70	56.27	2.25		1	53	1.80		1.00	101.0	1.00	0.176	0.176	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.62	34.66	0.52	1.49	100	0.131	0.996	1.49	0.67	1.70	55.48	2.22		1	52	1.71		1.00	95.1	1.00	0.160	0.160	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.79	30.29	0.43	1.42	100	0.139	0.996	1.43	0.68	1.70	48.45	2.25		1	47	1.81		1.00	87.5	1.00	0.142	0.142	0.322	**Non-Liq.**	Non-Liq.	**0.00**
2.95	25.72	0.37	1.42	100	0.148	0.995	1.43	0.70	1.70	41.09	2.31		1	40	1.98		1.00	81.4	1.00	0.130	0.130	0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.12	22.47	0.33	1.49	100	0.156	0.995	1.50	0.72	1.70	35.85	2.37		1	34	2.19		1.00	78.6	1.00	0.125	0.125	0.322	**Non-Liq.**	Non-Liq.	**0.00**
3.28	20.80	0.31	1.47	100	0.164	0.994	1.48	0.73	1.70	33.16	2.39		1	31	2.29		1.00	76.0	1.00	0.121	0.121	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.44	20.45	0.30	1.47	100	0.172	0.994	1.48	0.73	1.70	32.58	2.40		1	30	2.31		1.00	75.4	1.00	0.120	0.120	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.61	20.73	0.30	1.45	100	0.180	0.994	1.46	0.73	1.70	33.02	2.39		1	31	2.29		1.00	75.5	1.00	0.120	0.120	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.77	19.90	0.31	1.58	100	0.189	0.993	1.59	0.74	1.70	31.67	2.43		1	29	2.44		1.00	77.1	1.00	0.123	0.123	0.321	**Non-Liq.**	Non-Liq.	**0.00**
3.94	17.21	0.35	2.05	100	0.197	0.993	2.07	0.77	1.70	27.34	2.55		1	23	3.03		1.00	82.8	1.00	0.133	0.133	0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.10	11.84	0.37	3.08	100	0.205	0.993	3.14	0.84	1.70	18.70	2.79		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.27	7.47	0.32	4.24	100	0.213	0.992	4.37	0.92	1.70	11.66	3.04		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.43	7.87	0.27	3.41	100	0.221	0.992	3.50	0.90	1.70	12.29	2.96		0						1.00			0.321	**Non-Liq.**	Non-Liq.	**0.00**
4.59	13.03	0.25	1.89	100	0.230	0.991	1.92	0.80	1.70	20.57	2.63		0						1.00			0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.76	17.56	0.20	1.13	100	0.238	0.991	1.15	0.73	1.70	27.83	2.40		1	24	2.30		1.00	63.9	1.00	0.104	0.104	0.320	**Non-Liq.**	Non-Liq.	**0.00**
4.92	25.00	0.25	0.99	100	0.246	0.991	1.00	0.68	1.70	39.77	2.23		1	39	1.75		1.00	69.6	1.00	0.111	0.111	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.09	28.21	0.27	0.97	110	0.255	0.990	0.98	0.66	1.70	44.92	2.18		1	44	1.63		1.00	73.1	1.00	0.116	0.116	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.25	26.74	0.32	1.19	110	0.264	0.990	1.20	0.68	1.70	42.54	2.25		1	41	1.81		1.00	76.9	1.00	0.122	0.122	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.41	27.54	0.33	1.20	110	0.273	0.989	1.21	0.68	1.70	43.81	2.25		1	43	1.78		1.00	78.2	1.00	0.124	0.124	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.58	30.42	0.33	1.08	110	0.282	0.989	1.09	0.66	1.70	48.43	2.18		1	47	1.63		1.00	78.9	1.00	0.126	0.126	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.74	35.07	0.33	0.95	110	0.291	0.989	0.96	0.64	1.70	55.88	2.10		1	53	1.45		1.00	81.3	1.00	0.130	0.130	0.320	**Non-Liq.**	Non-Liq.	**0.00**
5.91	42.76	0.43	0.99	110	0.300	0.988	1.00	0.62	1.70	68.22	2.04		1	61	1.36		1.00	92.6	1.00	0.154	0.154	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.07	59.96	0.60	1.00	110	0.309	0.988	1.01	0.59	1.70	95.85	1.93		1	75	1.21	1.00	1.00	116.9	1.00	0.229	0.229	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.23	82.48	0.78	0.94	110	0.318	0.988	0.94	0.55	1.70	132.02	1.80		1	88	1.11	1.05	1.00	146.9	1.00	0.375	0.375	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.40	98.15	0.89	0.91	110	0.327	0.987	0.91	0.53	1.70	157.18	1.74		1	96	1.06	1.10	1.00	167.6	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.56	106.99	1.01	0.94	110	0.336	0.987	0.95	0.52	1.70	171.37	1.72		1	99	1.05	1.15	1.00	180.9	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.73	112.07	1.09	0.97	110	0.345	0.986	0.98	0.52	1.70	179.52	1.72		1	100	1.05	1.20	1.00	188.9	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
6.89	112.25	1.18	1.05	110	0.354	0.986	1.05	0.53	1.70	179.79	1.74		1	100	1.06	1.25	1.00	191.9	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.05	111.68	1.25	1.12	110	0.363	0.986	1.13	0.54	1.70	178.86	1.76		1	100	1.08	1.30	1.00	193.7	1.00	Infin.	0.000	0.319	**Non-Liq.**	Non-Liq.	**0.00**
7.22	113.57	1.36	1.19	110	0.372	0.985	1.20	0.54	1.70	181.89	1.77		1	100	1.09	1.35	1.00	198.7	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.38	110.25	1.39	1.26	110	0.381	0.985	1.27	0.55	1.70	176.54	1.80		1	100	1.11	1.40	1.00	196.3	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.55	100.97	1.35	1.34	110	0.390	0.985	1.34	0.56	1.70	161.61	1.85		1	97	1.14	1.45	1.00	185.3	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.71	100.97	1.35	1.34	110	0.399	0.984	1.34	0.56	1.70	161.60	1.85		1	97	1.14	1.50	1.00	185.3	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
7.87	95.77	1.34	1.40	110	0.408	0.984	1.40	0.57	1.70	153.23	1.88		1	95	1.17	1.55	1.00	179.4	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**
8.04	92.93	1.31	1.41	110	0.417	0.984	1.42	0.57	1.70	148.65	1.89		1	93	1.18	1.60	1.00	175.7	1.00	Infin.	0.000	0.318	**Non-Liq.**	Non-Liq.	**0.00**

Seismically Induced Settlement of Dry Sand Analysis – Groundwater at 20 feet

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-1
Plot: 1

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	20.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0.1
0%	
Max	
0%	

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	82.43	1.01	1.22	110	0.009	1.000	1.22	0.57	1.70	132.43	1.88		1	88	1.17	0.05	1.00	154.7	1.00	0.424	0.424	0.323	Non-Liq.	Non-Liq.	0.00
0.33	77.94	1.37	1.76	110	0.018	1.000	1.76	0.61	1.70	125.21	2.01		1	86	1.31		1.00	164.0	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.49	66.43	1.48	2.23	110	0.027	1.000	2.23	0.65	1.70	106.70	2.13		1	80	1.51		1.00	161.4	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.66	56.46	1.33	2.35	110	0.036	1.000	2.35	0.67	1.70	90.66	2.20		1	73	1.65		1.00	150.0	1.00	0.394	0.394	0.323	Non-Liq.	Non-Liq.	0.00
0.82	50.54	1.16	2.30	110	0.045	1.000	2.30	0.67	1.70	81.14	2.22		1	68	1.72		1.00	139.9	1.00	0.334	0.334	0.323	Non-Liq.	Non-Liq.	0.00
0.98	45.66	1.04	2.28	110	0.054	1.000	2.28	0.68	1.70	73.28	2.25		1	64	1.80		1.00	132.1	1.00	0.294	0.294	0.323	Non-Liq.	Non-Liq.	0.00
1.15	40.24	0.94	2.33	110	0.063	0.999	2.33	0.70	1.70	64.56	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.323	Non-Liq.	Non-Liq.	0.00
1.31	40.24	0.94	2.33	110	0.072	0.999	2.33	0.70	1.70	64.54	2.30		1	59	1.94		1.00	125.2	1.00	0.263	0.263	0.323	Non-Liq.	Non-Liq.	0.00
1.48	34.62	0.81	2.34	110	0.081	0.999	2.35	0.71	1.70	55.50	2.35		1	52	2.11		1.00	117.0	1.00	0.229	0.229	0.323	Non-Liq.	Non-Liq.	0.00
1.64	31.09	0.64	2.05	110	0.090	0.998	2.06	0.71	1.70	49.81	2.34		1	48	2.10		1.00	104.5	1.00	0.186	0.186	0.323	Non-Liq.	Non-Liq.	0.00
1.80	30.58	0.62	2.01	110	0.099	0.998	2.02	0.71	1.70	48.98	2.34		1	47	2.10		1.00	102.7	1.00	0.181	0.181	0.323	Non-Liq.	Non-Liq.	0.00
1.97	32.03	0.75	2.33	110	0.108	0.998	2.34	0.72	1.70	51.29	2.37		1	49	2.20		1.00	112.8	1.00	0.213	0.213	0.322	Non-Liq.	Non-Liq.	0.00
2.13	31.02	0.74	2.40	110	0.117	0.997	2.41	0.73	1.70	49.65	2.39		1	48	2.27		1.00	112.8	1.00	0.214	0.214	0.322	Non-Liq.	Non-Liq.	0.00
2.30	29.95	0.70	2.34	110	0.126	0.997	2.35	0.73	1.70	47.92	2.39		1	46	2.29		1.00	109.8	1.00	0.203	0.203	0.322	Non-Liq.	Non-Liq.	0.00
2.46	29.19	0.66	2.26	110	0.135	0.996	2.27	0.73	1.70	46.69	2.39		1	45	2.29		1.00	106.7	1.00	0.193	0.193	0.322	Non-Liq.	Non-Liq.	0.00
2.62	29.17	0.63	2.17	110	0.144	0.996	2.18	0.72	1.70	46.64	2.38		1	45	2.24		1.00	104.4	1.00	0.186	0.186	0.322	Non-Liq.	Non-Liq.	0.00
2.79	29.42	0.62	2.12	110	0.153	0.996	2.13	0.72	1.70	47.03	2.37		1	46	2.20		1.00	103.6	1.00	0.183	0.183	0.322	Non-Liq.	Non-Liq.	0.00
2.95	29.77	0.62	2.08	110	0.162	0.995	2.09	0.72	1.70	47.57	2.36		1	46	2.17		1.00	103.3	1.00	0.182	0.182	0.322	Non-Liq.	Non-Liq.	0.00
3.12	29.70	0.60	2.02	110	0.171	0.995	2.04	0.72	1.70	47.45	2.36		1	46	2.14		1.00	101.7	1.00	0.178	0.178	0.322	Non-Liq.	Non-Liq.	0.00
3.28	28.88	0.57	1.96	110	0.180	0.994	1.98	0.72	1.70	46.11	2.36		1	45	2.15		1.00	99.1	1.00	0.170	0.170	0.321	Non-Liq.	Non-Liq.	0.00
3.44	26.80	0.52	1.95	110	0.189	0.994	1.97	0.72	1.70	42.76	2.38		1	42	2.24		1.00	95.7	1.00	0.162	0.162	0.321	Non-Liq.	Non-Liq.	0.00
3.61	26.96	0.49	1.80	110	0.198	0.994	1.81	0.72	1.70	43.00	2.36		1	42	2.15		1.00	92.3	1.00	0.153	0.153	0.321	Non-Liq.	Non-Liq.	0.00
3.77	29.75	0.49	1.63	110	0.208	0.993	1.65	0.70	1.70	47.47	2.30		1	46	1.94		1.00	92.2	1.00	0.153	0.153	0.321	Non-Liq.	Non-Liq.	0.00
3.94	32.57	0.49	1.50	110	0.217	0.993	1.51	0.68	1.70	51.99	2.24		1	50	1.78		1.00	92.7	1.00	0.154	0.154	0.321	Non-Liq.	Non-Liq.	0.00
4.10	34.78	0.51	1.46	110	0.226	0.993	1.47	0.67	1.70	55.52	2.21		1	52	1.70		1.00	94.6	1.00	0.159	0.159	0.321	Non-Liq.	Non-Liq.	0.00
4.27	36.24	0.53	1.47	110	0.235	0.992	1.48	0.67	1.70	57.85	2.20		1	54	1.67		1.00	96.7	1.00	0.164	0.164	0.321	Non-Liq.	Non-Liq.	0.00
4.43	38.86	0.57	1.47	110	0.244	0.992	1.48	0.66	1.70	62.05	2.18		1	57	1.62		1.00	100.3	1.00	0.174	0.174	0.321	Non-Liq.	Non-Liq.	0.00
4.59	44.03	0.63	1.44	110	0.253	0.991	1.45	0.65	1.70	70.34	2.13		1	62	1.51		1.00	106.4	1.00	0.192	0.192	0.320	Non-Liq.	Non-Liq.	0.00
4.76	50.25	0.69	1.36	110	0.262	0.991	1.37	0.63	1.70	80.32	2.07		1	68	1.41		1.00	112.9	1.00	0.214	0.214	0.320	Non-Liq.	Non-Liq.	0.00
4.92	56.32	0.74	1.31	110	0.271	0.991	1.31	0.61	1.70	90.06	2.02		1	72	1.33		1.00	119.7	1.00	0.239	0.239	0.320	Non-Liq.	Non-Liq.	0.00
5.09	62.37	0.74	1.19	110	0.280	0.990	1.19	0.60	1.70	99.77	1.96		1	77	1.25	0.55	1.19	148.2	1.00	0.383	0.383	0.320	Non-Liq.	Non-Liq.	0.00
5.25	67.00	0.84	1.26	110	0.289	0.990	1.27	0.59	1.70	107.19	1.95		1	80	1.25	0.60	1.19	158.4	1.00	0.449	0.449	0.320	Non-Liq.	Non-Liq.	0.00
5.41	67.37	0.89	1.32	110	0.298	0.989	1.32	0.60	1.70	107.77	1.97		1	80	1.26	0.65	1.19	160.8	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.58	67.34	0.91	1.35	110	0.307	0.989	1.36	0.60	1.70	107.71	1.97		1	80	1.27	0.70	1.19	162.0	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.74	67.46	0.93	1.37	110	0.316	0.989	1.38	0.60	1.70	107.89	1.98		1	80	1.27	0.75	1.19	162.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.91	67.82	0.93	1.37	110	0.325	0.988	1.38	0.60	1.70	108.45	1.98		1	80	1.27	0.80	1.19	163.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.07	65.23	0.93	1.42	110	0.334	0.988	1.43	0.61	1.70	104.28	2.00		1	79	1.30	0.85	1.19	160.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.23	63.78	0.93	1.46	110	0.343	0.988	1.47	0.61	1.70	101.93	2.01		1	78	1.32		1.00	134.5	1.00	0.306	0.306	0.319	Non-Liq.	Non-Liq.	0.00
6.40	65.72	0.95	1.45	110	0.352	0.987	1.45	0.61	1.70	105.03	2.00		1	79	1.30		1.00	136.9	1.00	0.319	0.319	0.319	Non-Liq.	Non-Liq.	0.00
6.56	71.05	1.00	1.40	110	0.361	0.987	1.41	0.60	1.70	113.58	1.97		1	82	1.26	1.00	1.00	143.8	1.00	0.357	0.357	0.319	Non-Liq.	Non-Liq.	0.00
6.73	77.49	1.08	1.39	110	0.370	0.986	1.40	0.59	1.70	123.92	1.94		1	86	1.23	1.05	1.00	152.7	1.00	0.411	0.411	0.319	Non-Liq.	Non-Liq.	0.00
6.89	86.69	1.16	1.34	110	0.379	0.986	1.34	0.58	1.70	138.69	1.89		1	90	1.18	1.10	1.00	164.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	98.48	1.28	1.30	110	0.388	0.986	1.31	0.56	1.70	157.61	1.85		1	96	1.14	1.15	1.00	180.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	114.53	1.41	1.23	110	0.397	0.985	1.23	0.54	1.70	183.39	1.78		1	100	1.09	1.20	1.00	201.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	122.82	1.49	1.21	110	0.406	0.985	1.21	0.54	1.67	193.40	1.76		1	100	1.08	1.25	1.00	209.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	128.68	1.53	1.19	110	0.415	0.985	1.19	0.53	1.65	199.45	1.75		1	100	1.07	1.30	1.00	214.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	128.68	1.53	1.19	110	0.424	0.984	1.19	0.53	1.63	197.34	1.75		1	100	1.07	1.35	1.00	212.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	134.06	1.56	1.17	110	0.433	0.984	1.17	0.53	1.60	202.54	1.74		1	100	1.06	1.40	1.00	215.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	139.69	1.63	1.16	110	0.442	0.984	1.17	0.53	1.58	208.28	1.73		1	100	1.06	1.45	1.00	220.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	147.04	1.72	1.17	110	0.451	0.983	1.17	0.52	1.56	216.44	1.72		1	100	1.05	1.50	1.00	228.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	151.94	1.71	1.12	110	0.460	0.983	1.13	0.52	1.54	220.33	1.70		1	100	1.04	1.55	1.00	229.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	158.05	1.80	1.14	110	0.469	0.982	1.14	0.52	1.52	226.66	1.69		1	100	1.03	1.60	1.00	235.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.69	163.87	1.92	1.17	110	0.478	0.982	1.18	0.52	1.51	232.90	1.70		1	100	1.04	1.65	1.00	242.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
8.86	169.68	2.08	1.22	110	0.487	0.982	1.23	0.52	1.50	239.19	1.70		1	100	1.04	1.70	1.00	249.8	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.02	174.27	2.26	1.30	110	0.496	0.981	1.30	0.52	1.49	244.08	1.72		1	100	1.05	1.75	1.00	257.2	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.19	179.31	2.32	1.29	110	0.505	0.981	1.30	0.52	1.47	248.52	1.71		1	100	1.05	1.80	1.00	261.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.35	181.08	2.35	1.30	110	0.514	0.981	1.30	0.52	1.46	248.69	1.71		1	100	1.05	1.85	1.00	261.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.51	191.53	2.42	1.26	110	0.523	0.980	1.27	0.52	1.44	259.55	1.69		1	100	1.03	1.90	1.00	269.1	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.68	202.38	2.57	1.27	110	0.532	0.980	1.27	0.51	1.42	271.29	1.68		1	100	1.03	1.95	1.00	279.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.84	214.08	2.69	1.26	110	0.541	0.980	1.26	0.51	1.41	283.70	1.67		1	100	1.02	2.00	1.00	289.1	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
10.01	227.79	2.91	1.28	110	0.550	0.979	1.28	0.51	1.39	298.89	1.66		1	100	1.01	2.05	1.00	302.9	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.17	242.24	3.22	1.33	110	0.559	0.979	1.33	0.51	1.38	315.27	1.66		1	100	1.01	2.10	1.00	319.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.33	244.06	3.47	1.42	110	0.568	0.979	1.43	0.51	1.37	316.43	1.68		1	100	1.03	2.15	1.00	325.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.50	249.05	3.55	1.43	110	0.577	0.978	1.43	0.51	1.36	320.21	1.68		1	100	1.02	2.20	1.00	329.2	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.66	254.87	3.69	1.45	110	0.586	0.978	1.45	0.51	1.35	325.19	1.68		1	100	1.03	2.25	1.00	334.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.83	256.89	3.79	1.48	110	0.595	0.978	1.48	0.51	1.34	325.57	1.69		1	100	1.03	2.30	1.00	336.5	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.99	258.54	3.96	1.53	110	0.604	0.977	1.53	0.52	1.34	325.83	1.70		1	100	1.04	2.35	1.00	339.6	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.15	252.91	3.87	1.53	110	0.614	0.977	1.53	0.52	1.33	316.61	1.71		1	100	1.04	2.40	1.00	331.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.32	241.86	3.70	1.53	110	0.623	0.977	1.53	0.52	1.32	301.06	1.72		1	100	1.05	2.45	1.00	317.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.48	235.08	3.50	1.49	110	0.632	0.976	1.49	0.52	1.31	290.38	1.72		1	100	1.05	2.50	1.00	306.4	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.65	233.08	3.34	1.43	110	0.641	0.976	1.44	0.52	1.30	285.38	1.71		1	100	1.05	2.55	1.00	299.4	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.81	236.89	2.82	1.19	110	0.650	0.975	1.19	0.50	1.28	285.24	1.65		1	100	1.00	2.60	1.00	286.6	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.98	239.86	3.05	1.27	110	0.659	0.975	1.27	0.51	1.27	287.65	1.67		1	100	1.02	2.65	1.00	293.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.14	232.44	3.13	1.35	110	0.668	0.975	1.35	0.52	1.27	277.93	1.70		1	100	1.04	2.70	1.00	288.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.30	231.56	3.17	1.37	110	0.677	0.974	1.37	0.52	1.26	275.23	1.70		1	100	1.04	2.70	1.00	287.5	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.47	226.67	3.06	1.35	110	0.686	0.974	1.35	0.52	1.25	267.63	1.71		1	100	1.04	2.70	1.00	280.0	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	224.32	3.05	1.36	110	0.695	0.974	1.36	0.52	1.25	263.26	1.71		1	100	1.05	2.70	1.00	276.6	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	219.31	3.06	1.39	110	0.704	0.973	1.40	0.53	1.24	256.14	1.73		1	100	1.06	2.70	1.00	272.0	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	214.97	3.04	1.41	110	0.713	0.973	1.42	0.53	1.23	249.70	1.74		1	100	1.07	2.70	1.00	267.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	210.39	2.92	1.39	110	0.722	0.973	1.39	0.53	1.23	242.78	1.74		1	100	1.07	2.70	1.00	260.0	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	202.73	2.85	1.41	110	0.731	0.972	1.41	0.54	1.22	232.77	1.76		1	100	1.08	2.70	1.00	251.7	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	202.03	2.75	1.36	110	0.740	0.972	1.36	0.53	1.21	230.22	1.75		1	100	1.07	2.70	1.00	247.7	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	202.36	2.74	1.36	110	0.749	0.972	1.36	0.53	1.20	229.11	1.75		1	100	1.07	2.70	1.00	246.5	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	210.84	2.87	1.36	110	0.758	0.971	1.37	0.53	1.19	237.04	1.74		1	100	1.07	2.70	1.00	253.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	228.51	2.41	1.05	110	0.767	0.971	1.06	0.50	1.17	252.83	1.64		1	100	1.00	2.70	1.00	253.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	285.52	2.69	0.94	110	0.776	0.971	0.94	0.50	1.17	314.27	1.54		1	100	1.00	2.70	1.00	315.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	292.87	2.62	0.89	110	0.785	0.970	0.90	0.50	1.16	320.51	1.52		1	100	1.00	2.70	1.00	321.7	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	251.89	2.37	0.94	110	0.794	0.970	0.94	0.50	1.15	273.97	1.58		1	100	1.00	2.70	1.00	275.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	209.49	2.12	1.01	110	0.803	0.970	1.02	0.51	1.15	226.74	1.66		1	100	1.01	2.70	1.00	229.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	185.30	1.81	0.97	110	0.812	0.969	0.98	0.51	1.15	199.73	1.68		1	100	1.03	2.70	1.00	205.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	177.04	1.72	0.97	110	0.821	0.969	0.97	0.52	1.14	189.90	1.70		1	100	1.04	2.70	1.00	197.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	163.66	1.53	0.94	110	0.830	0.969	0.94	0.52	1.13	174.67	1.71		1	100	1.05	2.70	1.00	183.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	131.77	1.43	1.09	110	0.839	0.968	1.10	0.56	1.14	140.77	1.83		1	91	1.13	2.70	1.00	159.1	1.00	0.454	0.454	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	90.92	1.82	2.00	110	0.848	0.968	2.02	0.64	1.15	98.18	2.12		1	76	1.50		1.00	147.1	1.00	0.376	0.376	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	71.71	1.75	2.45	110	0.857	0.967	2.48	0.69	1.16	77.37	2.26		1	66	1.82		1.00	141.2	1.00	0.342	0.342	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	110.76	2.45	2.21	110	0.866	0.967	2.22	0.64	1.14	118.01	2.10		1	84	1.46		1.00	171.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	111.12	2.74	2.46	110	0.875	0.967	2.48	0.65	1.13	117.85	2.14		1	84	1.52		1.00	179.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	114.52	2.87	2.51	110	0.884	0.966	2.52	0.65	1.12	120.66	2.14		1	85	1.52		1.00	183.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	142.13	2.72	1.91	110	0.893	0.966	1.92	0.60	1.11	147.88	1.99		1	93	1.28	1.00	1.00	190.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	171.27	2.46	1.44	110	0.902	0.966	1.45	0.56	1.09	176.09	1.84		1	100	1.14	1.05	1.00	201.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	179.24	2.28	1.27	110	0.911	0.965	1.28	0.55	1.08	182.87	1.79		1	100	1.10	1.10	1.00	202.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	203.64	2.08	1.02	110	0.920	0.965	1.03	0.51	1.07	205.87	1.69		1	100	1.03	1.15	1.00	213.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	253.20	2.34	0.92	110	0.929	0.965	0.93	0.50	1.07	254.42	1.59		1	100	1.00	1.20	1.00	255.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	288.82	2.54	0.88	110	0.938	0.964	0.88	0.50	1.06	288.93	1.54		1	100	1.00	1.25	1.00	290.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	315.97	2.96	0.94	110	0.947	0.964	0.94	0.50	1.06	314.66	1.54		1	100	1.00	1.30	1.00	315.8	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	322.57	2.98	0.92	110	0.956	0.963	0.93	0.50	1.05	319.73	1.53		1	100	1.00	1.35	1.00	320.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	346.12	4.11	1.19	110	0.965	0.963	1.19	0.50	1.05	341.52	1.60		1	100	1.00	1.40	1.00	342.8	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	402.20	6.00	1.49	110	0.974	0.963	1.50	0.50	1.04	395.22	1.65		1	100	1.00	1.45	1.00	396.7	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	358.55	6.07	1.69	110	0.983	0.962	1.70	0.52	1.04	351.16	1.72		1	100	1.05	1.50	1.00	370.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	345.21	4.98	1.44	110	0.992	0.962	1.45	0.51	1.03	336.13	1.67		1	100	1.02	1.55	1.00	343.7	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	360.17	4.43	1.23	110	1.001	0.962	1.23	0.50	1.03	348.93	1.61		1	100	1.00	1.60	1.00	350.2	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	359.99	3.79	1.05	110	1.010	0.961	1.06	0.50	1.02	347.18	1.55		1	100	1.00	1.65	1.00	348.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	354.62	3.03	0.86	110	1.020	0.961	0.86	0.50	1.02	340.46	1.49		1	100	1.00	1.70	1.00	341.7	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	344.24	2.99	0.87	110	1.029	0.960	0.87	0.50	1.01	329.01	1.50		1	100	1.00	1.75	1.00	330.2	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	332.45	3.04	0.91	110	1.038	0.960	0.92	0.50	1.01	316.31	1.53		1	100	1.00	1.80	1.00	317.5	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	327.71	2.96	0.90	110	1.047	0.960	0.91	0.50	1.01	310.43	1.53		1	100	1.00	1.85	1.00	311.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	307.45	2.73	0.89	110	1.056	0.959	0.89	0.50	1.00	289.93	1.54		1	100	1.00	1.90	1.00	291.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	274.72	2.45	0.89	110	1.065	0.959	0.89	0.50	1.00	257.85	1.58		1	100	1.00	1.95	1.00	258.8	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	271.54	4.15	1.53	110	1.074	0.958	1.53	0.54	0.99	253.63	1.76		1	100	1.08	2.00	1.00	275.2	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	279.83	3.92	1.40	110	1.083	0.958	1.41	0.53	0.99	260.29	1.73		1	100	1.06	2.05	1.00	276.0	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	285.99	4.02	1.41	110	1.092	0.957	1.41	0.53	0.98	264.88	1.72		1	100	1.05	2.10	1.00	280.2	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	315.42	2.61	0.83	110	1.101	0.957	0.83	0.50	0.98	291.27	1.52		1	100	1.00	2.15	1.00	292.4	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-2A
Plot: 2

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:

Magnitude:	6.77	7.5
PGA, g:	0.65	0.50
MSF:	1.30	
GWT, feet:	20.0	
Design GWT, feet:	20.0	

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab Avg 0%	Total Induced Subsidence (inches)
Max 0%	0.2

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	8.00	0.09	1.13	110	0.009	1.000	1.13	0.81	1.70	12.84	2.68		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
0.33	11.37	0.11	0.97	110	0.018	1.000	0.97	0.76	1.70	18.24	2.52		1	6	2.86		1.00	52.1	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
0.49	14.06	0.14	1.00	110	0.027	1.000	1.00	0.74	1.70	22.55	2.44		1	15	2.50		1.00	56.3	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.66	15.85	0.14	0.90	110	0.036	1.000	0.90	0.72	1.70	25.41	2.38		1	20	2.22		1.00	56.4	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.82	15.82	0.14	0.88	110	0.045	1.000	0.89	0.72	1.70	25.35	2.37		1	20	2.21		1.00	55.9	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
0.98	15.42	0.12	0.78	110	0.054	1.000	0.79	0.72	1.70	24.69	2.36		1	19	2.15		1.00	53.1	1.00	0.094	0.094	0.323	Non-Liq.	Non-Liq.	0.00
1.15	12.24	0.10	0.81	110	0.063	0.999	0.81	0.74	1.70	19.57	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.323	Non-Liq.	Non-Liq.	0.00
1.31	12.24	0.10	0.81	110	0.072	0.999	0.81	0.74	1.70	19.55	2.45		1	9	2.55		1.00	49.8	1.00	0.092	0.092	0.323	Non-Liq.	Non-Liq.	0.00
1.48	10.64	0.13	1.17	110	0.081	0.999	1.18	0.78	1.70	16.97	2.59		1	3	3.25		1.00	55.1	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
1.64	11.63	0.20	1.72	110	0.090	0.998	1.73	0.80	1.70	18.54	2.64		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.80	19.13	0.29	1.53	110	0.099	0.998	1.53	0.74	1.70	30.58	2.43		1	28	2.45		1.00	74.9	1.00	0.119	0.119	0.323	Non-Liq.	Non-Liq.	0.00
1.97	35.11	0.52	1.48	110	0.108	0.998	1.48	0.67	1.70	56.24	2.21		1	53	1.70		1.00	95.4	1.00	0.161	0.161	0.322	Non-Liq.	Non-Liq.	0.00
2.13	43.24	0.60	1.40	110	0.117	0.997	1.40	0.65	1.70	69.29	2.13		1	62	1.50		1.00	104.3	1.00	0.185	0.185	0.322	Non-Liq.	Non-Liq.	0.00
2.30	43.08	0.62	1.43	110	0.126	0.997	1.44	0.65	1.70	69.02	2.13		1	61	1.52		1.00	105.0	1.00	0.188	0.188	0.322	Non-Liq.	Non-Liq.	0.00
2.46	41.08	0.60	1.46	110	0.135	0.996	1.46	0.65	1.70	65.79	2.16		1	59	1.56		1.00	102.9	1.00	0.181	0.181	0.322	Non-Liq.	Non-Liq.	0.00
2.62	38.58	0.56	1.46	110	0.144	0.996	1.46	0.66	1.70	61.76	2.18		1	57	1.61		1.00	99.6	1.00	0.172	0.172	0.322	Non-Liq.	Non-Liq.	0.00
2.79	35.25	0.53	1.50	110	0.153	0.996	1.50	0.67	1.70	56.39	2.22		1	53	1.70		1.00	96.1	1.00	0.163	0.163	0.322	Non-Liq.	Non-Liq.	0.00
2.95	32.60	0.49	1.50	110	0.162	0.995	1.51	0.68	1.70	52.12	2.24		1	50	1.78		1.00	92.6	1.00	0.154	0.154	0.322	Non-Liq.	Non-Liq.	0.00
3.12	29.61	0.45	1.52	110	0.171	0.995	1.53	0.69	1.70	47.30	2.28		1	46	1.88		1.00	89.0	1.00	0.146	0.146	0.322	Non-Liq.	Non-Liq.	0.00
3.28	26.41	0.40	1.51	110	0.180	0.994	1.52	0.70	1.70	42.15	2.32		1	41	2.01		1.00	84.6	1.00	0.136	0.136	0.321	Non-Liq.	Non-Liq.	0.00
3.44	23.64	0.34	1.44	110	0.189	0.994	1.45	0.71	1.70	37.68	2.34		1	36	2.10		1.00	79.2	1.00	0.126	0.126	0.321	Non-Liq.	Non-Liq.	0.00
3.61	21.08	0.29	1.36	110	0.198	0.994	1.37	0.72	1.70	33.55	2.37		1	32	2.20		1.00	73.8	1.00	0.117	0.117	0.321	Non-Liq.	Non-Liq.	0.00
3.77	18.23	0.30	1.67	110	0.208	0.993	1.69	0.75	1.70	28.96	2.48		1	25	2.65		1.00	76.6	1.00	0.122	0.122	0.321	Non-Liq.	Non-Liq.	0.00
3.94	15.34	0.30	1.98	110	0.217	0.993	2.00	0.78	1.70	24.30	2.58		1	18	3.21		1.00	78.0	1.00	0.124	0.124	0.321	Non-Liq.	Non-Liq.	0.00
4.10	12.99	0.35	2.73	110	0.226	0.993	2.77	0.83	1.70	20.51	2.72		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.27	11.82	0.38	3.20	110	0.235	0.992	3.26	0.85	1.70	18.62	2.80		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.43	10.34	0.34	3.30	110	0.244	0.992	3.38	0.87	1.70	16.22	2.86		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.59	11.89	0.24	2.04	110	0.253	0.991	2.08	0.81	1.70	18.70	2.68		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.76	26.79	0.25	0.93	110	0.262	0.991	0.94	0.67	1.70	42.63	2.19		1	41	1.65		1.00	70.3	1.00	0.112	0.112	0.320	Non-Liq.	Non-Liq.	0.00
4.92	35.67	0.30	0.84	110	0.271	0.991	0.85	0.63	1.70	56.88	2.06		1	53	1.39		1.00	79.2	1.00	0.126	0.126	0.320	Non-Liq.	Non-Liq.	0.00
5.09	41.25	0.36	0.88	110	0.280	0.990	0.89	0.61	1.70	65.83	2.02		1	59	1.33		1.00	87.7	1.00	0.143	0.143	0.320	Non-Liq.	Non-Liq.	0.00
5.25	44.28	0.41	0.92	110	0.289	0.990	0.93	0.61	1.70	70.69	2.01		1	62	1.31		1.00	92.7	1.00	0.154	0.154	0.320	Non-Liq.	Non-Liq.	0.00
5.41	46.60	0.44	0.94	110	0.298	0.989	0.95	0.61	1.70	74.40	2.00		1	65	1.30	1.00	1.00	96.8	1.00	0.164	0.164	0.320	Non-Liq.	Non-Liq.	0.00
5.58	50.22	0.47	0.93	110	0.307	0.989	0.94	0.60	1.70	80.20	1.97		1	68	1.26	1.05	1.00	101.4	1.00	0.177	0.177	0.320	Non-Liq.	Non-Liq.	0.00
5.74	54.67	0.47	0.87	110	0.316	0.989	0.87	0.58	1.70	87.34	1.92		1	71	1.21	1.10	1.00	105.9	1.00	0.190	0.190	0.320	Non-Liq.	Non-Liq.	0.00
5.91	56.65	0.48	0.85	110	0.325	0.988	0.86	0.58	1.70	90.50	1.90		1	73	1.19	1.15	1.00	108.2	1.00	0.198	0.198	0.319	Non-Liq.	Non-Liq.	0.00
6.07	56.48	0.50	0.89	110	0.334	0.988	0.90	0.58	1.70	90.22	1.92		1	73	1.20	1.20	1.00	109.0	1.00	0.201	0.201	0.319	Non-Liq.	Non-Liq.	0.00
6.23	58.52	0.53	0.91	110	0.343	0.988	0.92	0.58	1.70	93.48	1.91		1	74	1.20	1.25	1.00	112.4	1.00	0.212	0.212	0.319	Non-Liq.	Non-Liq.	0.00
6.40	61.73	0.57	0.92	110	0.352	0.987	0.93	0.58	1.70	98.62	1.90		1	76	1.18	1.30	1.00	117.2	1.00	0.230	0.230	0.319	Non-Liq.	Non-Liq.	0.00
6.56	65.05	0.55	0.84	110	0.361	0.987	0.85	0.56	1.70	103.94	1.85		1	78	1.15	1.35	1.00	119.6	1.00	0.239	0.239	0.319	Non-Liq.	Non-Liq.	0.00
6.73	67.42	0.56	0.83	110	0.370	0.986	0.84	0.56	1.70	107.74	1.84		1	80	1.13	1.40	1.00	122.6	1.00	0.251	0.251	0.319	Non-Liq.	Non-Liq.	0.00
6.89	72.04	0.64	0.89	110	0.379	0.986	0.89	0.56	1.70	115.15	1.83		1	83	1.13	1.45	1.00	130.6	1.00	0.287	0.287	0.319	Non-Liq.	Non-Liq.	0.00
7.05	79.98	0.56	0.70	110	0.388	0.986	0.71	0.53	1.70	127.76	1.73		1	87	1.06	1.50	1.00	135.9	1.00	0.314	0.314	0.319	Non-Liq.	Non-Liq.	0.00
7.22	84.69	0.74	0.87	110	0.397	0.985	0.88	0.54	1.70	135.25	1.77		1	89	1.09	1.55	1.00	147.6	1.00	0.379	0.379	0.318	Non-Liq.	Non-Liq.	0.00
7.38	84.27	0.71	0.84	110	0.406	0.985	0.84	0.54	1.67	132.75	1.77		1	89	1.08	1.60	1.00	144.4	1.00	0.360	0.360	0.318	Non-Liq.	Non-Liq.	0.00
7.55	88.99	0.71	0.80	110	0.415	0.985	0.81	0.53	1.64	137.62	1.74		1	90	1.07	1.65	1.00	147.5	1.00	0.378	0.378	0.318	Non-Liq.	Non-Liq.	0.00
7.71	88.99	0.71	0.80	110	0.424	0.984	0.81	0.53	1.63	136.17	1.75		1	90	1.07	1.70	1.00	146.2	1.00	0.371	0.371	0.318	Non-Liq.	Non-Liq.	0.00
7.87	97.16	0.72	0.74	110	0.433	0.984	0.74	0.52	1.59	145.34	1.70		1	92	1.04	1.75	1.00	151.8	1.00	0.405	0.405	0.318	Non-Liq.	Non-Liq.	0.00
8.04	104.13	0.76	0.73	110	0.442	0.984	0.73	0.51	1.56	153.24	1.68		1	95	1.03	1.80	1.00	157.7	1.00	0.445	0.445	0.318	Non-Liq.	Non-Liq.	0.00
8.20	109.72	0.85	0.77	110	0.451	0.983	0.78	0.51	1.55	159.96	1.68		1	96	1.03	1.85	1.00	164.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	127.90	0.84	0.66	110	0.460	0.983	0.66	0.50	1.52	182.65	1.59		1	100	1.00	1.90	1.00	183.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	139.29	1.12	0.80	110	0.469	0.982	0.80	0.50	1.50	197.04	1.63		1	100	1.00	1.95	1.00	197.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.69	174.32	1.33	0.76	110	0.478	0.982	0.77	0.50	1.49	244.41	1.55		1	100	1.00	2.00	1.00	245.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
8.86	197.20	1.54	0.78	110	0.487	0.982	0.78	0.50	1.47	273.99	1.52		1	100	1.00	2.05	1.00	275.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.02	211.19	1.71	0.81	110	0.496	0.981	0.81	0.50	1.46	290.78	1.51		1	100	1.00	2.10	1.00	291.9	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.19	221.47	1.88	0.85	110	0.505	0.981	0.85	0.50	1.45	302.22	1.52		1	100	1.00	2.15	1.00	303.4	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.35	230.78	2.04	0.88	110	0.514	0.981	0.88	0.50	1.43	312.17	1.52		1	100	1.00	2.20	1.00	313.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.51	234.50	2.16	0.92	110	0.523	0.980	0.92	0.50	1.42	314.45	1.53		1	100	1.00	2.25	1.00	315.6	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.68	232.94	2.27	0.98	110	0.532	0.980	0.98	0.50	1.41	309.69	1.56		1	100	1.00	2.30	1.00	310.8	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.84	231.57	2.35	1.01	110	0.541	0.980	1.02	0.50	1.40	305.27	1.57		1	100	1.00	2.35	1.00	306.4	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
10.01	230.54	2.41	1.04	110	0.550	0.979	1.05	0.50	1.39	301.40	1.59		1	100	1.00	2.40	1.00	302.5	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.17	237.18	2.50	1.05	110	0.559	0.979	1.06	0.50	1.38	307.58	1.58		1	100	1.00	2.45	1.00	308.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.33	247.31	2.55	1.03	110	0.568	0.979	1.03	0.50	1.36	318.18	1.57		1	100	1.00	2.50	1.00	319.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.50	243.77	2.52	1.03	110	0.577	0.978	1.04	0.50	1.35	311.14	1.58		1	100	1.00	2.55	1.00	312.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.66	237.97	2.56	1.07	110	0.586	0.978	1.08	0.50	1.34	301.36	1.60		1	100	1.00	2.60	1.00	302.5	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.83	236.70	2.58	1.09	110	0.595	0.978	1.09	0.50	1.33	297.46	1.61		1	100	1.00	2.65	1.00	298.6	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.99	231.19	3.35	1.45	110	0.604	0.977	1.45	0.52	1.34	291.69	1.71		1	100	1.04	2.70	1.00	305.6	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.15	223.52	4.80	2.15	110	0.614	0.977	2.15	0.56	1.36	286.52	1.85		1	100	1.15	2.75	1.00	330.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.32	231.18	4.24	1.83	110	0.623	0.977	1.84	0.55	1.34	291.09	1.79		1	100	1.10	2.80	1.00	321.9	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.48	277.74	3.56	1.28	110	0.632	0.976	1.29	0.50	1.29	339.00	1.63		1	100	1.00	2.85	1.00	340.3	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.65	232.79	2.16	0.93	110	0.641	0.976	0.93	0.50	1.29	281.99	1.57		1	100	1.00	2.90	1.00	283.0	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.81	242.50	1.85	0.76	110	0.650	0.975	0.76	0.50	1.28	291.73	1.49		1	100	1.00	2.95	1.00	292.8	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.98	238.61	2.39	1.00	110	0.659	0.975	1.00	0.50	1.27	285.05	1.59		1	100	1.00	3.00	1.00	286.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.14	226.91	2.22	0.98	110	0.668	0.975	0.98	0.50	1.26	269.19	1.60		1	100	1.00	3.05	1.00	270.2	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.30	230.52	2.15	0.93	110	0.677	0.974	0.93	0.50	1.25	271.64	1.58		1	100	1.00	3.10	1.00	272.7	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.47	221.89	1.76	0.79	110	0.686	0.974	0.80	0.50	1.24	259.71	1.54		1	100	1.00	3.15	1.00	260.7	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	219.46	1.58	0.72	110	0.695	0.974	0.72	0.50	1.23	255.17	1.51		1	100	1.00	3.20	1.00	256.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	210.68	1.41	0.67	110	0.704	0.973	0.67	0.50	1.23	243.34	1.51		1	100	1.00	3.25	1.00	244.3	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	195.33	1.35	0.69	110	0.713	0.973	0.70	0.50	1.22	224.11	1.54		1	100	1.00	3.30	1.00	225.0	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	189.89	1.37	0.72	110	0.722	0.973	0.72	0.50	1.21	216.47	1.57		1	100	1.00	3.35	1.00	217.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	182.75	2.89	1.58	110	0.731	0.972	1.59	0.56	1.23	211.28	1.82		1	100	1.13	3.40	1.00	238.6	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	189.66	3.51	1.85	110	0.740	0.972	1.86	0.57	1.23	218.84	1.87		1	100	1.16	3.45	1.00	255.0	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	243.92	3.67	1.50	110	0.749	0.972	1.51	0.53	1.20	275.93	1.74		1	100	1.06	3.50	1.00	294.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	196.55	3.12	1.59	110	0.758	0.971	1.59	0.55	1.20	222.44	1.81		1	100	1.12	3.55	1.00	249.0	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	166.33	2.01	1.21	110	0.767	0.971	1.22	0.54	1.19	186.17	1.77		1	100	1.09	3.60	1.00	203.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	168.09	2.05	1.22	110	0.776	0.971	1.22	0.54	1.18	186.97	1.77		1	100	1.09	3.65	1.00	204.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	186.64	4.05	2.17	110	0.785	0.970	2.18	0.59	1.19	209.42	1.94		1	100	1.22	3.70	1.00	257.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	201.80	4.71	2.33	110	0.794	0.970	2.34	0.59	1.18	225.11	1.94		1	100	1.23	3.75	1.00	278.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	281.02	4.40	1.57	110	0.803	0.970	1.57	0.53	1.16	306.15	1.72		1	100	1.05	3.80	1.00	324.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	344.71	3.37	0.98	110	0.812	0.969	0.98	0.50	1.14	371.03	1.51		1	100	1.00	3.85	1.00	372.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	284.50	2.91	1.02	110	0.821	0.969	1.03	0.50	1.14	304.37	1.58		1	100	1.00	3.90	1.00	305.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	313.45	2.95	0.94	110	0.830	0.969	0.94	0.50	1.13	333.60	1.52		1	100	1.00	3.95	1.00	334.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	330.55	3.27	0.99	110	0.839	0.968	0.99	0.50	1.12	349.94	1.53		1	100	1.00	4.00	1.00	351.2	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	347.21	3.40	0.98	110	0.848	0.968	0.98	0.50	1.12	365.65	1.51		1	100	1.00	4.05	1.00	367.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	369.08	4.35	1.18	110	0.857	0.967	1.18	0.50	1.11	386.68	1.56		1	100	1.00	4.10	1.00	388.1	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	398.50	4.30	1.08	110	0.866	0.967	1.08	0.50	1.11	415.38	1.52		1	100	1.00	4.15	1.00	416.9	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	418.62	3.93	0.94	110	0.875	0.967	0.94	0.50	1.10	434.34	1.46		1	100	1.00	4.20	1.00	436.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	410.39	4.19	1.02	110	0.884	0.966	1.02	0.50	1.09	423.39	1.49		1	100	1.00	4.25	1.00	425.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	419.61	4.80	1.14	110	0.893	0.966	1.15	0.50	1.09	430.73	1.53		1	100	1.00	4.30	1.00	432.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	443.67	4.84	1.09	110	0.902	0.966	1.09	0.50	1.08	453.18	1.50		1	100	1.00	4.35	1.00	454.9	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	437.41	4.97	1.14	110	0.911	0.965	1.14	0.50	1.08	444.55	1.52		1	100	1.00	4.40	1.00	446.2	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	435.84	4.65	1.07	110	0.920	0.965	1.07	0.50	1.07	440.77	1.50		1	100	1.00	4.45	1.00	442.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	448.38	4.22	0.94	110	0.929	0.965	0.94	0.50	1.07	451.26	1.45		1	100	1.00	4.50	1.00	452.9	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	457.41	3.79	0.83	110	0.938	0.964	0.83	0.50	1.06	458.14	1.40		1	100	1.00	4.55	1.00	459.8	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	450.04	4.42	0.98	110	0.947	0.964	0.99	0.50	1.06	448.58	1.46		1	100	1.00	4.60	1.00	450.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	437.15	4.09	0.94	110	0.956	0.963	0.94	0.50	1.05	433.64	1.45		1	100	1.00	4.65	1.00	435.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	447.32	4.19	0.94	110	0.965	0.963	0.94	0.50	1.05	441.66	1.45		1	100	1.00	4.70	1.00	443.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	476.04	4.81	1.01	110	0.974	0.963	1.01	0.50	1.04	467.89	1.46		1	100	1.00	4.75	1.00	469.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	526.73	4.25	0.81	110	0.983	0.962	0.81	0.50	1.04	515.42	1.36		1	100	1.00	4.80	1.00	517.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	498.22	4.85	0.97	110	0.992	0.962	0.98	0.50	1.03	485.24	1.44		1	100	1.00	4.85	1.00	487.1	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	506.10	5.27	1.04	110	1.001	0.962	1.04	0.50	1.03	490.70	1.46		1	100	1.00	4.90	1.00	492.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	512.17	6.70	1.31	110	1.010	0.961	1.31	0.50	1.02	494.36	1.55		1	100	1.00	4.95	1.00	496.2	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	559.50	8.56	1.53	110	1.020	0.961	1.53	0.50	1.02	537.73	1.59		1	100	1.00	5.00	1.00	539.7	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	562.50	8.26	1.47	110	1.029	0.960	1.47	0.50	1.01	538.24	1.57		1	100	1.00	5.05	1.00	540.2	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	559.79	8.82	1.58	110	1.038	0.960	1.58	0.50	1.01	533.30	1.60		1	100	1.00	5.10	1.00	535.3	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	547.34	8.23	1.50	110	1.047	0.960	1.51	0.50	1.01	519.15	1.59		1	100	1.00	5.15	1.00	521.1	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	552.34	7.74	1.40	110	1.056	0.959	1.40	0.50	1.00	521.65	1.56		1	100	1.00	5.20	1.00	523.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	492.99	7.25	1.47	110	1.065	0.959	1.47	0.50	1.00	463.51	1.60		1	100	1.00	5.25	1.00	465.2	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	443.38	5.21	1.18	110	1.074	0.958	1.18	0.50	0.99	415.00	1.55		1	100	1.00	5.30	1.00	416.6	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	430.83	4.17	0.97	110	1.083	0.958	0.97	0.50	0.99	401.53	1.49		1	100	1.00	5.35	1.00	403.0	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	411.08	3.30	0.80	110	1.092	0.957	0.80	0.50	0.98	381.48	1.43		1	100	1.00	5.40	1.00	382.9	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	393.49	2.98	0.76	110	1.101	0.957	0.76	0.50	0.98	363.61	1.43		1	100	1.00	5.45	1.00	365.0	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-3
Plot: 3

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0
0%	
Max	0
0%	0.1

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	61.63	0.93	1.50	110	0.009	1.000	1.50	0.62	1.70	99.01	2.03		1	76	1.34		1.00	133.0	1.00	0.299	0.299	0.323	Non-Liq.	Non-Liq.	0.00
0.33	79.05	1.53	1.94	110	0.018	1.000	1.94	0.62	1.70	126.99	2.03		1	87	1.35		1.00	171.2	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.49	78.13	1.93	2.46	110	0.027	1.000	2.46	0.64	1.70	125.50	2.12		1	86	1.48		1.00	186.4	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.66	68.31	1.84	2.70	110	0.036	1.000	2.70	0.66	1.70	109.70	2.18		1	81	1.63		1.00	178.6	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.82	54.87	1.52	2.77	110	0.045	1.000	2.77	0.68	1.70	88.09	2.26		1	72	1.82		1.00	159.9	1.00	0.460	0.460	0.323	Non-Liq.	Non-Liq.	0.00
0.98	47.14	1.21	2.56	110	0.054	1.000	2.57	0.69	1.70	75.66	2.28		1	65	1.88		1.00	142.1	1.00	0.347	0.347	0.323	Non-Liq.	Non-Liq.	0.00
1.15	39.47	1.02	2.57	110	0.063	0.999	2.58	0.71	1.70	63.32	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.323	Non-Liq.	Non-Liq.	0.00
1.31	39.47	1.02	2.57	110	0.072	0.999	2.58	0.71	1.70	63.30	2.33		1	58	2.06		1.00	130.5	1.00	0.287	0.287	0.323	Non-Liq.	Non-Liq.	0.00
1.48	31.24	0.82	2.63	110	0.081	0.999	2.64	0.73	1.70	50.07	2.41		1	48	2.37		1.00	118.7	1.00	0.236	0.236	0.323	Non-Liq.	Non-Liq.	0.00
1.64	24.89	0.66	2.65	110	0.090	0.998	2.66	0.75	1.70	39.85	2.49		1	39	2.72		1.00	108.3	1.00	0.198	0.198	0.323	Non-Liq.	Non-Liq.	0.00
1.80	19.86	0.33	1.65	110	0.099	0.998	1.66	0.74	1.70	31.75	2.44		1	29	2.48		1.00	78.7	1.00	0.125	0.125	0.323	Non-Liq.	Non-Liq.	0.00
1.97	20.55	0.42	2.06	110	0.108	0.998	2.07	0.75	1.70	32.85	2.49		1	31	2.70		1.00	88.6	1.00	0.145	0.145	0.322	Non-Liq.	Non-Liq.	0.00
2.13	20.42	0.47	2.29	110	0.117	0.997	2.30	0.76	1.70	32.62	2.52		1	30	2.85		1.00	93.0	1.00	0.155	0.155	0.322	Non-Liq.	Non-Liq.	0.00
2.30	19.65	0.48	2.45	110	0.126	0.997	2.46	0.77	1.70	31.37	2.55		1	29	3.02		1.00	94.8	1.00	0.159	0.159	0.322	Non-Liq.	Non-Liq.	0.00
2.46	18.16	0.52	2.85	110	0.135	0.996	2.87	0.79	1.70	28.96	2.62		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.62	15.20	0.57	3.77	110	0.144	0.996	3.81	0.83	1.70	24.19	2.76		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.79	13.95	0.57	4.06	110	0.153	0.996	4.10	0.85	1.70	22.17	2.81		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.95	11.38	0.56	4.92	110	0.162	0.995	4.99	0.89	1.70	18.02	2.93		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
3.12	12.18	0.59	4.85	110	0.171	0.995	4.92	0.88	1.70	19.30	2.90		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
3.28	12.71	0.60	4.68	110	0.180	0.994	4.75	0.87	1.70	20.13	2.88		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.44	11.57	0.62	5.32	110	0.189	0.994	5.41	0.89	1.70	18.29	2.95		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.61	11.06	0.51	4.57	110	0.198	0.994	4.65	0.88	1.70	17.45	2.92		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.77	20.97	0.48	2.28	110	0.208	0.993	2.30	0.76	1.70	33.36	2.51		1	31	2.81		1.00	93.8	1.00	0.157	0.157	0.321	Non-Liq.	Non-Liq.	0.00
3.94	29.22	0.55	1.88	110	0.217	0.993	1.90	0.71	1.70	46.60	2.34		1	45	2.09		1.00	97.6	1.00	0.166	0.166	0.321	Non-Liq.	Non-Liq.	0.00
4.10	37.87	0.68	1.79	110	0.226	0.993	1.80	0.68	1.70	60.49	2.24		1	56	1.78		1.00	107.4	1.00	0.195	0.195	0.321	Non-Liq.	Non-Liq.	0.00
4.27	45.79	0.82	1.80	110	0.235	0.992	1.81	0.66	1.70	73.20	2.18		1	64	1.62		1.00	118.8	1.00	0.236	0.236	0.321	Non-Liq.	Non-Liq.	0.00
4.43	52.76	0.97	1.84	110	0.244	0.992	1.85	0.65	1.70	84.38	2.14		1	70	1.54		1.00	129.9	1.00	0.284	0.284	0.321	Non-Liq.	Non-Liq.	0.00
4.59	58.36	1.00	1.72	110	0.253	0.991	1.73	0.64	1.70	93.37	2.09		1	74	1.44		1.00	134.3	1.00	0.305	0.305	0.320	Non-Liq.	Non-Liq.	0.00
4.76	62.10	1.17	1.89	110	0.262	0.991	1.90	0.64	1.70	99.36	2.10		1	77	1.46		1.00	144.7	1.00	0.362	0.362	0.320	Non-Liq.	Non-Liq.	0.00
4.92	64.35	1.31	2.03	110	0.271	0.991	2.04	0.64	1.70	102.96	2.11		1	78	1.48		1.00	152.2	1.00	0.408	0.408	0.320	Non-Liq.	Non-Liq.	0.00
5.09	68.21	1.45	2.13	110	0.280	0.990	2.14	0.64	1.70	109.15	2.11		1	80	1.47		1.00	160.8	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.25	72.78	1.57	2.16	110	0.289	0.990	2.17	0.64	1.70	116.48	2.10		1	83	1.45		1.00	168.6	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.41	77.81	1.63	2.10	110	0.298	0.989	2.11	0.63	1.70	124.55	2.07		1	86	1.40		1.00	174.2	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.58	85.70	1.64	1.91	110	0.307	0.989	1.92	0.61	1.70	137.21	2.01		1	90	1.31		1.00	179.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.74	100.29	1.65	1.65	110	0.316	0.989	1.65	0.58	1.70	160.64	1.91		1	96	1.20	1.00	1.00	193.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.91	115.78	1.63	1.41	110	0.325	0.988	1.41	0.55	1.70	185.51	1.82		1	100	1.12	1.05	1.00	209.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.07	127.60	1.61	1.26	110	0.334	0.988	1.27	0.54	1.70	204.49	1.76		1	100	1.08	1.10	1.00	221.2	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.23	135.25	1.64	1.21	110	0.343	0.988	1.22	0.53	1.70	216.77	1.73		1	100	1.06	1.15	1.00	230.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.40	142.84	1.69	1.18	110	0.352	0.987	1.19	0.52	1.70	228.95	1.71		1	100	1.04	1.20	1.00	239.3	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.56	144.87	1.70	1.18	110	0.361	0.987	1.18	0.52	1.70	232.20	1.70		1	100	1.04	1.25	1.00	241.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.73	154.10	1.74	1.13	110	0.370	0.986	1.13	0.51	1.70	247.01	1.67		1	100	1.02	1.30	1.00	251.8	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.89	159.66	1.81	1.14	110	0.379	0.986	1.14	0.51	1.68	253.36	1.66		1	100	1.01	1.35	1.00	257.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	165.12	1.78	1.08	110	0.388	0.986	1.08	0.50	1.65	257.24	1.64		1	100	1.00	1.40	1.00	257.5	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	169.35	1.74	1.02	110	0.397	0.985	1.03	0.50	1.63	260.70	1.62		1	100	1.00	1.45	1.00	261.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	177.82	1.68	0.94	110	0.406	0.985	0.95	0.50	1.61	270.69	1.58		1	100	1.00	1.50	1.00	271.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	173.84	1.63	0.94	110	0.415	0.985	0.94	0.50	1.60	261.72	1.59		1	100	1.00	1.55	1.00	262.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	173.84	1.63	0.94	110	0.424	0.984	0.94	0.50	1.58	258.90	1.59		1	100	1.00	1.60	1.00	259.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	174.47	1.63	0.94	110	0.433	0.984	0.94	0.50	1.56	257.11	1.60		1	100	1.00	1.65	1.00	258.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	179.36	1.92	1.07	110	0.442	0.984	1.07	0.50	1.55	261.61	1.63		1	100	1.00	1.70	1.00	262.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	186.51	2.06	1.10	110	0.451	0.983	1.11	0.50	1.53	269.32	1.64		1	100	1.00	1.75	1.00	270.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	187.62	1.80	0.96	110	0.460	0.983	0.96	0.50	1.52	268.24	1.59		1	100	1.00	1.80	1.00	269.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	196.66	1.97	1.00	110	0.469	0.982	1.00	0.50	1.50	278.47	1.60		1	100	1.00	1.85	1.00	279.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.69	203.40	2.06	1.01	110	0.478	0.982	1.01	0.50	1.49	285.29	1.59		1	100	1.00	1.90	1.00	286.4	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
8.86	213.10	2.23	1.05	110	0.487	0.982	1.05	0.50	1.47	296.14	1.59		1	100	1.00	1.95	1.00	297.2	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.02	211.76	2.34	1.10	110	0.496	0.981	1.11	0.50	1.46	291.57	1.62		1	100	1.00	2.00	1.00	292.7	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.19	215.66	2.34	1.09	110	0.505	0.981	1.09	0.50	1.45	294.28	1.61		1	100	1.00	2.05	1.00	295.4	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.35	219.54	2.54	1.16	110	0.514	0.981	1.16	0.50	1.43	296.93	1.63		1	100	1.00	2.10	1.00	298.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.51	229.63	2.68	1.17	110	0.523	0.980	1.17	0.50	1.42	307.91	1.62		1	100	1.00	2.15	1.00	309.1	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.68	235.06	2.79	1.18	110	0.532	0.980	1.19	0.50	1.41	312.51	1.62		1	100	1.00	2.20	1.00	313.7	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.84	237.58	2.88	1.21	110	0.541	0.980	1.21	0.50	1.40	313.21	1.63		1	100	1.00	2.25	1.00	314.4	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
10.01	233.01	2.93	1.26	110	0.550	0.979	1.26	0.50	1.39	305.09	1.65		1	100	1.00	2.30	1.00	306.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.17	237.10	2.96	1.25	110	0.559	0.979	1.25	0.50	1.38	307.65	1.64		1	100	1.00	2.35	1.00	308.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.33	243.13	3.06	1.26	110	0.568	0.979	1.26	0.50	1.36	312.86	1.64		1	100	1.00	2.40	1.00	313.1	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.50	243.55	3.17	1.30	110	0.577	0.978	1.30	0.50	1.36	311.64	1.65		1	100	1.01	2.45	1.00	314.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.66	243.58	3.23	1.32	110	0.586	0.978	1.33	0.51	1.35	309.70	1.66		1	100	1.01	2.50	1.00	314.6	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.83	251.39	3.25	1.29	110	0.595	0.978	1.30	0.50	1.33	316.43	1.65		1	100	1.00	2.55	1.00	318.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.99	254.32	3.43	1.35	110	0.604	0.977	1.35	0.51	1.33	318.41	1.66		1	100	1.01	2.60	1.00	323.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.15	250.44	3.64	1.45	110	0.614	0.977	1.46	0.52	1.32	312.74	1.69		1	100	1.03	2.65	1.00	324.1	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.32	235.91	3.45	1.46	110	0.623	0.977	1.47	0.52	1.32	293.22	1.71		1	100	1.05	2.70	1.00	307.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.48	231.44	3.34	1.44	110	0.632	0.976	1.45	0.52	1.31	285.58	1.71		1	100	1.05	2.75	1.00	300.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.65	243.81	3.39	1.39	110	0.641	0.976	1.40	0.51	1.29	297.60	1.69		1	100	1.03	2.80	1.00	308.0	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.81	248.76	3.18	1.28	110	0.650	0.975	1.28	0.51	1.28	300.06	1.66		1	100	1.01	2.85	1.00	303.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.98	252.74	3.49	1.38	110	0.659	0.975	1.39	0.51	1.27	303.78	1.68		1	100	1.03	2.90	1.00	312.7	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.14	246.32	3.71	1.51	110	0.668	0.975	1.51	0.52	1.27	295.51	1.72		1	100	1.05	2.95	1.00	311.7	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.30	247.22	3.84	1.55	110	0.677	0.974	1.56	0.53	1.27	294.93	1.73		1	100	1.06	3.00	1.00	313.3	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.47	246.81	3.92	1.59	110	0.686	0.974	1.59	0.53	1.26	292.77	1.74		1	100	1.07	3.05	1.00	313.0	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	246.30	4.04	1.64	110	0.695	0.974	1.65	0.53	1.25	290.63	1.75		1	100	1.07	3.10	1.00	313.4	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	244.00	4.09	1.67	110	0.704	0.973	1.68	0.54	1.25	286.30	1.76		1	100	1.08	3.15	1.00	310.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_σ	H (m)	K_H	Clean Sand Qc1n	K_σ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
12.96	243.85	4.05	1.66	110	0.713	0.973	1.67	0.54	1.24	284.13	1.76		1	100	1.08	3.20	1.00	308.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	250.82	4.24	1.69	110	0.722	0.973	1.70	0.54	1.23	290.33	1.76		1	100	1.08	3.25	1.00	315.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	254.86	4.23	1.66	110	0.731	0.972	1.66	0.53	1.22	292.76	1.76		1	100	1.08	3.30	1.00	316.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	265.02	4.01	1.51	110	0.740	0.972	1.52	0.52	1.21	301.15	1.72		1	100	1.05	3.35	1.00	316.9	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	296.24	3.54	1.19	110	0.749	0.972	1.20	0.50	1.19	331.97	1.61		1	100	1.00	3.40	1.00	333.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	358.75	4.85	1.35	110	0.758	0.971	1.35	0.50	1.18	399.79	1.61		1	100	1.00	3.45	1.00	401.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	401.73	4.27	1.06	110	0.767	0.971	1.07	0.50	1.17	445.14	1.49		1	100	1.00	3.45	1.00	446.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	397.89	5.59	1.40	110	0.776	0.971	1.41	0.50	1.17	438.29	1.60		1	100	1.00	3.45	1.00	439.9	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	408.46	4.70	1.15	110	0.785	0.970	1.15	0.50	1.16	447.36	1.52		1	100	1.00	3.45	1.00	449.0	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	435.23	5.55	1.28	110	0.794	0.970	1.28	0.50	1.15	474.00	1.55		1	100	1.00	3.45	1.00	475.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	389.69	5.04	1.29	110	0.803	0.970	1.30	0.50	1.15	421.92	1.58		1	100	1.00	3.45	1.00	423.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	348.88	3.51	1.01	110	0.812	0.969	1.01	0.50	1.14	375.53	1.52		1	100	1.00	3.45	1.00	376.9	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	347.64	3.21	0.92	110	0.821	0.969	0.93	0.50	1.14	372.12	1.49		1	100	1.00	3.45	1.00	373.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	366.34	3.29	0.90	110	0.830	0.969	0.90	0.50	1.13	390.04	1.47		1	100	1.00	3.45	1.00	391.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	355.46	3.76	1.06	110	0.839	0.968	1.06	0.50	1.12	376.38	1.53		1	100	1.00	3.45	1.00	377.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	339.34	3.85	1.14	110	0.848	0.968	1.14	0.50	1.12	357.34	1.57		1	100	1.00	3.45	1.00	358.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	338.34	4.27	1.26	110	0.857	0.967	1.27	0.50	1.11	354.40	1.61		1	100	1.00	3.45	1.00	355.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	341.10	4.54	1.33	110	0.866	0.967	1.33	0.50	1.11	355.42	1.63		1	100	1.00	3.45	1.00	356.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	335.06	4.41	1.32	110	0.875	0.967	1.32	0.50	1.10	347.30	1.63		1	100	1.00	3.45	1.00	348.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	339.73	3.85	1.13	110	0.884	0.966	1.14	0.50	1.09	350.34	1.58		1	100	1.00	3.45	1.00	351.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	339.17	3.94	1.16	110	0.893	0.966	1.16	0.50	1.09	347.98	1.59		1	100	1.00	3.45	1.00	349.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	304.89	4.11	1.35	110	0.902	0.966	1.35	0.51	1.08	311.54	1.67		1	100	1.02	3.45	1.00	317.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	240.39	3.63	1.51	110	0.911	0.965	1.51	0.54	1.08	245.31	1.77		1	100	1.08	3.45	1.00	267.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	200.85	3.97	1.97	110	0.920	0.965	1.98	0.58	1.08	204.91	1.91		1	100	1.20	3.45	1.00	246.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	186.05	3.36	1.80	110	0.929	0.965	1.81	0.58	1.08	188.60	1.90		1	100	1.19	3.45	1.00	225.2	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	145.35	4.55	3.13	110	0.938	0.964	3.15	0.65	1.08	147.65	2.15		1	93	1.56		1.00	230.8	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	137.21	1.70	1.24	110	0.947	0.964	1.25	0.57	1.06	137.16	1.87		1	90	1.16	1.00	1.00	160.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	195.13	2.67	1.37	110	0.956	0.963	1.37	0.55	1.06	193.97	1.80		1	100	1.11	1.05	1.00	215.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	375.11	3.14	0.84	110	0.965	0.963	0.84	0.50	1.05	370.21	1.46		1	100	1.00	1.10	1.00	371.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	366.40	3.61	0.98	110	0.974	0.963	0.99	0.50	1.04	359.90	1.52		1	100	1.00	1.15	1.00	361.2	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	334.19	2.48	0.74	110	0.983	0.962	0.75	0.50	1.04	326.66	1.45		1	100	1.00	1.20	1.00	327.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	253.24	2.71	1.07	110	0.992	0.962	1.08	0.50	1.03	246.22	1.65		1	100	1.00	1.25	1.00	248.4	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	169.29	2.90	1.71	110	1.001	0.962	1.72	0.58	1.03	164.25	1.92		1	97	1.21	1.30	1.00	199.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	135.74	2.18	1.61	110	1.010	0.961	1.62	0.60	1.03	130.89	1.97		1	88	1.26	1.35	1.00	165.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	258.73	2.13	0.82	110	1.020	0.961	0.83	0.50	1.02	248.14	1.56		1	100	1.00	1.40	1.00	249.1	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	348.17	2.48	0.71	110	1.029	0.960	0.71	0.50	1.01	332.78	1.43		1	100	1.00	1.45	1.00	334.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	379.90	3.61	0.95	110	1.038	0.960	0.95	0.50	1.01	361.60	1.51		1	100	1.00	1.50	1.00	363.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	419.21	3.90	0.93	110	1.047	0.960	0.93	0.50	1.01	397.39	1.47		1	100	1.00	1.55	1.00	398.9	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	396.96	4.58	1.15	110	1.056	0.959	1.16	0.50	1.00	374.62	1.57		1	100	1.00	1.60	1.00	376.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	387.05	4.64	1.20	110	1.065	0.959	1.20	0.50	1.00	363.69	1.59		1	100	1.00	1.65	1.00	365.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	368.81	4.55	1.23	110	1.074	0.958	1.24	0.50	0.99	345.03	1.61		1	100	1.00	1.70	1.00	346.3	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	354.61	3.09	0.87	110	1.083	0.958	0.87	0.50	0.99	330.32	1.50		1	100	1.00	1.75	1.00	331.6	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	342.37	2.52	0.74	110	1.092	0.957	0.74	0.50	0.98	317.55	1.46		1	100	1.00	1.80	1.00	318.7	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	342.04	2.21	0.65	110	1.101	0.957	0.65	0.50	0.98	315.93	1.42		1	100	1.00	1.85	1.00	317.1	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-4
Plot: 4

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR

Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab	Total Induced Subsidence (inches)
Avg	0
0%	
Max	0.2
0%	

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
0.16	92.62	1.11	1.20	110	0.009	1.000	1.20	0.56	1.70	148.81	1.84		1	93	1.13	0.25	1.00	168.8	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.33	130.04	2.02	1.55	110	0.018	1.000	1.55	0.55	1.70	208.92	1.82		1	100	1.12	0.25	1.00	234.3	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.49	152.39	3.01	1.98	110	0.027	1.000	1.98	0.57	1.70	244.82	1.86		1	100	1.16	0.25	1.00	282.8	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.66	146.45	3.22	2.20	110	0.036	1.000	2.20	0.58	1.70	235.26	1.91		1	100	1.20	0.25	1.00	282.0	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.82	125.63	2.97	2.36	110	0.045	1.000	2.36	0.60	1.70	201.79	1.97		1	100	1.27	0.25	1.00	255.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
0.98	97.23	2.48	2.55	110	0.054	1.000	2.55	0.63	1.70	156.14	2.07		1	95	1.40		1.00	218.4	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.15	63.94	1.59	2.49	110	0.063	0.999	2.50	0.66	1.70	102.64	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.31	63.94	1.59	2.49	110	0.072	0.999	2.50	0.66	1.70	102.62	2.18		1	78	1.61		1.00	165.7	1.00	Infin.	0.000	0.323	Non-Liq.	Non-Liq.	0.00
1.48	41.59	1.09	2.61	110	0.081	0.999	2.62	0.70	1.70	66.70	2.32		1	60	2.02		1.00	134.8	1.00	0.308	0.308	0.323	Non-Liq.	Non-Liq.	0.00
1.64	28.11	0.74	2.64	110	0.090	0.998	2.64	0.74	1.70	45.02	2.45		1	44	2.52		1.00	113.6	1.00	0.216	0.216	0.323	Non-Liq.	Non-Liq.	0.00
1.80	20.76	0.53	2.55	110	0.099	0.998	2.57	0.77	1.70	33.20	2.54		1	31	2.98		1.00	98.9	1.00	0.170	0.170	0.323	Non-Liq.	Non-Liq.	0.00
1.97	21.63	0.56	2.58	110	0.108	0.998	2.60	0.77	1.70	34.58	2.53		1	33	2.92		1.00	101.1	1.00	0.176	0.176	0.322	Non-Liq.	Non-Liq.	0.00
2.13	34.59	0.78	2.25	110	0.117	0.997	2.26	0.71	1.70	55.39	2.34		1	52	2.07		1.00	114.6	1.00	0.220	0.220	0.322	Non-Liq.	Non-Liq.	0.00
2.30	34.08	0.89	2.61	110	0.126	0.997	2.62	0.72	1.70	54.56	2.39		1	52	2.25		1.00	123.0	1.00	0.253	0.253	0.322	Non-Liq.	Non-Liq.	0.00
2.46	31.06	0.81	2.60	110	0.135	0.996	2.61	0.73	1.70	49.69	2.41		1	48	2.37		1.00	117.7	1.00	0.231	0.231	0.322	Non-Liq.	Non-Liq.	0.00
2.62	26.71	0.71	2.65	110	0.144	0.996	2.67	0.75	1.70	42.69	2.47		1	42	2.62		1.00	111.6	1.00	0.209	0.209	0.322	Non-Liq.	Non-Liq.	0.00
2.79	24.66	0.64	2.61	110	0.153	0.996	2.62	0.76	1.70	39.38	2.49		1	38	2.72		1.00	107.1	1.00	0.194	0.194	0.322	Non-Liq.	Non-Liq.	0.00
2.95	22.66	0.59	2.60	110	0.162	0.995	2.62	0.76	1.70	36.15	2.52		1	35	2.86		1.00	103.4	1.00	0.183	0.183	0.322	Non-Liq.	Non-Liq.	0.00
3.12	21.79	0.57	2.60	110	0.171	0.995	2.62	0.77	1.70	34.74	2.53		1	33	2.93		1.00	101.7	1.00	0.178	0.178	0.322	Non-Liq.	Non-Liq.	0.00
3.28	20.52	0.55	2.69	110	0.180	0.994	2.72	0.78	1.70	32.68	2.56		1	30	3.10		1.00	101.3	1.00	0.177	0.177	0.321	Non-Liq.	Non-Liq.	0.00
3.44	18.85	0.54	2.86	110	0.189	0.994	2.89	0.79	1.70	29.98	2.61		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.61	16.96	0.52	3.05	110	0.198	0.994	3.09	0.81	1.70	26.93	2.66		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.77	15.22	0.50	3.30	110	0.208	0.993	3.34	0.82	1.70	24.12	2.72		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.94	13.60	0.54	3.97	110	0.217	0.993	4.03	0.85	1.70	21.50	2.81		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.10	13.10	0.56	4.31	110	0.226	0.993	4.38	0.86	1.70	20.69	2.85		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.27	13.76	0.61	4.45	110	0.235	0.992	4.52	0.86	1.70	21.73	2.84		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.43	12.78	0.63	4.94	110	0.244	0.992	5.03	0.88	1.70	20.14	2.90		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.59	9.82	0.62	6.32	110	0.253	0.991	6.49	0.93	1.70	15.37	3.06		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.76	9.11	0.58	6.39	110	0.262	0.991	6.58	0.93	1.70	14.22	3.09		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.92	9.64	0.67	6.94	110	0.271	0.991	7.14	0.94	1.70	15.05	3.09		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
5.09	11.05	0.51	4.60	110	0.280	0.990	4.72	0.89	1.70	17.31	2.93		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
5.25	26.79	0.51	1.91	110	0.289	0.990	1.93	0.72	1.70	42.58	2.38		1	41	2.22		1.00	94.7	1.00	0.159	0.159	0.320	Non-Liq.	Non-Liq.	0.00
5.41	43.87	0.61	1.40	110	0.298	0.989	1.41	0.65	1.70	70.01	2.12		1	62	1.50		1.00	105.0	1.00	0.188	0.188	0.320	Non-Liq.	Non-Liq.	0.00
5.58	61.57	0.87	1.42	110	0.307	0.989	1.42	0.61	1.70	98.44	2.02		1	76	1.32		1.00	130.2	1.00	0.285	0.285	0.320	Non-Liq.	Non-Liq.	0.00
5.74	81.48	1.27	1.55	110	0.316	0.989	1.56	0.60	1.70	130.42	1.96		1	88	1.25	1.00	1.00	163.4	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.91	104.49	1.77	1.69	110	0.325	0.988	1.70	0.58	1.70	167.37	1.91		1	98	1.20	1.05	1.00	201.7	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.07	121.74	2.26	1.85	110	0.334	0.988	1.86	0.58	1.70	195.08	1.90		1	100	1.19	1.10	1.00	232.8	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.23	129.40	2.54	1.96	110	0.343	0.988	1.97	0.58	1.70	207.37	1.90		1	100	1.19	1.15	1.00	248.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.40	133.71	2.63	1.97	110	0.352	0.987	1.98	0.58	1.70	214.28	1.90		1	100	1.18	1.20	1.00	254.9	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.56	136.13	2.67	1.96	110	0.361	0.987	1.97	0.57	1.70	218.15	1.89		1	100	1.18	1.20	1.00	258.3	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.73	137.04	2.50	1.82	110	0.370	0.986	1.83	0.57	1.70	219.60	1.86		1	100	1.16	1.20	1.00	254.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.89	134.61	2.27	1.69	110	0.379	0.986	1.69	0.56	1.70	215.68	1.84		1	100	1.14	1.20	1.00	246.3	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	133.55	2.02	1.51	110	0.388	0.986	1.52	0.55	1.70	213.97	1.81		1	100	1.11	1.20	1.00	238.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	130.84	1.92	1.47	110	0.397	0.985	1.47	0.55	1.70	209.60	1.80		1	100	1.11	1.20	1.00	233.0	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	125.34	1.72	1.37	110	0.406	0.985	1.38	0.55	1.69	199.24	1.79		1	100	1.10	1.20	1.00	220.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	121.32	1.59	1.31	110	0.415	0.985	1.32	0.55	1.67	190.42	1.79		1	100	1.10	1.20	1.00	210.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	121.32	1.59	1.31	110	0.424	0.984	1.32	0.55	1.65	188.35	1.80		1	100	1.10	1.20	1.00	208.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	117.69	1.47	1.25	110	0.433	0.984	1.25	0.55	1.63	180.43	1.79		1	100	1.10	1.20	1.00	199.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	112.60	1.37	1.22	110	0.442	0.984	1.22	0.55	1.61	170.99	1.80		1	99	1.11	1.20	1.00	189.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	105.92	1.25	1.18	110	0.451	0.983	1.19	0.55	1.60	159.50	1.81		1	96	1.12	1.20	1.00	178.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	94.02	1.10	1.17	110	0.460	0.983	1.18	0.56	1.60	141.18	1.85		1	91	1.14	1.20	1.00	161.8	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	82.35	0.71	0.86	110	0.469	0.982	0.86	0.55	1.56	121.02	1.81		1	85	1.11	1.20	1.00	135.0	1.00	0.309	0.309	0.318	Non-Liq.	Non-Liq.	0.00
8.69	75.19	0.69	0.91	110	0.478	0.982	0.92	0.56	1.56	110.51	1.85		1	81	1.15	1.20	1.00	127.3	1.00	0.272	0.272	0.317	Non-Liq.	Non-Liq.	0.00
8.86	63.26	0.61	0.97	110	0.487	0.982	0.97	0.59	1.57	93.45	1.93		1	74	1.21	1.20	1.00	113.9	1.00	0.217	0.217	0.317	Non-Liq.	Non-Liq.	0.00
9.02	59.99	0.57	0.95	110	0.496	0.981	0.96	0.59	1.56	87.95	1.94		1	71	1.23	1.20	1.00	108.8	1.00	0.200	0.200	0.317	Non-Liq.	Non-Liq.	0.00
9.19	56.32	0.53	0.94	110	0.505	0.981	0.94	0.60	1.55	81.99	1.96		1	69	1.25	1.20	1.00	103.2	1.00	0.182	0.182	0.317	Non-Liq.	Non-Liq.	0.00
9.35	53.37	0.45	0.85	110	0.514	0.981	0.86	0.60	1.54	76.78	1.96		1	66	1.25	1.20	1.00	96.4	1.00	0.163	0.163	0.317	Non-Liq.	Non-Liq.	0.00
9.51	48.12	0.39	0.82	110	0.523	0.980	0.83	0.60	1.53	68.86	1.99		1	61	1.29	1.20	1.00	88.9	1.00	0.145	0.145	0.317	Non-Liq.	Non-Liq.	0.00
9.68	43.46	0.35	0.81	110	0.532	0.980	0.82	0.62	1.53	61.93	2.03		1	57	1.34		1.00	82.7	1.00	0.133	0.133	0.317	Non-Liq.	Non-Liq.	0.00
9.84	43.28	0.29	0.68	110	0.541	0.980	0.69	0.61	1.50	60.60	1.99		1	56	1.29	0.05	1.71	133.7	1.00	0.302	0.302	0.317	Non-Liq.	Non-Liq.	0.00
10.01	40.37	0.42	1.04	110	0.550	0.979	1.05	0.64	1.52	57.28	2.12		1	54	1.48		1.00	84.9	1.00	0.137	0.137	0.316	Non-Liq.	Non-Liq.	0.00
10.17	38.85	0.35	0.91	110	0.559	0.979	0.92	0.64	1.50	54.36	2.10		1	52	1.46		1.00	79.2	1.00	0.126	0.126	0.316	Non-Liq.	Non-Liq.	0.00
10.33	35.99	0.37	1.03	110	0.568	0.979	1.05	0.66	1.50	50.33	2.16		1	48	1.58		1.00	79.3	1.00	0.126	0.126	0.316	Non-Liq.	Non-Liq.	0.00
10.50	35.23	0.33	0.94	110	0.577	0.978	0.96	0.65	1.48	48.64	2.15		1	47	1.55		1.00	75.5	1.00	0.120	0.120	0.316	Non-Liq.	Non-Liq.	0.00
10.66	32.68	0.32	0.98	110	0.586	0.978	0.99	0.66	1.48	44.89	2.19		1	44	1.64		1.00	73.5	1.00	0.117	0.117	0.316	Non-Liq.	Non-Liq.	0.00
10.83	29.98	0.30	0.99	110	0.595	0.978	1.01	0.68	1.47	40.94	2.22		1	40	1.73		1.00	70.8	1.00	0.113	0.113	0.316	Non-Liq.	Non-Liq.	0.00
10.99	26.35	0.27	1.02	110	0.604	0.977	1.04	0.69	1.47	35.85	2.28		1	34	1.89		1.00	67.7	1.00	0.109	0.109	0.316	Non-Liq.	Non-Liq.	0.00
11.15	21.42	0.31	1.43	110	0.614	0.977	1.48	0.74	1.50	29.41	2.44		1	26	2.47		1.00	72.5	1.00	0.115	0.115	0.316	Non-Liq.	Non-Liq.	0.00
11.32	14.65	0.21	1.40	110	0.623	0.977	1.46	0.78	1.51	20.05	2.57		1	10	3.16		1.00	63.4	1.00	0.104	0.104	0.316	Non-Liq.	Non-Liq.	0.00
11.48	9.05	0.21	2.30	110	0.632	0.976	2.47	0.87	1.57	12.46	2.87		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
11.65	7.19	0.20	2.77	110	0.641	0.976	3.04	0.91	1.58	9.77	3.01		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
11.81	2.70	0.13	4.89	110	0.650	0.975	6.44	1.00	1.63	3.16	3.60		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
11.98	2.65	0.12	4.64	110	0.659	0.975	6.18	1.00	1.61	3.02	3.60		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
12.14	3.48	0.11	3.10	110	0.668	0.975	3.84	1.00	1.58	4.21	3.37		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
12.30	2.50	0.10	3.84	110	0.677	0.974	5.27	1.00	1.56	2.69	3.61		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
12.47	1.85	0.11	5.73	110	0.686	0.974	9.10	1.00	1.54	1.70	3.90		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
12.63	1.79	0.13	7.43	110	0.695	0.974	12.14	1.00	1.52	1.58	4.00		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00
12.80	5.10	0.29	5.59	110	0.704	0.973	6.48	1.00	1.50	6.25	3.36		0						1.00			0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	30.62	0.58	1.88	110	0.713	0.973	1.92	0.73	1.34	38.00	2.42		1	37	2.37		1.00	90.3	1.00	0.148	0.148	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	81.21	1.11	1.36	110	0.722	0.973	1.37	0.61	1.26	96.14	2.01		1	75	1.32		1.00	126.7	1.00	0.269	0.269	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	92.10	1.26	1.37	110	0.731	0.972	1.38	0.60	1.25	107.89	1.98		1	80	1.27	1.00	1.00	137.9	1.00	0.324	0.324	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	131.97	1.30	0.99	110	0.740	0.972	0.99	0.54	1.21	150.49	1.77		1	94	1.09	1.05	1.00	164.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	176.29	1.68	0.95	110	0.749	0.972	0.96	0.51	1.19	198.00	1.68		1	100	1.02	1.10	1.00	203.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	208.26	2.28	1.09	110	0.758	0.971	1.10	0.51	1.19	232.55	1.68		1	100	1.02	1.15	1.00	238.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	234.75	2.60	1.11	110	0.767	0.971	1.11	0.50	1.18	259.95	1.65		1	100	1.00	1.20	1.00	261.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	244.80	2.82	1.15	110	0.776	0.971	1.16	0.50	1.17	269.60	1.65		1	100	1.00	1.25	1.00	271.7	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	272.06	2.98	1.09	110	0.785	0.970	1.10	0.50	1.16	297.68	1.61		1	100	1.00	1.30	1.00	298.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	294.29	3.35	1.14	110	0.794	0.970	1.14	0.50	1.15	320.23	1.60		1	100	1.00	1.35	1.00	321.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	316.23	3.17	1.00	110	0.803	0.970	1.00	0.50	1.15	342.22	1.54		1	100	1.00	1.40	1.00	343.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	316.63	3.35	1.06	110	0.812	0.969	1.06	0.50	1.14	340.73	1.56		1	100	1.00	1.45	1.00	342.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	294.75	3.41	1.16	110	0.821	0.969	1.16	0.50	1.14	315.37	1.61		1	100	1.00	1.50	1.00	316.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	278.02	3.48	1.25	110	0.830	0.969	1.25	0.50	1.13	296.09	1.65		1	100	1.01	1.55	1.00	299.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	279.30	3.53	1.26	110	0.839	0.968	1.27	0.51	1.12	295.90	1.66		1	100	1.01	1.55	1.00	299.6	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	288.00	3.58	1.24	110	0.848	0.968	1.25	0.50	1.12	303.25	1.65		1	100	1.00	1.55	1.00	304.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	292.46	3.59	1.23	110	0.857	0.967	1.23	0.50	1.11	306.22	1.64		1	100	1.00	1.55	1.00	307.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	272.56	3.89	1.43	110	0.866	0.967	1.43	0.52	1.11	285.01	1.71		1	100	1.04	1.55	1.00	298.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	276.67	3.59	1.30	110	0.875	0.967	1.30	0.51	1.10	287.18	1.67		1	100	1.02	1.55	1.00	294.2	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	273.17	3.92	1.44	110	0.884	0.966	1.44	0.52	1.10	282.65	1.71		1	100	1.05	1.55	1.00	297.2	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	281.27	3.86	1.37	110	0.893	0.966	1.38	0.52	1.09	289.18	1.69		1	100	1.03	1.55	1.00	299.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	308.06	4.92	1.60	110	0.902	0.966	1.60	0.53	1.09	315.65	1.72		1	100	1.05	1.55	1.00	334.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	298.32	4.41	1.48	110	0.911	0.965	1.48	0.52	1.08	303.79	1.71		1	100	1.04	1.55	1.00	317.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	317.60	4.08	1.28	110	0.920	0.965	1.29	0.50	1.07	320.96	1.64		1	100	1.00	1.55	1.00	321.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	332.36	5.17	1.56	110	0.929	0.965	1.56	0.52	1.07	335.03	1.70		1	100	1.04	1.55	1.00	349.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	338.43	6.36	1.88	110	0.938	0.964	1.88	0.54	1.07	340.25	1.76		1	100	1.08	1.55	1.00	369.5	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	307.99	5.82	1.89	110	0.947	0.964	1.90	0.55	1.06	308.23	1.79		1	100	1.10	1.55	1.00	340.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	269.28	4.43	1.64	110	0.956	0.963	1.65	0.54	1.06	267.85	1.78		1	100	1.09	1.55	1.00	292.8	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	257.64	3.38	1.31	110	0.965	0.963	1.32	0.52	1.05	254.47	1.71		1	100	1.05	1.55	1.00	267.0	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	229.45	3.27	1.42	110	0.974	0.963	1.43	0.54	1.05	225.75	1.77		1	100	1.09	1.55	1.00	246.1	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	185.15	3.15	1.70	110	0.983	0.962	1.71	0.58	1.04	181.55	1.89		1	100	1.18	1.55	1.00	215.2	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	157.27	2.43	1.54	110	0.992	0.962	1.55	0.58	1.04	153.30	1.91		1	95	1.20	1.55	1.00	184.1	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	172.27	2.97	1.72	110	1.001	0.962	1.73	0.58	1.03	167.15	1.92		1	98	1.21	1.55	1.00	202.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	148.03	3.30	2.23	110	1.010	0.961	2.24	0.62	1.03	142.99	2.05		1	92	1.37		1.00	195.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	212.42	3.34	1.57	110	1.020	0.961	1.58	0.56	1.02	203.98	1.83		1	100	1.13	1.00	1.00	231.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	249.14	2.81	1.13	110	1.029	0.960	1.13	0.51	1.01	237.92	1.68		1	100	1.02	1.05	1.00	244.5	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	254.49	2.69	1.06	110	1.038	0.960	1.06	0.50	1.01	241.92	1.65		1	100	1.01	1.10	1.00	244.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	249.73	2.74	1.10	110	1.047	0.960	1.10	0.51	1.01	236.35	1.67		1	100	1.02	1.15	1.00	241.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	253.62	2.91	1.15	110	1.056	0.959	1.15	0.51	1.00	239.00	1.68		1	100	1.03	1.20	1.00	246.3	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	260.64	3.02	1.16	110	1.065	0.959	1.16	0.51	1.00	244.56	1.68		1	100	1.02	1.25	1.00	251.5	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	261.87	3.10	1.18	110	1.074	0.958	1.19	0.51	0.99	244.64	1.69		1	100	1.03	1.30	1.00	252.7	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	270.64	2.97	1.10	110	1.083	0.958	1.10	0.50	0.99	251.84	1.65		1	100	1.01	1.35	1.00	254.3	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	280.85	3.04	1.08	110	1.092	0.957	1.09	0.50	0.98	260.31	1.64		1	100	1.00	1.40	1.00	261.3	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	294.22	3.15	1.07	110	1.101	0.957	1.07	0.50	0.98	271.62	1.62		1	100	1.00	1.45	1.00	272.6	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-5
Plot: 5

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0
Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Probab Avg	Total Induced Subsidence (inches)
0%	Max
0%	0.2

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	7.20	0.07	0.96	110	0.009	1.000	0.96	0.82	1.70	11.55	2.69		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
0.33	11.97	0.11	0.92	110	0.018	1.000	0.92	0.75	1.70	19.20	2.49		1	8	2.70		1.00	51.9	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
0.49	16.98	0.15	0.86	110	0.027	1.000	0.86	0.71	1.70	27.24	2.34		1	23	2.08		1.00	56.7	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.66	18.41	0.17	0.90	110	0.036	1.000	0.90	0.70	1.70	29.52	2.32		1	26	2.01		1.00	59.5	1.00	0.100	0.100	0.323	Non-Liq.	Non-Liq.	0.00
0.82	16.13	0.16	1.01	110	0.045	1.000	1.01	0.73	1.70	25.85	2.40		1	21	2.29		1.00	59.2	1.00	0.099	0.099	0.323	Non-Liq.	Non-Liq.	0.00
0.98	12.95	0.14	1.06	110	0.054	1.000	1.06	0.75	1.70	20.72	2.49		1	12	2.71		1.00	56.1	1.00	0.096	0.096	0.323	Non-Liq.	Non-Liq.	0.00
1.15	10.49	0.11	1.05	110	0.063	0.999	1.05	0.78	1.70	16.75	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
1.31	10.49	0.11	1.05	110	0.072	0.999	1.06	0.78	1.70	16.74	2.57		1	3	3.13		1.00	52.5	1.00	0.093	0.093	0.323	Non-Liq.	Non-Liq.	0.00
1.48	9.50	0.14	1.52	110	0.081	0.999	1.53	0.81	1.70	15.13	2.69		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.64	11.89	0.21	1.77	110	0.090	0.998	1.79	0.80	1.70	18.96	2.64		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.80	17.29	0.33	1.93	110	0.099	0.998	1.94	0.77	1.70	27.62	2.53		1	23	2.91		1.00	80.4	1.00	0.128	0.128	0.323	Non-Liq.	Non-Liq.	0.00
1.97	29.55	0.52	1.75	110	0.108	0.998	1.76	0.70	1.70	47.31	2.32		1	46	2.00		1.00	94.8	1.00	0.159	0.159	0.322	Non-Liq.	Non-Liq.	0.00
2.13	29.26	0.52	1.76	110	0.117	0.997	1.77	0.70	1.70	46.83	2.32		1	45	2.02		1.00	94.6	1.00	0.159	0.159	0.322	Non-Liq.	Non-Liq.	0.00
2.30	27.77	0.48	1.74	110	0.126	0.997	1.75	0.71	1.70	44.42	2.34		1	43	2.07		1.00	92.1	1.00	0.153	0.153	0.322	Non-Liq.	Non-Liq.	0.00
2.46	25.48	0.44	1.74	110	0.135	0.996	1.75	0.72	1.70	40.72	2.37		1	40	2.18		1.00	88.8	1.00	0.145	0.145	0.322	Non-Liq.	Non-Liq.	0.00
2.62	22.54	0.40	1.76	110	0.144	0.996	1.77	0.73	1.70	35.99	2.41		1	34	2.36		1.00	85.1	1.00	0.137	0.137	0.322	Non-Liq.	Non-Liq.	0.00
2.79	20.15	0.37	1.83	110	0.153	0.996	1.85	0.75	1.70	32.13	2.46		1	30	2.58		1.00	83.0	1.00	0.133	0.133	0.322	Non-Liq.	Non-Liq.	0.00
2.95	17.63	0.42	2.37	110	0.162	0.995	2.39	0.78	1.70	28.07	2.58		1	24	3.19		1.00	89.5	1.00	0.147	0.147	0.322	Non-Liq.	Non-Liq.	0.00
3.12	13.94	0.43	3.06	110	0.171	0.995	3.10	0.83	1.70	22.12	2.73		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
3.28	11.33	0.42	3.69	110	0.180	0.994	3.75	0.86	1.70	17.92	2.85		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.44	10.79	0.35	3.27	110	0.189	0.994	3.33	0.86	1.70	17.03	2.84		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
3.61	19.14	0.32	1.69	110	0.198	0.994	1.71	0.75	1.70	30.44	2.46		1	27	2.58		1.00	78.4	1.00	0.125	0.125	0.321	Non-Liq.	Non-Liq.	0.00
3.77	28.87	0.35	1.20	110	0.208	0.993	1.21	0.68	1.70	46.06	2.23		1	45	1.74		1.00	79.9	1.00	0.127	0.127	0.321	Non-Liq.	Non-Liq.	0.00
3.94	37.13	0.44	1.18	110	0.217	0.993	1.19	0.65	1.70	59.31	2.13		1	55	1.52		1.00	90.2	1.00	0.148	0.148	0.321	Non-Liq.	Non-Liq.	0.00
4.10	42.19	0.52	1.24	110	0.226	0.993	1.25	0.64	1.70	67.43	2.10		1	60	1.46		1.00	98.5	1.00	0.169	0.169	0.321	Non-Liq.	Non-Liq.	0.00
4.27	42.88	0.62	1.43	110	0.235	0.992	1.44	0.65	1.70	68.52	2.14		1	61	1.53		1.00	104.7	1.00	0.187	0.187	0.321	Non-Liq.	Non-Liq.	0.00
4.43	42.87	0.65	1.51	110	0.244	0.992	1.52	0.65	1.70	68.49	2.15		1	61	1.56		1.00	106.9	1.00	0.194	0.194	0.321	Non-Liq.	Non-Liq.	0.00
4.59	43.05	0.62	1.44	110	0.253	0.991	1.44	0.65	1.70	68.77	2.14		1	61	1.53		1.00	105.0	1.00	0.188	0.188	0.320	Non-Liq.	Non-Liq.	0.00
4.76	40.55	0.64	1.58	110	0.262	0.991	1.59	0.66	1.70	64.74	2.18		1	59	1.63		1.00	105.4	1.00	0.189	0.189	0.320	Non-Liq.	Non-Liq.	0.00
4.92	37.17	0.59	1.58	110	0.271	0.991	1.60	0.67	1.70	59.29	2.21		1	55	1.70		1.00	101.0	1.00	0.176	0.176	0.320	Non-Liq.	Non-Liq.	0.00
5.09	45.41	0.55	1.21	110	0.280	0.990	1.22	0.63	1.70	72.52	2.07		1	63	1.41		1.00	102.1	1.00	0.179	0.179	0.320	Non-Liq.	Non-Liq.	0.00
5.25	49.21	0.55	1.12	110	0.289	0.990	1.13	0.62	1.70	78.61	2.02		1	67	1.33		1.00	104.9	1.00	0.187	0.187	0.320	Non-Liq.	Non-Liq.	0.00
5.41	48.56	0.56	1.16	110	0.298	0.989	1.16	0.62	1.70	77.55	2.04		1	66	1.35		1.00	104.9	1.00	0.187	0.187	0.320	Non-Liq.	Non-Liq.	0.00
5.58	48.19	0.59	1.22	110	0.307	0.989	1.23	0.62	1.70	76.94	2.06		1	66	1.38		1.00	106.1	1.00	0.191	0.191	0.320	Non-Liq.	Non-Liq.	0.00
5.74	48.82	0.59	1.20	110	0.316	0.989	1.21	0.62	1.70	77.94	2.05		1	66	1.37		1.00	106.5	1.00	0.192	0.192	0.320	Non-Liq.	Non-Liq.	0.00
5.91	49.59	0.58	1.17	110	0.325	0.988	1.18	0.62	1.70	79.16	2.03		1	67	1.35		1.00	106.6	1.00	0.193	0.193	0.319	Non-Liq.	Non-Liq.	0.00
6.07	49.01	0.58	1.19	110	0.334	0.988	1.19	0.62	1.70	78.21	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.319	Non-Liq.	Non-Liq.	0.00
6.23	48.87	0.58	1.19	110	0.343	0.988	1.20	0.62	1.70	77.97	2.04		1	67	1.36		1.00	106.2	1.00	0.191	0.191	0.319	Non-Liq.	Non-Liq.	0.00
6.40	48.92	0.59	1.20	110	0.352	0.987	1.21	0.62	1.70	78.04	2.05		1	67	1.37		1.00	106.5	1.00	0.192	0.192	0.319	Non-Liq.	Non-Liq.	0.00
6.56	50.19	0.62	1.23	110	0.361	0.987	1.24	0.62	1.70	80.07	2.04		1	68	1.36		1.00	109.1	1.00	0.201	0.201	0.319	Non-Liq.	Non-Liq.	0.00
6.73	54.54	0.64	1.17	110	0.370	0.986	1.17	0.61	1.70	87.04	2.00		1	71	1.30		1.00	113.3	1.00	0.215	0.215	0.319	Non-Liq.	Non-Liq.	0.00
6.89	60.79	0.78	1.29	110	0.379	0.986	1.29	0.61	1.70	97.07	1.99		1	76	1.29	0.90	1.02	127.9	1.00	0.275	0.275	0.319	Non-Liq.	Non-Liq.	0.00
7.05	70.21	1.20	1.71	110	0.388	0.986	1.72	0.62	1.70	112.19	2.03		1	82	1.35		1.00	151.2	1.00	0.401	0.401	0.319	Non-Liq.	Non-Liq.	0.00
7.22	86.10	1.28	1.49	110	0.397	0.985	1.49	0.59	1.70	137.71	1.93		1	90	1.22	1.00	1.00	168.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	112.25	1.15	1.02	110	0.406	0.985	1.02	0.53	1.66	175.45	1.74		1	100	1.06	1.05	1.00	187.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	123.77	1.31	1.06	110	0.415	0.985	1.06	0.52	1.63	190.49	1.72		1	100	1.05	1.10	1.00	201.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	123.77	1.31	1.06	110	0.424	0.984	1.06	0.53	1.62	188.51	1.73		1	100	1.05	1.15	1.00	199.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	137.24	1.24	0.90	110	0.433	0.984	0.90	0.50	1.57	202.88	1.65		1	100	1.01	1.20	1.00	204.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	143.26	1.17	0.82	110	0.442	0.984	0.82	0.50	1.55	208.83	1.61		1	100	1.00	1.25	1.00	209.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	133.59	0.95	0.71	110	0.451	0.983	0.72	0.50	1.53	192.72	1.60		1	100	1.00	1.30	1.00	193.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	119.63	0.65	0.54	110	0.460	0.983	0.54	0.50	1.52	170.80	1.56		1	99	1.00	1.35	1.00	171.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	108.61	0.64	0.59	110	0.469	0.982	0.59	0.50	1.50	153.49	1.62		1	95	1.00	1.40	1.00	154.1	1.00	0.420	0.420	0.318	Non-Liq.	Non-Liq.	0.00
8.69	97.77	0.53	0.54	110	0.478	0.982	0.54	0.50	1.49	136.81	1.64		1	90	1.00	1.45	1.00	136.9	1.00	0.318	0.318	0.317	Non-Liq.	Non-Liq.	0.00
8.86	91.00	0.48	0.52	110	0.487	0.982	0.53	0.51	1.48	126.66	1.66		1	87	1.01	1.50	1.00	128.5	1.00	0.277	0.277	0.317	Non-Liq.	Non-Liq.	0.00
9.02	88.06	0.54	0.61	110	0.496	0.981	0.62	0.52	1.48	122.80	1.71		1	85	1.05	1.55	1.00	128.8	1.00	0.279	0.279	0.317	Non-Liq.	Non-Liq.	0.00
9.19	80.39	0.53	0.66	110	0.505	0.981	0.66	0.54	1.49	112.21	1.76		1	82	1.08	1.60	1.00	121.5	1.00	0.247	0.247	0.317	Non-Liq.	Non-Liq.	0.00
9.35	57.91	0.50	0.87	110	0.514	0.981	0.88	0.59	1.53	83.01	1.94		1	69	1.23	1.65	1.00	102.3	1.00	0.180	0.180	0.317	Non-Liq.	Non-Liq.	0.00
9.51	67.62	0.54	0.79	110	0.523	0.980	0.80	0.57	1.49	94.64	1.87		1	75	1.16	1.70	1.00	110.3	1.00	0.205	0.205	0.317	Non-Liq.	Non-Liq.	0.00
9.68	67.40	0.52	0.77	110	0.532	0.980	0.78	0.57	1.48	93.34	1.87		1	74	1.16	1.75	1.00	108.5	1.00	0.199	0.199	0.317	Non-Liq.	Non-Liq.	0.00
9.84	67.98	0.51	0.75	110	0.541	0.980	0.76	0.57	1.46	93.14	1.86		1	74	1.15	1.80	1.00	107.8	1.00	0.197	0.197	0.317	Non-Liq.	Non-Liq.	0.00
10.01	65.93	0.45	0.68	110	0.550	0.979	0.69	0.56	1.44	89.29	1.85		1	72	1.15	1.85	1.00	102.7	1.00	0.181	0.181	0.316	Non-Liq.	Non-Liq.	0.00
10.17	65.84	0.44	0.67	110	0.559	0.979	0.68	0.56	1.43	88.34	1.85		1	72	1.15	1.90	1.00	101.6	1.00	0.178	0.178	0.316	Non-Liq.	Non-Liq.	0.00
10.33	64.79	0.46	0.70	110	0.568	0.979	0.71	0.57	1.42	86.44	1.87		1	71	1.16	1.95	1.00	100.8	1.00	0.175	0.175	0.316	Non-Liq.	Non-Liq.	0.00
10.50	65.15	0.49	0.74	110	0.577	0.978	0.75	0.57	1.42	86.37	1.88		1	71	1.17	2.00	1.00	101.9	1.00	0.178	0.178	0.316	Non-Liq.	Non-Liq.	0.00
10.66	65.57	0.48	0.74	110	0.586	0.978	0.74	0.57	1.40	86.12	1.88		1	71	1.17	2.05	1.00	101.4	1.00	0.177	0.177	0.316	Non-Liq.	Non-Liq.	0.00
10.83	66.76	0.49	0.73	110	0.595	0.978	0.74	0.57	1.39	86.85	1.88		1	71	1.17	2.10	1.00	101.9	1.00	0.178	0.178	0.316	Non-Liq.	Non-Liq.	0.00
10.99	69.51	0.50	0.72	110	0.604	0.977	0.73	0.57	1.37	89.46	1.86		1	72	1.16	2.15	1.00	103.8	1.00	0.184	0.184	0.316	Non-Liq.	Non-Liq.	0.00
11.15	72.61	0.54	0.74	110	0.614	0.977	0.74	0.57	1.36	92.59	1.86		1	74	1.15	2.20	1.00	107.0	1.00	0.194	0.194	0.316	Non-Liq.	Non-Liq.	0.00
11.32	77.76	0.57	0.73	110	0.623	0.977	0.73	0.56	1.34	98.03	1.83		1	76	1.13	2.25	1.00	111.4	1.00	0.209	0.209	0.316	Non-Liq.	Non-Liq.	0.00
11.48	84.82	0.65	0.76	110	0.632	0.976	0.77	0.55	1.33	105.90	1.82		1	79	1.12	2.30	1.00	119.2	1.00	0.238	0.238	0.315	Non-Liq.	Non-Liq.	0.00
11.65	92.40	0.51	0.55	110	0.641	0.976	0.56	0.52	1.30	112.72	1.72		1	82	1.05	2.35	1.00	118.6	1.00	0.235	0.235	0.315	Non-Liq.	Non-Liq.	0.00
11.81	100.55	0.65	0.64	110	0.650	0.975	0.65	0.53	1.29	122.02	1.73		1	85	1.06	2.40	1.00	129.2	1.00	0.281	0.281	0.315	Non-Liq.	Non-Liq.	0.00
11.98	108.89	0.74	0.67	110	0.659	0.975	0.68	0.52	1.28	131.02	1.71		1	88	1.05	2.45	1.00	137.7	1.00	0.323	0.323	0.315	Non-Liq.	Non-Liq.	0.00
12.14	120.07	0.79	0.66	110	0.668	0.975	0.66	0.51	1.27	142.80	1.68		1	92	1.02	2.50	1.00	146.6	1.00	0.373	0.373	0.315	Non-Liq.	Non-Liq.	0.00
12.30	132.01	0.89	0.68	110	0.677	0.974	0.68	0.50	1.25	155.55	1.66		1	95	1.01	2.55	1.00	157.3	1.00	0.442	0.442	0.315	Non-Liq.	Non-Liq.	0.00
12.47	144.08	1.04	0.72	110	0.686	0.974	0.72	0.50	1.24	168.48	1.65		1	98	1.00	2.60	1.00	169.2	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	152.23	1.19	0.78	110	0.695	0.974	0.79	0.50	1.24	177.08	1.65		1	100	1.01	2.65	1.00	178.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	162.83	1.20	0.74	110	0.704	0.973	0.74	0.50	1.23	187.89	1.62		1	100	1.00	2.70	1.00	188.6	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	177.02	1.56	0.88	110	0.713	0.973	0.88	0.50	1.22	203.18	1.65		1	100	1.00	2.75	1.00	204.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	188.21	1.70	0.90	110	0.722	0.973	0.90	0.50	1.21	214.55	1.64		1	100	1.00	2.80	1.00	215.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	199.52	1.82	0.91	110	0.731	0.972	0.92	0.50	1.20	226.07	1.63		1	100	1.00	2.85	1.00	226.9	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	206.33	1.96	0.95	110	0.740	0.972	0.95	0.50	1.20	232.38	1.63		1	100	1.00	2.90	1.00	233.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	209.22	1.92	0.92	110	0.749	0.972	0.92	0.50	1.19	234.21	1.62		1	100	1.00	2.95	1.00	235.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	216.92	2.11	0.97	110	0.758	0.971	0.98	0.50	1.18	241.40	1.63		1	100	1.00	3.00	1.00	242.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	220.68	1.88	0.85	110	0.767	0.971	0.85	0.50	1.17	244.14	1.58		1	100	1.00	3.05	1.00	245.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	225.50	2.72	1.21	110	0.776	0.971	1.21	0.51	1.17	249.15	1.69		1	100	1.03	3.10	1.00	257.6	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	226.97	2.77	1.22	110	0.785	0.970	1.22	0.52	1.17	249.35	1.69		1	100	1.03	3.15	1.00	258.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	260.76	3.44	1.32	110	0.794	0.970	1.32	0.51	1.16	284.70	1.68		1	100	1.03	3.20	1.00	293.3	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	273.34	5.44	1.99	110	0.803	0.970	2.00	0.55	1.16	300.02	1.82		1	100	1.12	3.25	1.00	336.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	293.55	5.65	1.92	110	0.812	0.969	1.93	0.54	1.15	319.57	1.79		1	100	1.10	3.30	1.00	352.3	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	441.40	7.59	1.72	110	0.821	0.969	1.72	0.51	1.14	473.40	1.66		1	100	1.01	3.35	1.00	479.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	347.82	7.25	2.09	110	0.830	0.969	2.09	0.54	1.14	374.13	1.78		1	100	1.09	3.40	1.00	410.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	302.88	7.87	2.60	110	0.839	0.968	2.61	0.58	1.14	326.31	1.90		1	100	1.18	3.45	1.00	387.9	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	275.99	6.43	2.33	110	0.848	0.968	2.34	0.57	1.13	295.07	1.88		1	100	1.17	3.50	1.00	346.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	376.75	5.16	1.37	110	0.857	0.967	1.37	0.50	1.11	394.73	1.61		1	100	1.00	3.55	1.00	396.2	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	321.62	5.68	1.76	110	0.866	0.967	1.77	0.53	1.11	337.17	1.74		1	100	1.07	3.60	1.00	361.3	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	321.75	3.28	1.02	110	0.875	0.967	1.02	0.50	1.10	333.46	1.55		1	100	1.00	3.65	1.00	334.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	344.32	3.11	0.90	110	0.884	0.966	0.90	0.50	1.09	355.08	1.49		1	100	1.00	3.70	1.00	356.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	348.92	2.94	0.84	110	0.893	0.966	0.84	0.50	1.09	358.01	1.47		1	100	1.00	3.75	1.00	359.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	351.59	2.77	0.79	110	0.902	0.966	0.79	0.50	1.08	358.94	1.44		1	100	1.00	3.80	1.00	360.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	366.52	2.53	0.69	110	0.911	0.965	0.69	0.50	1.08	372.35	1.39		1	100	1.00	3.85	1.00	373.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	381.08	3.05	0.80	110	0.920	0.965	0.80	0.50	1.07	385.27	1.43		1	100	1.00	3.90	1.00	386.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	413.82	3.60	0.87	110	0.929	0.965	0.87	0.50	1.07	416.40	1.44		1	100	1.00	3.95	1.00	418.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	452.15	4.24	0.94	110	0.938	0.964	0.94	0.50	1.06	452.86	1.44		1	100	1.00	4.00	1.00	454.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	427.40	3.95	0.92	110	0.947	0.964	0.93	0.50	1.06	425.97	1.45		1	100	1.00	4.05	1.00	427.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	404.51	3.69	0.91	110	0.956	0.963	0.91	0.50	1.05	401.19	1.46		1	100	1.00	4.10	1.00	402.7	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	425.81	4.21	0.99	110	0.965	0.963	0.99	0.50	1.05	420.37	1.48		1	100	1.00	4.15	1.00	421.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	438.64	4.22	0.96	110	0.974	0.963	0.96	0.50	1.04	431.05	1.47		1	100	1.00	4.20	1.00	432.7	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	461.57	3.57	0.77	110	0.983	0.962	0.78	0.50	1.04	451.54	1.38		1	100	1.00	4.25	1.00	453.2	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	498.99	4.53	0.91	110	0.992	0.962	0.91	0.50	1.03	485.99	1.42		1	100	1.00	4.30	1.00	487.8	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	579.29	5.58	0.96	110	1.001	0.962	0.96	0.50	1.03	561.80	1.40		1	100	1.00	4.35	1.00	563.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	590.35	3.67	0.62	110	1.010	0.961	0.62	0.50	1.02	569.97	1.24		1	100	1.00	4.40	1.00	572.1	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	576.43	4.80	0.83	110	1.020	0.961	0.83	0.50	1.02	554.03	1.35		1	100	1.00	4.45	1.00	556.1	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	606.56	5.65	0.93	110	1.029	0.960	0.93	0.50	1.01	580.47	1.38		1	100	1.00	4.50	1.00	582.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	565.11	6.10	1.08	110	1.038	0.960	1.08	0.50	1.01	538.37	1.46		1	100	1.00	4.55	1.00	540.4	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	544.74	8.59	1.58	110	1.047	0.960	1.58	0.50	1.01	516.68	1.61		1	100	1.00	4.60	1.00	518.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	567.96	6.47	1.14	110	1.056	0.959	1.14	0.50	1.00	536.43	1.48		1	100	1.00	4.65	1.00	538.4	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	526.36	6.42	1.22	110	1.065	0.959	1.22	0.50	1.00	494.95	1.52		1	100	1.00	4.70	1.00	496.8	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	450.76	4.60	1.02	110	1.074	0.958	1.02	0.50	0.99	421.92	1.49		1	100	1.00	4.75	1.00	423.5	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	418.45	3.90	0.93	110	1.083	0.958	0.94	0.50	0.99	389.97	1.48		1	100	1.00	4.80	1.00	391.4	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	376.34	3.82	1.02	110	1.092	0.957	1.02	0.50	0.98	349.16	1.54		1	100	1.00	4.85	1.00	350.5	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	355.23	3.87	1.09	110	1.101	0.957	1.09	0.50	0.98	328.16	1.58		1	100	1.00	4.90	1.00	329.4	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-6A
Plot: 6

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Probab Avg	Total Induced Subsidence (inches)
0%	Max
Required SF: 1.50	0.1
Min SF of Liquefiable Layers: 0.00	0%
Avg SF of Liquefiable Layers: 0.00	

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Overide	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	6.69	0.01	0.21	110	0.009	1.000	0.21	0.76	1.70	10.74	2.50		1	0	1.00		1.00	10.7	1.00	0.059	0.059	0.323	Non-Liq.	Non-Liq.	0.00
0.33	14.12	0.04	0.28	110	0.018	1.000	0.28	0.67	1.70	22.66	2.22		1	15	1.00		1.00	22.7	1.00	0.069	0.069	0.323	Non-Liq.	Non-Liq.	0.00
0.49	16.59	0.09	0.55	110	0.027	1.000	0.56	0.69	1.70	26.61	2.26		1	22	1.83		1.00	48.7	1.00	0.091	0.091	0.323	Non-Liq.	Non-Liq.	0.00
0.66	21.13	0.18	0.84	110	0.036	1.000	0.84	0.68	1.70	33.89	2.25		1	32	1.81		1.00	61.3	1.00	0.101	0.101	0.323	Non-Liq.	Non-Liq.	0.00
0.82	29.41	0.29	0.98	110	0.045	1.000	0.98	0.66	1.70	47.18	2.17		1	46	1.59		1.00	75.1	1.00	0.119	0.119	0.323	Non-Liq.	Non-Liq.	0.00
0.98	35.60	0.35	0.99	110	0.054	1.000	0.99	0.64	1.70	57.12	2.10		1	54	1.46		1.00	83.2	1.00	0.134	0.134	0.323	Non-Liq.	Non-Liq.	0.00
1.15	34.08	0.35	1.03	110	0.063	0.999	1.03	0.65	1.70	54.66	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.323	Non-Liq.	Non-Liq.	0.00
1.31	34.08	0.35	1.03	110	0.072	0.999	1.04	0.65	1.70	54.64	2.13		1	52	1.51		1.00	82.3	1.00	0.132	0.132	0.323	Non-Liq.	Non-Liq.	0.00
1.48	30.11	0.33	1.11	110	0.081	0.999	1.11	0.66	1.70	48.25	2.19		1	47	1.64		1.00	79.2	1.00	0.126	0.126	0.323	Non-Liq.	Non-Liq.	0.00
1.64	28.15	0.27	0.96	110	0.090	0.998	0.96	0.66	1.70	45.09	2.18		1	44	1.62		1.00	72.8	1.00	0.116	0.116	0.323	Non-Liq.	Non-Liq.	0.00
1.80	29.07	0.35	1.20	110	0.099	0.998	1.20	0.67	1.70	46.55	2.22		1	45	1.72		1.00	80.2	1.00	0.128	0.128	0.323	Non-Liq.	Non-Liq.	0.00
1.97	26.19	0.39	1.47	110	0.108	0.998	1.48	0.70	1.70	41.91	2.31		1	41	1.99		1.00	83.4	1.00	0.134	0.134	0.322	Non-Liq.	Non-Liq.	0.00
2.13	20.41	0.42	2.07	110	0.117	0.997	2.08	0.75	1.70	32.61	2.49		1	30	2.72		1.00	88.5	1.00	0.145	0.145	0.322	Non-Liq.	Non-Liq.	0.00
2.30	15.45	0.44	2.83	110	0.126	0.997	2.85	0.81	1.70	24.62	2.67		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.46	12.62	0.37	2.95	110	0.135	0.996	2.98	0.83	1.70	20.06	2.75		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.62	13.50	0.27	2.01	110	0.144	0.996	2.04	0.80	1.70	21.46	2.63		0						1.00			0.322	Non-Liq.	Non-Liq.	0.00
2.79	20.18	0.31	1.56	110	0.153	0.996	1.57	0.73	1.70	32.18	2.42		1	30	2.39		1.00	77.0	1.00	0.123	0.123	0.322	Non-Liq.	Non-Liq.	0.00
2.95	25.28	0.31	1.23	110	0.162	0.995	1.23	0.69	1.70	40.36	2.28		1	39	1.88		1.00	76.0	1.00	0.121	0.121	0.322	Non-Liq.	Non-Liq.	0.00
3.12	31.76	0.36	1.12	110	0.171	0.995	1.13	0.66	1.70	50.76	2.18		1	49	1.61		1.00	81.6	1.00	0.131	0.131	0.322	Non-Liq.	Non-Liq.	0.00
3.28	35.56	0.38	1.08	110	0.180	0.994	1.09	0.65	1.70	56.85	2.13		1	53	1.50		1.00	85.5	1.00	0.138	0.138	0.321	Non-Liq.	Non-Liq.	0.00
3.44	40.16	0.39	0.98	110	0.189	0.994	0.98	0.63	1.70	64.22	2.06		1	58	1.38		1.00	88.8	1.00	0.145	0.145	0.321	Non-Liq.	Non-Liq.	0.00
3.61	45.45	0.46	1.00	110	0.198	0.994	1.01	0.61	1.70	72.71	2.02		1	64	1.33		1.00	96.5	1.00	0.164	0.164	0.321	Non-Liq.	Non-Liq.	0.00
3.77	52.79	0.51	0.96	110	0.208	0.993	0.97	0.60	1.70	84.49	1.96		1	70	1.25	0.65	1.12	118.5	1.00	0.235	0.235	0.321	Non-Liq.	Non-Liq.	0.00
3.94	58.72	0.56	0.95	110	0.217	0.993	0.95	0.58	1.70	94.00	1.92		1	74	1.20	0.70	1.12	127.1	1.00	0.271	0.271	0.321	Non-Liq.	Non-Liq.	0.00
4.10	64.33	0.60	0.94	110	0.226	0.993	0.94	0.57	1.70	103.00	1.88		1	78	1.17	0.75	1.12	135.7	1.00	0.312	0.312	0.321	Non-Liq.	Non-Liq.	0.00
4.27	69.66	0.83	1.19	110	0.235	0.992	1.19	0.59	1.70	111.55	1.93		1	81	1.21	0.80	1.12	151.9	1.00	0.406	0.406	0.321	Non-Liq.	Non-Liq.	0.00
4.43	74.65	1.28	1.71	110	0.244	0.992	1.72	0.61	1.70	119.56	2.01		1	84	1.32		1.00	157.6	1.00	0.444	0.444	0.321	Non-Liq.	Non-Liq.	0.00
4.59	78.74	2.11	2.68	110	0.253	0.991	2.69	0.65	1.70	126.11	2.14		1	86	1.54		1.00	194.3	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
4.76	95.41	2.01	2.11	110	0.262	0.991	2.12	0.61	1.70	152.88	2.01		1	94	1.31		1.00	200.9	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
4.92	90.35	1.38	1.53	110	0.271	0.991	1.54	0.58	1.70	144.74	1.92		1	92	1.21	1.00	1.00	175.8	1.00	Infin.	0.000	0.320	Non-Liq.	Non-Liq.	0.00
5.09	73.79	0.57	0.78	110	0.280	0.990	0.78	0.54	1.70	118.12	1.79		1	84	1.10	1.05	1.00	130.0	1.00	0.285	0.285	0.320	Non-Liq.	Non-Liq.	0.00
5.25	64.99	0.41	0.63	110	0.289	0.990	0.63	0.54	1.70	103.96	1.78		1	78	1.09	1.10	1.00	113.6	1.00	0.216	0.216	0.320	Non-Liq.	Non-Liq.	0.00
5.41	60.11	0.48	0.80	110	0.298	0.989	0.81	0.57	1.70	96.11	1.87		1	75	1.16	1.15	1.00	111.7	1.00	0.210	0.210	0.320	Non-Liq.	Non-Liq.	0.00
5.58	57.62	0.71	1.23	110	0.307	0.989	1.24	0.61	1.70	92.09	2.00		1	73	1.30	1.20	1.00	120.0	1.00	0.241	0.241	0.320	Non-Liq.	Non-Liq.	0.00
5.74	60.32	0.70	1.16	110	0.316	0.989	1.16	0.60	1.70	96.42	1.97		1	75	1.26	1.25	1.00	121.7	1.00	0.247	0.247	0.320	Non-Liq.	Non-Liq.	0.00
5.91	59.79	0.67	1.11	110	0.325	0.988	1.12	0.60	1.70	95.55	1.96		1	75	1.25	1.30	1.00	119.7	1.00	0.239	0.239	0.319	Non-Liq.	Non-Liq.	0.00
6.07	56.99	0.42	0.74	110	0.334	0.988	0.75	0.57	1.70	91.04	1.86		1	73	1.16	1.35	1.00	105.8	1.00	0.190	0.190	0.319	Non-Liq.	Non-Liq.	0.00
6.23	64.88	0.50	0.77	110	0.343	0.988	0.77	0.56	1.70	103.70	1.83		1	78	1.13	1.40	1.00	117.4	1.00	0.230	0.230	0.319	Non-Liq.	Non-Liq.	0.00
6.40	81.28	0.52	0.64	110	0.352	0.987	0.64	0.52	1.70	130.04	1.70		1	88	1.04	1.45	1.00	135.6	1.00	0.312	0.312	0.319	Non-Liq.	Non-Liq.	0.00
6.56	88.72	0.58	0.65	110	0.361	0.987	0.66	0.51	1.70	141.98	1.68		1	91	1.02	1.50	1.00	145.7	1.00	0.368	0.368	0.319	Non-Liq.	Non-Liq.	0.00
6.73	90.02	0.70	0.78	110	0.370	0.986	0.78	0.52	1.70	144.05	1.72		1	92	1.05	1.55	1.00	151.9	1.00	0.406	0.406	0.319	Non-Liq.	Non-Liq.	0.00
6.89	95.98	0.75	0.78	110	0.379	0.986	0.79	0.52	1.70	153.61	1.70		1	95	1.04	1.60	1.00	160.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	106.17	0.82	0.77	110	0.388	0.986	0.77	0.51	1.67	166.59	1.67		1	98	1.02	1.65	1.00	170.1	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	120.42	0.87	0.72	110	0.397	0.985	0.72	0.50	1.63	185.20	1.62		1	100	1.00	1.70	1.00	185.9	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	147.55	0.97	0.66	110	0.406	0.985	0.66	0.50	1.61	224.51	1.53		1	100	1.00	1.75	1.00	225.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	167.64	1.10	0.66	110	0.415	0.985	0.66	0.50	1.60	252.36	1.49		1	100	1.00	1.80	1.00	253.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	167.64	1.10	0.66	110	0.424	0.984	0.66	0.50	1.58	249.65	1.49		1	100	1.00	1.85	1.00	250.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	175.94	1.23	0.70	110	0.433	0.984	0.70	0.50	1.56	259.28	1.50		1	100	1.00	1.90	1.00	260.3	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	183.17	1.23	0.67	110	0.442	0.984	0.67	0.50	1.55	267.18	1.48		1	100	1.00	1.95	1.00	268.2	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	189.37	0.94	0.50	110	0.451	0.983	0.50	0.50	1.53	273.46	1.38		1	100	1.00	2.00	1.00	274.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.37	193.49	1.24	0.64	110	0.460	0.983	0.64	0.50	1.52	276.65	1.45		1	100	1.00	2.05	1.00	277.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.53	194.51	1.46	0.75	110	0.469	0.982	0.75	0.50	1.50	275.42	1.51		1	100	1.00	2.10	1.00	276.4	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.69	195.90	1.50	0.77	110	0.478	0.982	0.77	0.50	1.49	274.75	1.51		1	100	1.00	2.15	1.00	275.8	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
8.86	199.53	1.67	0.84	110	0.487	0.982	0.84	0.50	1.47	277.23	1.54		1	100	1.00	2.20	1.00	278.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.02	202.65	1.56	0.77	110	0.496	0.981	0.77	0.50	1.46	279.00	1.51		1	100	1.00	2.25	1.00	280.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.19	204.68	1.62	0.79	110	0.505	0.981	0.80	0.50	1.45	279.26	1.52		1	100	1.00	2.30	1.00	280.3	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.35	192.88	1.56	0.81	110	0.514	0.981	0.81	0.50	1.43	260.79	1.54		1	100	1.00	2.35	1.00	261.8	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.51	173.28	1.31	0.75	110	0.523	0.980	0.76	0.50	1.42	232.18	1.56		1	100	1.00	2.40	1.00	233.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.68	160.53	1.12	0.70	110	0.532	0.980	0.70	0.50	1.41	213.20	1.56		1	100	1.00	2.45	1.00	214.0	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.84	160.48	0.98	0.61	110	0.541	0.980	0.61	0.50	1.40	211.34	1.53		1	100	1.00	2.50	1.00	212.1	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
10.01	167.93	0.95	0.57	110	0.550	0.979	0.57	0.50	1.39	219.35	1.49		1	100	1.00	2.55	1.00	220.2	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.17	179.44	1.12	0.62	110	0.559	0.979	0.62	0.50	1.38	232.52	1.50		1	100	1.00	2.60	1.00	233.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.33	196.39	1.47	0.75	110	0.568	0.979	0.75	0.50	1.36	252.52	1.53		1	100	1.00	2.65	1.00	253.5	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.50	212.87	1.68	0.79	110	0.577	0.978	0.79	0.50	1.35	271.61	1.52		1	100	1.00	2.70	1.00	272.6	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.66	218.59	1.72	0.79	110	0.586	0.978	0.79	0.50	1.34	276.76	1.52		1	100	1.00	2.75	1.00	277.8	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.83	219.09	1.46	0.67	110	0.595	0.978	0.67	0.50	1.33	275.28	1.47		1	100	1.00	2.80	1.00	276.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.99	218.78	1.57	0.72	110	0.604	0.977	0.72	0.50	1.32	272.81	1.49		1	100	1.00	2.85	1.00	273.8	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.15	227.29	1.90	0.84	110	0.614	0.977	0.84	0.50	1.31	281.35	1.53		1	100	1.00	2.90	1.00	282.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.32	240.17	1.92	0.80	110	0.623	0.977	0.80	0.50	1.30	295.17	1.50		1	100	1.00	2.95	1.00	296.3	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.48	222.62	1.81	0.81	110	0.632	0.976	0.82	0.50	1.29	271.57	1.53		1	100	1.00	3.00	1.00	272.6	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.65	216.62	2.13	0.98	110	0.641	0.976	0.98	0.50	1.29	262.35	1.61		1	100	1.00	3.05	1.00	263.3	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.81	220.47	2.23	1.01	110	0.650	0.975	1.01	0.50	1.28	265.16	1.61		1	100	1.00	3.10	1.00	266.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.98	211.90	2.36	1.11	110	0.659	0.975	1.12	0.50	1.27	253.63	1.66		1	100	1.01	3.15	1.00	256.5	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.14	218.21	2.15	0.99	110	0.668	0.975	0.99	0.50	1.26	258.84	1.61		1	100	1.00	3.20	1.00	259.8	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.30	217.25	1.71	0.79	110	0.677	0.974	0.79	0.50	1.25	255.96	1.54		1	100	1.00	3.25	1.00	256.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.47	227.19	1.31	0.58	110	0.686	0.974	0.58	0.50	1.24	265.93	1.43		1	100	1.00	3.30	1.00	266.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	246.00	1.35	0.55	110	0.695	0.974	0.55	0.50	1.23	286.13	1.40		1	100	1.00	3.35	1.00	287.2	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	271.55	2.19	0.81	110	0.704	0.973	0.81	0.50	1.23	313.89	1.49		1	100	1.00	3.40	1.00	315.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	Induced EQ CRR	M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	*Volumetric Strain (%)*
12.96	298.70	2.19	0.73	110	0.713	0.973	0.74	0.50	1.22	343.15	1.43		1	100	1.00	3.45	1.00	344.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	297.19	2.53	0.85	110	0.722	0.973	0.85	0.50	1.21	339.26	1.49		1	100	1.00	3.50	1.00	340.5	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	297.26	2.68	0.90	110	0.731	0.972	0.90	0.50	1.20	337.23	1.51		1	100	1.00	3.55	1.00	338.5	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	299.77	2.66	0.89	110	0.740	0.972	0.89	0.50	1.20	337.99	1.50		1	100	1.00	3.60	1.00	339.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	299.47	2.65	0.88	110	0.749	0.972	0.89	0.50	1.19	335.60	1.50		1	100	1.00	3.65	1.00	336.9	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	293.58	3.11	1.06	110	0.758	0.971	1.06	0.50	1.18	327.01	1.57		1	100	1.00	3.70	1.00	328.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	298.13	3.07	1.03	110	0.767	0.971	1.03	0.50	1.17	330.12	1.56		1	100	1.00	3.75	1.00	331.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	301.85	3.04	1.01	110	0.776	0.971	1.01	0.50	1.17	332.29	1.55		1	100	1.00	3.80	1.00	333.5	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	298.45	3.68	1.23	110	0.785	0.970	1.24	0.50	1.16	326.64	1.62		1	100	1.00	3.85	1.00	327.9	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	300.98	2.74	0.91	110	0.794	0.970	0.91	0.50	1.15	327.53	1.52		1	100	1.00	3.90	1.00	328.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	315.50	2.80	0.89	110	0.803	0.970	0.89	0.50	1.15	341.43	1.50		1	100	1.00	3.95	1.00	342.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	313.59	3.04	0.97	110	0.812	0.969	0.97	0.50	1.14	337.45	1.53		1	100	1.00	4.00	1.00	338.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	322.37	3.47	1.08	110	0.821	0.969	1.08	0.50	1.14	345.00	1.56		1	100	1.00	4.05	1.00	346.3	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	336.14	3.51	1.04	110	0.830	0.969	1.05	0.50	1.13	357.81	1.54		1	100	1.00	4.10	1.00	359.1	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	323.66	3.11	0.96	110	0.839	0.968	0.96	0.50	1.12	342.62	1.52		1	100	1.00	4.15	1.00	343.9	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	317.94	3.08	0.97	110	0.848	0.968	0.97	0.50	1.12	334.75	1.53		1	100	1.00	4.20	1.00	336.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	320.07	3.08	0.96	110	0.857	0.967	0.96	0.50	1.11	335.21	1.53		1	100	1.00	4.25	1.00	336.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	310.52	2.97	0.96	110	0.866	0.967	0.96	0.50	1.11	323.47	1.54		1	100	1.00	4.30	1.00	324.7	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	314.10	3.02	0.96	110	0.875	0.967	0.96	0.50	1.10	325.51	1.54		1	100	1.00	4.35	1.00	326.7	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	315.60	2.97	0.94	110	0.884	0.966	0.94	0.50	1.09	325.39	1.53		1	100	1.00	4.40	1.00	326.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	327.26	2.77	0.85	110	0.893	0.966	0.85	0.50	1.09	335.73	1.49		1	100	1.00	4.45	1.00	337.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	328.11	2.94	0.89	110	0.902	0.966	0.90	0.50	1.08	334.91	1.51		1	100	1.00	4.50	1.00	336.2	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	357.30	2.93	0.82	110	0.911	0.965	0.82	0.50	1.08	362.96	1.45		1	100	1.00	4.55	1.00	364.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	379.84	3.02	0.80	110	0.920	0.965	0.80	0.50	1.07	384.01	1.43		1	100	1.00	4.60	1.00	385.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	393.42	4.35	1.11	110	0.929	0.965	1.11	0.50	1.07	395.83	1.54		1	100	1.00	4.65	1.00	397.3	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	393.65	3.67	0.93	110	0.938	0.964	0.93	0.50	1.06	394.14	1.48		1	100	1.00	4.70	1.00	395.6	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	403.88	3.66	0.91	110	0.947	0.964	0.91	0.50	1.06	402.47	1.46		1	100	1.00	4.75	1.00	404.0	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	384.75	3.06	0.80	110	0.956	0.963	0.80	0.50	1.05	381.54	1.43		1	100	1.00	4.80	1.00	383.0	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	418.46	2.70	0.64	110	0.965	0.963	0.65	0.50	1.05	413.10	1.34		1	100	1.00	4.85	1.00	414.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	426.59	3.76	0.88	110	0.974	0.963	0.88	0.50	1.04	419.18	1.44		1	100	1.00	4.90	1.00	420.8	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	438.49	4.30	0.98	110	0.983	0.962	0.98	0.50	1.04	428.91	1.47		1	100	1.00	4.95	1.00	430.5	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	459.63	3.50	0.76	110	0.992	0.962	0.76	0.50	1.03	447.58	1.37		1	100	1.00	5.00	1.00	449.3	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	446.70	3.76	0.84	110	1.001	0.962	0.84	0.50	1.03	432.99	1.42		1	100	1.00	5.05	1.00	434.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	433.53	3.52	0.81	110	1.010	0.961	0.81	0.50	1.02	418.31	1.41		1	100	1.00	5.10	1.00	419.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	420.70	4.05	0.96	110	1.020	0.961	0.96	0.50	1.02	404.09	1.48		1	100	1.00	5.15	1.00	405.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	427.38	4.04	0.95	110	1.029	0.960	0.95	0.50	1.01	408.71	1.47		1	100	1.00	5.20	1.00	410.2	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	433.11	4.37	1.01	110	1.038	0.960	1.01	0.50	1.01	412.39	1.49		1	100	1.00	5.20	1.00	413.9	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	406.01	4.03	0.99	110	1.047	0.960	0.99	0.50	1.01	384.84	1.51		1	100	1.00	5.20	1.00	386.3	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	382.11	4.15	1.09	110	1.056	0.959	1.09	0.50	1.00	360.57	1.55		1	100	1.00	5.20	1.00	361.9	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	381.05	4.09	1.07	110	1.065	0.959	1.08	0.50	1.00	358.03	1.55		1	100	1.00	5.20	1.00	359.4	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	379.85	4.12	1.08	110	1.074	0.958	1.09	0.50	0.99	355.39	1.56		1	100	1.00	5.20	1.00	356.7	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	382.89	4.14	1.08	110	1.083	0.958	1.08	0.50	0.99	356.74	1.55		1	100	1.00	5.20	1.00	358.1	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	384.60	3.97	1.03	110	1.092	0.957	1.04	0.50	0.98	356.85	1.54		1	100	1.00	5.20	1.00	358.2	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	377.72	4.35	1.15	110	1.101	0.957	1.16	0.50	0.98	349.00	1.58		1	100	1.00	5.20	1.00	350.3	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

CPT-LIQUEFY.XLS - A SPREADSHEET FOR EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL USING CPT DATA
Developed 2003 by Shelton L. Stringer, GE, Earth Systems Southwest

Project: Oxnard High School No. 8
Job No: 301953-001
Date: 8/14/2018
Sounding: CPT-7
Plot: 7

Methods: Liquefaction Analysis using 1998 NCEER workshop methods (Robertson & Wride)
Post-liquefaction Settlement Analysis from Tokimatsu & Seed (1987)
Dry Sand Settlement by Pradel, ASCE Journal of G&GE, Vol 124, No. 4

Total Liquefied Thickness (feet)
0.0

EARTHQUAKE INFORMATION:
Magnitude: 6.77 (7.5)
PGA, g: 0.65 (0.50)
MSF: 1.30
GWT, feet: 20.0
Design GWT, feet: 20.0

Induced CSR (M=7.5): = 0.65*PGA*(po/p'o)*rd/MSF
Clean Sand Qc1n = C_Q*K_C*K_H*Qc
SF = $CRR_{7.5}$*Kσ/CSR
Use Tokimatsu & Seed (0) or Ishihara &Yoshmine (1): 0
Unit Weight of unsaturated soils: 110 pcf
Unit Weight of saturated soils: 110 pcf
Limiting Ic for liquefiable soils: 2.60
Limiting Ic for K_H: 2.0

Probab	Total Induced Subsidence (inches)
Avg	0%
Max	0%

Required SF: 1.50
Min SF of Liquefiable Layers: 0.00
Avg SF of Liquefiable Layers: 0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff.Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_C	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
0.16	7.32	0.09	1.28	110	0.009	1.000	1.29	0.83	1.70	11.75	2.74		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
0.33	12.26	0.12	1.00	110	0.018	1.000	1.00	0.76	1.70	19.67	2.50		1	9	2.75		1.00	54.0	1.00	0.095	0.095	0.323	Non-Liq.	Non-Liq.	0.00
0.49	14.26	0.15	1.02	110	0.027	1.000	1.03	0.74	1.70	22.87	2.44		1	16	2.50		1.00	57.1	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.66	13.52	0.15	1.09	110	0.036	1.000	1.10	0.75	1.70	21.67	2.48		1	13	2.66		1.00	57.7	1.00	0.098	0.098	0.323	Non-Liq.	Non-Liq.	0.00
0.82	11.35	0.14	1.22	110	0.045	1.000	1.22	0.78	1.70	18.16	2.57		1	6	3.14		1.00	57.0	1.00	0.097	0.097	0.323	Non-Liq.	Non-Liq.	0.00
0.98	9.04	0.12	1.33	110	0.054	1.000	1.34	0.81	1.70	14.44	2.67		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.15	7.13	0.08	1.07	110	0.063	0.999	1.08	0.82	1.70	11.36	2.72		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.31	7.13	0.08	1.07	110	0.072	0.999	1.08	0.82	1.70	11.34	2.72		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.48	6.14	0.08	1.27	110	0.081	0.999	1.29	0.85	1.70	9.74	2.82		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.64	6.75	0.14	2.01	110	0.090	0.998	2.04	0.87	1.70	10.70	2.88		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.80	12.03	0.25	2.04	110	0.099	0.998	2.05	0.81	1.70	19.17	2.67		0						1.00			0.323	Non-Liq.	Non-Liq.	0.00
1.97	26.83	0.46	1.71	110	0.108	0.998	1.72	0.71	1.70	42.94	2.34		1	42	2.10		1.00	90.0	1.00	0.148	0.148	0.322	Non-Liq.	Non-Liq.	0.00
2.13	27.70	0.58	2.10	110	0.117	0.997	2.11	0.72	1.70	44.32	2.39		1	43	2.27		1.00	100.6	1.00	0.175	0.175	0.322	Non-Liq.	Non-Liq.	0.00
2.30	30.71	0.62	2.02	110	0.126	0.997	2.02	0.71	1.70	49.14	2.34		1	47	2.10		1.00	103.0	1.00	0.182	0.182	0.322	Non-Liq.	Non-Liq.	0.00
2.46	35.14	0.59	1.69	110	0.135	0.996	1.70	0.68	1.70	56.25	2.25		1	53	1.80		1.00	101.0	1.00	0.176	0.176	0.322	Non-Liq.	Non-Liq.	0.00
2.62	34.66	0.52	1.49	110	0.144	0.996	1.49	0.67	1.70	55.46	2.22		1	52	1.71		1.00	95.1	1.00	0.160	0.160	0.322	Non-Liq.	Non-Liq.	0.00
2.79	30.29	0.43	1.42	110	0.153	0.996	1.43	0.68	1.70	48.42	2.25		1	47	1.81		1.00	87.5	1.00	0.142	0.142	0.322	Non-Liq.	Non-Liq.	0.00
2.95	25.72	0.37	1.42	110	0.162	0.995	1.43	0.70	1.70	41.07	2.31		1	40	1.98		1.00	81.4	1.00	0.130	0.130	0.322	Non-Liq.	Non-Liq.	0.00
3.12	22.47	0.33	1.49	110	0.171	0.995	1.50	0.72	1.70	35.83	2.37		1	34	2.19		1.00	78.6	1.00	0.125	0.125	0.322	Non-Liq.	Non-Liq.	0.00
3.28	20.80	0.31	1.47	110	0.180	0.994	1.48	0.73	1.70	33.13	2.40		1	31	2.29		1.00	76.0	1.00	0.121	0.121	0.321	Non-Liq.	Non-Liq.	0.00
3.44	20.45	0.30	1.47	110	0.189	0.994	1.48	0.73	1.70	32.55	2.40		1	30	2.32		1.00	75.4	1.00	0.120	0.120	0.321	Non-Liq.	Non-Liq.	0.00
3.61	20.73	0.30	1.45	110	0.198	0.994	1.47	0.73	1.70	32.99	2.39		1	31	2.29		1.00	75.5	1.00	0.120	0.120	0.321	Non-Liq.	Non-Liq.	0.00
3.77	19.90	0.31	1.58	110	0.208	0.993	1.59	0.74	1.70	31.64	2.43		1	29	2.44		1.00	77.1	1.00	0.123	0.123	0.321	Non-Liq.	Non-Liq.	0.00
3.94	17.21	0.35	2.05	110	0.217	0.993	2.08	0.77	1.70	27.31	2.55		1	23	3.03		1.00	82.8	1.00	0.133	0.133	0.321	Non-Liq.	Non-Liq.	0.00
4.10	11.84	0.37	3.08	110	0.226	0.993	3.14	0.85	1.70	18.66	2.79		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.27	7.47	0.32	4.24	110	0.235	0.992	4.38	0.92	1.70	11.63	3.04		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.43	7.87	0.27	3.41	110	0.244	0.992	3.51	0.90	1.70	12.25	2.96		0						1.00			0.321	Non-Liq.	Non-Liq.	0.00
4.59	13.03	0.25	1.89	110	0.253	0.991	1.93	0.80	1.70	20.53	2.63		0						1.00			0.320	Non-Liq.	Non-Liq.	0.00
4.76	17.56	0.20	1.13	110	0.262	0.991	1.15	0.73	1.70	27.80	2.40		1	24	2.30		1.00	63.9	1.00	0.104	0.104	0.320	Non-Liq.	Non-Liq.	0.00
4.92	25.00	0.25	0.99	110	0.271	0.991	1.00	0.68	1.70	39.74	2.23		1	39	1.75		1.00	69.6	1.00	0.111	0.111	0.320	Non-Liq.	Non-Liq.	0.00
5.09	28.21	0.27	0.97	110	0.280	0.990	0.98	0.66	1.70	44.88	2.18		1	44	1.63		1.00	73.1	1.00	0.116	0.116	0.320	Non-Liq.	Non-Liq.	0.00
5.25	26.74	0.32	1.19	110	0.289	0.990	1.20	0.68	1.70	42.50	2.25		1	41	1.81		1.00	76.9	1.00	0.122	0.122	0.320	Non-Liq.	Non-Liq.	0.00
5.41	27.54	0.33	1.20	110	0.298	0.989	1.21	0.68	1.70	43.77	2.25		1	43	1.79		1.00	78.2	1.00	0.124	0.124	0.320	Non-Liq.	Non-Liq.	0.00
5.58	30.42	0.33	1.08	110	0.307	0.989	1.10	0.66	1.70	48.39	2.18		1	47	1.63		1.00	78.9	1.00	0.126	0.126	0.320	Non-Liq.	Non-Liq.	0.00
5.74	35.07	0.33	0.95	110	0.316	0.989	0.96	0.64	1.70	55.84	2.10		1	53	1.46		1.00	81.3	1.00	0.130	0.130	0.320	Non-Liq.	Non-Liq.	0.00
5.91	42.76	0.43	0.99	110	0.325	0.988	1.00	0.62	1.70	68.19	2.04		1	61	1.36		1.00	92.6	1.00	0.154	0.154	0.319	Non-Liq.	Non-Liq.	0.00
6.07	59.96	0.60	1.00	110	0.334	0.988	1.01	0.59	1.70	95.81	1.93		1	75	1.22	1.00	1.00	116.9	1.00	0.228	0.228	0.319	Non-Liq.	Non-Liq.	0.00
6.23	82.48	0.78	0.94	110	0.343	0.988	0.94	0.55	1.70	131.98	1.80		1	88	1.11	1.05	1.00	146.8	1.00	0.374	0.374	0.319	Non-Liq.	Non-Liq.	0.00
6.40	98.15	0.89	0.91	110	0.352	0.987	0.91	0.53	1.70	157.14	1.74		1	96	1.06	1.10	1.00	167.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.56	106.99	1.01	0.94	110	0.361	0.987	0.95	0.52	1.70	171.33	1.72		1	99	1.05	1.15	1.00	180.9	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.73	112.07	1.09	0.97	110	0.370	0.986	0.98	0.52	1.70	179.48	1.72		1	100	1.05	1.20	1.00	188.9	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
6.89	112.25	1.18	1.05	110	0.379	0.986	1.05	0.53	1.70	179.76	1.74		1	100	1.06	1.25	1.00	191.9	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.05	111.68	1.25	1.12	110	0.388	0.986	1.13	0.54	1.70	178.82	1.76		1	100	1.08	1.30	1.00	193.6	1.00	Infin.	0.000	0.319	Non-Liq.	Non-Liq.	0.00
7.22	113.57	1.36	1.19	110	0.397	0.985	1.20	0.54	1.70	181.71	1.78		1	100	1.09	1.35	1.00	198.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.38	110.25	1.39	1.26	110	0.406	0.985	1.27	0.55	1.69	175.63	1.80		1	100	1.11	1.40	1.00	195.5	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.55	100.97	1.35	1.34	110	0.415	0.985	1.34	0.56	1.69	160.87	1.85		1	97	1.14	1.45	1.00	184.6	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.71	100.97	1.35	1.34	110	0.424	0.984	1.34	0.56	1.67	159.07	1.85		1	96	1.15	1.50	1.00	183.0	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
7.87	95.77	1.34	1.40	110	0.433	0.984	1.40	0.57	1.67	150.26	1.88		1	94	1.17	1.55	1.00	176.7	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.04	92.93	1.31	1.41	110	0.442	0.984	1.42	0.58	1.65	144.62	1.90		1	92	1.19	1.60	1.00	172.1	1.00	Infin.	0.000	0.318	Non-Liq.	Non-Liq.	0.00
8.20	90.79	1.03	1.14	110	0.451	0.983	1.14	0.56	1.61	137.80	1.85		1	90	1.14	1.65	1.00	157.8	1.00	0.446	0.446	0.318	Non-Liq.	Non-Liq.	0.00
8.37	87.38	1.00	1.14	110	0.460	0.983	1.15	0.57	1.60	131.65	1.86		1	88	1.15	1.70	1.00	152.6	1.00	0.410	0.410	0.318	Non-Liq.	Non-Liq.	0.00
8.53	82.47	0.96	1.17	110	0.469	0.982	1.18	0.57	1.60	123.63	1.89		1	86	1.18	1.75	1.00	146.1	1.00	0.370	0.370	0.318	Non-Liq.	Non-Liq.	0.00
8.69	86.06	1.00	1.17	110	0.478	0.982	1.17	0.57	1.57	127.32	1.88		1	87	1.17	1.80	1.00	149.3	1.00	0.390	0.390	0.317	Non-Liq.	Non-Liq.	0.00
8.86	93.45	1.08	1.15	110	0.487	0.982	1.16	0.56	1.55	136.07	1.85		1	90	1.15	1.85	1.00	156.8	1.00	0.439	0.439	0.317	Non-Liq.	Non-Liq.	0.00
9.02	102.02	1.14	1.12	110	0.496	0.981	1.13	0.55	1.52	146.04	1.82		1	93	1.12	1.90	1.00	164.7	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.19	107.28	1.17	1.09	110	0.505	0.981	1.10	0.55	1.50	151.44	1.80		1	94	1.11	1.95	1.00	168.7	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.35	109.34	1.18	1.07	110	0.514	0.981	1.08	0.55	1.48	152.59	1.80		1	94	1.10	2.00	1.00	169.1	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.51	111.98	1.16	1.04	110	0.523	0.980	1.04	0.54	1.47	154.35	1.78		1	95	1.09	2.05	1.00	169.5	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.68	118.26	1.20	1.01	110	0.532	0.980	1.02	0.54	1.45	160.83	1.76		1	97	1.08	2.10	1.00	174.2	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
9.84	127.36	1.25	0.98	110	0.541	0.980	0.99	0.53	1.42	170.74	1.73		1	99	1.06	2.15	1.00	181.7	1.00	Infin.	0.000	0.317	Non-Liq.	Non-Liq.	0.00
10.01	137.13	1.33	0.97	110	0.550	0.979	0.97	0.52	1.41	181.45	1.71		1	100	1.04	2.20	1.00	190.2	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.17	144.79	1.41	0.98	110	0.559	0.979	0.98	0.52	1.39	189.61	1.70		1	100	1.04	2.25	1.00	197.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.33	155.29	1.57	1.01	110	0.568	0.979	1.02	0.52	1.38	201.47	1.69		1	100	1.03	2.30	1.00	208.8	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.50	160.35	1.65	1.03	110	0.577	0.978	1.03	0.51	1.37	206.27	1.69		1	100	1.03	2.35	1.00	213.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.66	162.80	1.74	1.07	110	0.586	0.978	1.07	0.52	1.36	208.10	1.70		1	100	1.04	2.40	1.00	216.7	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.83	163.62	1.48	0.90	110	0.595	0.978	0.91	0.50	1.34	205.78	1.65		1	100	1.00	2.45	1.00	207.4	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
10.99	165.03	1.59	0.96	110	0.604	0.977	0.96	0.51	1.33	206.59	1.67		1	100	1.02	2.50	1.00	210.8	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.15	165.44	1.62	0.98	110	0.614	0.977	0.98	0.51	1.32	205.76	1.68		1	100	1.02	2.55	1.00	210.9	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.32	170.54	1.67	0.98	110	0.623	0.977	0.98	0.51	1.31	210.31	1.67		1	100	1.02	2.60	1.00	214.5	1.00	Infin.	0.000	0.316	Non-Liq.	Non-Liq.	0.00
11.48	193.35	1.66	0.86	110	0.632	0.976	0.86	0.50	1.29	235.76	1.59		1	100	1.00	2.65	1.00	236.6	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.65	234.30	1.88	0.80	110	0.641	0.976	0.81	0.50	1.29	283.83	1.52		1	100	1.00	2.70	1.00	284.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.81	311.45	1.81	0.58	110	0.650	0.975	0.58	0.50	1.28	374.90	1.33		1	100	1.00	2.75	1.00	376.3	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
11.98	345.03	2.01	0.58	110	0.659	0.975	0.58	0.50	1.27	412.54	1.30		1	100	1.00	2.80	1.00	414.1	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.14	350.57	2.01	0.57	110	0.668	0.975	0.58	0.50	1.26	416.32	1.30		1	100	1.00	2.85	1.00	417.9	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.30	323.89	2.04	0.63	110	0.677	0.974	0.63	0.50	1.25	381.99	1.35		1	100	1.00	2.90	1.00	383.4	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.47	284.79	2.15	0.75	110	0.686	0.974	0.76	0.50	1.24	333.56	1.45		1	100	1.00	2.95	1.00	334.8	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.63	272.50	2.15	0.79	110	0.695	0.974	0.79	0.50	1.23	317.04	1.48		1	100	1.00	3.00	1.00	318.2	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00
12.80	284.55	2.13	0.75	110	0.704	0.973	0.75	0.50	1.23	328.95	1.45		1	100	1.00	3.05	1.00	330.2	1.00	Infin.	0.000	0.315	Non-Liq.	Non-Liq.	0.00

Layer Depth (feet)	Tip Qc (tsf)	Friction Fs (tsf)	Friction Ratio %	Total Unit Wt. (pcf)	Eff. Stress at Midpt. p'o (tsf)	rd	F	n	C_Q	Corrected Qc1n	Ic	Override	Liquef. Suscept (0 or 1)	Rel. Dens. Dr (%)	K_c	H (m)	K_H	Clean Sand Qc1n	Kσ	$CRR_{7.5}$	EQ CRR	Induced M=7.5 CSR	Liquefac. Safety Factor	Probab. P_L	Volumetric Strain (%)
12.96	288.27	2.12	0.73	110	0.713	0.973	0.74	0.50	1.22	331.14	1.44		1	100	1.00	3.10	1.00	332.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.12	289.02	2.14	0.74	110	0.722	0.973	0.74	0.50	1.21	329.91	1.45		1	100	1.00	3.15	1.00	331.1	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.29	293.05	2.33	0.80	110	0.731	0.972	0.80	0.50	1.20	332.44	1.47		1	100	1.00	3.15	1.00	333.7	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.45	289.11	2.34	0.81	110	0.740	0.972	0.81	0.50	1.20	325.94	1.48		1	100	1.00	3.15	1.00	327.2	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.62	286.16	2.38	0.83	110	0.749	0.972	0.83	0.50	1.19	320.65	1.49		1	100	1.00	3.15	1.00	321.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.78	285.79	2.45	0.86	110	0.758	0.971	0.86	0.50	1.18	318.31	1.51		1	100	1.00	3.15	1.00	319.5	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
13.94	290.46	3.11	1.07	110	0.767	0.971	1.07	0.50	1.17	321.61	1.58		1	100	1.00	3.15	1.00	322.8	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.11	293.63	3.14	1.07	110	0.776	0.971	1.07	0.50	1.17	323.22	1.58		1	100	1.00	3.15	1.00	324.4	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.27	305.18	2.93	0.96	110	0.785	0.970	0.96	0.50	1.16	334.02	1.53		1	100	1.00	3.15	1.00	335.3	1.00	Infin.	0.000	0.314	**Non-Liq.**	Non-Liq.	**0.00**
14.44	274.68	2.47	0.90	110	0.794	0.970	0.90	0.50	1.15	298.83	1.54		1	100	1.00	3.15	1.00	299.9	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.60	264.68	1.89	0.71	110	0.803	0.970	0.72	0.50	1.15	286.29	1.48		1	100	1.00	3.15	1.00	287.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.76	260.78	1.87	0.72	110	0.812	0.969	0.72	0.50	1.14	280.48	1.48		1	100	1.00	3.15	1.00	281.5	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
14.93	254.73	1.85	0.73	110	0.821	0.969	0.73	0.50	1.14	272.43	1.50		1	100	1.00	3.15	1.00	273.4	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.09	243.62	1.72	0.71	110	0.830	0.969	0.71	0.50	1.13	259.08	1.50		1	100	1.00	3.15	1.00	260.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.26	247.90	1.73	0.70	110	0.839	0.968	0.70	0.50	1.12	262.22	1.50		1	100	1.00	3.15	1.00	263.2	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.42	243.67	1.34	0.55	110	0.848	0.968	0.55	0.50	1.12	256.34	1.43		1	100	1.00	3.15	1.00	257.3	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.58	240.87	1.85	0.77	110	0.857	0.967	0.77	0.50	1.11	252.04	1.54		1	100	1.00	3.15	1.00	253.0	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.75	227.67	1.80	0.79	110	0.866	0.967	0.79	0.50	1.11	236.93	1.57		1	100	1.00	3.15	1.00	237.8	1.00	Infin.	0.000	0.313	**Non-Liq.**	Non-Liq.	**0.00**
15.91	215.03	1.51	0.70	110	0.875	0.967	0.71	0.50	1.10	222.56	1.55		1	100	1.00	3.15	1.00	223.4	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.08	169.50	0.84	0.50	110	0.884	0.966	0.50	0.50	1.09	174.33	1.53		1	100	1.00	3.15	1.00	175.0	1.00	Infin.	0.000	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.24	113.63	0.81	0.71	110	0.893	0.966	0.72	0.54	1.10	116.73	1.77		1	83	1.08	3.15	1.00	127.1	1.00	0.271	0.271	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.40	74.42	0.94	1.26	110	0.902	0.966	1.28	0.63	1.11	76.80	2.07		1	66	1.40		1.00	107.3	1.00	0.195	0.195	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.57	41.55	1.04	2.51	110	0.911	0.965	2.57	0.74	1.12	42.93	2.46		1	42	2.56		1.00	109.7	1.00	0.203	0.203	0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.73	20.49	1.00	4.87	110	0.920	0.965	5.10	0.87	1.13	20.90	2.89		0						1.00			0.312	**Non-Liq.**	Non-Liq.	**0.00**
16.90	17.66	0.87	4.92	110	0.929	0.965	5.19	0.89	1.12	17.75	2.95		0						1.00			0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.06	17.13	0.80	4.64	110	0.938	0.964	4.91	0.89	1.11	17.03	2.94		0						1.00			0.312	**Non-Liq.**	Non-Liq.	**0.00**
17.22	45.69	0.87	1.91	110	0.947	0.964	1.95	0.71	1.08	45.77	2.36		1	44	2.14		1.00	98.1	1.00	0.168	0.168	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.39	85.88	0.98	1.14	110	0.956	0.963	1.15	0.61	1.06	85.36	2.00		1	70	1.30		1.00	111.2	1.00	0.208	0.208	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.55	131.32	1.21	0.92	110	0.965	0.963	0.93	0.55	1.05	129.57	1.80		1	88	1.11	1.00	1.00	144.3	1.00	0.360	0.360	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.72	175.08	1.51	0.86	110	0.974	0.963	0.87	0.52	1.04	171.70	1.69		1	99	1.03	1.05	1.00	178.1	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
17.88	212.23	1.86	0.88	110	0.983	0.962	0.88	0.50	1.04	207.10	1.64		1	100	1.00	1.10	1.00	207.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.04	246.62	1.63	0.66	110	0.992	0.962	0.66	0.50	1.03	239.71	1.51		1	100	1.00	1.10	1.00	240.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.21	274.39	2.22	0.81	110	1.001	0.962	0.81	0.50	1.03	265.59	1.54		1	100	1.00	1.10	1.00	266.6	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.37	300.69	2.46	0.82	110	1.010	0.961	0.82	0.50	1.02	289.83	1.52		1	100	1.00	1.10	1.00	290.9	1.00	Infin.	0.000	0.311	**Non-Liq.**	Non-Liq.	**0.00**
18.54	310.01	2.49	0.80	110	1.020	0.961	0.81	0.50	1.02	297.51	1.50		1	100	1.00	1.10	1.00	298.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.70	331.14	2.83	0.85	110	1.029	0.960	0.86	0.50	1.01	316.45	1.51		1	100	1.00	1.10	1.00	317.6	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
18.86	350.78	3.15	0.90	110	1.038	0.960	0.90	0.50	1.01	333.81	1.51		1	100	1.00	1.10	1.00	335.1	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.03	364.85	3.25	0.89	110	1.047	0.960	0.89	0.50	1.01	345.73	1.50		1	100	1.00	1.10	1.00	347.0	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.19	366.79	3.32	0.91	110	1.056	0.959	0.91	0.50	1.00	346.08	1.50		1	100	1.00	1.10	1.00	347.4	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.36	364.13	3.25	0.89	110	1.065	0.959	0.89	0.50	1.00	342.09	1.50		1	100	1.00	1.10	1.00	343.4	1.00	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.52	351.02	3.25	0.92	110	1.074	0.958	0.93	0.50	0.99	328.34	1.52		1	100	1.00	1.10	1.00	329.6	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.69	348.92	2.58	0.74	110	1.083	0.958	0.74	0.50	0.99	325.00	1.45		1	100	1.00	1.10	1.00	326.2	0.99	Infin.	0.000	0.310	**Non-Liq.**	Non-Liq.	**0.00**
19.85	359.19	3.47	0.97	110	1.092	0.957	0.97	0.50	0.98	333.20	1.53		1	100	1.00	1.10	1.00	334.4	0.99	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**
20.01	376.67	4.05	1.08	110	1.101	0.957	1.08	0.50	0.98	348.02	1.56		1	100	1.00	1.10	1.00	349.3	0.98	Infin.	0.000	0.309	**Non-Liq.**	Non-Liq.	**0.00**

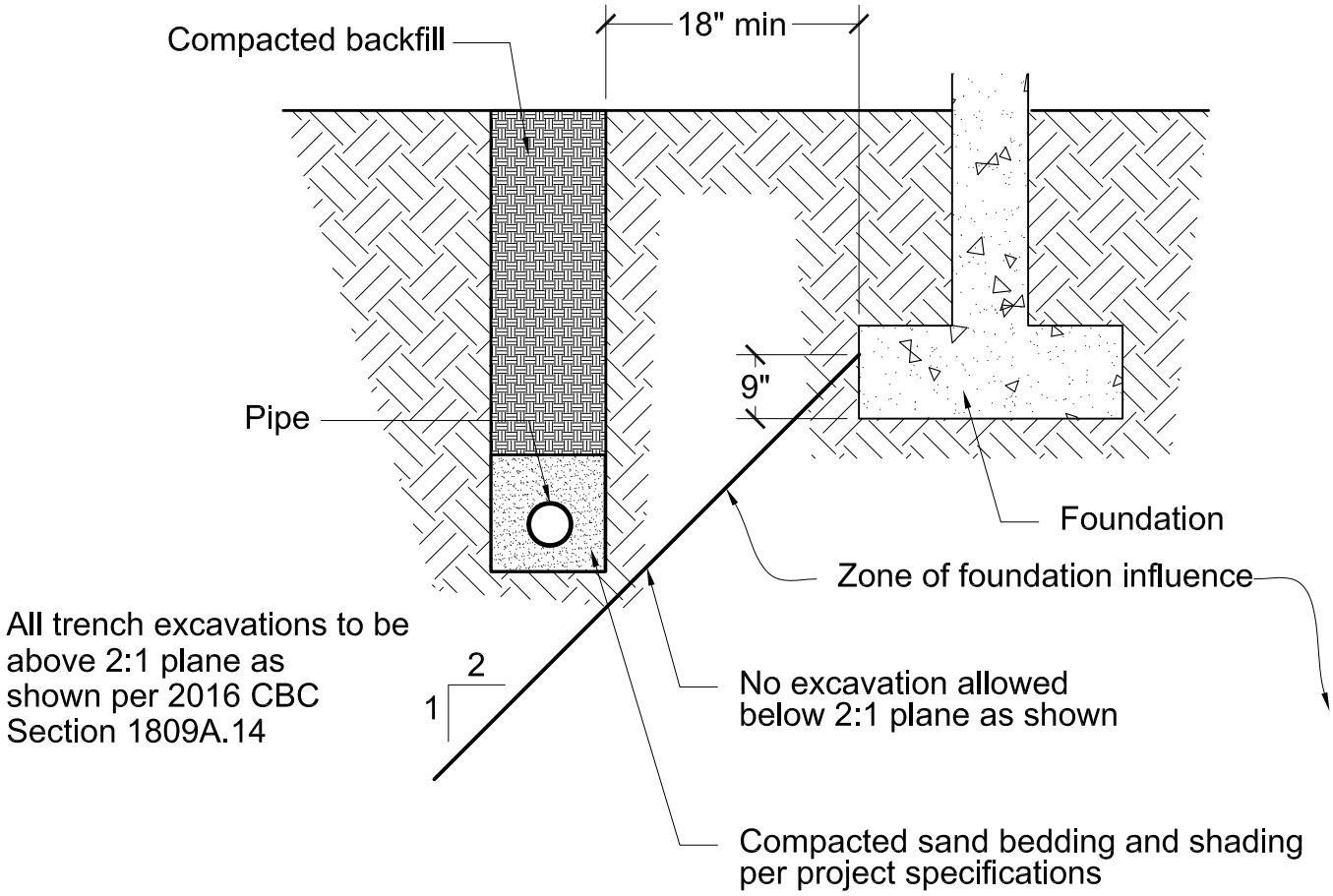
APPENDIX E

Typical Detail A: Title 24 Pipe Placed Parallel to Foundations

TYPICAL DETAIL A
TITLE 24
PIPE PLACED PARALLEL TO FOUNDATIONS

OXNARD HIGH SCHOOL NO. 8

Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California



SCHEMATIC ONLY
NOT TO SCALE

Earth Systems

2049 Preisker Lane, Suite E
Santa Maria, California 93454

(805) 928-2991 • FAX (805) 928-9253
E-mail: esp@earthsystems.com

ESP File No.: 301953-002

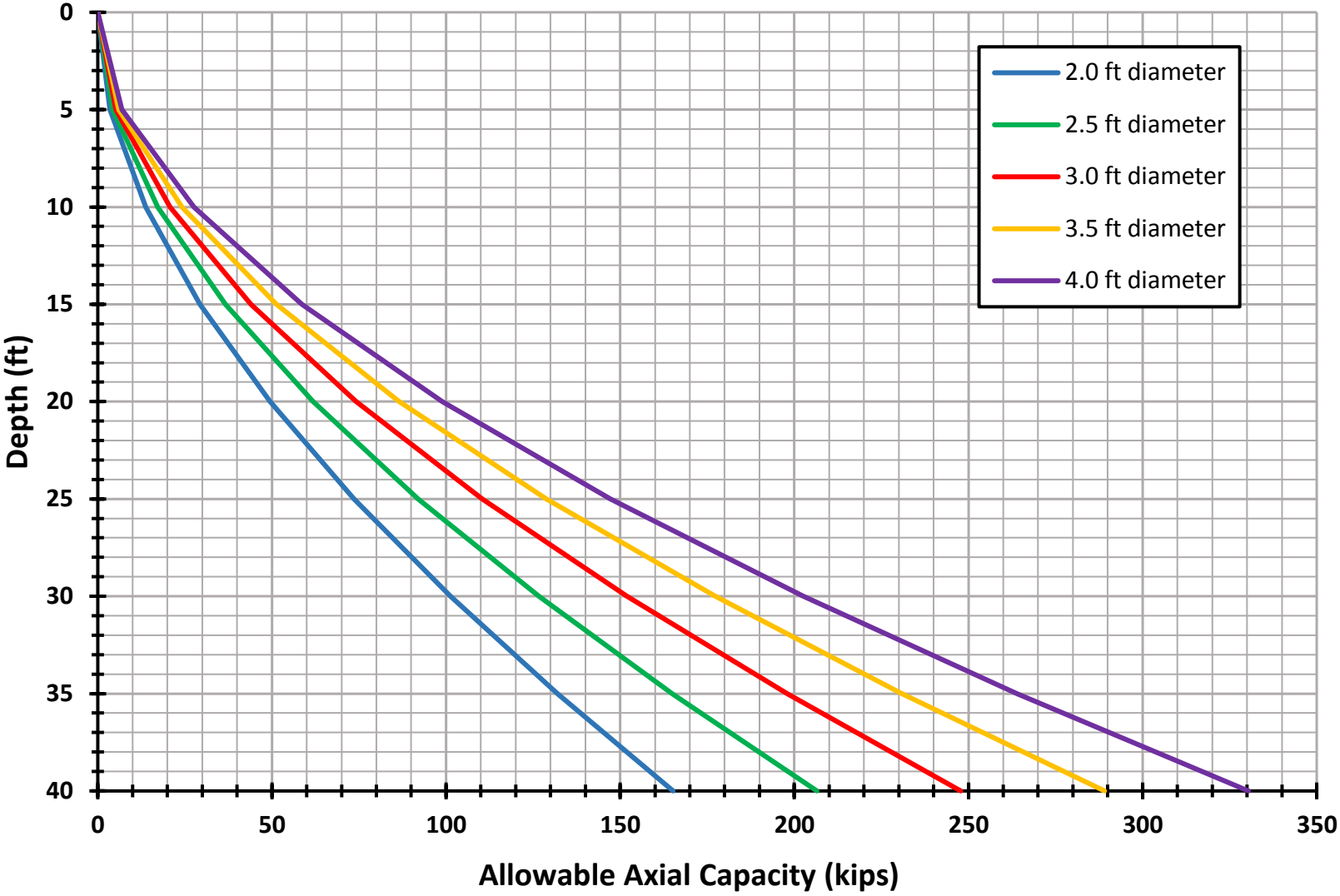
APPENDIX F

Allowable Axial Capacity for CIDH Piles in Compression Chart

Tremie Method

Oxnard High School No. 8

Allowable Axial Capacity for CIDH Piles in Compression



RECOMMENDED PROCEDURE FOR TREMIE-PLACED CONCRETE IN CAISSON (DRILLED SHAFT) FOUNDATION CONSTRUCTION

The following are general guidelines only, and may be subject to modification by the architect/engineer and/or geotechnical engineer.

1. Concrete should be placed in caisson excavations by means of a tremie when the depth of water in the excavation cannot be limited to a maximum of 2 inches, or when the freefall of the concrete would result in the concrete striking the rebar or excavation walls as it falls.

2. The concrete should be pumped to the tremie pipe or, a hopper with a tremie pipe attached should be used. An "elephant's trunk" should not be used to place concrete under water; however, an elephant's trunk may be used to direct the fall of the concrete in dry excavations. The elephant's trunk should be of sufficient length to prevent the concrete from striking the rebar or excavation walls as it falls.

3. Concrete for dry excavations should be designed for, and placed at, a slump of 4 to 6 inches. Concrete to be placed below water should be designed for, and placed at, a slump of 7 to 9 inches.

4. The tremie pipe should consist of rigid steel pipe with tight couplings. The tremie pipe should be 4 to 6 inches in diameter and should be longer than the deepest caisson excavation.

5. The tremie pipe should be lowered with caution through the center of the reinforcing to within 1 foot of the bottom of the excavation; the tremie should not be allowed to penetrate into the muck on the bottom of the hole

6. The pump hose and tremie pipe should be "slicked" with Portland cement slurry. No clay, bentonite, or other material should be used unless approved by the architect/engineer and geotechnical engineer.

7. Pumping of the concrete should begin immediately after the reinforcing and the tremie pipe have been placed in the excavation and the excavation has been inspected. The tremie pipe should not be raised until the concrete surface in the caisson excavation is at least 5 feet above the bottom of the tremie pipe. The bottom of the tremie pipe should then be kept at least 5 feet below the top of the concrete until the pour is completed.

8. The concrete should be pumped until all muck, laitance, and unsuitable concrete has been lifted above the top-of-caisson elevation. All muck, laitance, and unsuitable concrete should be immediately removed from the excavation.

9. Concrete poured at a 6-inch or greater slump should *not* be vibrated during the pour, unless directed by the architect/engineer. When vibration is required, it should *not* be started until the concrete pour is completed and the muck, laitance and unsuitable concrete have been removed. At a minimum, the upper 10 feet of the concrete should then be vibrated. Additional concrete may be added as necessary during vibration. The vibrator should not be allowed to contact the reinforcing.

10. During the pour, if the tremie pipe has to be removed from the concrete, (e.g., to allow removal of casing), it should be reset at the top of the concrete. The tremie should then be purged, as directed by the inspector, and then immediately lowered to at least 5 feet below the top of the concrete as the concrete is being pumped. All degraded concrete should be lifted with the continuing pour and removed from the top of the caisson.

B HISTORICAL AERIAL PHOTOGRAPHS

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.9
September 12, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

09/12/17

Client Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.9

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

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Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1994	1"=500'	Acquisition Date: September 03, 1994	USGS/DOQQ
1985	1"=500'	Flight Date: August 06, 1985	USDA
1978	1"=500'	Flight Date: September 21, 1978	USDA
1967	1"=500'	Flight Date: August 13, 1967	USGS
1959	1"=500'	Flight Date: October 04, 1959	USDA
1947	1"=500'	Flight Date: August 15, 1947	USGS
1938	1"=500'	Flight Date: May 09, 1938	USDA
1927	1"=500'	Flight Date: January 01, 1927	USGS

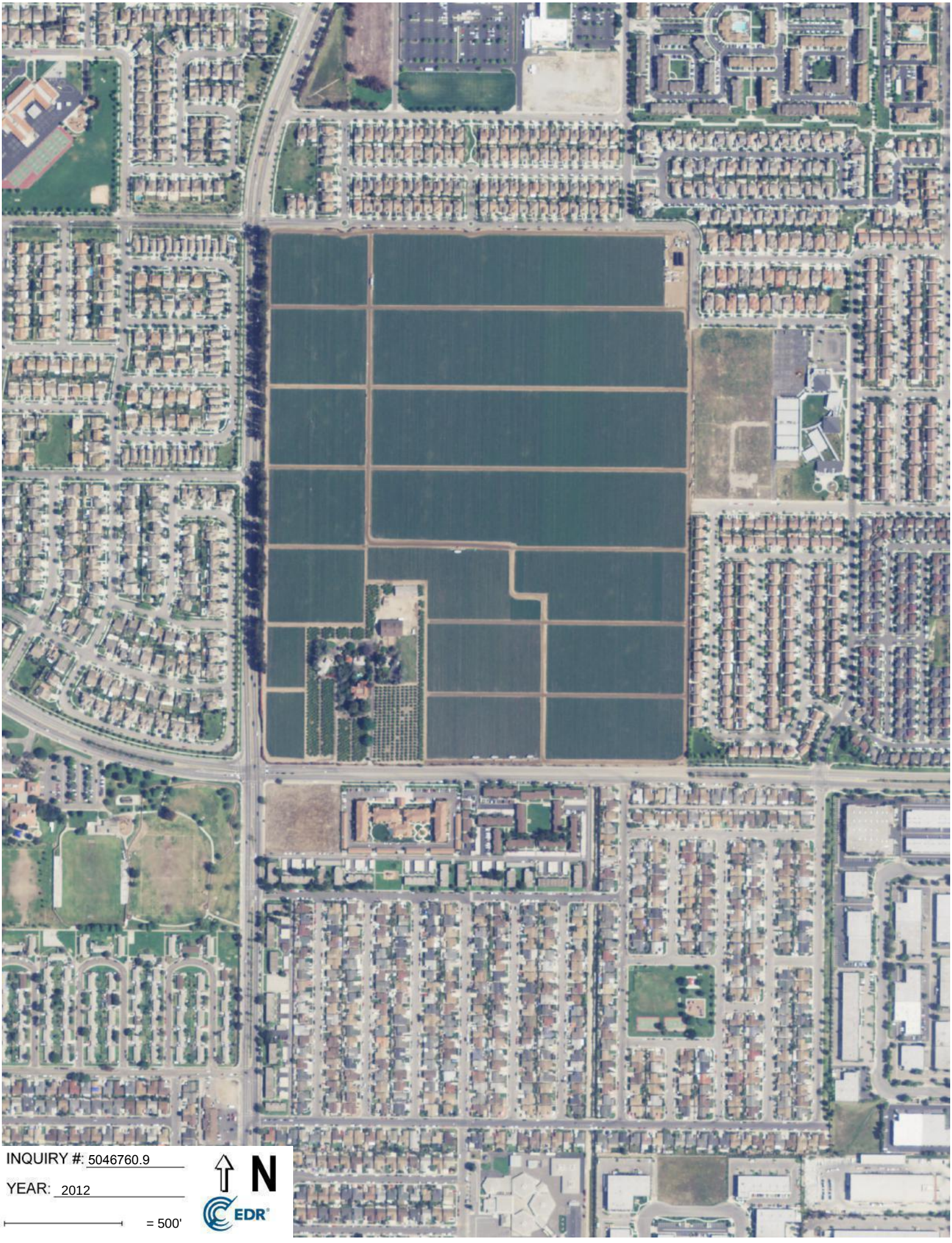
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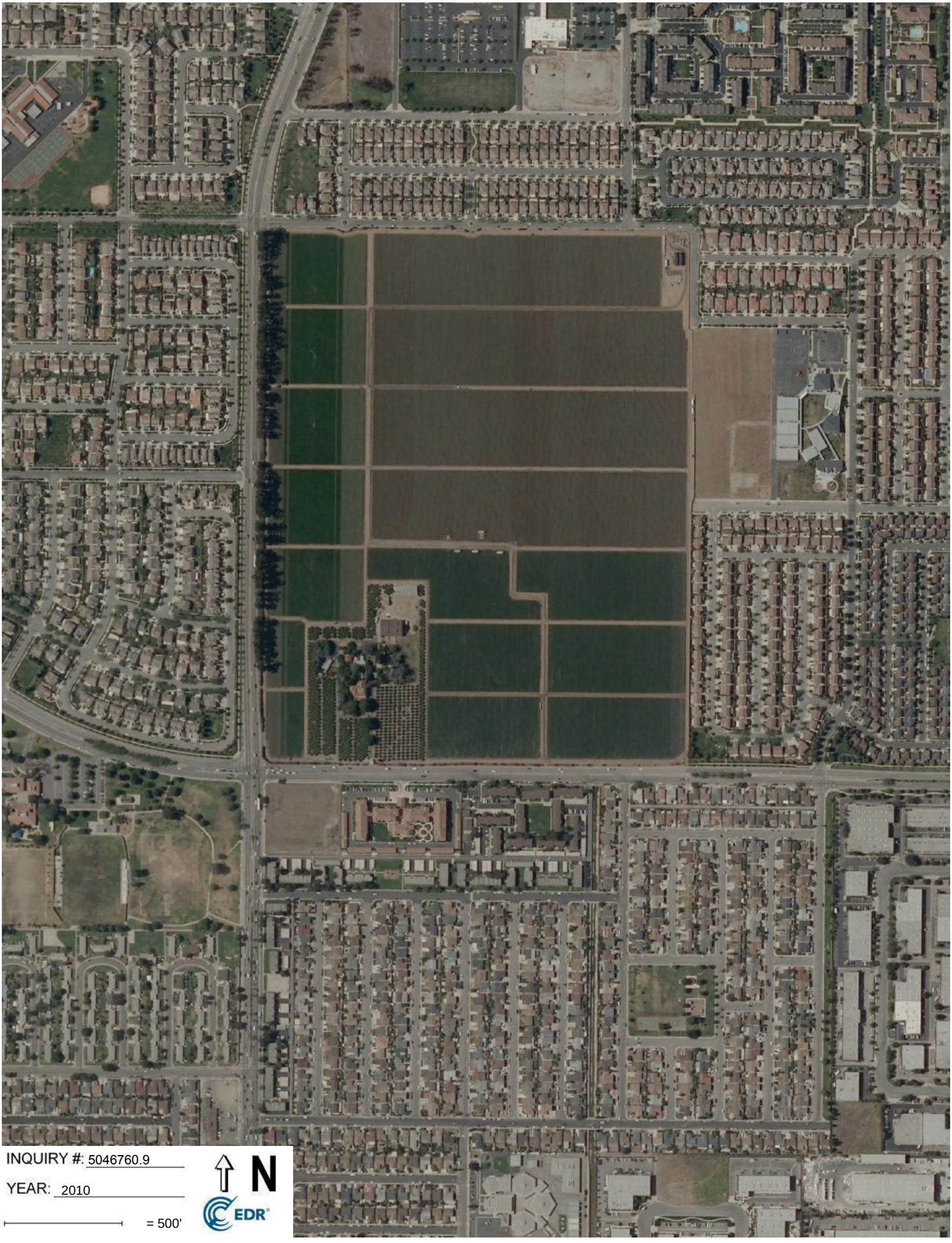
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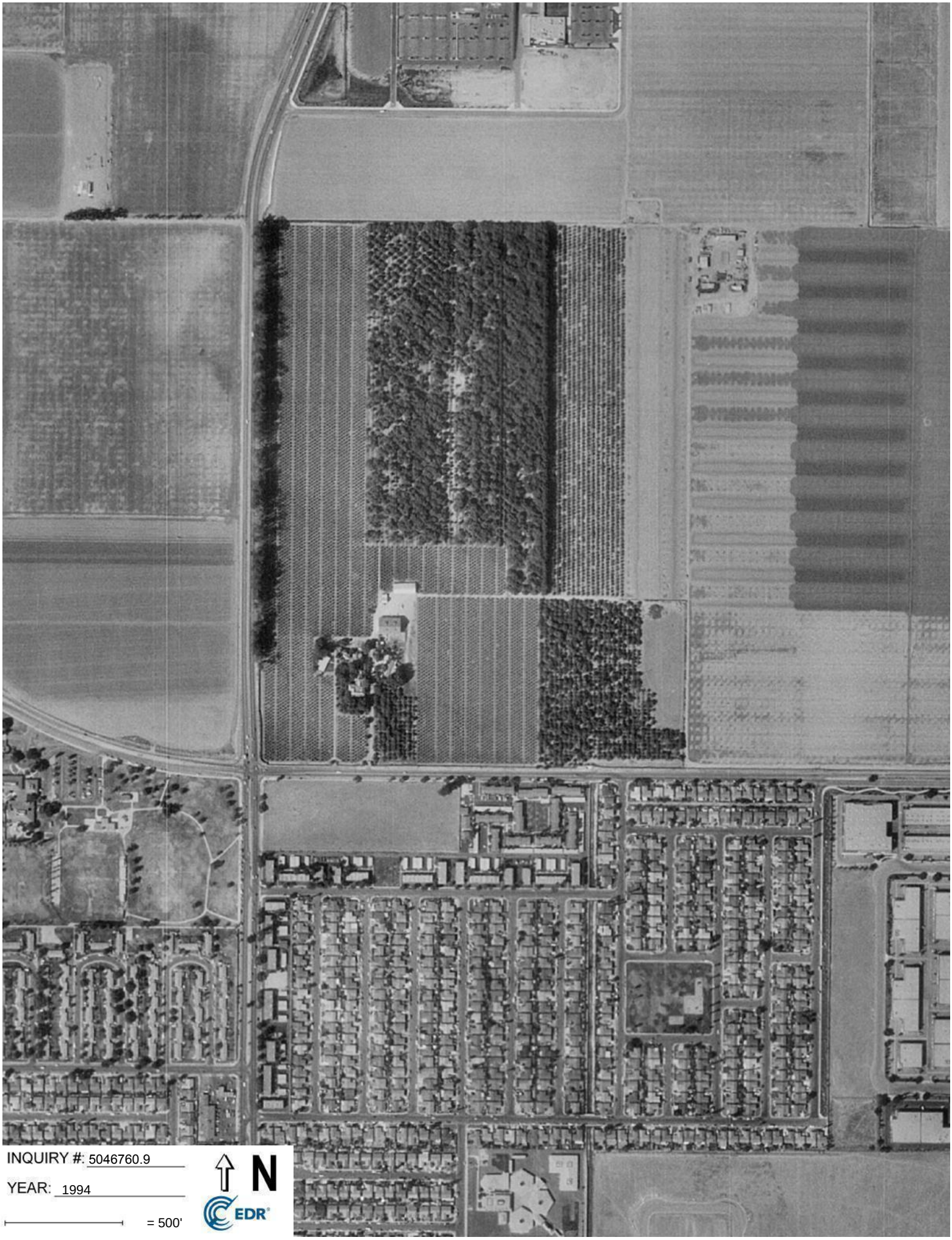
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INQUIRY #: 5046760.9
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2010
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2005
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EDR


INQUIRY #: 5046760.9
YEAR: 1994
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N
EDR


INQUIRY #: 5046760.9
YEAR: 1985
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EDR


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EDR


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YEAR: 1967
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N
EDR



INQUIRY #: 5046760.9

YEAR: 1959

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1947

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1938

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1927

= 500'

N

EDR

C USGS ANALYSES OUTPUT

USGS Design Maps Summary Report

User–Specified Input

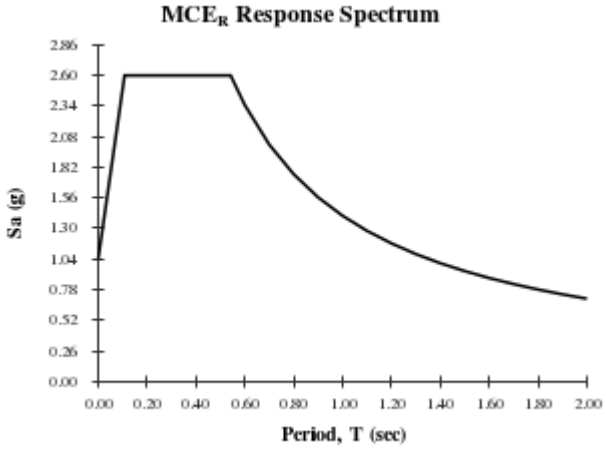
Report Title	High School No. 8 Wed May 16, 2018 02:09:37 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	34.2077°N, 119.1554°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

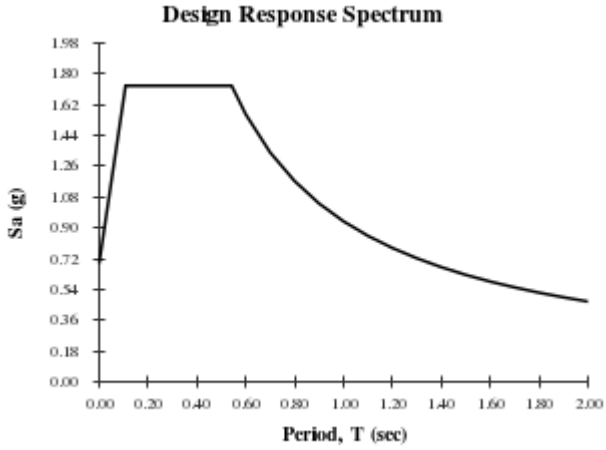


USGS–Provided Output

S_S =	2.596 g	S_{MS} =	2.596 g	S_{DS} =	1.731 g
S_1 =	0.938 g	S_{M1} =	1.407 g	S_{D1} =	0.938 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

Design Maps Detailed Report

ASCE 7-10 Standard (34.2077°N, 119.1554°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_S = 2.596 g
From Figure 22-2 [2]	S_1 = 0.938 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_s = 2.596 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.938 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.596 = 2.596$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.938 = 1.407$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

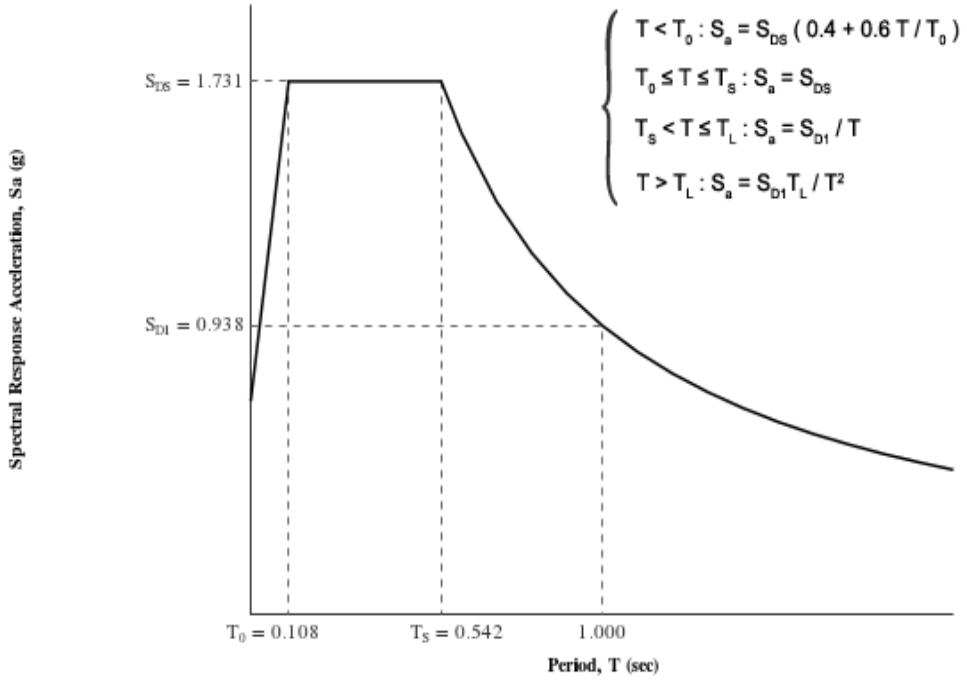
Equation (11.4–3): $S_{DS} = ⅔ S_{MS} = ⅔ \times 2.596 = 1.731$ g

Equation (11.4–4): $S_{D1} = ⅔ S_{M1} = ⅔ \times 1.407 = 0.938$ g

Section 11.4.5 — Design Response Spectrum

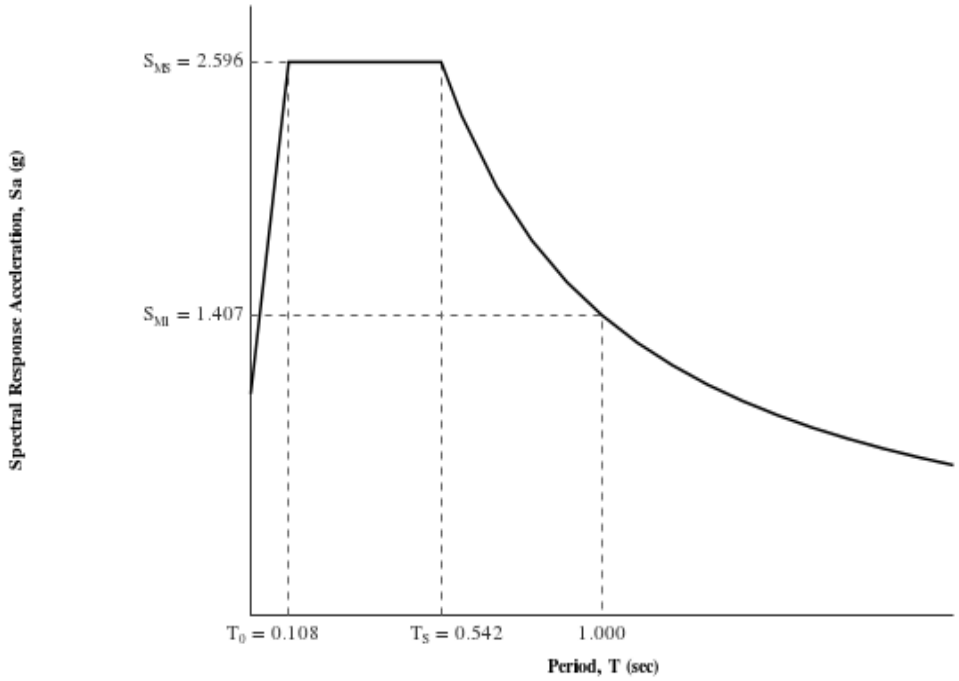
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.020

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.020 = 1.02$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.020 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.910

From Figure 22-18 [6] C_{R1} = 0.909

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.731 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.938 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (v4.1.

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

34.2077

Time Horizon

Return period in years

2475

Longitude

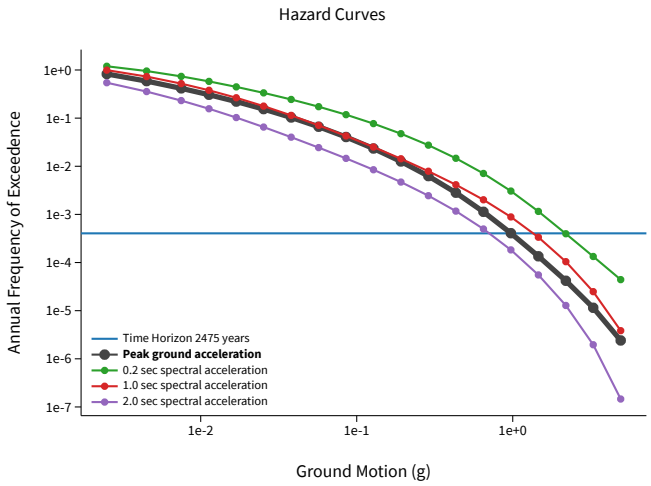
Decimal degrees, negative values for western longitudes

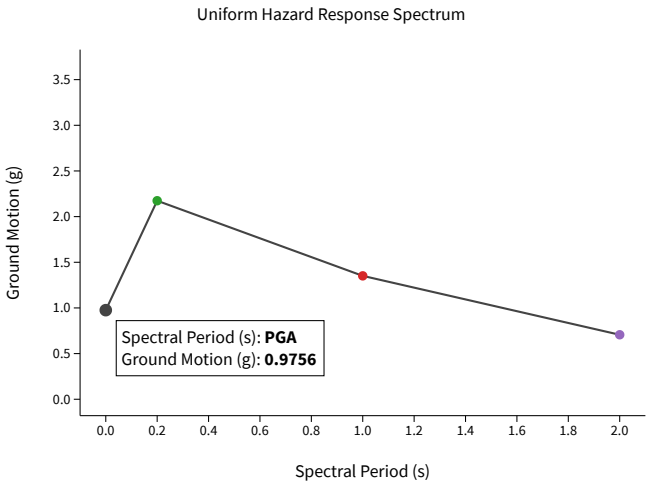
-119.1554

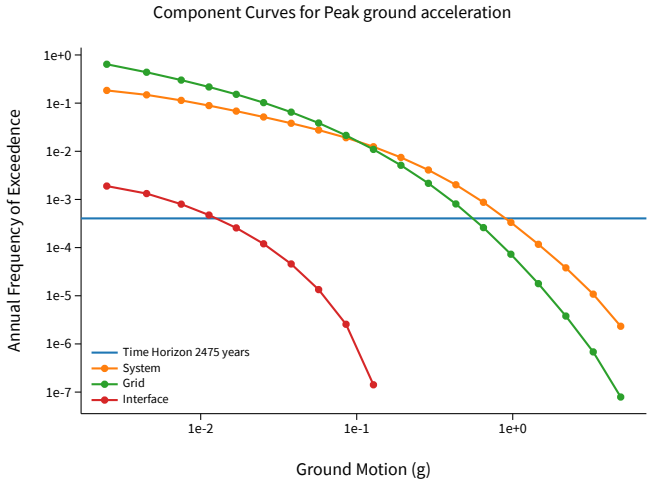
Site Class

259 m/s (Site class D)

Hazard Curve





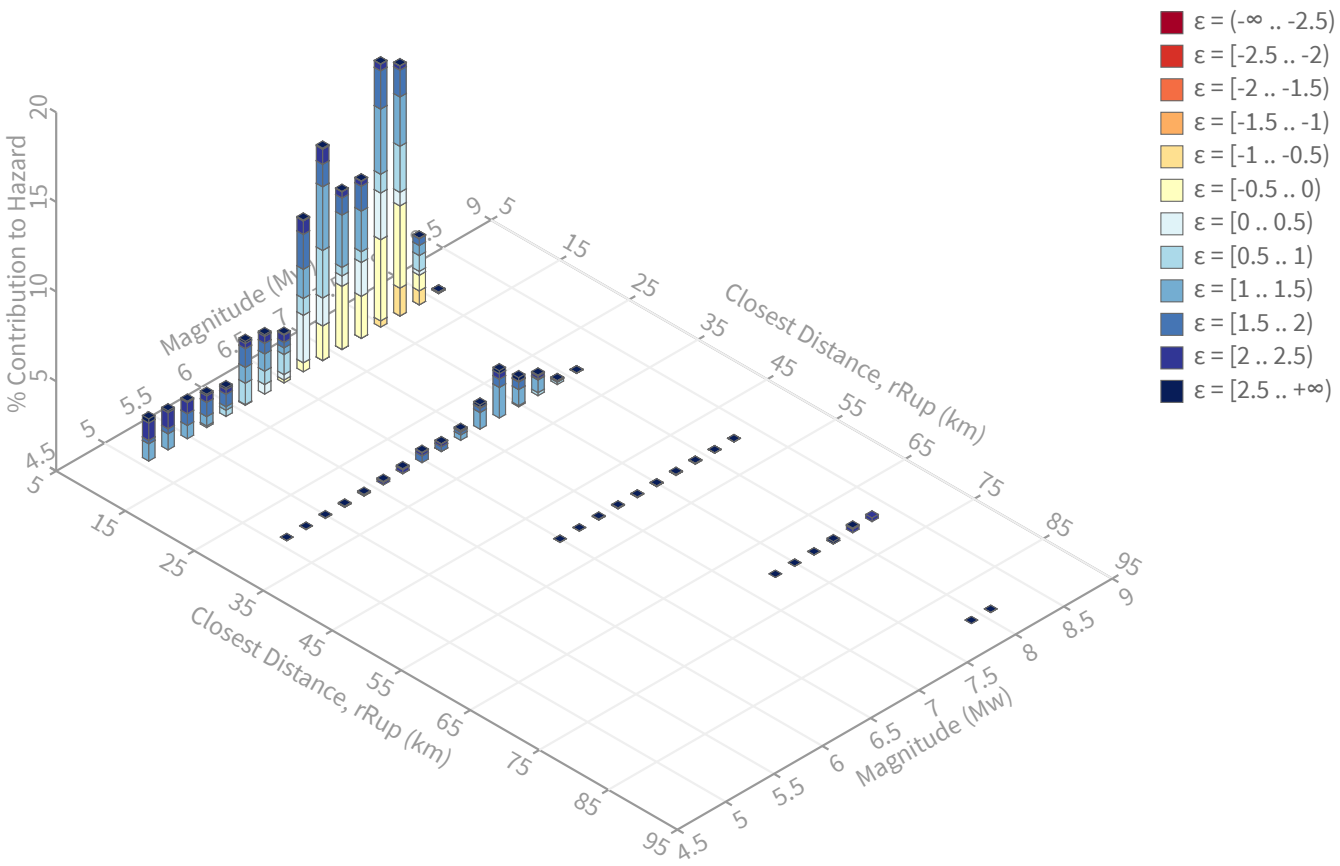


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.97556941 g

Recovered targets

Return period: 2817.403 yrs
Exceedance rate: 0.0003549368 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.11 %

Mean (for all sources)

r: 10.79 km
m: 7.01
ε_0: 0.93 σ

Mode (largest r-m bin)

r: 9.19 km
m: 7.53
ε_0: 0.57 σ
Contribution: 14.68 %

Mode (largest ε_0 bin)

r: 9.02 km
m: 7.68
ε_0: -0.22 σ
Contribution: 4.59 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							42.71
Simi-Santa Rosa [6]		5.61	6.98	0.59	119.102°W	34.222°N	71.68	10.00
Oak Ridge (Onshore) [0]		6.66	7.36	0.50	119.167°W	34.261°N	350.11	9.57
Oak Ridge (Offshore) [5]		11.12	6.87	1.03	119.273°W	34.240°N	288.48	5.05
Oak Ridge (Onshore) [1]		9.81	7.55	0.61	119.113°W	34.285°N	24.35	3.72
Ventura-Pitas Point [3]		10.11	7.51	0.59	119.195°W	34.290°N	338.13	3.62
Red Mountain [0]		20.69	7.13	1.42	119.304°W	34.347°N	318.73	1.76
Malibu Coast (Extension) alt 2 [3]		15.26	7.54	1.00	119.168°W	34.070°N	184.32	1.41
Ventura-Pitas Point [2]		10.11	7.18	0.76	119.195°W	34.290°N	338.13	1.05
UC33brAvg_FM31	System							39.83
Simi-Santa Rosa [6]		5.61	7.01	0.59	119.102°W	34.222°N	71.68	10.81
Oak Ridge (Onshore) [0]		6.66	7.43	0.48	119.167°W	34.261°N	350.11	9.71
Ventura-Pitas Point [3]		10.11	7.58	0.56	119.195°W	34.290°N	338.13	4.28
Oak Ridge (Onshore) [1]		9.81	7.65	0.58	119.113°W	34.285°N	24.35	3.48
Red Mountain [0]		20.69	7.23	1.36	119.304°W	34.347°N	318.73	1.97
Ventura-Pitas Point [2]		10.11	6.71	1.00	119.195°W	34.290°N	338.13	1.57
Channel Islands Thrust [0]		16.31	6.87	1.50	119.265°W	34.044°N	209.01	1.47
Malibu Coast (Extension) alt 1 [5]		15.26	7.33	1.10	119.172°W	34.068°N	185.62	1.11
UC33brAvg_FM31 (opt)	Grid							8.80
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.20
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.20
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
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UC33brAvg_FM32 (opt)	Grid							8.66
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07

Jeffrey Weinstein
Assistant Superintendent Business Services
Oxnard Union High School District
309 South K Street,
Oxnard, CA 93030

June 5, 2019

Subject: **Third Engineering Geology and Seismology Review for Oxnard Union High School District – New High School No. 8 North Rose Avenue and Camino Del Sol, Oxnard, CA CGS Application No. 03-CGS3810**

Dear Mr. Weinstein:

In accordance with your request and transmittal of documents received on January 18, May 16, and May 31, 2019, the California Geological Survey has reviewed the engineering geology and seismology aspects of the consulting reports prepared for the Oxnard Union High School District. It is our understanding this project involves construction of a new high school campus. This review was performed in accordance with Title 24, California Code of Regulations, 2016 California Building Code (CBC) and followed CGS Note 48 guidelines. We reviewed the following report:

> **Second Addendum Report, Geohazard Assessment/Geotechnical Investigation, High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California:** Earth Systems Pacific, 2049 Preisker Lane, Suite E, Santa Maria, California 93454; company Project No. 301953-002, response dated May 31, 2019, 10 pages, 2 tables, 6 figures, 3 appendices.

In addition, we previously reviewed the following reports:

> **Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California:** Earth Systems Pacific, 2049 Preisker Lane, Suite E, Santa Maria, California 93454; company Project No. 301953-002, report dated August 31, 2018, 10 pages, 6 appendices.
>
> **Geohazard Assessment/Geotechnical Investigation, High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California:** Tetra Tech, Inc., 5383 Hollister Avenue, Suite 130, Santa Barbara, California 93111; company Project No. 100-SBA-T38628, report dated October 11, 2018, 34 pages, 10 figures, 3 tables, 3 appendices.
>
> **Foundation Recommendations in the Geohazard Assessment/Geotechnical Investigation High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California:** Tetra Tech, Inc., 5383 Hollister Avenue, Suite 130, Santa Barbara, California 93111; company Project No. 100-SBA-T38628, report dated December 12, 2018, 1 page.

Addendum Report, Geohazard Assessment/Geotechnical Investigation, High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California: Earth Systems Pacific, 2049 Preisker Lane, Suite E, Santa Maria, California 93454; company Project No. 301953-002, response dated May 15, 2019, 10 pages, 2 tables, 6 figures, 3 appendices.

CGS previously reviewed and submitted our findings regarding this project in letters dated April 5, 2019 and May 24, 2019, in which additional information was requested regarding the site-specific ground motion analysis.

Discussion of Site-Specific Ground Motion Analysis

Based on this third review, the consultants have revised their site-specific ground motion analysis to appropriately incorporate spectral accelerations in the direction of maximum horizontal response. Their deterministic and probabilistic MCE spectra appear reasonable based on comparison with results from the State-Wide Model (from Petersen et al., 2008). The consultants report their site-specific seismic design parameters are: $\mathbf{S_{DS} = 1.385}\boldsymbol{g}$ and $\mathbf{S_{D1} = 1.204}\boldsymbol{g}$. The site-specific ground motion analysis presented appears to be reasonable and in accordance with ASCE 7-10.

Based on the discussion above, the consultants have addressed our earlier concern regarding the site-specific ground motion analysis. The consultants have now provided a thorough evaluation of engineering geology and seismology issues with respect to the proposed improvements.

In conclusion, ***the engineering geology and seismology issues at this site are adequately assessed in the referenced reports, and no further information is requested***. If you have any further questions about this review letter, please contact the primary reviewer at erik.frost@conservation.ca.gov.

Respectfully submitted,

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Concur:

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Job No. 100-SBA-T38628

Second Addendum Report
Geohazard Assessment/Geotechnical Investigation
High School No. 8
APN 214-002-059 on North Rose Avenue
Oxnard, California
CGS Application No. 03-CGS3810

Prepared for:

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May 31, 2019

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1.0 INTRODUCTION

On behalf of the Oxnard Union High School District (OUHSD), Tetra Tech has prepared this Second Addendum Report to the *Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-05 on North Rose Avenue, Oxnard, California* (Tetra Tech 2018) (Geohazard Assessment/Geotechnical Investigation Report). This Second Addendum Report was prepared in response to the California Geological Survey's (CGS's) comment in their letter dated May 24, 2019 (CGS 2019b) on the *Addendum, Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-05 on North Rose Avenue, Oxnard, California* (Addendum Report) (Tetra Tech 2019). The CGS comment indicates that the Site Specific Ground Motion Analysis in the Addendum Report is based on geometric mean spectral accelerations and that the analysis should be revised using the spectral accelerations in the direction of maximum horizontal response (also known as "maximum rotated component" or MRC). In response to CGS's comment, the Site Specific Ground Motion Analysis presented in this Second Addendum Report has been revised using EZ-FRISK calculations with attenuation relationships that consider MRC accelerations. The revised Site Specific Ground Motion Analysis presented in Sections 2.0 through 2.10 of this Second Addendum Report addresses the CGS comment and should be used in place of Sections 6.0 through 6.2.8 of the Geohazard Assessment/Geotechnical Investigation Report (Tetra Tech 2018) and Sections 2.0 through 2.10 of the Addendum Report (Tetra Tech 2019).

This Second Addendum Report contains three appendices as references for the information presented in the report:

- Appendix A – Recommendations for Shear Wave Velocity (Earth Systems Pacific [ESP] 2019);
- Appendix B – EZ-FRISK Program Reports and Data Tables; and
- Appendix C – USGS Earthquake Hazards Program Website Data.

2.0 SITE SPECIFIC EARTHQUAKE GROUND MOTION ANALYSIS

2.1 SETTING

The Site location is shown on Figure 1. The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). The geographic coordinates of the Site are approximately Latitude 34° 12' 27.76" North, Longitude 119° 9' 19.44" West. Surface elevations at the Site are approximately 63 feet above mean sea level (EDR 2017).

The Site is in a region of generally high seismicity and has the potential to experience strong ground shaking from earthquakes on regional or local causative faults. According to the 2016 California Building Code (CBC) Section 1616A.1.3 (International Code Council [ICC] 2017), the Site should be assigned to Seismic Design Category E or F, as the Site's mapped spectral response acceleration parameter at a 1-second period (S_1) is 0.938 g, which is greater than 0.75 g (see Table 1 American Society of Civil Engineers [ASCE] 7-10 Standard Acceleration Parameters in Section 2.6 of this report). Based on this S_1 parameter, a site-specific response analysis is warranted to analyze the ground motion hazard at the Site. The site-specific response analysis is intended to be in general conformance with the CBC (ICC 2017) and ASCE Standard 7-10, Chapter 21, Site Specific Ground Motion Procedures

for Seismic Design, Sections 21.1.1 through 21.5.3 (ASCE 2013). ASCE 7-10 (ASCE 2013) requires that the following site-specific seismic information be developed:

- Risk-Targeted Maximum Considered Earthquake (MCE_R) Probabilistic and Deterministic response curves;
- Site-Specific MCE_R spectral response curve; and
- Site Design Response Curve (2/3 Site-Specific MCE); and 4) Site Design Acceleration Parameters.

The MCE_R is defined as an event having a 2 percent chance of exceedance in 50 years, with a return period of approximately 2,475 years, which is expected to achieve a 1 percent probability of partial or total structure collapse within a 50-year period. The deterministic and probabilistic ground motions were calculated using the USGS 2008 Lower 48 California outside of Cascadia seismic source database and Next Generation Attenuations (NGA) from the EZ-FRISK program Version 7.65 by Fugro (Fugro 2019). The NGAs used for this ground motion analysis consider MRC accelerations and were as follows: 1) Boore & Atkinson, 2008 NGA USGS MRC; 2) Campbell & Bozorgnia, 2008 NGA USGS MRC; and 3) Chiou & Young, 2007 NGA USGS MRC, all of which are applicable to shallow crustal earthquakes in the western United States. These three NGAs was used for determining the Probabilistic MCE_R and Deterministic MCE_R.

2.2 SITE SPECIFIC SHEAR WAVE VELOCITY (V_{S30})

ASCE 7-10 (ASCE 2013) Section 20.1 requires that site soils shall be classified in accordance with Table 20.3-1 and Section 20.3 based on the upper 100 feet (30 meters) of the site profile. Earth Systems Pacific developed a Site Specific Shear Wave Velocity (V_{S30}) for the geologic profile of the Site from upper 100 feet (30 meters) using the average of the sampler blow counts from the seven deeper borings B-1, B-2, B-16, B-22, B-35, B-43, and B-51, which are shown on Figure 2 circled in red. Cal sampler blow counts were converted to equivalent SPT blow counts by using a reduction factor of 0.63. The boring logs for borings B-1, B-2, B-16, B-22, B-35, B-43 are included as Appendix A of ESP's report in Appendix A. The sampler blow counts used are circled in red on the boring logs (ESP 2019).

The average field standard penetration resistance or average SPT N blow counts were determined by using the equation listed in Section 20.4-2 of Chapter 20 of the ASCE 7-10 (ASCE 2013). Two analyses of the blow count information were performed. One analysis only considered the upper approximately 50 feet of soil and the other used the same information from the upper 50 feet of soil and then used the deepest SPT blow counts to extrapolate information down to a depth of 100 feet. The results of the analyses yielded average SPT N blow counts of approximately 17 for the 50-foot analysis and 21 for the 100-foot analysis. See the analyses presented in Appendix B of ESP's report in Appendix A.

Based on the analyses, ESP recommended using the higher average SPT blow count of 21 for estimating the shear wave velocity as this will likely lead to a higher ground acceleration than using the lower average SPT blow count of 17. Table 20.3-1 of ASCE 7-10 (ASCE 2013) indicates that the V_{S30} for Class D Soils ranges from 600 feet/second to 1,200 feet/second. Comparing the average SPT blow count of 21 to the information listed in Table 20.3-1 Site Classification of ASCE 7-10, a V_{S30} shear wave velocity of 705 feet/second (215 meters/second) was estimated for the Site Specific Ground Motion Analysis. This V_{S30} value of 705 feet/second (215 meters/second) was used in the ground motion analyses performed by

Fugro's EZ-FRISK program Version 7.65 as described in Sections 2.3 and 2.4 and documented in the program output in Appendix B.

2.3 PROBABILISTIC (MCE_R) GROUND MOTIONS

To develop the probabilistic MCE_R spectrum for the Site, the EZ-FRISK program Version 7.65 by Fugro was used (Fugro 2019). Mapped faults within a 105-kilometer radius (65 miles) were selected from the program database. The peak horizontal ground acceleration (PGA) and spectral accelerations, at 5 percent damped for a Site Class "D" (ASCE, 2013), were estimated using the NGAs mentioned above. The MRC of these three generated curves was used as the probabilistic MCE_R response spectrum. The ordinates of the probabilistic ground motions were then computed using Method 1 of ASCE 7-10 Section 21.2.1.1 (ASCE, 2013). To obtain the probabilistic MCE_R spectrum using this method, at each spectral response period for which the acceleration is computed, the ordinates of the probabilistic ground motion are determined as the product of the risk coefficient C_R, and the spectral response acceleration from a 5 percent damped acceleration response spectrum having a two percent probability of exceedance within a 50-year period. The value of the risk coefficient C_R is determined using the values of C_{RS} (0.910) and C_{R1} (0.909) from Figures 22-17 and 22-18 of ASCE 7-10 (ASCE, 2013) that were obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix C). The ground motions were multiplied by the mapped risk coefficient C_{RS} (0.910) at periods up to 0.2 seconds, and C_{R1} the mapped risk coefficient (0.909) at periods greater than or equal to 1 second. At response spectral periods greater than 0.2 seconds and less than 1.0 seconds, C_R was based on linear interpolation of C_{RS} and C_{R1}. The Probabilistic Response Spectra (MCE_R) are included in a single graph presented in Figure 3. The Probabilistic MRC with Risk Component PGA (MCE_G) is 0.943g (includes risk factor), which is the PGA with a 2 percent probability of exceedance within a 50-year period.

2.4 DETERMINISTIC (MCE_R) GROUND MOTIONS

A deterministic analysis using the NGAs was performed using the EZ-FRISK program Version 7.65 by Fugro (Fugro 2019) in accordance with ASCE 7-10 (ASCE, 2013). The parameters used in this analysis included the stiff soil classification (Site Class "D"), and the controlling seismic source being the late Quaternary Oak Ridge—Connected-Fault with a maximum magnitude of 7.40 and 5.04 kilometers from the Site and the Oak Ridge (Onshore)-Fault with a maximum magnitude of 7.20 and 5.72 kilometers from the Site. Values for the three spectral NGA curves were calculated using EZ-FRISK. The MRC of the obtained values was used as the basis for calculating the Deterministic Response Spectrum (MCE_R) presented on the graph in Figure 4. The Deterministic (MCE_R) Lower Limit was calculated using F_a = 1.00 and F_v = 1.50, obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix C). The Deterministic Response Spectra (MCE_R) are included in a single graph presented in Figure 4.

ASCE 7-10 Section 21.2.2 (ASCE, 2013) requires that the ordinates of the deterministic ground motion response spectrum shall not be less than the corresponding ordinates of the Deterministic Lower Limit determined in accordance with Figure 21.2.1. The ordinates of the Deterministic MRC (MCE_R) spectrum are higher than or equal to the corresponding ordinates of the Deterministic Lower Limit response spectrum at all spectral periods. Therefore, it is our opinion that the Deterministic MRC spectrum curve should comprise the Deterministic Site Specific (MCE_R) curve at all spectral periods. This Deterministic Site-Specific (MCE_R) is indicated by the red dashed line on the Deterministic Response Spectra graph presented in Figure 4.

The Deterministic MRC (MCE_R) PGA is 1.03g, which was calculated from the largest source earthquake from the Oak Ridge-Connected-Fault.

2.5 SITE-SPECIFIC (MCE_R)

The Site-Specific (MCE_R) was developed in accordance with ASCE 7-10 (ASCE, 2013). The Site-Specific (MCE_R) is defined by ASCE 7-10, Section 21.2.3 (ASCE, 2013) as the lesser of the Probabilistic (MCE_R) and the Deterministic (MCE_R). A review of the Probabilistic and Deterministic MRC Response Spectra graphs presented in Figure 5 indicates that the Probabilistic (MCE_R) spectral response acceleration curve is the lesser curve for periods less than 0.13 seconds and greater than 0.23 seconds and the Deterministic MRC spectral response acceleration curve is the lesser curve for periods greater than 0.13 seconds and less than 0.23 seconds. Therefore, the Site-Specific (MCE_R) should consist of the Probabilistic MRC with Risk Coefficient spectral response curve for periods less than 0.13 seconds and greater than 0.23 seconds and the Deterministic MRC spectral response acceleration for periods greater than 0.13 seconds and less than 0.23 seconds. The Probabilistic MRC with Risk Coefficient curve, Deterministic Site Specific (MCEr) curve, and Site-Specific (MCE_R) curve are presented in Figure 5.

2.6 ASCE 7-10 STANDARD ACCELERATION PARAMETERS

The site coefficients mapped and design seismic ground motions that could occur at the Site were analyzed based on the CBC (ICC 2017) and ASCE 7-10 Standard method (ASCE, 2013). The site coordinates used in this analysis were latitude 34.2077 north and longitude 119.1554 west (Google Earth 2018), with a Site Classification of "D". The ASCE 7-10 Standard method available on the USGS Earthquake Hazards Program website (USGS 2018a) was used (Appendix C). The results of the seismic ground motion analysis are presented in Table 1.

Table 1
ASCE 7-10 Standard Acceleration Parameters

Mapped Acceleration Values for Site Class "B"		**Site Coefficients and Adjusted MCE_R Design Response Spectrum Acceleration Parameters For Site C ass "D"**					
Seismic Parameters	**Values (g)**	**Site Coefficients**	**Values**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_S	2.596	F_a	1.000	S_{MS}	2.596	S_{DS}	1.731
S_1	0.938	F_v	1.500	S_{M1}	1.407	S_{D1}	0.938

2.7 DESIGN RESPONSE SPECTRUM

The Site Design Response Spectra were developed in accordance with ASCE 7-10 (ASCE, 2013). Per ASCE 7-10 Section 21.3 (ASCE, 2013), the Site Design Response Spectra is obtained by taking 2/3 of the Site-Specific (MCE_R), except that the ordinates shall not be less than those obtained from 80% of the ASCE 7-10 Standard adjusted Design Response Spectra values per ASCE 7-10 Section 11.4.5 (ASCE, 2013). The accelerations for 2/3 of the Site-Specific (MCE_R) were lower than 80% of the ASCE 7-10 Standard adjusted Design Response Spectra for periods between 0.013 and 0.63 seconds, and higher for periods lower than 0.013 seconds and greater than 0.63 seconds, as shown on the Site Design Response Spectra graph presented in Figure 6. Therefore, the Governing Site Design Response Spectrum should consist of the ground accelerations for 80% of the ASCE 7-10 Standard adjusted Design Response Spectrum for periods between 0.013 and 0.63 seconds, and the ground accelerations for 2/3 of the Site-Specific (MCE_R) for periods lower than 0.013 seconds and greater than 0.63 seconds. This Governing

Site Design Response Spectrum combination is indicated by the red dashed line on the Site Design Response Spectra graph presented in Figure 6.

Note that ASCE 7-10, Section 21.4 (ASCE, 2013), requires that the parameter S_{DS} shall be obtained from site-specific spectra as the spectral acceleration S_a, determined in accordance with ASCE 7-10, Section 21.3, at a period of 0.2 second (1.385g), except it shall not be taken as less than 90 percent of the peak acceleration, S_a, at any period larger than 0.2 seconds. In this case, S_a is greater than 90 percent of the peak acceleration spectral acceleration at any period larger than 0.2 seconds. The parameter S_{D1} shall be taken as the greater of the spectral acceleration, S_a, at a period of 1 second (1.020g) or two times the spectral acceleration, S_a, at 2 seconds (0.602g). In this case, the value at two times the spectral acceleration, S_a, at a period of 2 seconds is higher (2 x 0.602g = 1.204g), and therefore, 1.204g shall be used as the value for S_{D1}. The parameters S_{MS} and S_{M1} were taken as 1.5 times S_{DS} and S_{D1}, respectively. The Site Design Response Parameters are provided in Table 2.

Table 2
Site Design Response Parameters

80% of the ASCE 7-10 Design Response Spectrum Acceleration Values for Site Class "D"				**Site Design Response Spectrum Acceleration Values for Site Class "D"**			
Seismic Parameters	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_{MS}	2.077	**S_{DS}**	1.385	**S_{MS}**	2.077	**S_{DS}**	1.385
S_{M1}	1.125	**S_{D1}**	0.750	**S_{M1}**	1.805	**S_{D1}**	1.204

2.8 MAXIMUM CONSIDERED EARTHQUAKE MRC (MCE_G) PEAK GROUND ACCELERATION

2.8.1 Probabilistic (MCE_G) Peak Ground Acceleration

The Probabilistic MRC PGA (MCE_G) is 0.943g (includes risk factor), taken as the MRC PGA with a 2% probability of exceedance over a 50-year period.

2.8.2 Deterministic (MCE_G) Peak Ground Acceleration

The Deterministic MCE_G MRC PGA is 1.03g, taken as the MRC peak ground acceleration of the largest 84th percentile earthquake, which was the late Quaternary Age Oak Ridge—Connected-Fault located approximately 5.04 kilometers north of the Site and the Oak Ridge (Onshore)-Fault located approximately 5.72 kilometers north the Site.

ASCE 7-10, Section 11.8.3 (ASCE, 2013) indicates that the Site PGA for evaluation of potential liquefaction and soil strength loss shall be determined based on the peak ground acceleration adjusted for site class effects (PGA_M) from equation 11.8-1 ($PGA_M = F_{PGA}$ PGA) using the coefficient F_{PGA} from Table 11.8-1. The PGA value is based on the mapped Maximum Considered Earthquake (MCE) ground motion peak ground acceleration shown on Figure 22-7 of ASCE 7-10 (1.02g) that was obtained from the USGS Earthquake Hazards Program website (USGS 2018) (Appendix C). For Site Class = D, PGA = 1.02g, and $F_{PGA} = 1.0$. Therefore, $PGA_M = 1.02$g and should be used as the Deterministic MCE_G MRC PGA.

2.8.3 Site Specific (MCE_G) Peak Ground Acceleration

ASCE 7-10 Section 21.5.3 indicates that the site-specific MCE_G PGA is the lesser of the Probabilistic (MCE_G) and the Deterministic (MCE_G) except that it cannot be less than 80 percent of the PGA_M determined from ASCE 7-10 Equation 11.8-1. In this case, the Probabilistic (MCE_R) MRC PGA of 0.943g is the lesser PGA. The Probabilistic (MCE_R) MRC PGA of 0.943g is greater than 80 percent of the PGA_M = 1.02g X 80% = 0.816g determined from ASCE 7-10 Eq. 11.8-1 (ASCE, 2013). Therefore, the site-specific MCE_G PGA should be Probabilistic (MCE_R) MRC PGA of 0.943g (ASCE 2013).

2.9 DEAGGREGATED SEISMIC PARAMETERS

A seismic hazards analysis procedure was used to estimate the probabilistic modal magnitude at the Site using the USGS Unified Hazard Tool available at the USGS Earthquake Hazards Program Website (USGS 2018b) (Appendix C; USGS 2018b). The Probabilistic Maximum Considered Earthquake (MCE) was used in the analysis. The MCE is defined as having a 2 percent chance of exceedance in 50 years, with a return period of approximately 2,475 years. The results of this analysis indicate that the Site could experience a probabilistic mean magnitude of 7.01g at a distance of 10.78 km.

2.10 SEISMIC DESIGN CATEGORY

The S_1 calculated for the Site is 0.938g (Appendix C; USGS 2018b). CBC Section 1613A.3.5 (CBSC, 2013) states that structures assigned to Risk Category I, II, or III where the $S_1 \geq 0.75$g should be assigned to Seismic Design Category E. If structures are assigned to Risk Category IV, they should be assigned to Seismic Design Category F.

3.0 CONCLUSIONS AND RECOMMENDATION

The Site Specific Ground Motion Analysis presented in Sections 2.0 through 2.10 of this Second Addendum Report was performed using the spectral accelerations in the direction of maximum horizontal response (also knowns as "maximum rotated component" or MRC). Sections 2.0 through 2.10 of this Second Addendum Report should be used in place of Sections 6.0 through 6.2.8 of the Geohazard Assessment/Geotechnical Investigation Report (Tetra Tech 2018) and Sections 2.0 through 2.10 of the Addendum Report (Tetra Tech 2019). No other changes were made to the findings, conclusions, or recommendations of the Geohazard Assessment/Geotechnical Investigation Report (Tetra Tech 2018) based on the results of the Site Specific Ground Motion Analysis presented in this Second Addendum Report. Tetra Tech concludes that with the inclusion of this Second Addendum Report to the Geohazard Assessment/Geotechnical Investigation Report (Tetra Tech 2018), the engineering geology and seismology issues for the OUHSD High School No. 8 Site are adequately addressed in accordance with CGS Note 48 guidelines (CGS 2014). Tetra Tech recommends that the CGS issue a letter stating that with the inclusion of this Second Addendum Report to the Geohazard Assessment/Geotechnical Investigation Report (Tetra Tech 2018), the engineering geology and seismology issues for the OUHSD High School No. 8 Site are adequately addressed in accordance with CGS Note 48 guidelines (CGS 2014).

4.0 DISCLAIMER

This report was compiled based partially on information supplied to Tetra Tech from outside sources and other information, which is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others which may be contained in the report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for the report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under local, state, or federal laws or any modifications or changes to such laws.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

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5.0 REFERENCES

American Society of Civil Engineers (ASCE)

2013 *Standard 7-10, Minimum Design Loads for Buildings and other Structures (7-10, third printing).*

California Department of Conservation, California Geological Survey (CGS)

2014 *Note 48. Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*. October.

California Department of Conservation, California Geological Survey (CGS)

2019a *Engineering Geology and Seismology Review for Oxnard Union High School – New High School North Rose Avenue and Camino Del Sol, Oxnard, CA, CGS Application No. 03-CGS3810*. April 5.

2019b *Second Engineering Geology and Seismology Review for Oxnard Union High School District — New High School No. 8 North Rose Avenue and Camino Del Sol, Oxnard, CA, CGS Application No. 03-CGS3810.* May 24.

Earth Systems Pacific (ESP)

2019 *Recommendations for Shear Wave Velocity*. April 19.

Environmental Data Resources, Inc. (EDR)

2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Fugro

2019 EZ-FRISK Seismic Hazard Analysis Program. April 24 – July 24.

Google Earth

2018 Imagery. January 9.

International Code Council (ICC)

2017 2016 California Building Code (CBC). January 1.

Tetra Tech

2018 *Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-05 on North Rose Avenue, Oxnard, California*. October 11.

2019 *Addendum, Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-05 on North Rose Avenue, Oxnard, California*. May 15.

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program

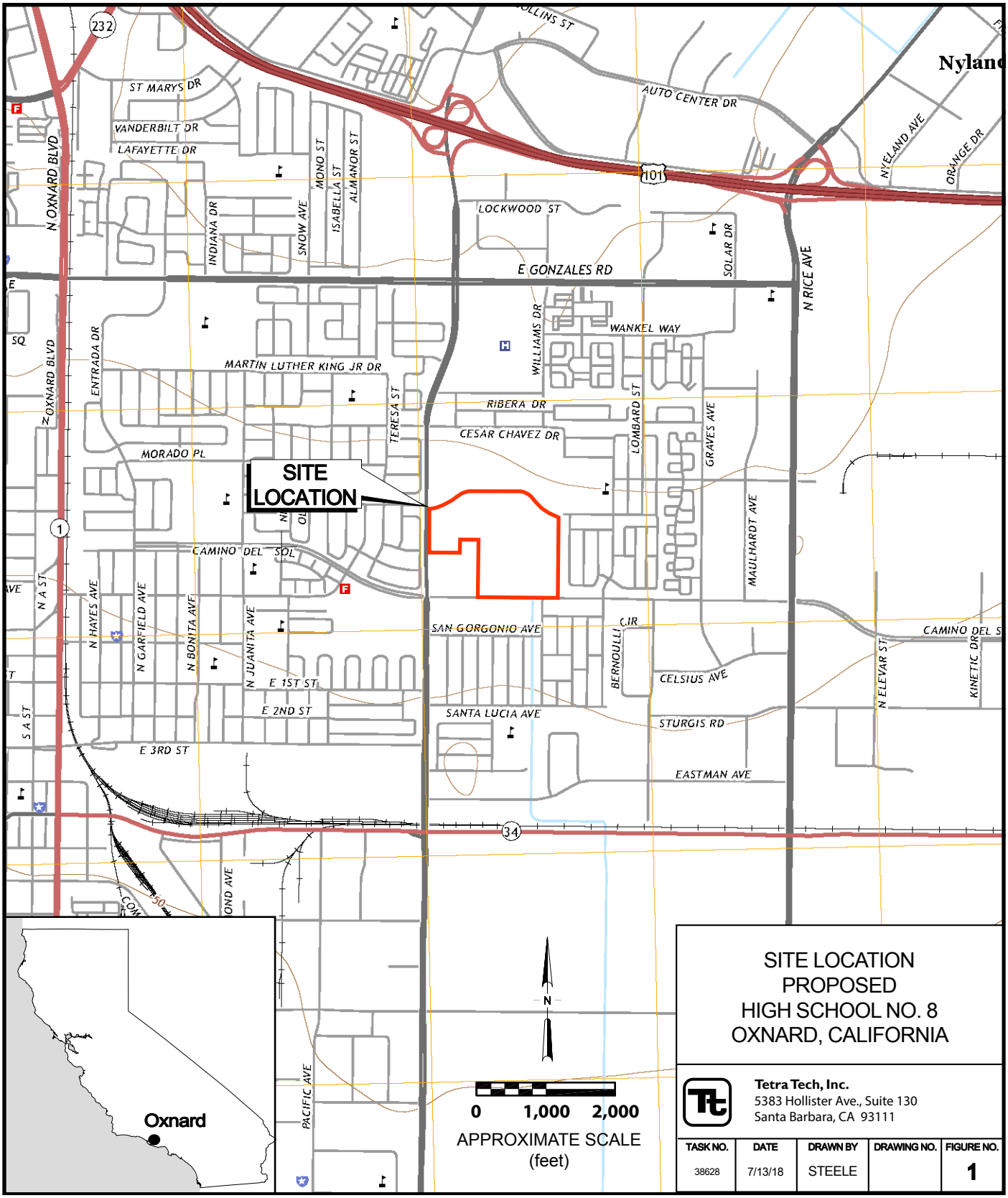
2018a U.S. Seismic Design Maps. https://earthquake.usgs.gov/hazards/designmaps/. May.

2018b Unified Hazard Tool. https://earthquake.usgs.gov/hazards/interactive/. May.

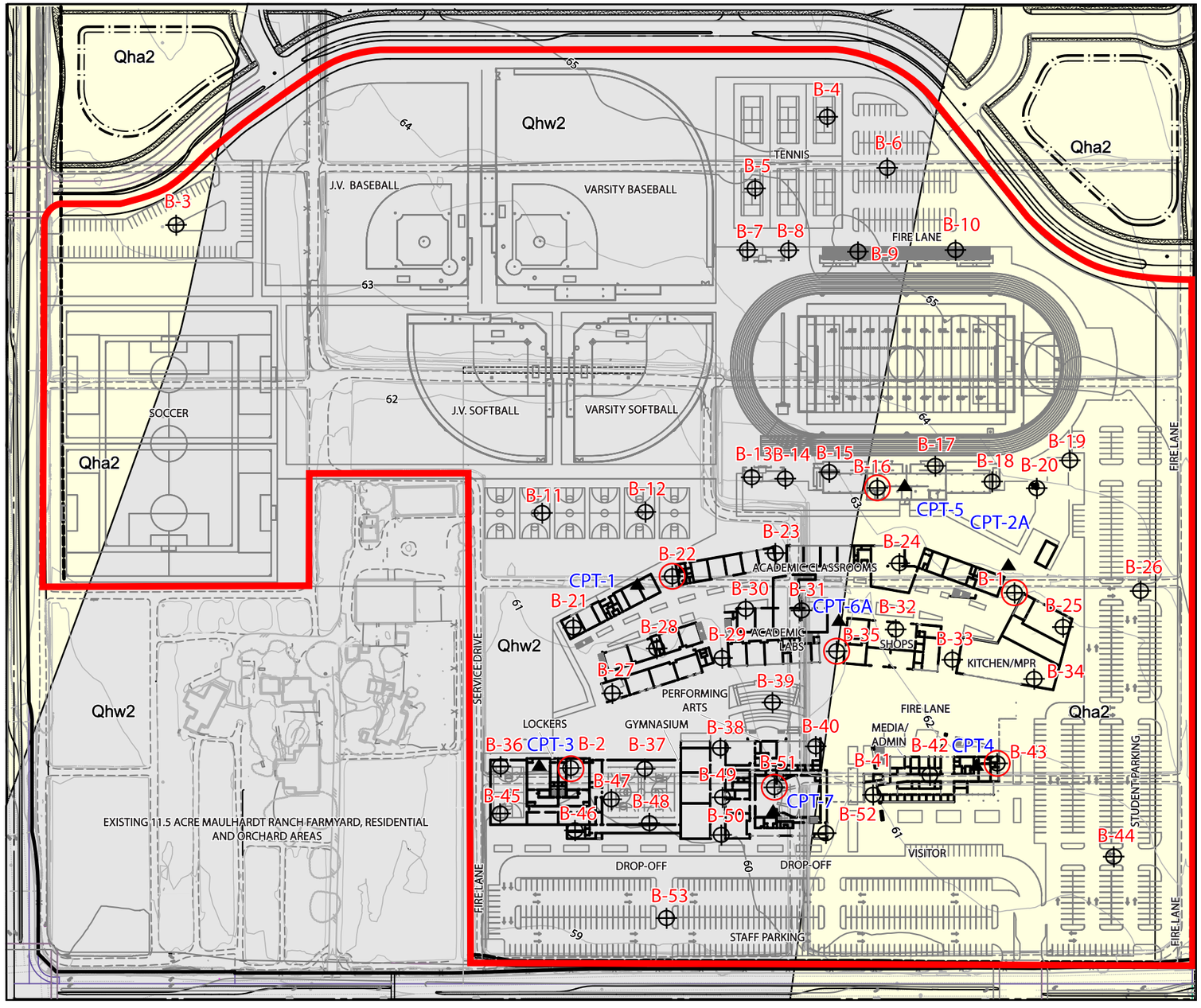
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FIGURES

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Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Boundary

63 Surface Elevation Contour
Feet Above Mean Sea Level

Borings and Soundings

- Hollow Stem Auger (HSA) Exploratory Soil Boring
- HSA Exploratory Soil Boring Used for V_{S30} Estimate
- ▲ Cone Penetrometer Test (CPT) Sounding

Geologic Formations

- **Qhw2** Holocene Alluvial Wash Deposits, Associated With Qha2
- **Qha2** Holocene Alluvium and Colluvial Deposits, Associated With Qhw2

Notes:

1) All features locations, including borings, CPT soundings,building, utility, and boundary locations are approximate.

2) The geologic formations are based on the *Geologic Map of the Santa Barbara 30' x 60' Quadrangle, California* (Gutierrez, et al. 2008)

3) The map shows the proposed school campus features superimposed on the existing Maulhardt Ranch facilities and is based on the *Northeast Community Specific Plan Maulhardt Property Urban Village Site Plan* (Jensen Design and Survey June 20, 2018).

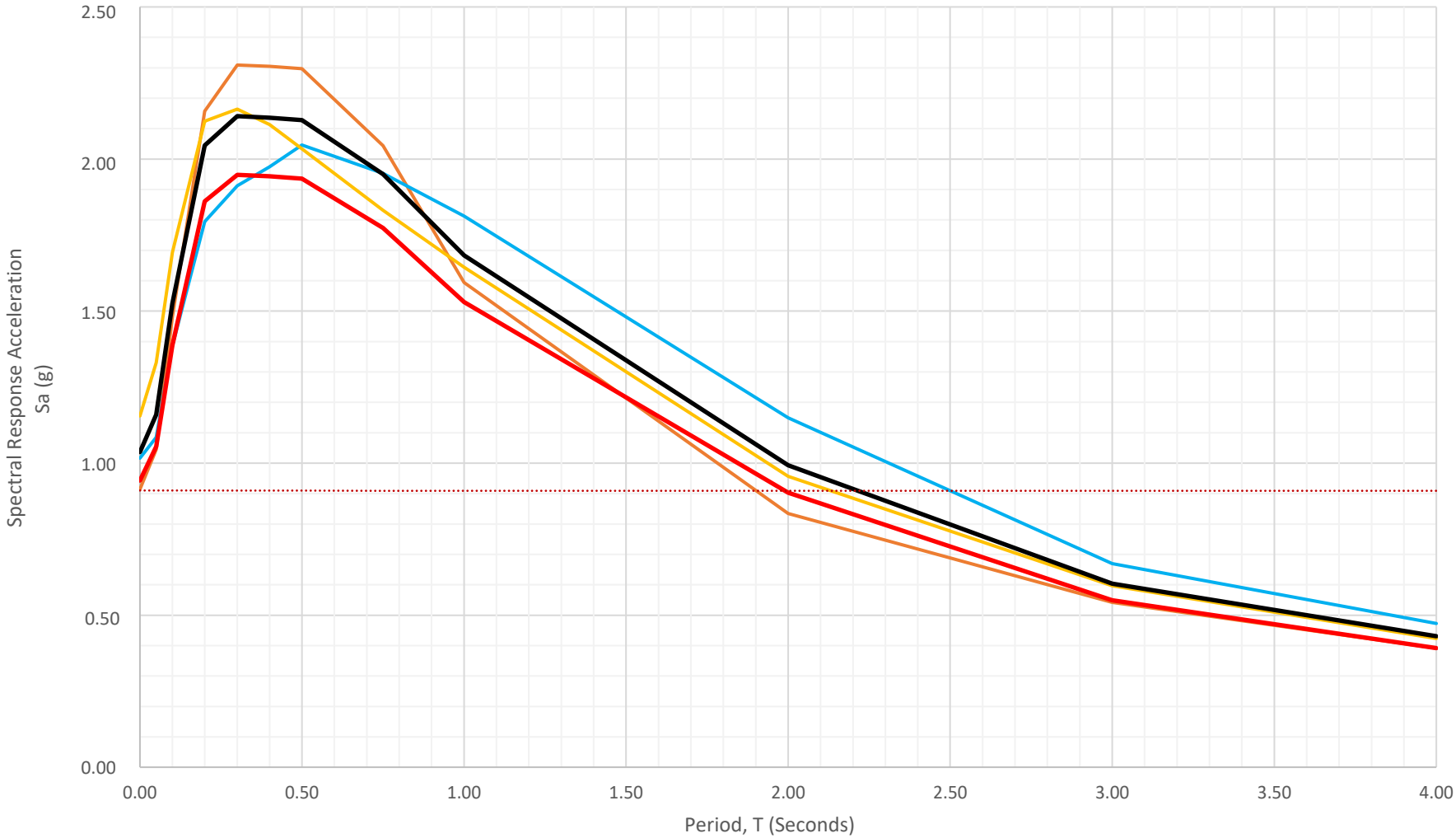
N

0 100 200 400
Feet

SITE PLAN/GEOLOGIC MAP
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
T38628	5/10/2019	JRS		2

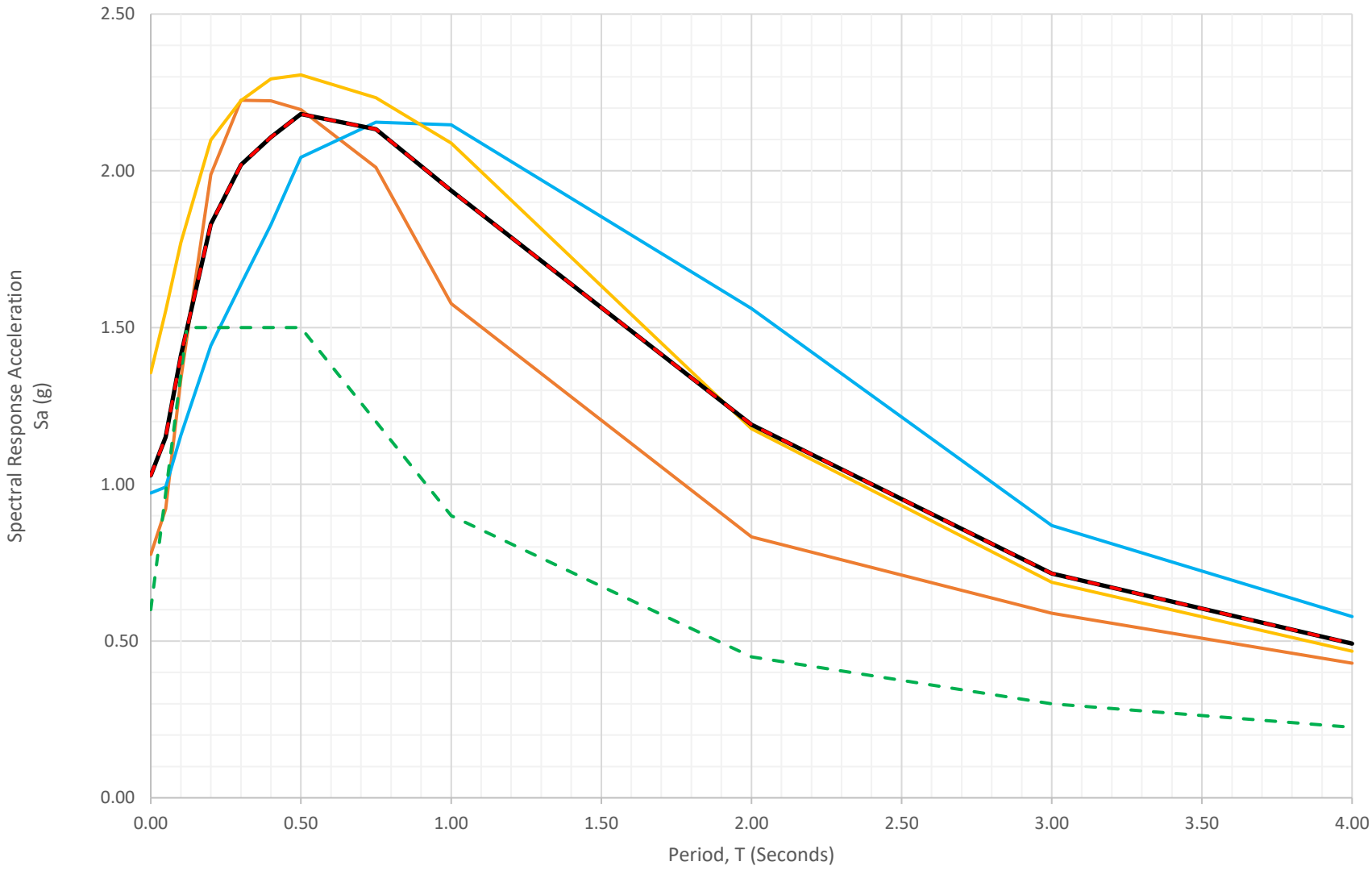


Note:
MRC = Maximum Rotated Component

PROBABLISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T38628	5/30/2019	JRS	3

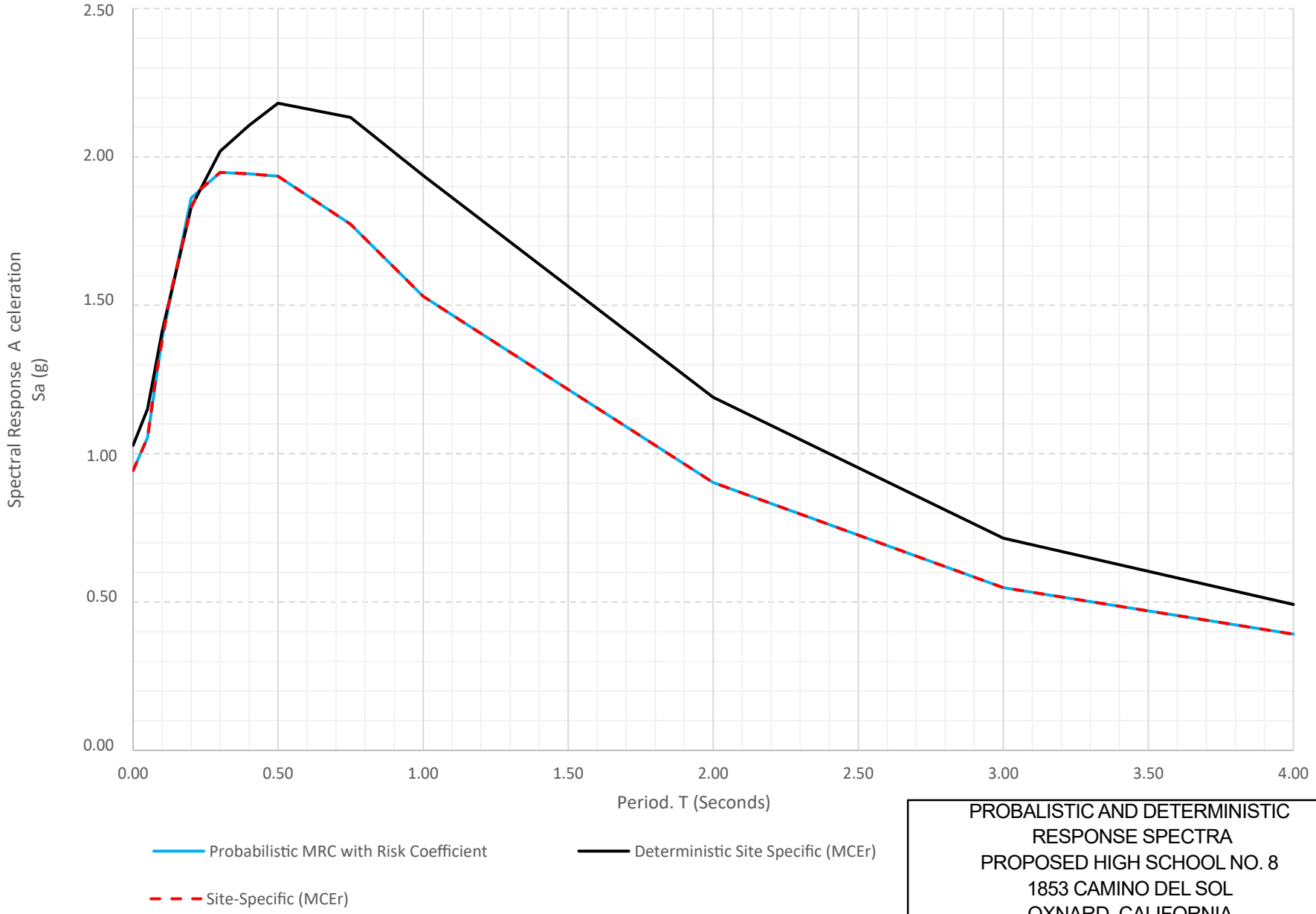


DETERMINISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T38628	5/30/2019	JRS	4

Notes:
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component

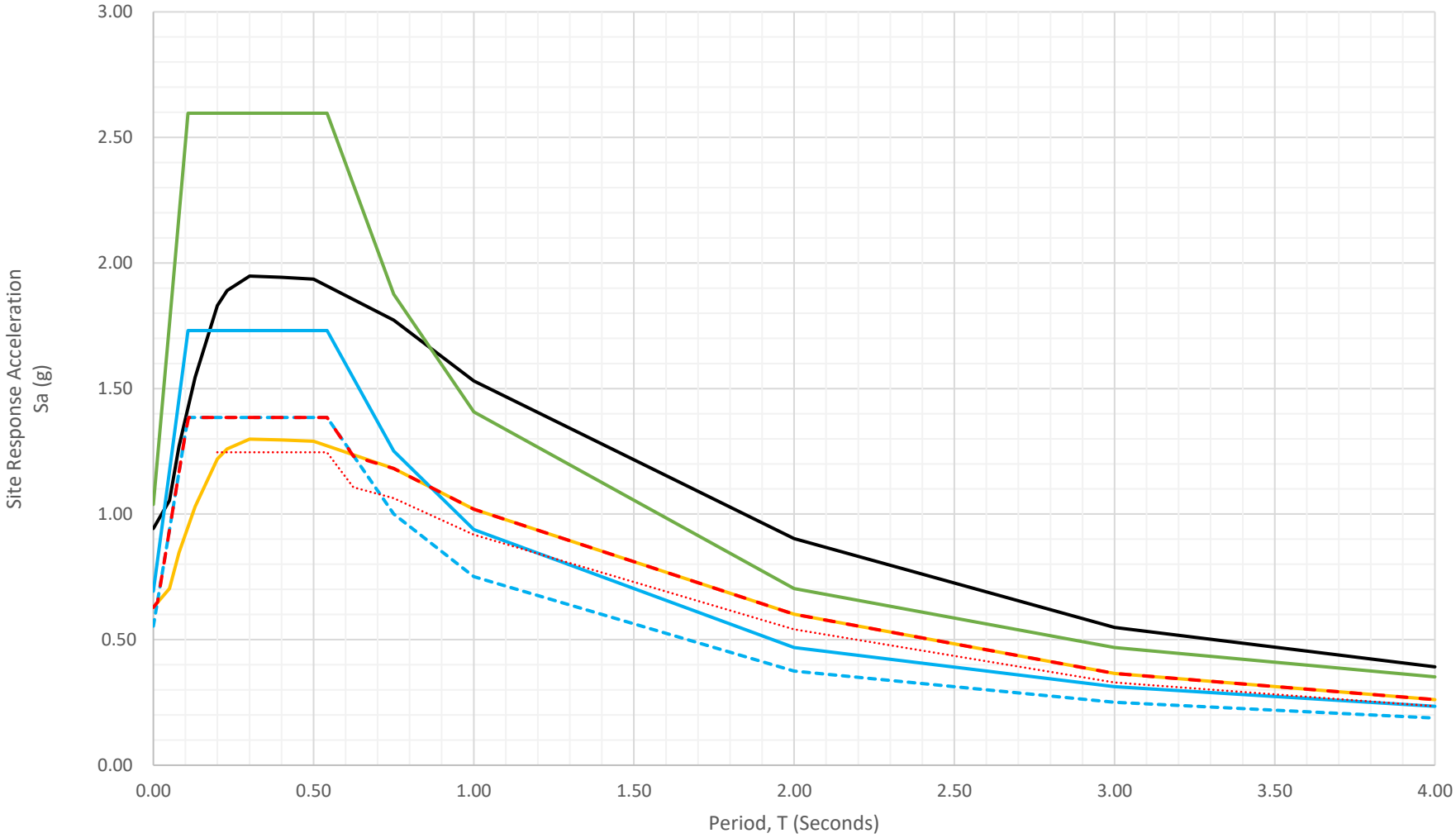


PROBALISTIC AND DETERMINISTIC
RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T38628	5/30/2019	JRS	5

Notes:
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component



Notes:
MCE = Maximum Considered Earthquake
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component

SITE DESIGN RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T38628	5/30/2019	JRS	6

A - RECOMMENDATIONS FOR SHEAR WAVE VELOCITY

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Earth Systems
2049 Preisker Lane, Suite E | Santa Maria, CA 93454 | Ph: 805.928.2991 | www.earthsystems.com

April 19, 2019

File No.: 301953-002

Mr. James R. Steele
Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, California 93111

PROJECT: OXNARD HIGH SCHOOL NO. 8
NORTHEAST OF CAMINO DEL SOL AND NORTH ROSE AVENUE
OXNARD, CALIFORNIA

SUBJECT: Recommendations for Shear Wave Velocity

REF: Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California, by Earth Systems Pacific, dated August 31, 2018, Doc. No. 1808-091.SER

Dear Mr. Steele:

This letter presents our recommendations for the shear wave velocity that should be used for the site-specific seismic analysis at the Oxnard High School No. 8 project. The project is located northeast of Camino Del Sol and North Rose Avenue in the City of Oxnard, California.

To develop the estimated shear wave velocity, we used the average of the sampler blow counts from the seven deeper borings (B-1, B-2, B-16, B-22, B-35, B-43, and B-51). Cal sampler blow counts were converted to equivalent SPT blow counts by using a reduction factor of 0.63. Please refer to the borings presented in Appendix A. The sampler blow counts used are circled in red.

We determined the average field standard penetration resistance or average SPT N blow counts by using the equation listed in Section 20.4-2 of Chapter 20 of the American Society of Civil Engineers (ASCE) 7-10. We performed two analyses of the blow count information. One analysis only considered the upper approximately 50 feet of soil and the other used the same information from the upper 50 feet of soil and then used the deepest SPT blow counts to extrapolate information down to depth of 100 feet. The results of the analyses yielded average SPT N blow counts of approximately 17 for the 50-foot analysis and 21 for the 100-foot analysis. See the analyses presented in Appendix B.

Based on the analyses, we recommend using the higher average SPT blow count of 21 for estimating the shear wave velocity as this will likely lead to a higher ground acceleration than using the lower average SPT blow count of 17. Comparing the average SPT blow count of 21 to the information listed in Table 20.3-1 Site Classification, we estimated a shear wave velocity of 705 feet/second or 215 meters/second and recommend using this value for the site-specific seismic analysis.

If there are any questions concerning this letter, please do not hesitate to contact the undersigned.

Sincerely,

Earth Systems Pacific

Doug Dunham

Doug Dunham, GE
Associate Engineer



Appendix A: Boring Logs
Appendix B: Average N Value Calculations

Doc. No.: 1904-031.LTR/ln

APPENDIX A

Boring Logs

Earth Systems Pacific

Boring No. 1
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 04-10-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, moist (Alluvium)	0-4	○			
4			thin lens of sandy silt					
4	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	■	98.0	3.5	2 4 6 (6)
10	SW		WELL GRADED SAND: gray brown, medium dense, moist	10.0-11.5	■	108.6	3.1	5 10 15 (16)
13			trace fine to coarse gravel					
				15.0-16.5	■	115.0	3.5	9 20 24 (28)
				20.0-21.5	●			9 16 21 (37)
24			wet ▼					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 1
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 04/10/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN
27	SW		WELL GRADED SAND: as above					
30	SW-SM		WELL GRADED SAND WITH SILT AND GRAVEL: gray brown, dense, wet, fine to coarse gravel	30.0-31.5	●			6, 17, 20 (37)
40			medium dense, thin discontinuous lenses of fine to very fine grained silty sand	40.0-41.5	●			3, 4, 12 (16)
50			dense	50.0-51.5	●			8, 15, 21 (36)
52			End of Boring @ 51.5' Subsurface water encountered @ 24.5'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 1 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04-10-2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, moist (Alluvium)	0-2.5	○			
2	ML		SANDY SILT: gray brown, mediumstiff, moist, trace clay	2.5-5	○			
5	SP		POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	▬	99.5	7.3	4 5 9 (9)
6				5-9	○			
9			gray brown, medium dense	10.0-11.5	▬	110.6	4.9	7 14 21 (22)
12	SW		WELL GRADED SAND: gray brown, medium dense, moist, trace fine to coarse gravel	15.0-16.5	▬	106.2	3.9	9 16 25 (26)
20				20.0-21.5	●			3 5 6 (11)
21			wet ▼					

LEGEND: ▬ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04/10/2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SP		POORLY GRADED SAND: brown, medium dense, wet, medium grained, trace fine to coarse gravel, thin lenses of sandy silt					
30				30.0-31.5	●			4, 7, 9 (16)
32			some gravel					
34	SW-SM		WELL GRADED SAND WITH SILT: gray brown, medium dense, wet, trace fine to coarse gravel					
39			gray					
40				40.0-41.5	●			7, 9, 11 (20)
48	SM		SILTY SAND: gray, medium dense, wet, fine grained					
50				50.0-51.5	●			5, 7, 12 (19)
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 16
PAGE 1 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-23-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
4	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	92.5	5.5	3, 5, 8 (8)
8	SW		WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	■	98.6	4.4	5, 11, 23 (21)
15			dense	15.0-16.5	■	112.6	4.7	11, 24, 36 (38)
17			trace fine gravel					
20			medium dense	20.0-21.5	●			8, 11, 14 (25)
21			very moist					
22			wet, flow sands ▼					
25			dense	25.0-26.5	●			7, 14, 17 (31)

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 16
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/23/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30				30.0-31.5	●			10, 17, 23 (40)
31			trace fine to coarse gravel and cobbles, blow count from 31.0' to 31.5' not reliable due to rocks					
35			cobbles end	35.0-36.5	●			15, 15, 18 (33)
40				40.0-41.5	●			5, 20, 23 (43)
43			trace cobbles					
45				45.0-46.0	●			18, 50/6.0" (~~50~~ 68)
46			End of Boring @ 46.0' Due to Refusal Subsurface water encountered @ 22.5'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 22
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 07-18-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4	SP		POORLY GRADED SAND: light brown, loose, very moist					
5				5.0-6.5	■	95.1	16.5	4, 6, 8 (9)
10			medium dense, moist	10.0-11.5	■	104.5	8.6	7, 11, 13 (14)
14	SW		WELL GRADED SAND: light brown, loose, very moist, trace fine to coarse gravel	15.0-16.5	■	83.5	36.5	5, 6, 8 (9)
18			trace fine to coarse gravel and cobbles					
20				20.0-21.5	●			8, 12, 14 (26)
21			medium dense, wet ▼					
24				25.0-26.5	●			11, 11, 16 (27)
25			trace fine gravel, flow sands					
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 22
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/18/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30				30.0-31.5	●			1, 7, 12 (19)
35				35.0-36.5	●			5, 10, 15 (25)
36	SP		POORLY GRADED SAND: light brown, medium dense, wet					
40			thin lenses of very fine grained silty sand	40.0-41.5	●			0, 5, 16 (21)
41	SW		WELL GRADED SAND: light brown, medium dense, wet, trace fine gravel					
45				45.0-46.5	●			3, 10, 22 (32)
47			dense					
50			medium dense	50.0-51.5	●			6, 13, 13 (26)
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 35
PAGE 1 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-24-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
3	SP		POORLY GRADED SAND: light brown, slightly loose, moist, trace fine to coarse gravel and cobbles					
5				5.0-6.5	■	102.4	2.8	9, 9, 10 (12)
6			medium dense					
9	SW		WELL GRADED SAND: light brown, loose, slightly moist, trace fine gravel					
10				10.0-11.5	■	109.4	2.9	5, 8, 8 (10)
13			medium dense, moist					
15				15.0-16.5	■	104.2	4.0	8, 15, 18 (21)
17			trace cobbles					
20				20.0-21.5	●			8, 14, 16 (30)
21			very moist					
22			wet, flow sands					
24				25.0-26.5	●			10, 15, 19 (34)
25			dense					
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 35
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/24/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	
27	SW		WELL GRADED SAND: as above						
30			thin lense of clayey sand ~3" to 4" thick	30.0-31.5	●			10 15 19	34
35			gray	35.0-36.5	●			10 14 27	41
40			blow count from 41.0' to 41.5' not reliable due to flow sands	40.0-41.5	●			7 21 30	51
44			SANDY SILT: gray brown, very soft, wet	45.0-46.5	●			0 0 6	6
46	SP-SM		POORLY GRADED SAND WITH SILT: light brown, loose, wet						
52			End of Boring @ 50.0' Subsurface water encountered @ 21.5'						

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 43
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 07-25-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
1			moist					
4			increasing silt content					
5	ML		SANDY SILT: light brown, stiff, moist	5.0-6.5	■	96.5	6.9	2, 5, 9 (9)
7	SP		POORLY GRADED SAND: light brown, loose, moist					
9	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.5	4.6	8, 11, 19 (19)
15				15.0-16.5	■	114.4	4.0	7, 19, 22 (26)
18			trace fine to coarse gravel and cobbles					
20			thin lense of soft clay ~ 4" thick	20.0-21.5	●			0, 5, 10 (15)
21			very moist, cobbles end					
24			gray brown, dense, wet ▼	25.0-26.5	●			8, 15, 23 (38)
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 43
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/25/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30			gray, medium dense, thick silt/clay lense ~8" to 10"	30.0-31.5	●			2, 8, 14 (22)
35			no sampling at 35.0' due to flow sands					
40	SW-SM		WELL GRADED SAND WITH SILT: gray brown, dense, wet	40.0-41.5	●			6, 14, 17 (31)
45				45.0-46.5	●			5, 9, 12 (21)
46	SW		WELL GRADED SAND: gray brown, medium dense, wet					
50			no sampling at 50.0' due to flow sands					
52			End of Boring @ 50.0' Subsurface water encountered @ 24.0'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 51
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 07-19-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
3			increasing silt content					
5	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	122.4	12.4	3, 6, 10 (10)
9			medium dense					
10				10.0-11.5	■	94.9	7.9	6, 17, 24 (26)
14	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel and cobbles	15.0-16.5	■	109.5	5.0	7, 19, 21 (25)
20			cobbles end	20.0-21.5	●			7, 11, 14 (25)
21			wet					
24				25.0-26.5	●			7, 8, 4 (12)
26	SP		POORLY GRADED SAND: gray brown, medium dense, wet, thin lense of silty sand					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 51
PAGE 2 OF 2
JOB NO.: 301953-002
DATE: 07/19/2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	
27	SP		POORLY GRADED SAND: as above						
28									
29									
30				30.0-31.5	●			8 16 32	38
31			trace fine gravel and cobbles, flow sands, blow count from 31.0' to 31.5' not reliable due to flow sands						
32									
33									
34								8	
35	SW-SM		WELL GRADED SAND WITH SILT AND GRAVEL: light brown, medium dense, wet	35.0-36.5	●			12 14	26
36									
37									
38									
39									
40				40.0-41.5	●			6 5 7	12
41									
42									
43	SW		WELL GRADED SAND: light brown, dense, wet, flow sands end						
44								5	
45				45.0-46.5	●			10 21	31
46									
47									
48									
49			thin lenses of poorly graded sand					11	
50				50.0-51.5	●			16 24	40
51									
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'						
53									

LEGEND: ■ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

APPENDIX B

Average N Value Calculations

Boring 1

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	6	6	0	3	3	0.5
6	6	6	3	8.5	5.5	0.916667
11	16	16	8.5	13.5	5	0.3125
16	28	28	13.5	18.5	5	0.178571
21	37	37	18.5	26	7.5	0.202703
31	37	37	26	36	10	0.27027
41	16	16	36	46	10	0.625
51	36	36	46	53.5	7.5	0.208333
56	36	36	53.5	78	24.5	0.680556
100	36	36	78	100	22	0.611111

	sums		Average N
upper approximately 50'	53.5	3.214044	16.6
100' with assumed blow counts below approximately 50'	100	4.505711	22.2

Boring 2

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	9	9	0	3	3	0.333333
6	9	9	3	8.5	5.5	0.611111
11	22	22	8.5	13.5	5	0.227273
16	26	26	13.5	18.5	5	0.192308
21	11	11	18.5	26	7.5	0.681818
31	16	16	26	36	10	0.625
41	20	20	36	46	10	0.5
51	19	19	46	53.5	7.5	0.394737
56	19	19	53.5	78	24.5	1.289474
100	19	19	78	100	22	1.157895

	sums		Average N
upper approximately 50'	53.5	3.56558	15.0
100' with assumed blow counts below approximately 50'	100	6.012948	16.6

Boring 16

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	8	8	0	3	3	0.375
6	8	8	3	8.5	5.5	0.6875
11	21	21	8.5	13.5	5	0.238095
16	38	38	13.5	18.5	5	0.131579
21	25	25	18.5	23.5	5	0.2
26	31	31	23.5	28.5	5	0.16129
31	40	40	28.5	33.5	5	0.125
36	33	33	33.5	38.5	5	0.151515
41	43	43	38.5	43.5	5	0.116279
46	68	68	43.5	48.5	5	0.073529
51	68	68	48.5	75.5	27	0.397059
100	68	68	75.5	100	24.5	0.360294

	sums		Average N
upper approximately 50'	48.5	2.259788	21.5
100' with assumed blow counts below approximately 50'	100	3.017141	33.1

Boring 22

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	9	9	0	3	3	0.333333
6	9	9	3	8.5	5.5	0.611111
11	14	14	8.5	13.5	5	0.357143
16	9	9	13.5	18.5	5	0.555556
21	26	26	18.5	23.5	5	0.192308
26	27	27	23.5	28.5	5	0.185185
31	19	19	28.5	33.5	5	0.263158
36	25	25	33.5	38.5	5	0.2
41	21	21	38.5	43.5	5	0.238095
46	32	32	43.5	48.5	5	0.15625
51	26	26	48.5	75.5	27	1.038462
100	26	26	75.5	100	24.5	0.942308

	sums		Average N
upper approximately 50'	48.5	3.092139	15.7
100' with assumed blow counts below approximately 50'	100	5.072908	19.7

Boring 35

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	12	12	0	3	3	0.25
6	12	12	3	8.5	5.5	0.458333
11	10	10	8.5	13.5	5	0.5
16	21	21	13.5	18.5	5	0.238095
21	30	30	18.5	23.5	5	0.166667
26	34	34	23.5	28.5	5	0.147059
31	34	34	28.5	33.5	5	0.147059
36	41	41	33.5	38.5	5	0.121951
41	51	51	38.5	43.5	5	0.098039
46	6	6	43.5	48.5	5	0.833333
51	6	6	48.5	75.5	27	4.5
100	6	6	75.5	100	24.5	4.083333

	sums		Average N
upper approximately 50'	48.5	2.960537	16.4
100' with assumed blow counts below approximately 50'	100	11.54387	8.7

Boring 43

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	9	9	0	3	3	0.333333
6	9	9	3	8.5	5.5	0.611111
11	19	19	8.5	13.5	5	0.263158
16	26	26	13.5	18.5	5	0.192308
21	15	15	18.5	23.5	5	0.333333
26	38	38	23.5	28.5	5	0.131579
31	22	22	28.5	33.5	5	0.227273
36	22	22	33.5	38.5	5	0.227273
41	31	31	38.5	43.5	5	0.16129
46	21	21	43.5	48.5	5	0.238095
51	21	21	48.5	75.5	27	1.285714
100	21	21	75.5	100	24.5	1.166667

	sums		Average N
upper approximately 50'	48.5	2.718753	17.8
100' with assumed blow counts below approximately 50'	100	5.171134	19.3

Boring 51

mdpt. of sample (ft bgs)	no corrections to field value except convert ring to SPT field N value	Ni value	don't change highlighted interval start (ft)	interval end (ft)	layer thickness (ft) di value	di/Ni
0	10	10	0	3	3	0.3
6	10	10	3	8.5	5.5	0.55
11	26	26	8.5	13.5	5	0.192308
16	25	25	13.5	18.5	5	0.2
21	25	25	18.5	23.5	5	0.2
26	12	12	23.5	28.5	5	0.416667
31	38	38	28.5	33.5	5	0.131579
36	26	26	33.5	38.5	5	0.192308
41	12	12	38.5	43.5	5	0.416667
46	31	31	43.5	48.5	5	0.16129
51	40	40	48.5	75.5	27	0.675
100	40	40	75.5	100	24.5	0.6125

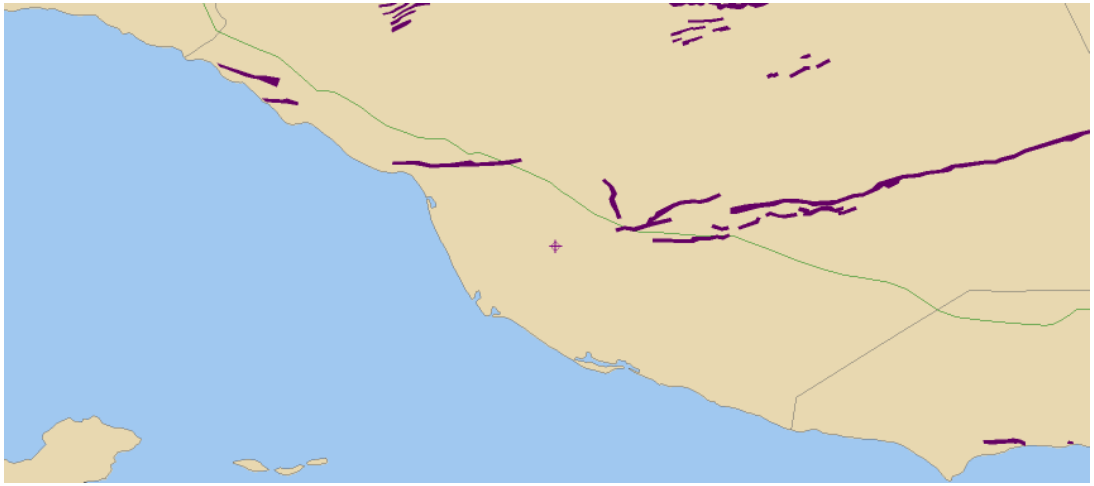
	sums		Average N
upper approximately 50'	48.5	2.760818	17.6
100' with assumed blow counts below approximately 50'	100	4.048318	24.7

Boring	Avg N in 50'	Avg N in 100'	
1	16.6	22.2	
2	15.0	16.6	
16	21.5	33.1	
22	15.7	19.7	
35	16.4	8.7	
43	17.8	19.3	
51	17.6	24.7	
	17.2	20.6	Averages

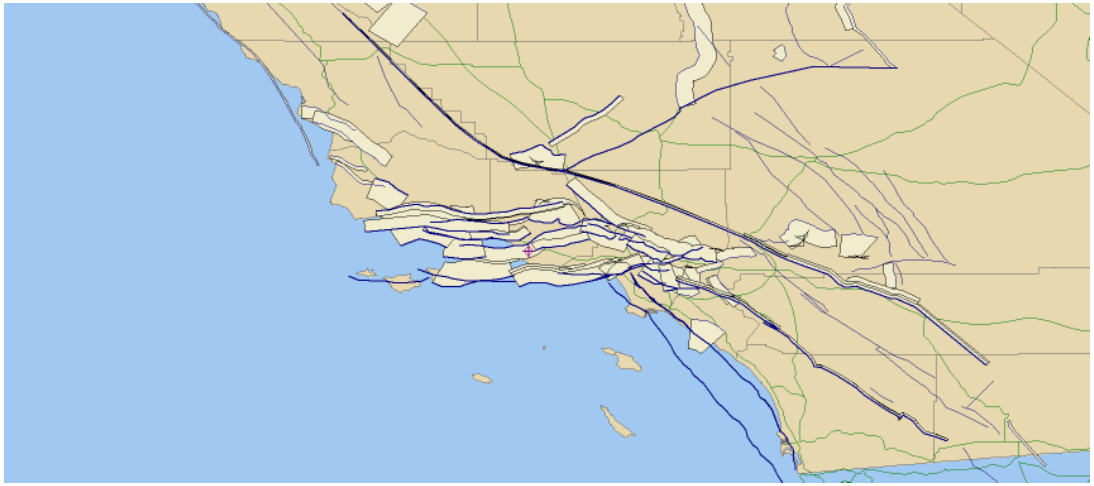
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B - EZ-FRISK PROGRAM REPORTS AND DATA TABLES

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MAP LEGEND
- Site
- Counties
- Highways
- Alquist-Priolo Zone

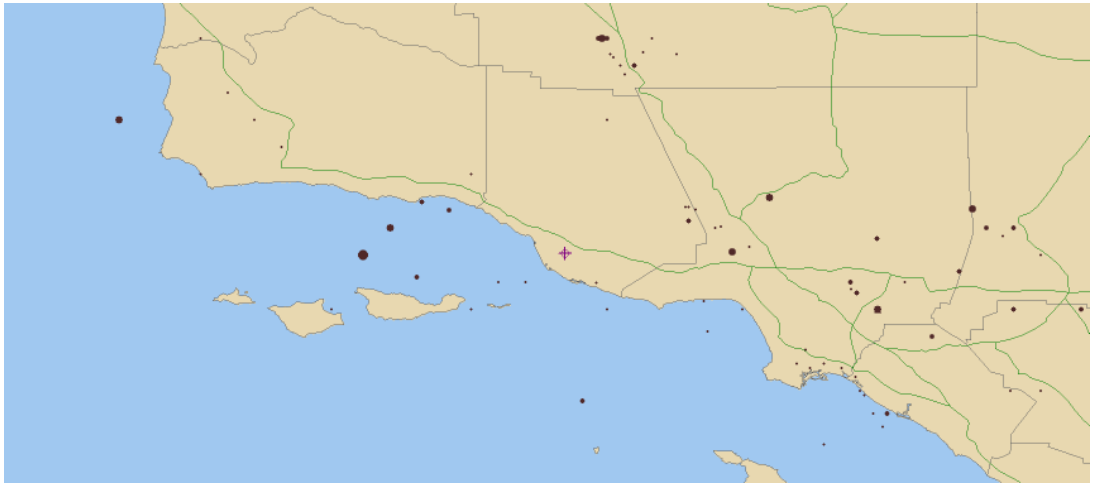


MAP LEGEND

- Site
- Counties
- Highways

Faults

- Included
- Not included

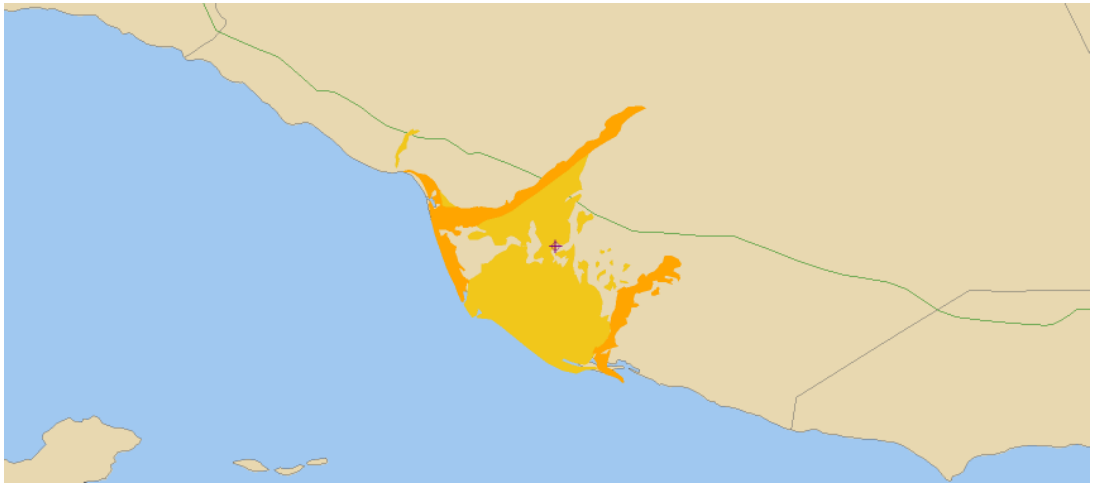


MAP LEGEND

Site
Counties
Highways

Historical Seismicity

Greater than 8.5
7.5 to 8.5
6.5 to 7.5
5.5 to 6.5
Less than 5.5
Unknown Magnitude

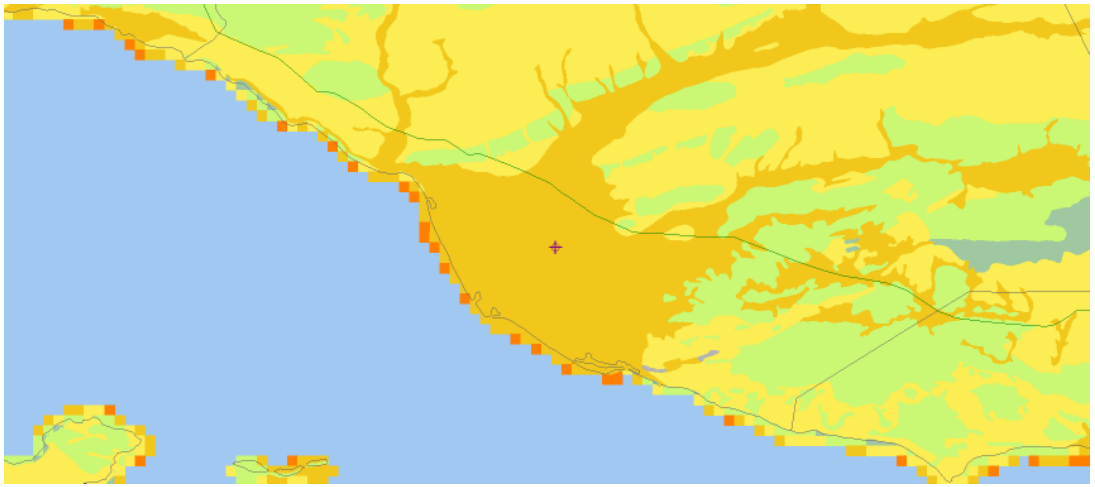


MAP LEGEND

- Site
- Counties
- Highways

Liquefaction Susceptibility

- Very High
- High
- Moderate
- Low
- Very Low



MAP LEGEND

Site
Counties
Highways

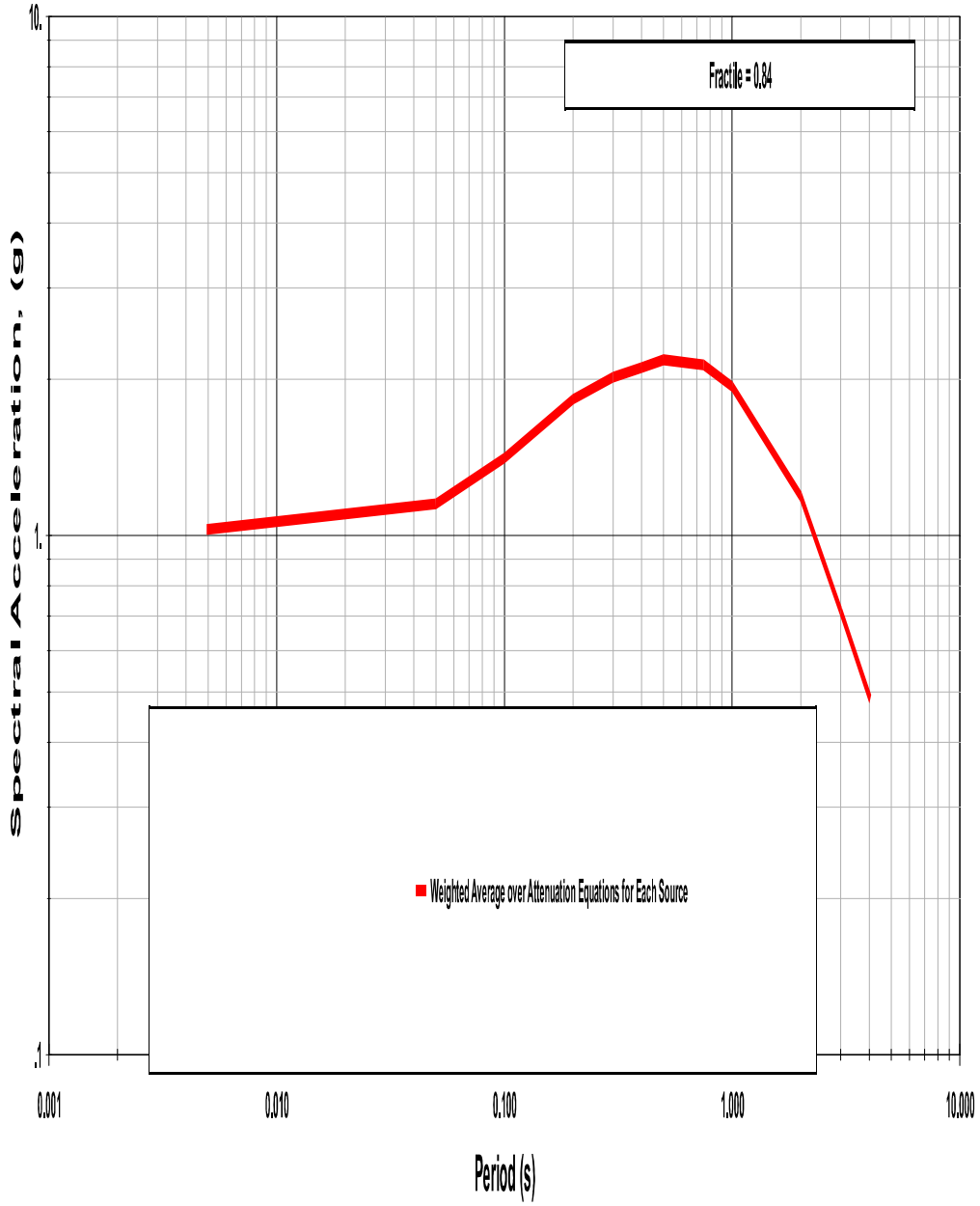
Soil Condition
(NEHRP Vs Category)

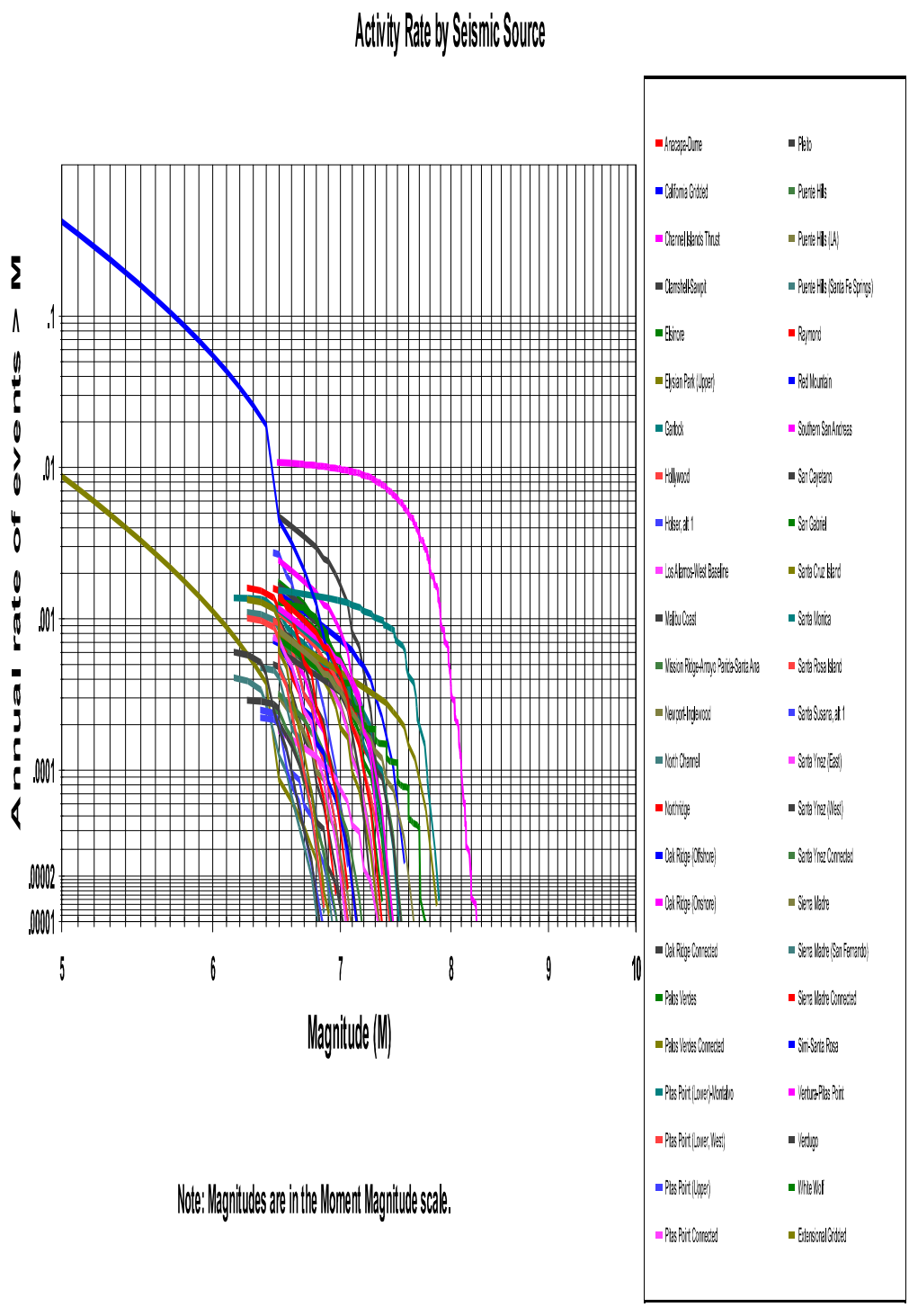
A (Vs30 > 1500)
B (760 < Vs30 < 1500)
BC
C (360 < Vs30 < 760)
CD
D (180 < Vs30 < 360)
DE
E (Vs30 < 180)

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Deterministic Spectra

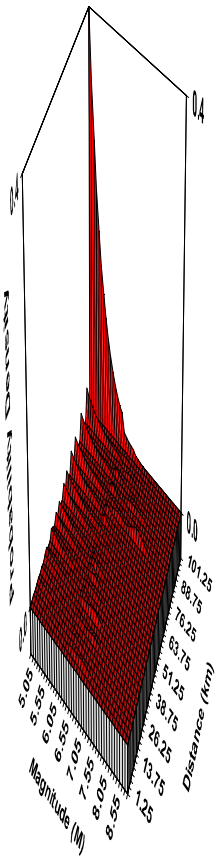
Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component




Activity Rate by Seismic Source
Annual rate of events > M
.1
.01
.001
.0001
.00002
.00001
5
6
7
8
9
10
Magnitude (M)
Note: Magnitudes are in the Moment Magnitude scale.
Anacapa-Dume
Blind Thrust
California Grotzbd
Channel Islands Thrust
ClamshellSawpit
Elsinore
Elysian Park (Upper)
Garlock
Hollywood
Holser, alt 1
Los Alamos-West Baseline
Malibu Coast
Mission Ridge-Arroyo Parico-Santa Ana
Newport-Inglewood
North Channel
Northridge
Oak Ridge (Offshore)
Oak Ridge (Onshore)
Oak Ridge Connected
Palos Verdes
Palos Verdes Connected
Pitas Point (Lower)-Montalvo
Pitas Point (Lower, West)
Pitas Point (Upper)
Pitas Point Connected
Pleito
Puente Hills
Puente Hills (LA)
Puente Hills (Santa Fe Springs)
Raymond
Red Mountain
Southern San Andreas
San Cayetano
San Gabriel
Santa Cruz Island
Santa Monica
Santa Rosa Island
Santa Susana, alt 1
Santa Ynez (East)
Santa Ynez (West)
Santa Ynez Connected
Sierra Madre
Sierra Madre (San Fernando)
Sierra Madre Connected
Sim-Santa Rosa
Ventura-Pitas Point
Verdugo
White Wolf
Extensional Grotzbd

Magnitude-Distance Deaggregation

Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component



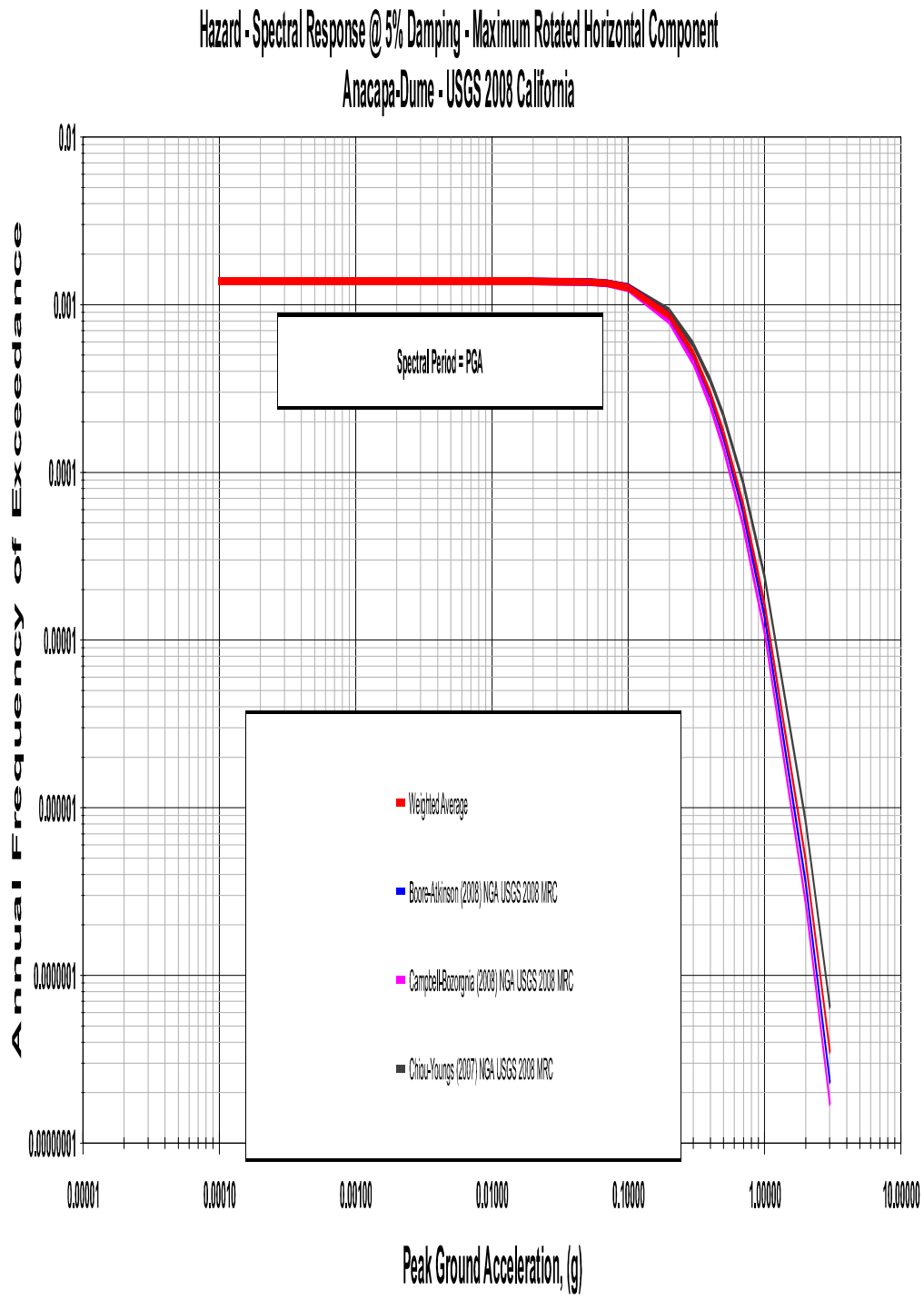
Period: PGA

Amplitude: 0.0001

Hazard: 0.480292

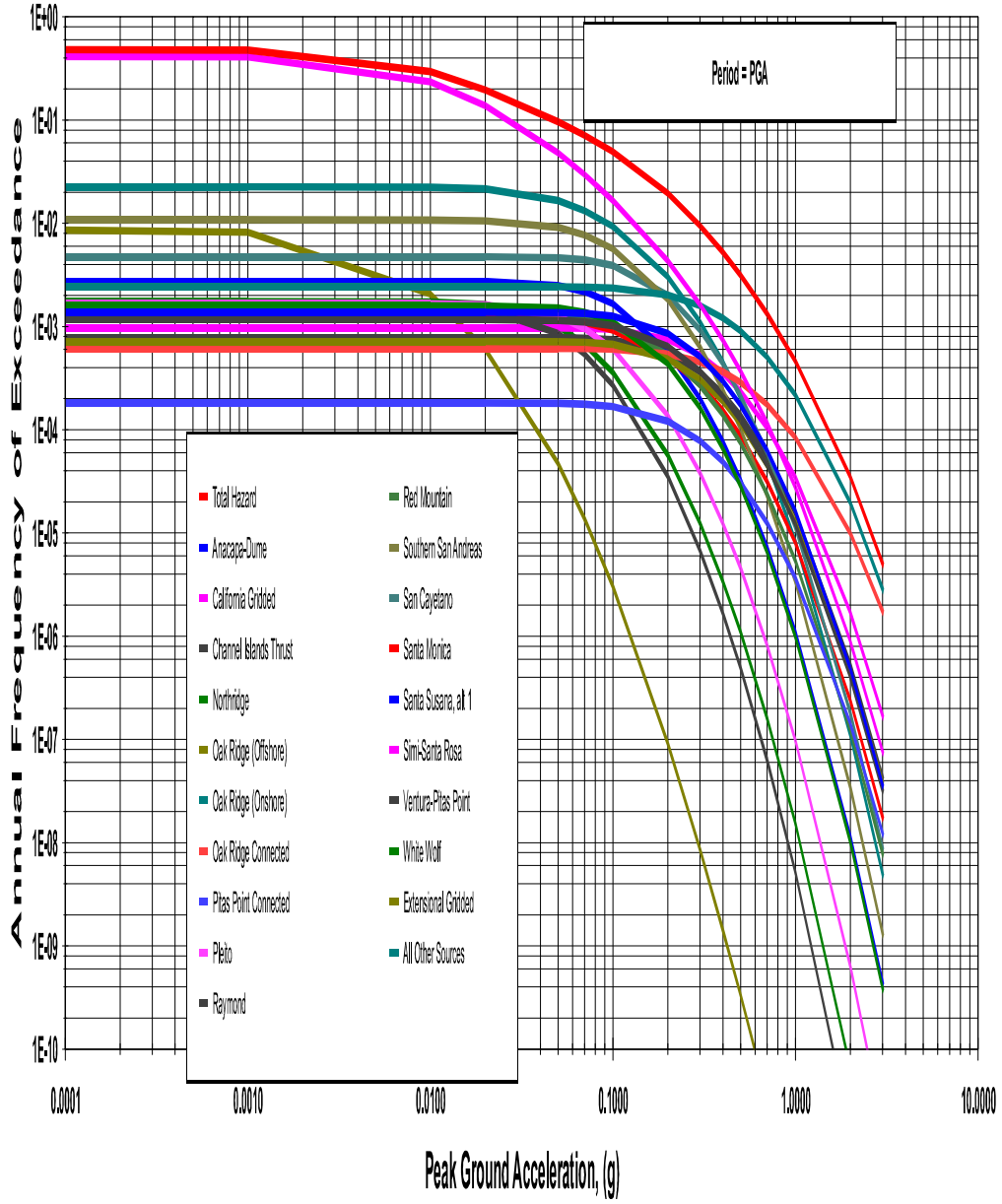
Mean Magnitude: 5.64

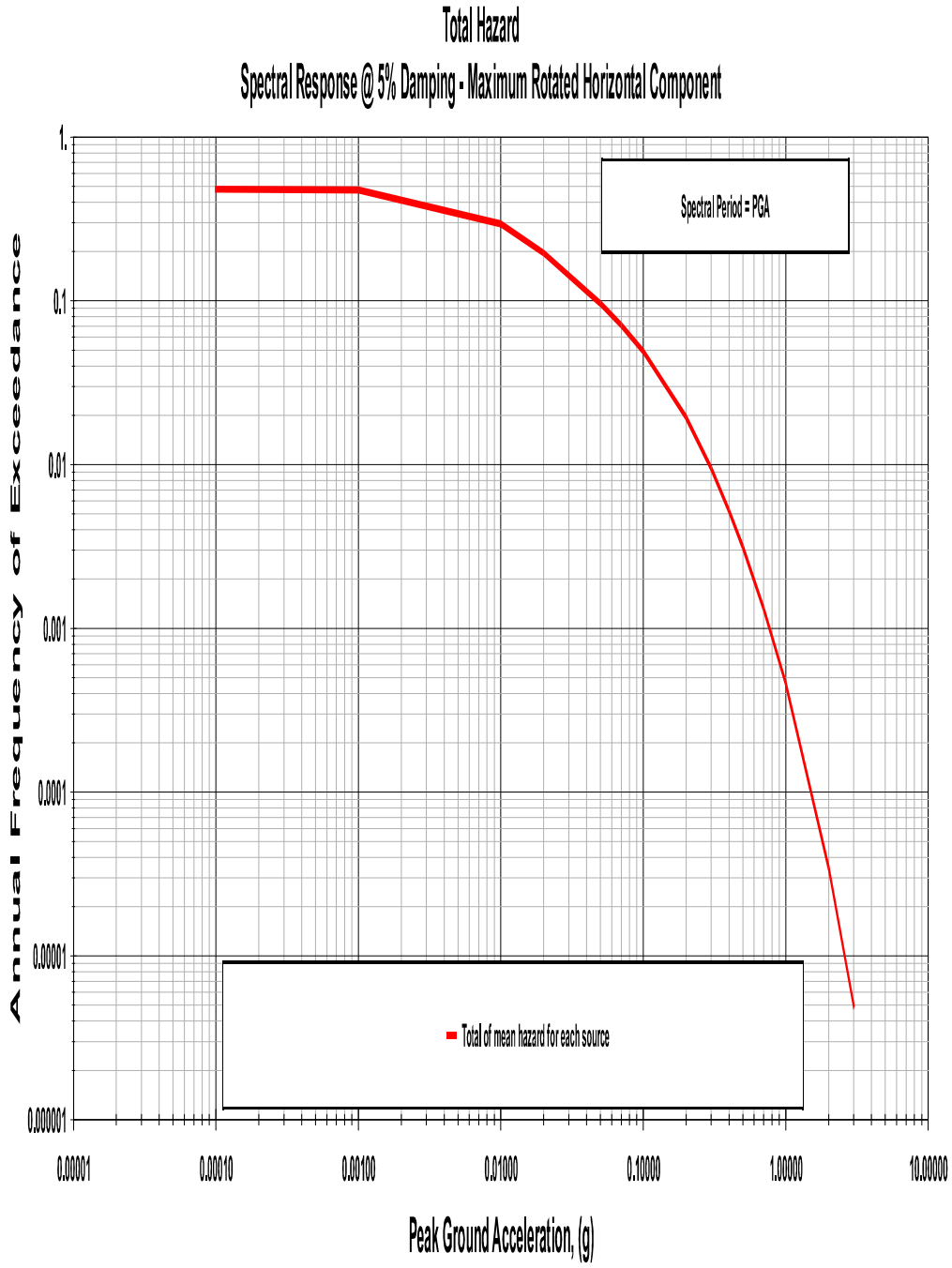
Mean Distance: 119.47


Hazard - Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component
Anacapa-Dume - USGS 2008 California
Annual Frequency of Exceedance
0.01
0.001
0.0001
0.00001
0.000001
0.0000001
0.00000001
Spectral Period = PGA
Weighted Average
Boore-Atkinson (2008) NGA USGS 2008 MRC
Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Chiou-Youngs (2007) NGA USGS 2008 MRC
0.00001
0.00010
0.00100
0.01000
0.10000
1.00000
10.00000
Peak Ground Acceleration, (g)

Hazard by Seismic Source

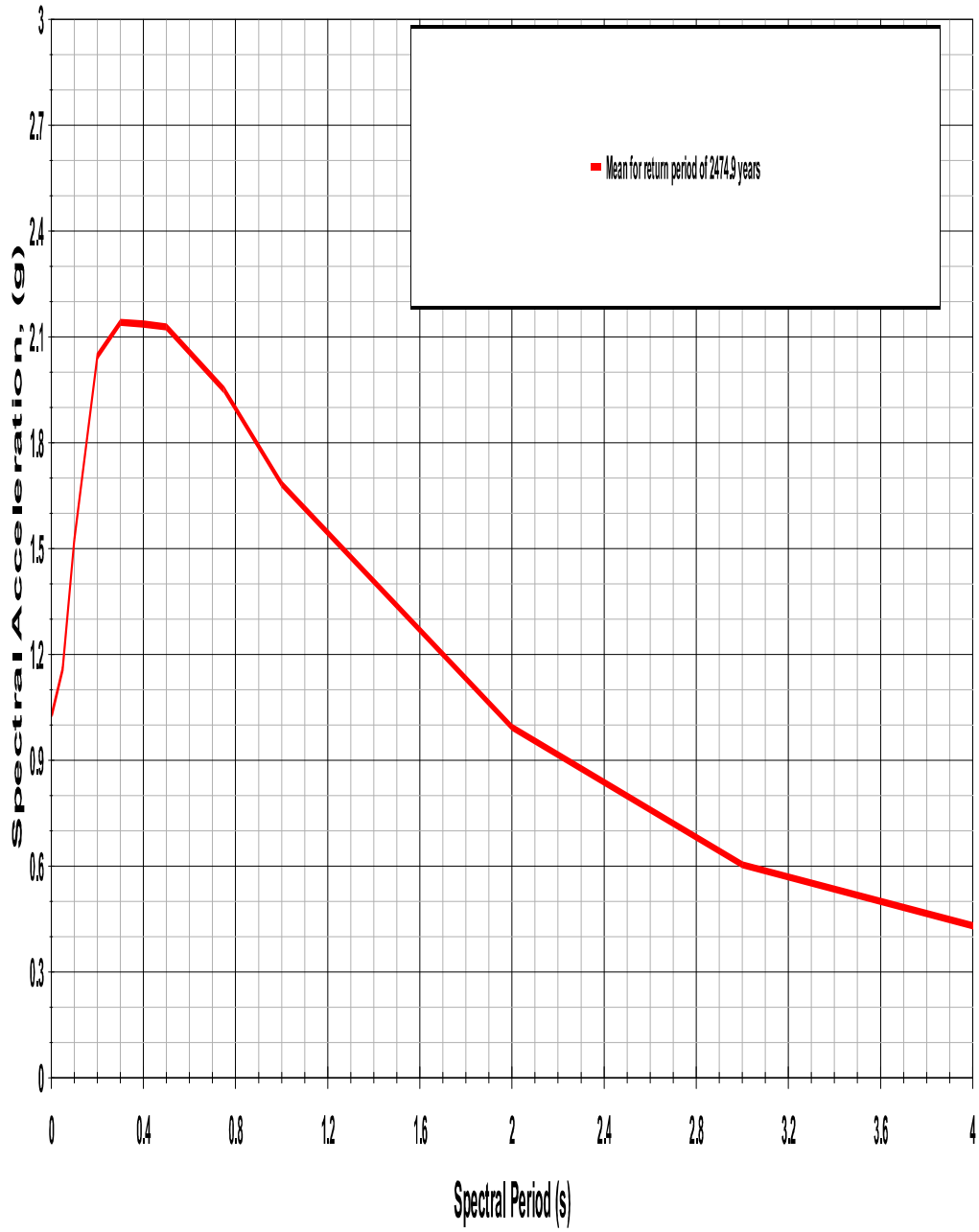
Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component




Total Hazard
Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component
Annual Frequency of Exceedance
1.
0.1
0.01
0.001
0.0001
0.00001
0.000001
Spectral Period = PGA
Total of mean hazard for each source
0.00001
0.00010
0.00100
0.01000
0.10000
1.00000
10.00000
Peak Ground Acceleration, (g)

Uniform Hazard Spectra

Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component



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Activity Rate Report for EZ-FRISK 7.65 Build 004

Source: Anacapa-Dume
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.375e-003
6.600	1.163e-003
6.700	9.740e-004
6.800	8.049e-004
6.860	6.520e-004
6.900	6.317e-004
6.960	4.923e-004
7.000	4.270e-004
7.060	2.989e-004
7.100	1.967e-004
7.160	1.471e-004
7.260	5.562e-005
7.360	9.955e-006

Source: California Gridded
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
5.000	4.222e-001
5.100	3.488e-001
5.200	2.877e-001
5.300	2.369e-001
5.400	1.947e-001
5.500	1.595e-001
5.600	1.303e-001
5.700	1.060e-001
5.800	8.580e-002
5.900	6.898e-002
6.000	5.499e-002
6.100	4.336e-002
6.200	3.370e-002
6.300	2.566e-002
6.400	1.898e-002
6.500	4.473e-003

```
             6.600  3.185e-003
             6.700  2.114e-003
             6.800  1.239e-003
             6.900  5.508e-004

Source:          Channel Islands Thrust
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  1.167e-003
             6.600  1.012e-003
             6.700  8.743e-004
             6.800  7.520e-004
             6.900  6.421e-004
             6.960  5.425e-004
             7.000  5.222e-004
             7.060  4.312e-004
             7.100  3.659e-004
             7.160  2.821e-004
             7.200  1.799e-004
             7.260  1.471e-004
             7.360  5.564e-005
             7.460  9.960e-006

Source:          Clamshell-Sawpit
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.160  6.026e-004
             6.260  5.776e-004
             6.360  5.152e-004
             6.399  4.340e-004
             6.460  2.494e-004
             6.500  1.857e-004
             6.560  1.376e-004
             6.600  9.821e-005
             6.660  5.436e-005
             6.760  2.556e-005
             6.860  6.123e-006
```

Source: Elsinore
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.283e-003
6.600	1.256e-003
6.602	1.228e-003
6.700	1.180e-003
6.702	1.152e-003
6.789	1.030e-003
6.800	9.914e-004
6.802	9.641e-004
6.889	8.050e-004
6.900	7.091e-004
6.902	6.817e-004
6.918	5.743e-004
6.989	5.710e-004
7.000	4.463e-004
7.002	4.190e-004
7.018	3.851e-004
7.026	3.769e-004
7.089	3.763e-004
7.100	2.922e-004
7.118	2.648e-004
7.126	2.541e-004
7.189	2.526e-004
7.200	2.261e-004
7.201	1.987e-004
7.218	1.966e-004
7.226	1.894e-004
7.238	1.875e-004
7.300	1.869e-004
7.301	1.595e-004
7.318	1.542e-004
7.326	1.519e-004
7.338	1.506e-004
7.400	1.492e-004
7.401	1.218e-004
7.426	1.149e-004
7.438	1.145e-004

```
             7.482  1.126e-004
             7.500  1.120e-004
             7.501  8.462e-005
             7.526  7.996e-005
             7.538  7.937e-005
             7.545  7.808e-005
             7.582  7.749e-005
             7.600  7.602e-005
             7.601  4.866e-005
             7.609  4.719e-005
             7.626  4.660e-005
             7.638  4.513e-005
             7.645  4.473e-005
             7.682  4.326e-005
             7.700  4.135e-005
             7.709  1.398e-005
             7.726  1.251e-005
             7.745  1.060e-005
             7.782  8.691e-006
             7.809  7.402e-006
             7.826  5.492e-006
             7.845  4.203e-006
             7.882  2.914e-006
             7.909  2.507e-006
             7.926  1.218e-006
             7.945  8.122e-007
             8.009  4.061e-007

Source:          Elysian Park (Upper)
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.260  1.339e-003
             6.360  1.290e-003
             6.460  1.166e-003
             6.499  9.803e-004
             6.500  6.144e-004
             6.560  4.797e-004
             6.600  3.091e-004
             6.660  1.864e-004
```

6.760	7.155e-005
6.860	1.714e-005

Source: Garlock
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.544e-003
6.600	1.500e-003
6.700	1.457e-003
6.800	1.413e-003
6.900	1.370e-003
6.978	1.326e-003
7.000	1.314e-003
7.071	1.271e-003
7.078	1.260e-003
7.100	1.231e-003
7.171	1.187e-003
7.178	1.161e-003
7.200	1.123e-003
7.271	1.079e-003
7.278	1.044e-003
7.300	1.019e-003
7.369	9.753e-004
7.371	9.539e-004
7.376	9.305e-004
7.378	9.103e-004
7.400	9.022e-004
7.449	8.586e-004
7.469	8.375e-004
7.471	7.840e-004
7.476	7.766e-004
7.483	7.260e-004
7.500	7.052e-004
7.549	6.616e-004
7.569	6.088e-004
7.576	5.391e-004
7.583	4.734e-004
7.600	4.212e-004
7.649	3.776e-004

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             7.669  3.090e-004
             7.676  2.620e-004
             7.683  2.176e-004
             7.749  1.498e-004
             7.769  1.035e-004
             7.776  8.873e-005
             7.783  7.475e-005
             7.849  2.900e-005
             7.883  1.441e-005

Source:          Hollywood
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.260  1.011e-003
             6.360  9.737e-004
             6.460  8.802e-004
             6.499  7.401e-004
             6.500  4.638e-004
             6.560  3.622e-004
             6.600  2.334e-004
             6.660  1.407e-004
             6.760  5.401e-005
             6.860  1.294e-005

Source:          Holser, alt 1
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.360  2.223e-004
             6.460  2.161e-004
             6.500  2.003e-004
             6.560  1.032e-004
             6.600  7.956e-005
             6.660  6.171e-005
             6.700  4.002e-005
             6.760  2.370e-005
             6.860  9.098e-006
             6.960  2.179e-006
```

Source: Los Alamos-West Baseline
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.460	7.518e-004
6.500	7.284e-004
6.560	5.524e-004
6.600	4.936e-004
6.660	3.337e-004
6.700	2.456e-004
6.760	2.059e-004
6.800	1.249e-004
6.860	8.848e-005
6.960	3.397e-005
7.060	8.137e-006

Source: Malibu Coast
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.260	2.898e-004
6.360	2.851e-004
6.460	2.733e-004
6.499	2.555e-004
6.500	2.066e-004
6.560	1.668e-004
6.600	1.458e-004
6.660	1.097e-004
6.700	8.679e-005
6.760	6.891e-005
6.800	4.577e-005
6.860	4.076e-005
6.900	2.263e-005
6.960	1.802e-005
7.060	6.917e-006
7.160	1.657e-006

Source: Mission Ridge-Arroyo Parida-Santa Ana
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.460	2.511e-004
6.500	2.433e-004
6.560	1.845e-004
6.600	1.649e-004
6.660	1.115e-004
6.700	8.203e-005
6.760	6.877e-005
6.800	4.172e-005
6.860	2.956e-005
6.960	1.135e-005
7.060	2.718e-006

Source: Newport-Inglewood
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	8.374e-004
6.600	7.134e-004
6.700	6.066e-004
6.800	5.140e-004
6.860	4.333e-004
6.900	4.269e-004
6.960	3.561e-004
7.000	3.355e-004
7.060	2.728e-004
7.100	2.405e-004
7.160	2.058e-004
7.200	1.769e-004
7.260	1.605e-004
7.300	1.338e-004
7.360	1.202e-004
7.400	8.644e-005
7.460	7.511e-005
7.560	3.532e-005
7.660	8.460e-006

Source: North Channel
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.360	4.770e-004
6.460	4.579e-004
6.500	4.100e-004
6.560	2.621e-004
6.600	1.902e-004
6.660	1.630e-004
6.700	9.700e-005
6.760	7.215e-005
6.860	2.770e-005
6.960	6.635e-006

Source: Northridge
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.460	1.585e-003
6.500	1.535e-003
6.560	1.164e-003
6.600	1.041e-003
6.660	7.034e-004
6.700	5.177e-004
6.760	4.340e-004
6.800	2.633e-004
6.860	1.865e-004
6.960	7.160e-005
7.060	1.715e-005

Source: Oak Ridge (Offshore)
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.460	7.161e-004
6.500	6.869e-004
6.560	5.462e-004
6.600	4.730e-004
6.660	3.452e-004
6.700	2.500e-004
6.760	2.262e-004
6.800	1.516e-004

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             6.860  1.299e-004
             6.900  8.371e-005
             6.960  6.375e-005
             7.060  2.997e-005
             7.160  7.180e-006

Source:          Oak Ridge (Onshore)
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  2.430e-003
             6.600  2.080e-003
             6.700  1.769e-003
             6.800  1.490e-003
             6.860  1.238e-003
             6.900  1.194e-003
             6.960  9.646e-004
             7.000  8.252e-004
             7.060  6.138e-004
             7.100  3.958e-004
             7.160  3.139e-004
             7.260  1.187e-004
             7.360  2.125e-005

Source:          Oak Ridge Connected
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  6.141e-004
             6.600  5.425e-004
             6.700  4.796e-004
             6.800  4.239e-004
             6.900  3.742e-004
             7.000  3.295e-004
             7.060  2.889e-004
             7.100  2.765e-004
             7.160  2.394e-004
             7.200  1.996e-004
             7.260  1.653e-004
             7.300  1.031e-004
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             7.360  8.958e-005
             7.460  3.387e-005
             7.560  6.063e-006

Source:          Palos Verdes
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  1.372e-003
             6.600  1.173e-003
             6.700  9.972e-004
             6.800  8.405e-004
             6.900  6.997e-004
             6.960  5.722e-004
             7.000  5.536e-004
             7.060  4.371e-004
             7.100  3.774e-004
             7.160  2.701e-004
             7.200  1.766e-004
             7.260  1.346e-004
             7.360  5.090e-005
             7.460  9.110e-006

Source:          Palos Verdes Connected
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  8.138e-004
             6.600  7.176e-004
             6.700  6.346e-004
             6.800  5.626e-004
             6.900  4.997e-004
             7.000  4.445e-004
             7.100  3.955e-004
             7.200  3.519e-004
             7.300  3.126e-004
             7.400  2.769e-004
             7.460  2.443e-004
             7.500  2.250e-004
             7.560  1.949e-004
```

7.600	1.466e-004
7.660	1.186e-004
7.760	5.576e-005
7.860	1.336e-005

Source: Pitas Point (Lower)-Montalvo
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.144e-003
6.600	9.783e-004
6.700	8.317e-004
6.800	7.010e-004
6.900	5.836e-004
6.960	4.773e-004
7.000	4.618e-004
7.060	3.646e-004
7.100	3.148e-004
7.160	2.253e-004
7.200	1.473e-004
7.260	1.123e-004
7.360	4.245e-005
7.460	7.599e-006

Source: Pitas Point (Lower, West)
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.096e-003
6.600	9.308e-004
6.700	7.837e-004
6.800	6.521e-004
6.860	5.333e-004
6.900	5.150e-004
6.960	4.069e-004
7.000	3.610e-004
7.060	2.618e-004
7.100	1.931e-004
7.160	1.615e-004
7.200	9.828e-005

```
             7.260  6.903e-005
             7.360  2.650e-005
             7.460  6.349e-006

Source:          Pitas Point (Upper)
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.360  2.492e-004
             6.460  2.382e-004
             6.500  2.108e-004
             6.560  1.323e-004
             6.600  9.667e-005
             6.660  8.660e-005
             6.700  5.870e-005
             6.760  4.953e-005
             6.800  3.225e-005
             6.860  2.384e-005
             6.960  1.121e-005
             7.060  2.685e-006

Source:          Pitas Point Connected
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  1.821e-004
             6.600  1.600e-004
             6.700  1.403e-004
             6.800  1.227e-004
             6.860  1.068e-004
             6.900  1.019e-004
             6.960  8.744e-005
             7.000  7.518e-005
             7.060  6.191e-005
             7.100  4.351e-005
             7.160  3.928e-005
             7.200  2.238e-005
             7.260  1.847e-005
             7.360  7.090e-006
             7.460  1.698e-006
```

Source: Pleito
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.654e-003
6.600	1.408e-003
6.700	1.188e-003
6.760	9.902e-004
6.800	9.549e-004
6.860	7.746e-004
6.900	6.613e-004
6.960	4.958e-004
7.000	3.185e-004
7.060	2.553e-004
7.160	9.655e-005
7.260	1.728e-005

Source: Puente Hills
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	3.169e-004
6.600	2.646e-004
6.700	2.178e-004
6.760	1.756e-004
6.800	1.702e-004
6.860	1.318e-004
6.900	1.145e-004
6.960	7.929e-005
7.000	5.230e-005
7.060	3.885e-005
7.160	1.469e-005
7.260	2.630e-006

Source: Puente Hills (LA)
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	3.070e-004

6.560	2.587e-004
6.600	2.481e-004
6.660	2.045e-004
6.700	1.779e-004
6.760	1.381e-004
6.800	9.817e-005
6.860	8.702e-005
6.900	5.033e-005
6.960	4.008e-005
7.060	1.539e-005
7.160	3.686e-006

Source: Puente Hills (Santa Fe Springs)
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.160	4.082e-004
6.260	3.886e-004
6.360	3.396e-004
6.399	2.758e-004
6.460	1.742e-004
6.500	1.243e-004
6.560	9.780e-005
6.600	6.683e-005
6.660	4.271e-005
6.760	2.008e-005
6.860	4.811e-006

Source: Raymond
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.260	1.601e-003
6.360	1.536e-003
6.460	1.375e-003
6.499	1.165e-003
6.500	6.869e-004
6.560	5.847e-004
6.600	4.200e-004
6.660	3.274e-004

6.700	2.254e-004
6.760	1.406e-004
6.860	6.613e-005
6.960	1.584e-005

Source: Red Mountain
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	1.462e-003
6.600	1.275e-003
6.700	1.111e-003
6.800	9.663e-004
6.900	8.377e-004
7.000	7.224e-004
7.100	6.182e-004
7.160	5.232e-004
7.200	4.864e-004
7.260	3.990e-004
7.300	3.069e-004
7.360	2.259e-004
7.460	1.062e-004
7.560	2.545e-005

Source: Southern San Andreas
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.491	1.081e-002
6.500	1.080e-002
6.591	1.069e-002
6.600	1.067e-002
6.664	1.056e-002
6.691	1.054e-002
6.700	1.051e-002
6.705	1.040e-002
6.763	1.040e-002
6.764	1.039e-002
6.791	1.034e-002
6.800	1.032e-002

6.805	1.021e-002
6.836	1.019e-002
6.863	1.017e-002
6.864	1.015e-002
6.891	1.009e-002
6.900	1.008e-002
6.905	9.972e-003
6.910	9.948e-003
6.936	9.937e-003
6.963	9.886e-003
6.964	9.859e-003
6.972	9.816e-003
6.985	9.790e-003
7.000	9.790e-003
7.005	9.679e-003
7.010	9.663e-003
7.036	9.636e-003
7.063	9.570e-003
7.064	9.551e-003
7.067	9.538e-003
7.072	9.512e-003
7.076	9.446e-003
7.085	9.446e-003
7.100	9.446e-003
7.105	9.335e-003
7.110	9.330e-003
7.117	9.295e-003
7.136	9.283e-003
7.144	9.238e-003
7.148	9.212e-003
7.163	9.174e-003
7.167	9.169e-003
7.172	9.105e-003
7.175	9.019e-003
7.176	9.006e-003
7.182	9.006e-003
7.185	8.990e-003
7.195	8.990e-003
7.198	8.963e-003
7.200	8.927e-003

7.210	8.816e-003
7.217	8.792e-003
7.224	8.762e-003
7.236	8.745e-003
7.244	8.731e-003
7.248	8.665e-003
7.267	8.571e-003
7.272	8.488e-003
7.275	8.430e-003
7.276	8.398e-003
7.282	8.398e-003
7.285	8.357e-003
7.286	8.357e-003
7.295	8.357e-003
7.298	8.291e-003
7.300	8.200e-003
7.302	8.089e-003
7.309	8.089e-003
7.310	8.057e-003
7.317	8.050e-003
7.319	8.011e-003
7.324	7.983e-003
7.335	7.941e-003
7.339	7.941e-003
7.344	7.941e-003
7.348	7.856e-003
7.353	7.733e-003
7.354	7.705e-003
7.367	7.676e-003
7.372	7.620e-003
7.373	7.602e-003
7.375	7.592e-003
7.376	7.550e-003
7.380	7.550e-003
7.382	7.538e-003
7.385	7.484e-003
7.386	7.484e-003
7.395	7.484e-003
7.398	7.399e-003
7.400	7.280e-003

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7.402  7.169e-003
7.409  7.169e-003
7.414  7.091e-003
7.417  7.084e-003
7.419  7.057e-003
7.424  6.988e-003
7.430  6.934e-003
7.435  6.934e-003
7.439  6.926e-003
7.441  6.926e-003
7.443  6.873e-003
7.444  6.873e-003
7.448  6.815e-003
7.453  6.732e-003
7.454  6.661e-003
7.455  6.589e-003
7.456  6.575e-003
7.467  6.575e-003
7.471  6.558e-003
7.473  6.501e-003
7.474  6.476e-003
7.475  6.476e-003
7.476  6.448e-003
7.480  6.448e-003
7.482  6.418e-003
7.486  6.382e-003
7.491  6.381e-003
7.495  6.371e-003
7.498  6.313e-003
7.500  6.233e-003
7.501  6.122e-003
7.502  6.108e-003
7.509  6.108e-003
7.514  6.006e-003
7.516  5.988e-003
7.517  5.986e-003
7.519  5.978e-003
7.524  5.888e-003
7.527  5.851e-003
7.530  5.847e-003
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7.535	5.847e-003
7.539	5.829e-003
7.541	5.829e-003
7.542	5.694e-003
7.543	5.677e-003
7.544	5.677e-003
7.548	5.659e-003
7.552	5.633e-003
7.553	5.624e-003
7.554	5.531e-003
7.555	5.433e-003
7.556	5.399e-003
7.571	5.399e-003
7.573	5.256e-003
7.574	5.222e-003
7.575	5.222e-003
7.580	5.213e-003
7.582	5.175e-003
7.585	5.163e-003
7.586	5.160e-003
7.591	5.139e-003
7.594	5.112e-003
7.595	5.044e-003
7.598	5.025e-003
7.600	5.000e-003
7.601	4.889e-003
7.602	4.851e-003
7.607	4.851e-003
7.609	4.833e-003
7.612	4.764e-003
7.614	4.760e-003
7.616	4.736e-003
7.619	4.730e-003
7.622	4.670e-003
7.624	4.666e-003
7.627	4.654e-003
7.630	4.645e-003
7.635	4.645e-003
7.637	4.621e-003
7.639	4.597e-003

7.641	4.597e-003
7.642	4.422e-003
7.643	4.380e-003
7.652	4.380e-003
7.653	4.356e-003
7.654	4.293e-003
7.655	4.219e-003
7.656	4.175e-003
7.665	4.175e-003
7.670	4.158e-003
7.671	4.156e-003
7.673	3.966e-003
7.674	3.944e-003
7.675	3.944e-003
7.679	3.886e-003
7.680	3.883e-003
7.685	3.857e-003
7.686	3.842e-003
7.687	3.788e-003
7.691	3.786e-003
7.693	3.751e-003
7.694	3.751e-003
7.699	3.580e-003
7.700	3.576e-003
7.701	3.465e-003
7.702	3.411e-003
7.707	3.411e-003
7.709	3.366e-003
7.712	3.344e-003
7.714	3.333e-003
7.716	3.317e-003
7.719	3.309e-003
7.722	3.290e-003
7.724	3.281e-003
7.727	3.281e-003
7.730	3.268e-003
7.733	3.268e-003
7.735	3.245e-003
7.737	3.229e-003
7.739	3.169e-003

7.740	3.169e-003
7.741	3.169e-003
7.742	3.051e-003
7.743	2.995e-003
7.744	2.995e-003
7.749	2.995e-003
7.752	2.993e-003
7.753	2.962e-003
7.754	2.942e-003
7.755	2.908e-003
7.756	2.879e-003
7.765	2.879e-003
7.770	2.835e-003
7.771	2.830e-003
7.773	2.698e-003
7.774	2.691e-003
7.775	2.691e-003
7.777	2.546e-003
7.779	2.544e-003
7.780	2.538e-003
7.785	2.529e-003
7.786	2.500e-003
7.787	2.430e-003
7.789	2.425e-003
7.791	2.423e-003
7.793	2.399e-003
7.794	2.399e-003
7.796	2.177e-003
7.797	2.172e-003
7.799	2.167e-003
7.800	2.155e-003
7.801	2.044e-003
7.807	2.002e-003
7.812	1.943e-003
7.814	1.929e-003
7.816	1.924e-003
7.822	1.919e-003
7.824	1.906e-003
7.827	1.906e-003
7.830	1.898e-003

7.833	1.898e-003
7.835	1.839e-003
7.837	1.834e-003
7.840	1.756e-003
7.841	1.755e-003
7.842	1.718e-003
7.843	1.681e-003
7.844	1.681e-003
7.849	1.681e-003
7.852	1.675e-003
7.854	1.654e-003
7.855	1.644e-003
7.856	1.635e-003
7.865	1.635e-003
7.870	1.579e-003
7.871	1.571e-003
7.874	1.527e-003
7.875	1.527e-003
7.877	1.338e-003
7.879	1.333e-003
7.882	1.325e-003
7.885	1.323e-003
7.886	1.290e-003
7.887	1.244e-003
7.889	1.236e-003
7.891	1.230e-003
7.893	1.223e-003
7.894	1.223e-003
7.896	1.073e-003
7.897	1.062e-003
7.899	1.050e-003
7.900	1.032e-003
7.901	9.208e-004
7.907	9.031e-004
7.912	8.636e-004
7.916	8.537e-004
7.922	8.521e-004
7.924	8.437e-004
7.927	8.436e-004
7.930	8.410e-004

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7.933  8.410e-004
7.937  7.642e-004
7.938  7.120e-004
7.940  7.120e-004
7.942  7.105e-004
7.944  6.987e-004
7.949  6.948e-004
7.952  6.874e-004
7.954  6.808e-004
7.965  6.777e-004
7.970  6.398e-004
7.971  6.338e-004
7.975  6.321e-004
7.977  5.050e-004
7.979  4.976e-004
7.982  4.924e-004
7.985  4.871e-004
7.986  4.675e-004
7.987  4.528e-004
7.989  4.480e-004
7.991  4.402e-004
7.993  4.401e-004
7.994  4.401e-004
7.996  3.928e-004
7.997  3.789e-004
7.999  3.626e-004
8.000  3.478e-004
8.001  3.108e-004
8.007  3.082e-004
8.012  2.958e-004
8.022  2.926e-004
8.024  2.900e-004
8.030  2.900e-004
8.033  2.899e-004
8.037  2.382e-004
8.038  2.217e-004
8.040  2.216e-004
8.044  2.206e-004
8.049  2.108e-004
8.065  2.058e-004
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8.070	1.939e-004
8.075	1.909e-004
8.077	1.508e-004
8.079	1.458e-004
8.082	1.442e-004
8.085	1.373e-004
8.087	1.318e-004
8.089	1.303e-004
8.091	1.250e-004
8.093	1.250e-004
8.096	1.249e-004
8.097	1.156e-004
8.099	1.046e-004
8.100	9.773e-005
8.124	6.073e-005
8.133	6.071e-005
8.138	4.439e-005
8.140	4.432e-005
8.144	4.400e-005
8.149	3.130e-005
8.170	2.973e-005
8.175	2.874e-005
8.177	2.869e-005
8.182	2.712e-005
8.189	2.248e-005
8.191	2.083e-005
8.196	2.081e-005
8.197	1.785e-005
8.199	1.440e-005
8.238	1.311e-005
8.244	1.306e-005
8.270	4.503e-006
8.275	4.191e-006
8.282	4.175e-006
8.338	2.712e-006
8.344	2.696e-006

Source: San Cayetano
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	4.734e-003
6.600	4.075e-003
6.700	3.490e-003
6.800	2.965e-003
6.860	2.491e-003
6.900	2.399e-003
6.960	1.967e-003
7.000	1.673e-003
7.060	1.275e-003
7.100	8.156e-004
7.160	6.616e-004
7.260	2.502e-004
7.360	4.478e-005

Source: San Gabriel
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	7.383e-004
6.600	6.400e-004
6.700	5.532e-004
6.800	4.758e-004
6.900	4.062e-004
6.960	3.432e-004
7.000	3.304e-004
7.060	2.728e-004
7.100	2.315e-004
7.160	1.785e-004
7.200	1.138e-004
7.260	9.310e-005
7.360	3.521e-005
7.460	6.301e-006

Source: Santa Cruz Island
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	8.349e-004
6.600	7.126e-004

6.700	6.034e-004
6.760	5.050e-004
6.800	4.854e-004
6.860	3.960e-004
6.900	3.467e-004
6.960	2.649e-004
7.000	1.910e-004
7.060	1.656e-004
7.100	9.768e-005
7.160	7.420e-005
7.260	2.849e-005
7.360	6.824e-006

Source: Santa Monica
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.160	1.374e-003
6.260	1.368e-003
6.360	1.352e-003
6.399	1.317e-003
6.460	1.182e-003
6.500	1.134e-003
6.560	8.795e-004
6.600	8.257e-004
6.660	7.279e-004
6.700	6.852e-004
6.760	5.981e-004
6.800	5.719e-004
6.860	5.061e-004
6.900	4.947e-004
6.960	4.353e-004
7.000	4.318e-004
7.060	3.778e-004
7.100	3.547e-004
7.160	3.052e-004
7.200	2.419e-004
7.260	1.962e-004
7.300	1.076e-004
7.360	9.941e-005

```
             7.460  3.131e-005
             7.560  3.660e-006

Source:          Santa Rosa Island
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.460  9.678e-004
             6.500  9.376e-004
             6.560  7.111e-004
             6.600  6.355e-004
             6.660  4.296e-004
             6.700  3.161e-004
             6.760  2.650e-004
             6.800  1.608e-004
             6.860  1.139e-004
             6.960  4.373e-005
             7.060  1.047e-005

Source:          Santa Susana, alt 1
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.460  2.731e-003
             6.500  2.661e-003
             6.560  1.927e-003
             6.600  1.752e-003
             6.660  1.085e-003
             6.700  8.225e-004
             6.760  6.569e-004
             6.800  4.155e-004
             6.860  2.636e-004
             6.960  1.012e-004
             7.060  2.425e-005

Source:          Santa Ynez (East)
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  8.285e-004
```

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             6.600  7.018e-004
             6.700  5.891e-004
             6.800  4.880e-004
             6.860  3.967e-004
             6.900  3.841e-004
             6.960  3.008e-004
             7.000  2.604e-004
             7.060  1.838e-004
             7.100  1.206e-004
             7.160  9.098e-005
             7.260  3.440e-005
             7.360  6.158e-006

Source:          Santa Ynez (West)
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  9.842e-004
             6.560  7.777e-004
             6.600  7.549e-004
             6.660  5.682e-004
             6.700  5.113e-004
             6.760  3.412e-004
             6.800  2.558e-004
             6.860  2.081e-004
             6.900  1.296e-004
             6.960  8.574e-005
             7.060  3.292e-005
             7.160  7.886e-006

Source:          Santa Ynez Connected
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  6.843e-004
             6.600  6.045e-004
             6.700  5.345e-004
             6.800  4.724e-004
             6.900  4.170e-004
             7.000  3.671e-004
```

7.060	3.219e-004
7.100	3.081e-004
7.160	2.667e-004
7.200	2.224e-004
7.260	1.842e-004
7.300	1.149e-004
7.360	9.982e-005
7.460	3.775e-005
7.560	6.756e-006

Source: Sierra Madre
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.500	8.666e-004
6.600	7.340e-004
6.700	6.162e-004
6.800	5.105e-004
6.860	4.149e-004
6.900	4.018e-004
6.960	3.146e-004
7.000	2.724e-004
7.060	1.923e-004
7.100	1.262e-004
7.160	9.516e-005
7.260	3.598e-005
7.360	6.441e-006

Source: Sierra Madre (San Fernando)
Region: USGS 2008 California
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
6.260	1.103e-003
6.360	1.069e-003
6.460	9.829e-004
6.499	8.540e-004
6.500	4.982e-004
6.560	3.673e-004
6.600	2.488e-004
6.660	1.294e-004

```
             6.760  4.969e-005
             6.860  1.190e-005

Source:          Sierra Madre Connected
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  7.440e-004
             6.600  6.558e-004
             6.700  5.779e-004
             6.800  5.084e-004
             6.900  4.461e-004
             6.960  3.895e-004
             7.000  3.730e-004
             7.060  3.214e-004
             7.100  2.684e-004
             7.160  2.209e-004
             7.200  1.380e-004
             7.260  1.193e-004
             7.360  4.513e-005
             7.460  8.078e-006

Source:          Simi-Santa Rosa
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.460  9.702e-004
             6.500  9.400e-004
             6.560  7.129e-004
             6.600  6.370e-004
             6.660  4.306e-004
             6.700  3.169e-004
             6.760  2.657e-004
             6.800  1.612e-004
             6.860  1.142e-004
             6.960  4.384e-005
             7.060  1.050e-005

Source:          Ventura-Pitas Point
Region:          USGS 2008 California
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Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  7.807e-004
             6.560  6.295e-004
             6.600  6.087e-004
             6.660  4.721e-004
             6.700  4.200e-004
             6.760  2.954e-004
             6.800  2.173e-004
             6.860  1.824e-004
             6.900  1.106e-004
             6.960  7.846e-005
             7.060  3.012e-005
             7.160  7.216e-006

Source:          Verdugo
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.460  4.964e-004
             6.500  4.810e-004
             6.560  3.648e-004
             6.600  3.260e-004
             6.660  2.203e-004
             6.700  1.622e-004
             6.760  1.359e-004
             6.800  8.247e-005
             6.860  5.842e-005
             6.960  2.243e-005
             7.060  5.373e-006

Source:          White Wolf
Region:          USGS 2008 California
Magnitude Scale: Moment Magnitude
     MAGNITUDE, Mw        RATE
             6.500  1.740e-003
             6.600  1.485e-003
             6.700  1.257e-003
             6.760  1.052e-003
             6.800  1.011e-003
```

6.860	8.253e-004
6.900	7.226e-004
6.960	5.521e-004
7.000	3.981e-004
7.060	3.451e-004
7.100	2.036e-004
7.160	1.546e-004
7.260	5.937e-005
7.360	1.422e-005

Source: Extensional Gridded
Region: USGS 2008 Western US
Magnitude Scale: Moment Magnitude

MAGNITUDE, Mw	RATE
5.000	8.757e-003
5.100	7.231e-003
5.200	5.962e-003
5.300	4.907e-003
5.400	4.029e-003
5.500	3.299e-003
5.600	2.691e-003
5.700	2.186e-003
5.800	1.766e-003
5.900	1.416e-003
6.000	1.126e-003
6.100	8.839e-004
6.200	6.828e-004
6.300	5.155e-004
6.400	3.763e-004
6.500	8.687e-005
6.600	6.259e-005
6.700	4.239e-005
6.800	2.559e-005
6.900	1.162e-005

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Deaggregation results for EZ-FRISK 7.65 Build 004

DEAGGREGATION: Magnitude
All magnitudes in Moment Magnitude scale.

Spectral Period:	**PGA**
Amplitude:	**0.0001**
Annual Frequency of Exceedance:	**4.803e-001**
Mode Magnitude:	**5.05**
Mode Rate (by magnitude):	**7.493e-002**
Mean Magnitude:	**5.64**

Magnitude	Probability Density
5.05	1.560e+000
5.15	1.298e+000
5.25	1.079e+000
5.35	8.977e-001
5.45	7.467e-001
5.55	6.211e-001
5.65	5.166e-001
5.75	4.297e-001
5.85	3.574e-001
5.95	2.973e-001
6.05	2.473e-001
6.15	2.054e-001
6.25	1.719e-001
6.35	1.487e-001
6.45	1.414e-001
6.55	2.382e-001
6.65	1.875e-001
6.75	1.423e-001
6.85	1.226e-001
6.95	1.053e-001
7.05	8.599e-002
7.15	7.595e-002
7.25	6.264e-002
7.35	5.016e-002
7.45	3.919e-002
7.55	3.474e-002
7.65	3.607e-002
7.75	3.618e-002

7.85	2.967e-002
7.95	2.120e-002
8.05	9.833e-003
8.15	3.667e-003
8.25	5.253e-004
8.35	9.376e-005
8.45	3.223e-294
8.55	3.223e-294
8.65	3.223e-294
8.75	3.223e-294
8.85	3.223e-294
8.95	3.223e-294

Integral : 1.000e+000

DEAGGREGATION: Distance

Spectral Period:	**PGA**
Amplitude:	**0.0001**
Annual Frequency of Exceedance:	**4.803e-001**
Mode Distance:	**101.25**
Mode Rate (by distance):	**2.985e-001**
Mean Distance:	**119.47**

Distance	Probability Density
1.25	1.258e-295
3.75	1.258e-295
6.25	3.041e-003
8.75	6.895e-004
11.25	1.746e-003
13.75	1.704e-003
16.25	6.317e-004
18.75	3.228e-003
21.25	1.141e-003
23.75	2.059e-003
26.25	6.969e-003
28.75	2.057e-003
31.25	7.597e-004
33.75	6.274e-003
36.25	3.042e-003

38.75	1.386e-003
41.25	5.981e-003
43.75	1.666e-003
46.25	6.459e-003
48.75	6.216e-004
51.25	3.779e-004
53.75	8.105e-003
56.25	6.546e-004
58.75	9.745e-003
61.25	7.932e-004
63.75	1.459e-003
66.25	1.263e-002
68.75	1.322e-003
71.25	8.070e-003
73.75	1.359e-002
76.25	2.860e-004
78.75	1.855e-003
81.25	2.362e-003
83.75	1.666e-002
86.25	1.540e-003
88.75	1.986e-004
91.25	1.193e-003
93.75	2.023e-002
96.25	6.019e-004
98.75	2.905e-004
101.25	2.486e-001

Integral : 1.000e+000

DEAGGREGATION: Epsilon

Spectral Period:	PGA
Amplitude:	0.0001
Annual Frequency of Exceedance:	4.803e-001
Mode Epsilon:	-2.10
Mode Rate (by epsilon):	4.803e-001
Mean Epsilon:	-8.38

Epsilon	Probability Density
-2.1	5.000e+000

-1.9	2.015e-294
-1.7	2.015e-294
-1.5	2.015e-294
-1.3	2.015e-294
-1.1	2.015e-294
-0.9	2.015e-294
-0.7	2.015e-294
-0.5	2.015e-294
-0.3	2.015e-294
-0.1	2.015e-294
0.1	2.015e-294
0.3	2.015e-294
0.5	2.015e-294
0.7	2.015e-294
0.9	2.015e-294
1.1	2.015e-294
1.3	2.015e-294
1.5	2.015e-294
1.7	2.015e-294
1.9	2.015e-294
2.1	2.015e-294
2.3	2.015e-294
2.5	2.015e-294
2.7	2.015e-294
2.9	2.015e-294
3.1	2.015e-294
3.3	2.015e-294
3.5	2.015e-294
3.7	2.015e-294
3.9	2.015e-294
4.1	2.015e-294

Integral : 1.000e+000

DEAGGREGATION: Magnitude - Distance
All magnitudes in Moment Magnitude scale.

Spectral Period:	**PGA**
Amplitude:	**0.0001**
Annual Frequency of Exceedance:	**4.803e-001**

Mode Magnitude: 5.05
Mode Distance: 101.25
Mode Rate (by distance and magnitude): 5.241e-002
Mean Magnitude: 5.64
Mean Distance: 119.47

Magnitude	Distance	Probability Density
5.05	1.25	3.145e-296
5.05	3.75	3.145e-296
5.05	6.25	1.319e-003
5.05	8.75	3.145e-296
5.05	11.25	1.378e-003
5.05	13.75	2.587e-003
5.05	16.25	6.737e-004
5.05	18.75	1.984e-003
5.05	21.25	7.113e-004
5.05	23.75	3.265e-003
5.05	26.25	5.336e-003
5.05	28.75	6.854e-004
5.05	31.25	3.145e-296
5.05	33.75	8.720e-003
5.05	36.25	4.584e-003
5.05	38.75	3.145e-296
5.05	41.25	9.122e-003
5.05	43.75	3.145e-296
5.05	46.25	1.039e-002
5.05	48.75	3.145e-296
5.05	51.25	3.145e-296
5.05	53.75	1.330e-002
5.05	56.25	3.145e-296
5.05	58.75	1.643e-002
5.05	61.25	3.145e-296
5.05	63.75	3.145e-296
5.05	66.25	2.223e-002
5.05	68.75	3.145e-296
5.05	71.25	3.145e-296
5.05	73.75	2.176e-002
5.05	76.25	3.145e-296
5.05	78.75	3.145e-296
5.05	81.25	3.145e-296

5.05	83.75	2.758e-002
5.05	86.25	3.145e-296
5.05	88.75	3.145e-296
5.05	91.25	3.145e-296
5.05	93.75	3.550e-002
5.05	96.25	3.145e-296
5.05	98.75	3.145e-296
5.05	101.25	4.365e-001
5.15	1.25	3.145e-296
5.15	3.75	3.145e-296
5.15	6.25	1.097e-003
5.15	8.75	3.145e-296
5.15	11.25	1.146e-003
5.15	13.75	2.152e-003
5.15	16.25	5.603e-004
5.15	18.75	1.650e-003
5.15	21.25	5.917e-004
5.15	23.75	2.716e-003
5.15	26.25	4.438e-003
5.15	28.75	5.701e-004
5.15	31.25	3.145e-296
5.15	33.75	7.253e-003
5.15	36.25	3.813e-003
5.15	38.75	3.145e-296
5.15	41.25	7.588e-003
5.15	43.75	3.145e-296
5.15	46.25	8.644e-003
5.15	48.75	3.145e-296
5.15	51.25	3.145e-296
5.15	53.75	1.107e-002
5.15	56.25	3.145e-296
5.15	58.75	1.366e-002
5.15	61.25	3.145e-296
5.15	63.75	3.145e-296
5.15	66.25	1.849e-002
5.15	68.75	3.145e-296
5.15	71.25	3.145e-296
5.15	73.75	1.810e-002
5.15	76.25	3.145e-296
5.15	78.75	3.145e-296

5.15	81.25	3.145e-296
5.15	83.75	2.294e-002
5.15	86.25	3.145e-296
5.15	88.75	3.145e-296
5.15	91.25	3.145e-296
5.15	93.75	2.953e-002
5.15	96.25	3.145e-296
5.15	98.75	3.145e-296
5.15	101.25	3.631e-001
5.25	1.25	3.145e-296
5.25	3.75	3.145e-296
5.25	6.25	9.122e-004
5.25	8.75	3.145e-296
5.25	11.25	9.532e-004
5.25	13.75	1.790e-003
5.25	16.25	4.661e-004
5.25	18.75	1.373e-003
5.25	21.25	4.921e-004
5.25	23.75	2.259e-003
5.25	26.25	3.692e-003
5.25	28.75	4.742e-004
5.25	31.25	3.145e-296
5.25	33.75	6.033e-003
5.25	36.25	3.171e-003
5.25	38.75	3.145e-296
5.25	41.25	6.311e-003
5.25	43.75	3.145e-296
5.25	46.25	7.190e-003
5.25	48.75	3.145e-296
5.25	51.25	3.145e-296
5.25	53.75	9.204e-003
5.25	56.25	3.145e-296
5.25	58.75	1.136e-002
5.25	61.25	3.145e-296
5.25	63.75	3.145e-296
5.25	66.25	1.538e-002
5.25	68.75	3.145e-296
5.25	71.25	3.145e-296
5.25	73.75	1.505e-002
5.25	76.25	3.145e-296

5.25	78.75	3.145e-296
5.25	81.25	3.145e-296
5.25	83.75	1.908e-002
5.25	86.25	3.145e-296
5.25	88.75	3.145e-296
5.25	91.25	3.145e-296
5.25	93.75	2.456e-002
5.25	96.25	3.145e-296
5.25	98.75	3.145e-296
5.25	101.25	3.020e-001
5.35	1.25	3.145e-296
5.35	3.75	3.145e-296
5.35	6.25	7.588e-004
5.35	8.75	3.145e-296
5.35	11.25	7.928e-004
5.35	13.75	1.489e-003
5.35	16.25	3.877e-004
5.35	18.75	1.142e-003
5.35	21.25	4.093e-004
5.35	23.75	1.879e-003
5.35	26.25	3.071e-003
5.35	28.75	3.944e-004
5.35	31.25	3.145e-296
5.35	33.75	5.018e-003
5.35	36.25	2.638e-003
5.35	38.75	3.145e-296
5.35	41.25	5.249e-003
5.35	43.75	3.145e-296
5.35	46.25	5.980e-003
5.35	48.75	3.145e-296
5.35	51.25	3.145e-296
5.35	53.75	7.656e-003
5.35	56.25	3.145e-296
5.35	58.75	9.452e-003
5.35	61.25	3.145e-296
5.35	63.75	3.145e-296
5.35	66.25	1.279e-002
5.35	68.75	3.145e-296
5.35	71.25	3.145e-296
5.35	73.75	1.252e-002

5.35	76.25	3.145e-296
5.35	78.75	3.145e-296
5.35	81.25	3.145e-296
5.35	83.75	1.587e-002
5.35	86.25	3.145e-296
5.35	88.75	3.145e-296
5.35	91.25	3.145e-296
5.35	93.75	2.043e-002
5.35	96.25	3.145e-296
5.35	98.75	3.145e-296
5.35	101.25	2.512e-001
5.45	1.25	3.145e-296
5.45	3.75	3.145e-296
5.45	6.25	6.311e-004
5.45	8.75	3.145e-296
5.45	11.25	6.594e-004
5.45	13.75	1.238e-003
5.45	16.25	3.224e-004
5.45	18.75	9.497e-004
5.45	21.25	3.405e-004
5.45	23.75	1.563e-003
5.45	26.25	2.554e-003
5.45	28.75	3.281e-004
5.45	31.25	3.145e-296
5.45	33.75	4.174e-003
5.45	36.25	2.194e-003
5.45	38.75	3.145e-296
5.45	41.25	4.366e-003
5.45	43.75	3.145e-296
5.45	46.25	4.974e-003
5.45	48.75	3.145e-296
5.45	51.25	3.145e-296
5.45	53.75	6.368e-003
5.45	56.25	3.145e-296
5.45	58.75	7.862e-003
5.45	61.25	3.145e-296
5.45	63.75	3.145e-296
5.45	66.25	1.064e-002
5.45	68.75	3.145e-296
5.45	71.25	3.145e-296

5.45	73.75	1.041e-002
5.45	76.25	3.145e-296
5.45	78.75	3.145e-296
5.45	81.25	3.145e-296
5.45	83.75	1.320e-002
5.45	86.25	3.145e-296
5.45	88.75	3.145e-296
5.45	91.25	3.145e-296
5.45	93.75	1.699e-002
5.45	96.25	3.145e-296
5.45	98.75	3.145e-296
5.45	101.25	2.089e-001
5.55	1.25	3.145e-296
5.55	3.75	3.145e-296
5.55	6.25	5.249e-004
5.55	8.75	3.145e-296
5.55	11.25	5.485e-004
5.55	13.75	1.030e-003
5.55	16.25	2.682e-004
5.55	18.75	7.900e-004
5.55	21.25	2.832e-004
5.55	23.75	1.300e-003
5.55	26.25	2.124e-003
5.55	28.75	2.729e-004
5.55	31.25	3.145e-296
5.55	33.75	3.471e-003
5.55	36.25	1.825e-003
5.55	38.75	3.145e-296
5.55	41.25	3.632e-003
5.55	43.75	3.145e-296
5.55	46.25	4.137e-003
5.55	48.75	3.145e-296
5.55	51.25	3.145e-296
5.55	53.75	5.296e-003
5.55	56.25	3.145e-296
5.55	58.75	6.539e-003
5.55	61.25	3.145e-296
5.55	63.75	3.145e-296
5.55	66.25	8.849e-003
5.55	68.75	3.145e-296

5.55	71.25	3.145e-296
5.55	73.75	8.661e-003
5.55	76.25	3.145e-296
5.55	78.75	3.145e-296
5.55	81.25	3.145e-296
5.55	83.75	1.098e-002
5.55	86.25	3.145e-296
5.55	88.75	3.145e-296
5.55	91.25	3.145e-296
5.55	93.75	1.413e-002
5.55	96.25	3.145e-296
5.55	98.75	3.145e-296
5.55	101.25	1.738e-001
5.65	1.25	3.145e-296
5.65	3.75	3.145e-296
5.65	6.25	4.366e-004
5.65	8.75	3.145e-296
5.65	11.25	4.562e-004
5.65	13.75	8.567e-004
5.65	16.25	2.231e-004
5.65	18.75	6.571e-004
5.65	21.25	2.355e-004
5.65	23.75	1.081e-003
5.65	26.25	1.767e-003
5.65	28.75	2.270e-004
5.65	31.25	3.145e-296
5.65	33.75	2.887e-003
5.65	36.25	1.518e-003
5.65	38.75	3.145e-296
5.65	41.25	3.021e-003
5.65	43.75	3.145e-296
5.65	46.25	3.441e-003
5.65	48.75	3.145e-296
5.65	51.25	3.145e-296
5.65	53.75	4.405e-003
5.65	56.25	3.145e-296
5.65	58.75	5.439e-003
5.65	61.25	3.145e-296
5.65	63.75	3.145e-296
5.65	66.25	7.360e-003

5.65	68.75	3.145e-296
5.65	71.25	3.145e-296
5.65	73.75	7.204e-003
5.65	76.25	3.145e-296
5.65	78.75	3.145e-296
5.65	81.25	3.145e-296
5.65	83.75	9.131e-003
5.65	86.25	3.145e-296
5.65	88.75	3.145e-296
5.65	91.25	3.145e-296
5.65	93.75	1.176e-002
5.65	96.25	3.145e-296
5.65	98.75	3.145e-296
5.65	101.25	1.445e-001
5.75	1.25	3.145e-296
5.75	3.75	3.145e-296
5.75	6.25	3.632e-004
5.75	8.75	3.145e-296
5.75	11.25	3.795e-004
5.75	13.75	7.126e-004
5.75	16.25	1.855e-004
5.75	18.75	5.465e-004
5.75	21.25	1.959e-004
5.75	23.75	8.994e-004
5.75	26.25	1.470e-003
5.75	28.75	1.888e-004
5.75	31.25	3.145e-296
5.75	33.75	2.402e-003
5.75	36.25	1.263e-003
5.75	38.75	3.145e-296
5.75	41.25	2.512e-003
5.75	43.75	3.145e-296
5.75	46.25	2.862e-003
5.75	48.75	3.145e-296
5.75	51.25	3.145e-296
5.75	53.75	3.664e-003
5.75	56.25	3.145e-296
5.75	58.75	4.524e-003
5.75	61.25	3.145e-296
5.75	63.75	3.145e-296

5.75	66.25	6.122e-003
5.75	68.75	3.145e-296
5.75	71.25	3.145e-296
5.75	73.75	5.992e-003
5.75	76.25	3.145e-296
5.75	78.75	3.145e-296
5.75	81.25	3.145e-296
5.75	83.75	7.595e-003
5.75	86.25	3.145e-296
5.75	88.75	3.145e-296
5.75	91.25	3.145e-296
5.75	93.75	9.778e-003
5.75	96.25	3.145e-296
5.75	98.75	3.145e-296
5.75	101.25	1.202e-001
5.85	1.25	3.145e-296
5.85	3.75	3.145e-296
5.85	6.25	3.021e-004
5.85	8.75	3.145e-296
5.85	11.25	3.156e-004
5.85	13.75	5.927e-004
5.85	16.25	1.543e-004
5.85	18.75	4.546e-004
5.85	21.25	1.630e-004
5.85	23.75	7.480e-004
5.85	26.25	1.222e-003
5.85	28.75	1.570e-004
5.85	31.25	3.145e-296
5.85	33.75	1.998e-003
5.85	36.25	1.050e-003
5.85	38.75	3.145e-296
5.85	41.25	2.090e-003
5.85	43.75	3.145e-296
5.85	46.25	2.381e-003
5.85	48.75	3.145e-296
5.85	51.25	3.145e-296
5.85	53.75	3.048e-003
5.85	56.25	3.145e-296
5.85	58.75	3.763e-003
5.85	61.25	3.145e-296

5.85	63.75	3.145e-296
5.85	66.25	5.092e-003
5.85	68.75	3.145e-296
5.85	71.25	3.145e-296
5.85	73.75	4.984e-003
5.85	76.25	3.145e-296
5.85	78.75	3.145e-296
5.85	81.25	3.145e-296
5.85	83.75	6.317e-003
5.85	86.25	3.145e-296
5.85	88.75	3.145e-296
5.85	91.25	3.145e-296
5.85	93.75	8.133e-003
5.85	96.25	3.145e-296
5.85	98.75	3.145e-296
5.85	101.25	1.000e-001
5.95	1.25	3.145e-296
5.95	3.75	3.145e-296
5.95	6.25	2.512e-004
5.95	8.75	3.145e-296
5.95	11.25	2.625e-004
5.95	13.75	4.930e-004
5.95	16.25	1.284e-004
5.95	18.75	3.781e-004
5.95	21.25	1.355e-004
5.95	23.75	6.222e-004
5.95	26.25	1.017e-003
5.95	28.75	1.306e-004
5.95	31.25	3.145e-296
5.95	33.75	1.662e-003
5.95	36.25	8.734e-004
5.95	38.75	3.145e-296
5.95	41.25	1.738e-003
5.95	43.75	3.145e-296
5.95	46.25	1.980e-003
5.95	48.75	3.145e-296
5.95	51.25	3.145e-296
5.95	53.75	2.535e-003
5.95	56.25	3.145e-296
5.95	58.75	3.130e-003

5.95	61.25	3.145e-296
5.95	63.75	3.145e-296
5.95	66.25	4.235e-003
5.95	68.75	3.145e-296
5.95	71.25	3.145e-296
5.95	73.75	4.146e-003
5.95	76.25	3.145e-296
5.95	78.75	3.145e-296
5.95	81.25	3.145e-296
5.95	83.75	5.255e-003
5.95	86.25	3.145e-296
5.95	88.75	3.145e-296
5.95	91.25	3.145e-296
5.95	93.75	6.764e-003
5.95	96.25	3.145e-296
5.95	98.75	3.145e-296
5.95	101.25	8.317e-002
6.05	1.25	3.145e-296
6.05	3.75	3.145e-296
6.05	6.25	2.090e-004
6.05	8.75	1.506e-004
6.05	11.25	3.285e-004
6.05	13.75	3.668e-004
6.05	16.25	1.342e-004
6.05	18.75	2.924e-004
6.05	21.25	4.968e-004
6.05	23.75	5.547e-004
6.05	26.25	3.103e-004
6.05	28.75	9.547e-004
6.05	31.25	3.145e-296
6.05	33.75	8.743e-004
6.05	36.25	1.050e-003
6.05	38.75	3.145e-296
6.05	41.25	1.575e-003
6.05	43.75	3.145e-296
6.05	46.25	1.545e-003
6.05	48.75	3.145e-296
6.05	51.25	3.145e-296
6.05	53.75	2.232e-003
6.05	56.25	3.145e-296

6.05	58.75	2.536e-003
6.05	61.25	3.145e-296
6.05	63.75	3.145e-296
6.05	66.25	3.464e-003
6.05	68.75	3.145e-296
6.05	71.25	3.145e-296
6.05	73.75	4.049e-003
6.05	76.25	3.145e-296
6.05	78.75	3.145e-296
6.05	81.25	3.145e-296
6.05	83.75	4.658e-003
6.05	86.25	3.145e-296
6.05	88.75	3.145e-296
6.05	91.25	3.145e-296
6.05	93.75	5.310e-003
6.05	96.25	3.145e-296
6.05	98.75	3.145e-296
6.05	101.25	6.781e-002
6.15	1.25	3.145e-296
6.15	3.75	3.145e-296
6.15	6.25	1.903e-004
6.15	8.75	1.531e-004
6.15	11.25	2.321e-004
6.15	13.75	3.215e-004
6.15	16.25	1.376e-004
6.15	18.75	2.610e-004
6.15	21.25	4.365e-004
6.15	23.75	3.899e-004
6.15	26.25	3.431e-004
6.15	28.75	7.658e-004
6.15	31.25	3.145e-296
6.15	33.75	7.621e-004
6.15	36.25	8.780e-004
6.15	38.75	3.145e-296
6.15	41.25	1.292e-003
6.15	43.75	3.145e-296
6.15	46.25	1.348e-003
6.15	48.75	3.145e-296
6.15	51.25	3.145e-296
6.15	53.75	1.910e-003

6.15	56.25	3.145e-296
6.15	58.75	2.068e-003
6.15	61.25	3.145e-296
6.15	63.75	3.145e-296
6.15	66.25	2.860e-003
6.15	68.75	3.145e-296
6.15	71.25	3.145e-296
6.15	73.75	3.390e-003
6.15	76.25	3.145e-296
6.15	78.75	3.145e-296
6.15	81.25	3.145e-296
6.15	83.75	3.857e-003
6.15	86.25	3.145e-296
6.15	88.75	3.145e-296
6.15	91.25	3.145e-296
6.15	93.75	4.454e-003
6.15	96.25	3.145e-296
6.15	98.75	3.145e-296
6.15	101.25	5.609e-002
6.25	1.25	3.145e-296
6.25	3.75	3.145e-296
6.25	6.25	1.842e-004
6.25	8.75	1.357e-004
6.25	11.25	1.918e-004
6.25	13.75	2.422e-004
6.25	16.25	1.473e-004
6.25	18.75	2.377e-004
6.25	21.25	3.706e-004
6.25	23.75	2.589e-004
6.25	26.25	3.998e-004
6.25	28.75	5.990e-004
6.25	31.25	3.145e-296
6.25	33.75	6.346e-004
6.25	36.25	7.221e-004
6.25	38.75	3.145e-296
6.25	41.25	1.082e-003
6.25	43.75	3.145e-296
6.25	46.25	1.208e-003
6.25	48.75	3.145e-296
6.25	51.25	3.145e-296

6.25	53.75	1.634e-003
6.25	56.25	3.145e-296
6.25	58.75	1.761e-003
6.25	61.25	3.145e-296
6.25	63.75	3.145e-296
6.25	66.25	2.289e-003
6.25	68.75	3.145e-296
6.25	71.25	3.145e-296
6.25	73.75	2.838e-003
6.25	76.25	3.145e-296
6.25	78.75	3.145e-296
6.25	81.25	3.145e-296
6.25	83.75	3.229e-003
6.25	86.25	3.145e-296
6.25	88.75	3.145e-296
6.25	91.25	1.632e-004
6.25	93.75	3.709e-003
6.25	96.25	3.145e-296
6.25	98.75	3.145e-296
6.25	101.25	4.671e-002
6.35	1.25	3.145e-296
6.35	3.75	3.145e-296
6.35	6.25	1.861e-004
6.35	8.75	9.664e-005
6.35	11.25	1.840e-004
6.35	13.75	1.903e-004
6.35	16.25	1.574e-004
6.35	18.75	2.252e-004
6.35	21.25	2.464e-004
6.35	23.75	2.236e-004
6.35	26.25	4.402e-004
6.35	28.75	4.423e-004
6.35	31.25	3.145e-296
6.35	33.75	5.575e-004
6.35	36.25	6.713e-004
6.35	38.75	3.145e-296
6.35	41.25	8.472e-004
6.35	43.75	3.145e-296
6.35	46.25	1.074e-003
6.35	48.75	3.145e-296

6.35	51.25	3.145e-296
6.35	53.75	1.295e-003
6.35	56.25	3.145e-296
6.35	58.75	1.669e-003
6.35	61.25	3.145e-296
6.35	63.75	2.858e-004
6.35	66.25	1.841e-003
6.35	68.75	3.107e-004
6.35	71.25	3.145e-296
6.35	73.75	2.328e-003
6.35	76.25	3.145e-296
6.35	78.75	4.115e-004
6.35	81.25	3.145e-296
6.35	83.75	2.686e-003
6.35	86.25	5.372e-004
6.35	88.75	3.145e-296
6.35	91.25	4.086e-004
6.35	93.75	3.156e-003
6.35	96.25	3.145e-296
6.35	98.75	3.145e-296
6.35	101.25	3.901e-002
6.45	1.25	3.145e-296
6.45	3.75	3.145e-296
6.45	6.25	1.816e-004
6.45	8.75	6.753e-005
6.45	11.25	1.611e-004
6.45	13.75	1.719e-004
6.45	16.25	1.398e-004
6.45	18.75	2.122e-004
6.45	21.25	1.578e-004
6.45	23.75	2.281e-004
6.45	26.25	4.710e-004
6.45	28.75	4.855e-004
6.45	31.25	3.145e-296
6.45	33.75	4.857e-004
6.45	36.25	6.005e-004
6.45	38.75	3.145e-296
6.45	41.25	7.719e-004
6.45	43.75	5.233e-005
6.45	46.25	8.838e-004

6.45	48.75	3.145e-296
6.45	51.25	8.590e-005
6.45	53.75	1.110e-003
6.45	56.25	3.145e-296
6.45	58.75	2.658e-003
6.45	61.25	3.145e-296
6.45	63.75	7.158e-004
6.45	66.25	1.534e-003
6.45	68.75	7.782e-004
6.45	71.25	3.145e-296
6.45	73.75	1.842e-003
6.45	76.25	3.145e-296
6.45	78.75	1.031e-003
6.45	81.25	3.145e-296
6.45	83.75	2.282e-003
6.45	86.25	1.346e-003
6.45	88.75	3.145e-296
6.45	91.25	1.377e-003
6.45	93.75	2.671e-003
6.45	96.25	3.145e-296
6.45	98.75	3.145e-296
6.45	101.25	3.404e-002
6.55	1.25	3.145e-296
6.55	3.75	3.145e-296
6.55	6.25	1.472e-003
6.55	8.75	1.017e-003
6.55	11.25	1.589e-003
6.55	13.75	1.145e-003
6.55	16.25	9.583e-004
6.55	18.75	1.708e-003
6.55	21.25	1.213e-003
6.55	23.75	8.285e-004
6.55	26.25	3.016e-003
6.55	28.75	4.274e-003
6.55	31.25	2.221e-003
6.55	33.75	2.736e-003
6.55	36.25	1.157e-003
6.55	38.75	1.481e-003
6.55	41.25	3.151e-003
6.55	43.75	4.696e-003

6.55	46.25	4.089e-003
6.55	48.75	1.344e-003
6.55	51.25	8.558e-004
6.55	53.75	7.362e-004
6.55	56.25	8.728e-004
6.55	58.75	2.063e-003
6.55	61.25	4.279e-004
6.55	63.75	5.797e-003
6.55	66.25	8.830e-004
6.55	68.75	5.245e-003
6.55	71.25	2.337e-003
6.55	73.75	2.111e-003
6.55	76.25	8.624e-004
6.55	78.75	6.528e-003
6.55	81.25	9.715e-004
6.55	83.75	1.187e-003
6.55	86.25	7.022e-003
6.55	88.75	7.497e-004
6.55	91.25	1.239e-003
6.55	93.75	1.176e-003
6.55	96.25	9.202e-004
6.55	98.75	9.072e-004
6.55	101.25	1.431e-002
6.65	1.25	3.145e-296
6.65	3.75	3.145e-296
6.65	6.25	2.137e-003
6.65	8.75	1.724e-003
6.65	11.25	2.028e-003
6.65	13.75	7.740e-004
6.65	16.25	7.795e-004
6.65	18.75	1.472e-003
6.65	21.25	8.629e-004
6.65	23.75	5.490e-004
6.65	26.25	3.616e-003
6.65	28.75	3.287e-003
6.65	31.25	1.388e-003
6.65	33.75	2.009e-003
6.65	36.25	6.844e-004
6.65	38.75	2.477e-003
6.65	41.25	3.772e-003

6.65	43.75	5.108e-003
6.65	46.25	1.696e-003
6.65	48.75	8.629e-004
6.65	51.25	8.630e-004
6.65	53.75	7.856e-004
6.65	56.25	6.992e-004
6.65	58.75	9.737e-004
6.65	61.25	4.827e-004
6.65	63.75	2.536e-003
6.65	66.25	8.623e-004
6.65	68.75	3.239e-003
6.65	71.25	2.402e-003
6.65	73.75	2.117e-003
6.65	76.25	7.595e-004
6.65	78.75	3.444e-003
6.65	81.25	9.305e-004
6.65	83.75	7.730e-004
6.65	86.25	2.517e-003
6.65	88.75	3.262e-004
6.65	91.25	8.832e-004
6.65	93.75	9.372e-004
6.65	96.25	1.291e-003
6.65	98.75	1.037e-003
6.65	101.25	1.193e-002
6.75	1.25	3.145e-296
6.75	3.75	3.145e-296
6.75	6.25	2.353e-003
6.75	8.75	1.202e-003
6.75	11.25	2.031e-003
6.75	13.75	4.047e-004
6.75	16.25	3.737e-004
6.75	18.75	1.347e-003
6.75	21.25	6.251e-004
6.75	23.75	2.270e-004
6.75	26.25	4.256e-003
6.75	28.75	2.443e-003
6.75	31.25	7.234e-004
6.75	33.75	1.759e-003
6.75	36.25	7.517e-004
6.75	38.75	4.048e-003

6.75	41.25	8.142e-004
6.75	43.75	2.808e-003
6.75	46.25	3.406e-004
6.75	48.75	1.608e-004
6.75	51.25	7.239e-004
6.75	53.75	9.785e-004
6.75	56.25	9.318e-004
6.75	58.75	1.031e-003
6.75	61.25	6.051e-004
6.75	63.75	1.189e-003
6.75	66.25	5.447e-004
6.75	68.75	1.575e-003
6.75	71.25	2.187e-003
6.75	73.75	2.129e-003
6.75	76.25	2.303e-004
6.75	78.75	1.761e-003
6.75	81.25	4.049e-004
6.75	83.75	6.922e-004
6.75	86.25	1.898e-003
6.75	88.75	3.184e-004
6.75	91.25	6.363e-004
6.75	93.75	9.789e-004
6.75	96.25	1.494e-003
6.75	98.75	4.147e-004
6.75	101.25	9.517e-003
6.85	1.25	3.145e-296
6.85	3.75	3.145e-296
6.85	6.25	2.497e-003
6.85	8.75	1.255e-003
6.85	11.25	1.433e-003
6.85	13.75	4.377e-004
6.85	16.25	9.458e-005
6.85	18.75	1.083e-003
6.85	21.25	6.368e-004
6.85	23.75	2.514e-004
6.85	26.25	5.070e-003
6.85	28.75	8.483e-004
6.85	31.25	6.769e-004
6.85	33.75	1.854e-003
6.85	36.25	6.498e-004

6.85	38.75	3.494e-003
6.85	41.25	4.542e-004
6.85	43.75	2.236e-003
6.85	46.25	1.874e-004
6.85	48.75	1.261e-004
6.85	51.25	5.768e-004
6.85	53.75	1.545e-003
6.85	56.25	6.014e-004
6.85	58.75	3.686e-004
6.85	61.25	3.137e-004
6.85	63.75	5.288e-004
6.85	66.25	3.352e-004
6.85	68.75	1.138e-003
6.85	71.25	2.994e-003
6.85	73.75	1.755e-003
6.85	76.25	2.114e-004
6.85	78.75	1.121e-003
6.85	81.25	5.120e-004
6.85	83.75	7.517e-004
6.85	86.25	1.054e-003
6.85	88.75	3.006e-004
6.85	91.25	8.727e-004
6.85	93.75	9.463e-004
6.85	96.25	1.340e-003
6.85	98.75	3.589e-004
6.85	101.25	8.122e-003
6.95	1.25	3.145e-296
6.95	3.75	3.145e-296
6.95	6.25	3.264e-003
6.95	8.75	5.627e-004
6.95	11.25	1.009e-003
6.95	13.75	4.398e-005
6.95	16.25	2.495e-005
6.95	18.75	1.513e-003
6.95	21.25	3.757e-004
6.95	23.75	2.489e-004
6.95	26.25	6.038e-003
6.95	28.75	5.776e-004
6.95	31.25	7.487e-004
6.95	33.75	1.590e-003

6.95	36.25	1.903e-004
6.95	38.75	1.445e-003
6.95	41.25	2.764e-004
6.95	43.75	1.074e-003
6.95	46.25	1.598e-004
6.95	48.75	2.851e-004
6.95	51.25	5.832e-004
6.95	53.75	1.567e-003
6.95	56.25	5.822e-004
6.95	58.75	1.660e-004
6.95	61.25	1.030e-004
6.95	63.75	2.872e-004
6.95	66.25	2.847e-004
6.95	68.75	5.464e-004
6.95	71.25	3.839e-003
6.95	73.75	1.154e-003
6.95	76.25	3.111e-004
6.95	78.75	8.959e-004
6.95	81.25	9.425e-004
6.95	83.75	9.082e-004
6.95	86.25	6.545e-004
6.95	88.75	1.152e-004
6.95	91.25	1.575e-003
6.95	93.75	1.227e-003
6.95	96.25	5.258e-004
6.95	98.75	3.176e-005
6.95	101.25	6.409e-003
7.05	1.25	3.145e-296
7.05	3.75	3.145e-296
7.05	6.25	3.537e-003
7.05	8.75	2.813e-004
7.05	11.25	6.152e-004
7.05	13.75	3.145e-296
7.05	16.25	3.145e-296
7.05	18.75	2.092e-003
7.05	21.25	6.114e-004
7.05	23.75	3.742e-004
7.05	26.25	6.840e-003
7.05	28.75	3.014e-004
7.05	31.25	7.598e-004

7.05	33.75	1.524e-003
7.05	36.25	7.234e-005
7.05	38.75	7.134e-004
7.05	41.25	1.192e-004
7.05	43.75	5.440e-004
7.05	46.25	7.234e-005
7.05	48.75	1.256e-003
7.05	51.25	9.008e-005
7.05	53.75	4.399e-004
7.05	56.25	5.864e-004
7.05	58.75	3.145e-296
7.05	61.25	2.276e-004
7.05	63.75	3.832e-004
7.05	66.25	2.029e-004
7.05	68.75	3.251e-004
7.05	71.25	3.626e-003
7.05	73.75	1.021e-003
7.05	76.25	1.801e-004
7.05	78.75	1.404e-003
7.05	81.25	6.139e-004
7.05	83.75	4.859e-004
7.05	86.25	1.669e-004
7.05	88.75	3.041e-005
7.05	91.25	1.757e-003
7.05	93.75	3.282e-005
7.05	96.25	2.462e-004
7.05	98.75	3.293e-005
7.05	101.25	2.829e-003
7.15	1.25	3.145e-296
7.15	3.75	3.145e-296
7.15	6.25	2.998e-003
7.15	8.75	1.898e-004
7.15	11.25	3.792e-004
7.15	13.75	3.145e-296
7.15	16.25	3.145e-296
7.15	18.75	2.776e-003
7.15	21.25	4.806e-004
7.15	23.75	1.249e-004
7.15	26.25	6.063e-003
7.15	28.75	5.448e-004

7.15	31.25	8.238e-004
7.15	33.75	1.358e-003
7.15	36.25	6.247e-005
7.15	38.75	2.019e-004
7.15	41.25	2.236e-005
7.15	43.75	1.429e-004
7.15	46.25	3.145e-296
7.15	48.75	8.358e-004
7.15	51.25	3.145e-296
7.15	53.75	2.085e-004
7.15	56.25	7.857e-004
7.15	58.75	3.145e-296
7.15	61.25	1.395e-003
7.15	63.75	8.448e-004
7.15	66.25	7.421e-006
7.15	68.75	4.970e-005
7.15	71.25	2.503e-003
7.15	73.75	5.374e-004
7.15	76.25	5.082e-005
7.15	78.75	9.504e-004
7.15	81.25	1.311e-003
7.15	83.75	8.012e-004
7.15	86.25	3.578e-005
7.15	88.75	3.540e-005
7.15	91.25	1.622e-003
7.15	93.75	3.590e-005
7.15	96.25	1.036e-004
7.15	98.75	3.381e-005
7.15	101.25	2.066e-003
7.25	1.25	3.145e-296
7.25	3.75	3.145e-296
7.25	6.25	2.242e-003
7.25	8.75	5.980e-005
7.25	11.25	2.335e-004
7.25	13.75	3.145e-296
7.25	16.25	3.145e-296
7.25	18.75	3.292e-003
7.25	21.25	5.356e-004
7.25	23.75	3.145e-296
7.25	26.25	3.821e-003

7.25	28.75	6.859e-004
7.25	31.25	2.551e-004
7.25	33.75	1.158e-003
7.25	36.25	3.145e-296
7.25	38.75	3.145e-296
7.25	41.25	3.145e-296
7.25	43.75	3.145e-296
7.25	46.25	3.145e-296
7.25	48.75	7.698e-004
7.25	51.25	3.145e-296
7.25	53.75	6.567e-005
7.25	56.25	7.113e-004
7.25	58.75	3.145e-296
7.25	61.25	1.133e-003
7.25	63.75	8.543e-004
7.25	66.25	8.923e-006
7.25	68.75	5.949e-006
7.25	71.25	2.003e-003
7.25	73.75	3.108e-004
7.25	76.25	5.454e-005
7.25	78.75	5.781e-004
7.25	81.25	2.478e-003
7.25	83.75	1.412e-003
7.25	86.25	4.506e-005
7.25	88.75	3.985e-005
7.25	91.25	8.363e-004
7.25	93.75	3.985e-005
7.25	96.25	4.004e-005
7.25	98.75	4.059e-005
7.25	101.25	1.348e-003
7.35	1.25	3.145e-296
7.35	3.75	3.145e-296
7.35	6.25	1.442e-003
7.35	8.75	3.145e-296
7.35	11.25	9.476e-005
7.35	13.75	3.145e-296
7.35	16.25	3.145e-296
7.35	18.75	2.965e-003
7.35	21.25	4.254e-004
7.35	23.75	3.145e-296

7.35	26.25	1.891e-003
7.35	28.75	5.814e-004
7.35	31.25	3.145e-296
7.35	33.75	9.380e-004
7.35	36.25	3.145e-296
7.35	38.75	3.145e-296
7.35	41.25	3.145e-296
7.35	43.75	3.145e-296
7.35	46.25	3.145e-296
7.35	48.75	3.542e-004
7.35	51.25	3.145e-296
7.35	53.75	3.145e-296
7.35	56.25	4.822e-004
7.35	58.75	3.145e-296
7.35	61.25	7.041e-004
7.35	63.75	6.320e-004
7.35	66.25	1.391e-005
7.35	68.75	9.277e-006
7.35	71.25	1.951e-003
7.35	73.75	3.573e-004
7.35	76.25	1.071e-004
7.35	78.75	2.875e-004
7.35	81.25	3.441e-003
7.35	83.75	1.951e-003
7.35	86.25	4.150e-005
7.35	88.75	3.441e-005
7.35	91.25	4.150e-004
7.35	93.75	3.441e-005
7.35	96.25	3.905e-005
7.35	98.75	3.905e-005
7.35	101.25	8.336e-004
7.45	1.25	3.145e-296
7.45	3.75	3.145e-296
7.45	6.25	6.409e-004
7.45	8.75	3.145e-296
7.45	11.25	4.490e-005
7.45	13.75	3.145e-296
7.45	16.25	3.145e-296
7.45	18.75	1.740e-003
7.45	21.25	2.871e-004

7.45	23.75	3.145e-296
7.45	26.25	4.298e-004
7.45	28.75	2.903e-004
7.45	31.25	3.145e-296
7.45	33.75	5.682e-004
7.45	36.25	3.145e-296
7.45	38.75	3.145e-296
7.45	41.25	3.145e-296
7.45	43.75	3.145e-296
7.45	46.25	3.145e-296
7.45	48.75	1.678e-004
7.45	51.25	3.145e-296
7.45	53.75	3.145e-296
7.45	56.25	2.407e-004
7.45	58.75	3.145e-296
7.45	61.25	4.295e-004
7.45	63.75	4.716e-004
7.45	66.25	2.716e-005
7.45	68.75	3.145e-296
7.45	71.25	3.728e-003
7.45	73.75	4.859e-004
7.45	76.25	6.898e-005
7.45	78.75	1.198e-004
7.45	81.25	3.420e-003
7.45	83.75	1.818e-003
7.45	86.25	6.343e-005
7.45	88.75	1.937e-005
7.45	91.25	1.323e-004
7.45	93.75	1.111e-005
7.45	96.25	1.111e-005
7.45	98.75	8.332e-006
7.45	101.25	4.506e-004
7.55	1.25	3.145e-296
7.55	3.75	3.145e-296
7.55	6.25	2.316e-004
7.55	8.75	3.145e-296
7.55	11.25	1.415e-005
7.55	13.75	3.145e-296
7.55	16.25	3.145e-296
7.55	18.75	8.956e-004

7.55	21.25	9.043e-005
7.55	23.75	3.145e-296
7.55	26.25	3.145e-296
7.55	28.75	6.328e-005
7.55	31.25	3.145e-296
7.55	33.75	2.581e-004
7.55	36.25	3.145e-296
7.55	38.75	3.145e-296
7.55	41.25	3.145e-296
7.55	43.75	3.145e-296
7.55	46.25	3.145e-296
7.55	48.75	5.287e-005
7.55	51.25	3.145e-296
7.55	53.75	3.145e-296
7.55	56.25	5.248e-005
7.55	58.75	3.145e-296
7.55	61.25	4.873e-004
7.55	63.75	6.727e-005
7.55	66.25	3.145e-296
7.55	68.75	3.145e-296
7.55	71.25	7.199e-003
7.55	73.75	3.617e-004
7.55	76.25	2.354e-005
7.55	78.75	2.018e-005
7.55	81.25	2.768e-003
7.55	83.75	9.484e-004
7.55	86.25	1.682e-005
7.55	88.75	1.682e-005
7.55	91.25	1.345e-005
7.55	93.75	1.345e-005
7.55	96.25	8.408e-006
7.55	98.75	3.145e-296
7.55	101.25	2.921e-004
7.65	1.25	3.145e-296
7.65	3.75	3.145e-296
7.65	6.25	5.049e-005
7.65	8.75	3.145e-296
7.65	11.25	3.145e-296
7.65	13.75	3.145e-296
7.65	16.25	3.145e-296

7.65	18.75	2.424e-004
7.65	21.25	3.145e-296
7.65	23.75	3.145e-296
7.65	26.25	3.145e-296
7.65	28.75	3.145e-296
7.65	31.25	3.145e-296
7.65	33.75	5.627e-005
7.65	36.25	3.145e-296
7.65	38.75	3.145e-296
7.65	41.25	3.145e-296
7.65	43.75	3.145e-296
7.65	46.25	3.145e-296
7.65	48.75	3.145e-296
7.65	51.25	3.145e-296
7.65	53.75	3.145e-296
7.65	56.25	3.145e-296
7.65	58.75	3.145e-296
7.65	61.25	6.358e-004
7.65	63.75	3.145e-296
7.65	66.25	3.145e-296
7.65	68.75	3.145e-296
7.65	71.25	1.057e-002
7.65	73.75	2.237e-004
7.65	76.25	3.145e-296
7.65	78.75	3.145e-296
7.65	81.25	2.144e-003
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8.95	18.75	3.145e-296
8.95	21.25	3.145e-296
8.95	23.75	3.145e-296
8.95	26.25	3.145e-296
8.95	28.75	3.145e-296
8.95	31.25	3.145e-296
8.95	33.75	3.145e-296
8.95	36.25	3.145e-296
8.95	38.75	3.145e-296
8.95	41.25	3.145e-296
8.95	43.75	3.145e-296
8.95	46.25	3.145e-296
8.95	48.75	3.145e-296
8.95	51.25	3.145e-296
8.95	53.75	3.145e-296
8.95	56.25	3.145e-296
8.95	58.75	3.145e-296
8.95	61.25	3.145e-296
8.95	63.75	3.145e-296
8.95	66.25	3.145e-296
8.95	68.75	3.145e-296
8.95	71.25	3.145e-296
8.95	73.75	3.145e-296
8.95	76.25	3.145e-296
8.95	78.75	3.145e-296
8.95	81.25	3.145e-296
8.95	83.75	3.145e-296

```
      8.95     86.25             3.145e-296
      8.95     88.75             3.145e-296
      8.95     91.25             3.145e-296
      8.95     93.75             3.145e-296
      8.95     96.25             3.145e-296
      8.95     98.75             3.145e-296
      8.95    101.25             3.145e-296

Integral: 1.000e+000


DEAGGREGATION: Summary by Source

Spectral Period:                          PGA
Amplitude:                                0.0001
Annual Frequency of Exceedance:           4.803e-001

Magnitude     Distance      Epsilon    Contribution
Source                                      Region
Mode   Mean   Mode   Mean   Mode   Mean     %
-------------------------------------------------------------------------------
Anacapa-Dume                                USGS 2008 California
6.55   6.87  18.75  20.27  -2.10 -13.04    0.29
California Gridded                          USGS 2008 California
5.05   5.46 101.25 126.90  -2.10  -7.94   86.03
Channel Islands Thrust                      USGS 2008 California
6.55   6.95  18.75  26.05  -2.10 -12.84    0.24
Clamshell-Sawpit                            USGS 2008 California
6.45   6.47 101.25 100.84  -2.10 -10.06    0.13
Elsinore                                    USGS 2008 California
6.95   7.02 101.25 121.04  -2.10 -10.29    0.27
Elysian Park (Upper)                        USGS 2008 California
6.55   6.55  78.75  79.73  -2.10 -10.86    0.28
Garlock                                     USGS 2008 California
7.65   7.41  71.25  90.68  -2.10 -11.23    0.32
Hollywood                                   USGS 2008 California
6.55   6.55  68.75  68.57  -2.10 -10.91    0.21
Holser, alt 1                               USGS 2008 California
6.55   6.62  43.75  43.07  -2.10 -11.85    0.05
```

```
Los Alamos-West Baseline                          USGS 2008 California
6.65   6.69  96.25  97.61  -2.10 -10.42    0.16
Malibu Coast                                      USGS 2008 California
6.55   6.66  26.25  27.98  -2.10 -12.27    0.06
Mission Ridge-Arroyo Parida-Santa Ana             USGS 2008 California
6.65   6.69  26.25  26.09  -2.10 -12.42    0.05
Newport-Inglewood                                 USGS 2008 California
6.55   6.96  73.75  97.33  -2.10 -10.67    0.17
North Channel                                     USGS 2008 California
6.55   6.63  28.75  28.67  -2.10 -12.39    0.10
Northridge                                        USGS 2008 California
6.65   6.69  43.75  44.20  -2.10 -12.10    0.33
Oak Ridge (Offshore)                              USGS 2008 California
6.65   6.72   8.75  12.26  -2.10 -13.20    0.15
Oak Ridge (Onshore)                               USGS 2008 California
7.05   6.89   6.25   9.31  -2.10 -13.85    0.51
Oak Ridge Connected                               USGS 2008 California
7.35   7.02   6.25   6.94  -2.10 -14.13    0.13
Palos Verdes                                      USGS 2008 California
6.55   6.92  61.25  78.34  -2.10 -11.00    0.29
Palos Verdes Connected                            USGS 2008 California
6.55   7.13 101.25 123.57  -2.10 -10.35    0.17
Pitas Point (Lower)-Montalvo                      USGS 2008 California
6.55   6.92  31.25  33.89  -2.10 -12.38    0.24
Pitas Point (Lower, West)                         USGS 2008 California
6.55   6.89  48.75  54.42  -2.10 -11.79    0.23
Pitas Point (Upper)                               USGS 2008 California
6.55   6.65  41.25  42.47  -2.10 -11.91    0.05
Pitas Point Connected                             USGS 2008 California
7.05   6.94  11.25  16.06  -2.10 -13.17    0.04
Pleito                                            USGS 2008 California
6.95   6.85  71.25  71.29  -2.10 -11.18    0.34
Puente Hills                                      USGS 2008 California
6.95   6.83  81.25  85.56  -2.10 -11.08    0.07
Puente Hills (LA)                                 USGS 2008 California
6.75   6.77  78.75  78.86  -2.10 -11.12    0.06
Puente Hills (Santa Fe Springs)                   USGS 2008 California
6.45   6.47  91.25  91.86  -2.10 -10.49    0.08
Raymond                                           USGS 2008 California
6.55   6.57  86.25  86.31  -2.10 -10.50    0.33
```

```
Red Mountain                                        USGS 2008 California
6.55   7.01  18.75  37.27  -2.10 -12.21    0.30
Southern San Andreas                                USGS 2008 California
7.75   7.56  71.25  78.90  -2.10 -11.56    2.25
San Cayetano                                        USGS 2008 California
7.05   6.90  26.25  26.58  -2.10 -12.51    0.99
San Gabriel                                         USGS 2008 California
6.55   6.95  56.25  57.75  -2.10 -11.51    0.15
Santa Cruz Island                                   USGS 2008 California
6.95   6.87  26.25  31.73  -2.10 -12.22    0.17
Santa Monica                                        USGS 2008 California
6.55   6.82  58.75  37.54  -2.10 -12.17    0.29
Santa Rosa Island                                   USGS 2008 California
6.65   6.69  73.75  75.84  -2.10 -10.84    0.20
Santa Susana, alt 1                                 USGS 2008 California
6.65   6.68  38.75  41.05  -2.10 -11.85    0.57
Santa Ynez (East)                                   USGS 2008 California
6.55   6.88  33.75  33.89  -2.10 -12.21    0.17
Santa Ynez (West)                                   USGS 2008 California
6.75   6.74  53.75  59.83  -2.10 -11.30    0.20
Santa Ynez Connected                                USGS 2008 California
7.35   7.02  33.75  38.28  -2.10 -12.13    0.14
Sierra Madre                                        USGS 2008 California
6.55   6.88  78.75  86.52  -2.10 -10.83    0.18
Sierra Madre (San Fernando)                         USGS 2008 California
6.55   6.55  63.75  63.13  -2.10 -11.06    0.23
Sierra Madre Connected                              USGS 2008 California
7.25   6.98  63.75  72.83  -2.10 -11.22    0.15
Simi-Santa Rosa                                     USGS 2008 California
6.65   6.69   6.25   7.34  -2.10 -13.51    0.20
Ventura-Pitas Point                                 USGS 2008 California
6.75   6.75  11.25  11.98  -2.10 -13.30    0.16
Verdugo                                             USGS 2008 California
6.65   6.69  68.75  69.08  -2.10 -11.05    0.10
White Wolf                                          USGS 2008 California
6.95   6.87  91.25  96.91  -2.10 -10.62    0.36
Extensional Gridded                                 USGS 2008 Western US
5.05   5.46 101.25 177.15  -2.10  -6.47    1.79

DEAGGREGATION: Conditional Mean Spectrum by Source
```

```
Period
0.01        0.05         0.1          0.2          0.3          0.4
0.5         0.75           1            2            3            4
Anacapa-Dume                                      USGS 2008 California
0.000100    0.000259    0.000354    0.000559    0.001069
0.001991    0.003098    0.004519    0.005661    0.007544
0.010309    0.013453
California Gridded                                USGS 2008 California
0.000100    0.000172    0.000231    0.000378    0.000603
0.000781    0.000883    0.000941    0.000945    0.000692
0.000557    0.000466
Channel Islands Thrust                            USGS 2008 California
0.000100    0.000253    0.000343    0.000539    0.001027
0.001889    0.002933    0.004208    0.005174    0.006648
0.009002    0.011810
Clamshell-Sawpit                                  USGS 2008 California
0.000100    0.000208    0.000281    0.000476    0.000847
0.001266    0.001568    0.001916    0.002214    0.002397
0.002786    0.003135
Elsinore                                          USGS 2008 California
0.000100    0.000207    0.000269    0.000458    0.000844
0.001416    0.001842    0.002394    0.002958    0.003992
0.005121    0.006228
Elysian Park (Upper)                              USGS 2008 California
0.000100    0.000220    0.000299    0.000495    0.000895
0.001435    0.001824    0.002234    0.002595    0.002814
0.003320    0.003909
Garlock                                           USGS 2008 California
0.000100    0.000224    0.000290    0.000462    0.000867
0.001514    0.002180    0.003022    0.003860    0.006009
0.008760    0.011303
Hollywood                                         USGS 2008 California
0.000100    0.000224    0.000308    0.000496    0.000866
0.001382    0.001733    0.002104    0.002523    0.003215
0.004061    0.004901
Holser, alt 1                                     USGS 2008 California
0.000100    0.000240    0.000334    0.000531    0.000953
0.001609    0.002209    0.002687    0.003204    0.003953
0.005109    0.006301
```

```
Los Alamos-West Baseline                        USGS 2008 California
0.000100    0.000211    0.000282    0.000482    0.000876
0.001402    0.001764    0.002203    0.002603    0.002993
0.003600    0.004258
Malibu Coast                                    USGS 2008 California
0.000100    0.000250    0.000349    0.000543    0.000969
0.001702    0.002508    0.003107    0.003789    0.005370
0.007409    0.009585
Mission Ridge-Arroyo Parida-Santa Ana           USGS 2008 California
0.000100    0.000251    0.000350    0.000552    0.001012
0.001789    0.002665    0.003453    0.004138    0.005408
0.007334    0.009411
Newport-Inglewood                               USGS 2008 California
0.000100    0.000215    0.000284    0.000472    0.000859
0.001436    0.001897    0.002438    0.003007    0.004133
0.005449    0.006797
North Channel                                   USGS 2008 California
0.000100    0.000249    0.000346    0.000545    0.001004
0.001770    0.002639    0.003359    0.003977    0.004865
0.006361    0.008103
Northridge                                      USGS 2008 California
0.000100    0.000241    0.000330    0.000527    0.000971
0.001685    0.002461    0.003042    0.003577    0.004182
0.005240    0.006567
Oak Ridge (Offshore)                            USGS 2008 California
0.000100    0.000262    0.000357    0.000564    0.001082
0.002045    0.003203    0.004744    0.006002    0.008305
0.011878    0.015784
Oak Ridge (Onshore)                             USGS 2008 California
0.000100    0.000264    0.000346    0.000548    0.001100
0.002180    0.003566    0.005883    0.007823    0.010931
0.015775    0.021487
Oak Ridge Connected                             USGS 2008 California
0.000100    0.000276    0.000338    0.000533    0.001126
0.002363    0.004028    0.007220    0.010415    0.015913
0.022380    0.029465
Palos Verdes                                    USGS 2008 California
0.000100    0.000222    0.000296    0.000484    0.000871
0.001467    0.001945    0.002456    0.003021    0.004139
0.005450    0.006839
```

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Palos Verdes Connected                          USGS 2008 California
0.000100    0.000207    0.000267    0.000452    0.000841
0.001421    0.001879    0.002478    0.003086    0.004257
0.005547    0.006759
Pitas Point (Lower)-Montalvo                    USGS 2008 California
0.000100    0.000247    0.000335    0.000530    0.000993
0.001780    0.002705    0.003689    0.004400    0.005569
0.007442    0.009680
Pitas Point (Lower, West)                       USGS 2008 California
0.000100    0.000234    0.000317    0.000512    0.000946
0.001635    0.002371    0.002981    0.003572    0.004362
0.005612    0.007116
Pitas Point (Upper)                             USGS 2008 California
0.000100    0.000240    0.000331    0.000529    0.000962
0.001647    0.002344    0.002852    0.003374    0.003998
0.005078    0.006359
Pitas Point Connected                           USGS 2008 California
0.000100    0.000258    0.000349    0.000547    0.001061
0.002009    0.003189    0.004852    0.006174    0.008364
0.011874    0.016009
Pleito                                          USGS 2008 California
0.000100    0.000225    0.000303    0.000498    0.000908
0.001524    0.002036    0.002559    0.003080    0.003818
0.004883    0.006028
Puente Hills                                    USGS 2008 California
0.000100    0.000220    0.000292    0.000490    0.000909
0.001534    0.002062    0.002591    0.003070    0.003510
0.004248    0.005186
Puente Hills (LA)                               USGS 2008 California
0.000100    0.000221    0.000297    0.000497    0.000914
0.001539    0.002043    0.002552    0.003021    0.003451
0.004178    0.005123
Puente Hills (Santa Fe Springs)                 USGS 2008 California
0.000100    0.000214    0.000290    0.000486    0.000875
0.001342    0.001688    0.002061    0.002368    0.002475
0.002833    0.003233
Raymond                                         USGS 2008 California
0.000100    0.000215    0.000292    0.000487    0.000873
0.001359    0.001698    0.002087    0.002444    0.002767
0.003332    0.003887
```

```
Red Mountain                                    USGS 2008 California
0.000100    0.000244    0.000334    0.000525    0.000971
0.001707    0.002537    0.003401    0.004134    0.005628
0.007853    0.010176
Southern San Andreas                            USGS 2008 California
0.000100    0.000231    0.000297    0.000464    0.000875
0.001547    0.002294    0.003251    0.004200    0.006829
0.010297    0.013461
San Cayetano                                    USGS 2008 California
0.000100    0.000250    0.000345    0.000543    0.001008
0.001805    0.002733    0.003750    0.004531    0.006180
0.008677    0.011362
San Gabriel                                     USGS 2008 California
0.000100    0.000232    0.000314    0.000500    0.000899
0.001539    0.002154    0.002701    0.003337    0.004736
0.006457    0.008287
Santa Cruz Island                               USGS 2008 California
0.000100    0.000246    0.000341    0.000533    0.000961
0.001700    0.002523    0.003250    0.004001    0.005853
0.008247    0.010871
Santa Monica                                    USGS 2008 California
0.000100    0.000245    0.000337    0.000529    0.000972
0.001707    0.002486    0.003408    0.004221    0.005687
0.007798    0.010075
Santa Rosa Island                               USGS 2008 California
0.000100    0.000220    0.000298    0.000491    0.000868
0.001427    0.001799    0.002218    0.002687    0.003501
0.004445    0.005477
Santa Susana, alt 1                             USGS 2008 California
0.000100    0.000239    0.000332    0.000530    0.000956
0.001627    0.002276    0.002782    0.003333    0.004198
0.005520    0.006932
Santa Ynez (East)                               USGS 2008 California
0.000100    0.000246    0.000340    0.000533    0.000962
0.001700    0.002517    0.003244    0.003993    0.005807
0.008105    0.010626
Santa Ynez (West)                               USGS 2008 California
0.000100    0.000228    0.000313    0.000506    0.000895
0.001508    0.001978    0.002437    0.002975    0.004014
0.005242    0.006631
```

```
Santa Ynez Connected                          USGS 2008 California
0.000100    0.000245    0.000335    0.000521    0.000946
0.001672    0.002481    0.003282    0.004066    0.006044
0.008593    0.011298
Sierra Madre                                  USGS 2008 California
0.000100    0.000218    0.000290    0.000485    0.000889
0.001482    0.001943    0.002464    0.002961    0.003619
0.004562    0.005558
Sierra Madre (San Fernando)                   USGS 2008 California
0.000100    0.000226    0.000312    0.000505    0.000898
0.001450    0.001826    0.002229    0.002626    0.003076
0.003832    0.004572
Sierra Madre Connected                        USGS 2008 California
0.000100    0.000225    0.000301    0.000491    0.000903
0.001528    0.002109    0.002682    0.003252    0.004151
0.005439    0.006757
Simi-Santa Rosa                               USGS 2008 California
0.000100    0.000267    0.000352    0.000552    0.001073
0.002119    0.003409    0.005355    0.007098    0.011082
0.016716    0.022842
Ventura-Pitas Point                           USGS 2008 California
0.000100    0.000261    0.000350    0.000557    0.001088
0.002095    0.003334    0.005143    0.006494    0.008677
0.012146    0.016331
Verdugo                                       USGS 2008 California
0.000100    0.000224    0.000305    0.000502    0.000903
0.001493    0.001914    0.002371    0.002823    0.003383
0.004237    0.005158
White Wolf                                    USGS 2008 California
0.000100    0.000213    0.000283    0.000479    0.000882
0.001462    0.001889    0.002402    0.002880    0.003463
0.004296    0.005179
Extensional Gridded                           USGS 2008 Western US
0.000100    0.000156    0.000208    0.000372    0.000600
0.000765    0.000865    0.000898    0.000884    0.000636
0.000483    0.000389
Conditional Mean Spectrum (all sources)
0.000100    0.000179    0.000241    0.000393    0.000643
0.000885    0.001064    0.001221    0.001321    0.001291
0.001441    0.001640
```

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Deterministic Spectra Results using EZ-FRISK 7.65 Build 004

Largest Amplitudes of Ground Motions Considering All Sources
Calculated using Weighted Mean of Attenuation Equations
Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	5.674e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.05	6.351e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.1	7.764e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.2	1.010e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.3	1.110e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.4	1.175e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.5	1.228e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.75	1.187e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
1	1.071e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
2	6.144e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
3	3.637e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
4	2.474e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.028e+000	7.40 Mw	5.04	USGS 2008	

```
California           Oak Ridge Connected
        0.05     1.151e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.1     1.411e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.2     1.830e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.3     2.019e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.4     2.107e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.5     2.181e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     2.133e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     1.937e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           2     1.190e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     7.151e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     4.918e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
```

Largest Amplitudes of Ground Motions Considering Sources Calculated with Boore-Atkinson (2008) NGA USGS 2008 MRC
Amplitude Units: Acceleration (g)

Fractile: 0.5

```
      Period    Amplitude   Magnitude   Closest      Region
Controlling Source
                                       Distance(km)
         PGA     4.283e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.05     5.085e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.1     7.305e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.2     1.097e+000   7.40 Mw      5.04   USGS 2008
```

```
California           Oak Ridge Connected
         0.3     1.216e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.4     1.221e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.5     1.191e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     1.059e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     8.281e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           2     4.150e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     2.950e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     2.145e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected

  Fractile: 0.84
      Period    Amplitude   Magnitude   Closest      Region
Controlling Source
                                       Distance(km)
         PGA     7.762e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.05     9.215e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.1     1.337e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.2     1.988e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.3     2.225e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.4     2.223e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.5     2.195e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     2.011e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     1.576e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
```

```
           2     8.325e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     5.888e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     4.294e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected


Largest Amplitudes of Ground Motions Considering Sources Calculated
with Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Amplitude Units: Acceleration (g)

  Fractile: 0.5
      Period    Amplitude   Magnitude   Closest      Region
Controlling Source
                                        Distance(km)
         PGA     5.366e-001   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
        0.05     5.469e-001   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
         0.1     6.387e-001   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
         0.2     7.957e-001   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
         0.3     9.037e-001   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
         0.4     1.029e+000   7.20 Mw      5.72   USGS 2008
California           Oak Ridge (Onshore)
         0.5     1.171e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     1.228e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     1.201e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           2     8.146e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     4.527e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     3.009e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
```

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	9.724e-001	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.05	9.910e-001	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.1	1.157e+000	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.2	1.442e+000	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.3	1.638e+000	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.4	1.828e+000	7.20 Mw	5.72	USGS 2008	California Oak Ridge (Onshore)
0.5	2.043e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
0.75	2.155e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
1	2.147e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
2	1.561e+000	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
3	8.686e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected
4	5.782e-001	7.40 Mw	5.04	USGS 2008	California Oak Ridge Connected

Largest Amplitudes of Ground Motions Considering Sources Calculated with Chiou-Youngs (2007) NGA USGS 2008 MRC
Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	7.480e-001	7.40 Mw	5.04	USGS 2008	

```
California           Oak Ridge Connected
        0.05     8.568e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.1     9.771e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.2     1.158e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.3     1.228e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.4     1.290e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.5     1.322e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     1.273e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     1.184e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           2     6.137e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     3.435e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     2.268e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected

  Fractile: 0.84
      Period    Amplitude   Magnitude   Closest      Region
Controlling Source
                                       Distance(km)
         PGA     1.356e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.05     1.553e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.1     1.771e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.2     2.098e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.3     2.224e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
         0.4     2.293e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
```

```
         0.5     2.306e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
        0.75     2.233e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           1     2.088e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           2     1.177e+000   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           3     6.878e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
           4     4.676e-001   7.40 Mw      5.04   USGS 2008
California           Oak Ridge Connected
```

Largest Amplitudes of Ground Motions for Each Source

Source: Anacapa-Dume
Region: USGS 2008 California
Closest Distance: 18.12 km
Amplitude Units: Acceleration (g)
Magnitude: 7.20 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.859e-001	2.791e-001	2.732e-001	3.383e-001
0.05	3.301e-001	3.126e-001	3.036e-001	4.051e-001
0.1	4.570e-001	4.397e-001	4.252e-001	5.443e-001

```
     0.2     6.109e-001     6.361e-001     5.624e-001     6.860e-
001
     0.3     6.325e-001     6.822e-001     5.865e-001     6.895e-
001
     0.4     6.298e-001     6.792e-001     5.980e-001     6.807e-
001
     0.5     6.235e-001     6.677e-001     6.220e-001     6.568e-
001
    0.75     5.407e-001     5.755e-001     5.575e-001     5.641e-
001
       1     4.566e-001     4.530e-001     4.875e-001     4.880e-
001
       2     2.283e-001     2.099e-001     2.551e-001     2.247e-
001
       3     1.391e-001     1.364e-001     1.552e-001     1.257e-
001
       4     9.737e-002     9.763e-002     1.120e-001     8.450e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     5.181e-001     5.058e-001     4.951e-001     6.131e-
001
    0.05     5.981e-001     5.664e-001     5.502e-001     7.340e-
001
     0.1     8.309e-001     8.049e-001     7.705e-001     9.864e-
001
     0.2     1.107e+000     1.153e+000     1.019e+000     1.243e+
000
     0.3     1.150e+000     1.249e+000     1.063e+000     1.249e+
```

```
000
     0.4     1.129e+000     1.237e+000     1.063e+000     1.210e+
000
     0.5     1.110e+000     1.231e+000     1.085e+000     1.146e+
000
    0.75     9.801e-001     1.093e+000     9.871e-001     9.897e-
001
       1     8.351e-001     8.621e-001     8.839e-001     8.638e-
001
       2     4.446e-001     4.210e-001     4.887e-001     4.333e-
001
       3     2.740e-001     2.723e-001     2.978e-001     2.519e-
001
       4     1.936e-001     1.955e-001     2.152e-001     1.743e-
001



Source: California Gridded
Region: USGS 2008 California
  Closest Distance: 5.00 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     4.639e-001     4.265e-001     4.253e-001     5.415e-
001
    0.05     5.244e-001     5.078e-001     4.601e-001     6.094e-
001
     0.1     6.727e-001     7.228e-001     5.559e-001     7.439e-
```

```
001
     0.2     9.059e-001     1.090e+000     7.036e-001     9.241e-
001
     0.3     9.751e-001     1.165e+000     7.797e-001     9.808e-
001
     0.4     1.028e+000     1.199e+000     8.596e-001     1.024e+
000
     0.5     1.048e+000     1.173e+000     9.330e-001     1.038e+
000
    0.75     9.471e-001     9.933e-001     8.763e-001     9.717e-
001
       1     8.170e-001     7.832e-001     7.826e-001     8.852e-
001
       2     4.329e-001     4.012e-001     4.550e-001     4.789e-
001
       3     2.815e-001     2.598e-001     2.856e-001     2.990e-
001
       4     2.038e-001     1.922e-001     2.167e-001     2.026e-
001

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     8.407e-001     7.728e-001     7.706e-001     9.812e-
001
    0.05     9.503e-001     9.202e-001     8.337e-001     1.104e+
000
     0.1     1.223e+000     1.323e+000     1.007e+000     1.348e+
000
     0.2     1.642e+000     1.975e+000     1.275e+000     1.675e+
000
```

0.3	1.774e+000	2.132e+000	1.413e+000	1.777e+000
0.4	1.844e+000	2.184e+000	1.527e+000	1.820e+000
0.5	1.866e+000	2.161e+000	1.628e+000	1.810e+000
0.75	1.710e+000	1.886e+000	1.537e+000	1.705e+000
1	1.485e+000	1.490e+000	1.405e+000	1.561e+000
2	8.422e-001	8.048e-001	8.718e-001	9.197e-001
3	5.551e-001	5.185e-001	5.480e-001	5.987e-001
4	4.063e-001	3.848e-001	4.163e-001	4.178e-001

Source: Channel Islands Thrust
Region: USGS 2008 California
  Closest Distance: 18.54 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.911e-001	2.567e-001	2.651e-001	3.514e-001
0.05	3.300e-001	2.852e-001	2.956e-001	4.091e-001

```
     0.1     4.483e-001     3.913e-001     4.130e-001     5.405e-
001
     0.2     5.921e-001     5.460e-001     5.472e-001     6.830e-
001
     0.3     6.168e-001     5.851e-001     5.716e-001     6.937e-
001
     0.4     6.172e-001     5.782e-001     5.826e-001     6.909e-
001
     0.5     6.171e-001     5.704e-001     6.104e-001     6.706e-
001
    0.75     5.442e-001     4.971e-001     5.549e-001     5.804e-
001
       1     4.622e-001     3.924e-001     4.900e-001     5.043e-
001
       2     2.280e-001     1.837e-001     2.648e-001     2.353e-
001
       3     1.401e-001     1.224e-001     1.617e-001     1.363e-
001
       4     1.002e-001     8.768e-002     1.219e-001     9.107e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     5.275e-001     4.651e-001     4.804e-001     6.368e-
001
    0.05     5.979e-001     5.168e-001     5.356e-001     7.414e-
001
     0.1     8.147e-001     7.163e-001     7.484e-001     9.795e-
001
     0.2     1.073e+000     9.895e-001     9.916e-001     1.238e+
```

```
000
     0.3     1.121e+000     1.071e+000     1.036e+000     1.257e+
000
     0.4     1.105e+000     1.053e+000     1.035e+000     1.228e+
000
     0.5     1.095e+000     1.051e+000     1.065e+000     1.170e+
000
    0.75     9.819e-001     9.441e-001     9.833e-001     1.018e+
000
       1     8.425e-001     7.466e-001     8.890e-001     8.919e-
001
       2     4.432e-001     3.686e-001     5.074e-001     4.536e-
001
       3     2.759e-001     2.443e-001     3.103e-001     2.731e-
001
       4     1.992e-001     1.755e-001     2.342e-001     1.878e-
001



Source: Clamshell-Sawpit
Region: USGS 2008 California
  Closest Distance: 100.84 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     5.054e-002     6.698e-002     4.680e-002     3.784e-
002
    0.05     5.484e-002     6.885e-002     5.310e-002     4.259e-
```

```
002
     0.1     7.461e-002     8.944e-002     7.187e-002     6.253e-
002
     0.2     1.150e-001     1.479e-001     1.048e-001     9.246e-
002
     0.3     1.283e-001     1.721e-001     1.163e-001     9.648e-
002
     0.4     1.264e-001     1.719e-001     1.122e-001     9.506e-
002
     0.5     1.237e-001     1.721e-001     1.090e-001     9.015e-
002
    0.75     1.012e-001     1.424e-001     8.744e-002     7.385e-
002
       1     8.110e-002     1.116e-001     6.997e-002     6.173e-
002
       2     3.539e-002     4.597e-002     3.300e-002     2.721e-
002
       3     2.087e-002     2.538e-002     2.102e-002     1.621e-
002
       4     1.488e-002     1.791e-002     1.572e-002     1.099e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     9.158e-002     1.214e-001     8.480e-002     6.858e-
002
    0.05     9.938e-002     1.248e-001     9.622e-002     7.718e-
002
     0.1     1.358e-001     1.637e-001     1.302e-001     1.133e-
001
```

```
     0.2     2.085e-001     2.680e-001     1.899e-001     1.676e-
001
     0.3     2.335e-001     3.150e-001     2.107e-001     1.748e-
001
     0.4     2.276e-001     3.132e-001     1.994e-001     1.702e-
001
     0.5     2.246e-001     3.172e-001     1.939e-001     1.627e-
001
    0.75     1.887e-001     2.704e-001     1.596e-001     1.360e-
001
       1     1.526e-001     2.124e-001     1.294e-001     1.160e-
001
       2     6.963e-002     9.221e-002     6.324e-002     5.344e-
002
       3     4.124e-002     5.067e-002     4.034e-002     3.271e-
002
       4     2.960e-002     3.585e-002     3.021e-002     2.275e-
002
```

```
Source: Elsinore
Region: USGS 2008 California
  Closest Distance: 104.63 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.85 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     9.310e-002     1.160e-001     7.635e-002     8.699e-
002
```

```
    0.05     1.028e-001     1.262e-001     8.415e-002     9.793e-
002
     0.1     1.312e-001     1.470e-001     1.051e-001     1.417e-
001
     0.2     1.778e-001     1.688e-001     1.571e-001     2.074e-
001
     0.3     1.973e-001     1.878e-001     1.855e-001     2.185e-
001
     0.4     2.023e-001     2.015e-001     1.867e-001     2.187e-
001
     0.5     2.097e-001     2.141e-001     2.035e-001     2.114e-
001
    0.75     1.982e-001     2.113e-001     2.012e-001     1.821e-
001
       1     1.794e-001     1.904e-001     1.863e-001     1.615e-
001
       2     1.107e-001     1.170e-001     1.228e-001     9.226e-
002
       3     7.989e-002     9.181e-002     8.667e-002     6.118e-
002
       4     5.938e-002     6.616e-002     6.821e-002     4.378e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.687e-001     2.101e-001     1.383e-001     1.576e-
001
    0.05     1.862e-001     2.287e-001     1.525e-001     1.775e-
001
     0.1     2.387e-001     2.690e-001     1.904e-001     2.568e-
```

```
001
     0.2     3.221e-001     3.060e-001     2.846e-001     3.758e-
001
     0.3     3.586e-001     3.438e-001     3.361e-001     3.959e-
001
     0.4     3.625e-001     3.671e-001     3.317e-001     3.887e-
001
     0.5     3.744e-001     3.947e-001     3.597e-001     3.687e-
001
    0.75     3.636e-001     4.013e-001     3.657e-001     3.238e-
001
       1     3.336e-001     3.624e-001     3.436e-001     2.949e-
001
       2     2.163e-001     2.347e-001     2.353e-001     1.791e-
001
       3     1.574e-001     1.833e-001     1.663e-001     1.228e-
001
       4     1.179e-001     1.324e-001     1.311e-001     9.030e-
002



Source: Elysian Park (Upper)
Region: USGS 2008 California
  Closest Distance: 79.73 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     7.467e-002     9.164e-002     7.446e-002     5.791e-
```

```
002
    0.05     8.192e-002     9.486e-002     8.448e-002     6.643e-
002
     0.1     1.127e-001     1.243e-001     1.162e-001     9.765e-
002
     0.2     1.678e-001     1.986e-001     1.672e-001     1.375e-
001
     0.3     1.815e-001     2.231e-001     1.826e-001     1.388e-
001
     0.4     1.766e-001     2.193e-001     1.767e-001     1.338e-
001
     0.5     1.710e-001     2.162e-001     1.717e-001     1.250e-
001
    0.75     1.375e-001     1.751e-001     1.377e-001     9.968e-
002
       1     1.085e-001     1.357e-001     1.080e-001     8.182e-
002
       2     4.446e-002     5.500e-002     4.410e-002     3.429e-
002
       3     2.523e-002     3.025e-002     2.569e-002     1.974e-
002
       4     1.787e-002     2.124e-002     1.924e-002     1.312e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.353e-001     1.661e-001     1.349e-001     1.049e-
001
    0.05     1.485e-001     1.719e-001     1.531e-001     1.204e-
001
```

```
     0.1     2.050e-001     2.275e-001     2.106e-001     1.769e-
001
     0.2     3.041e-001     3.600e-001     3.030e-001     2.492e-
001
     0.3     3.303e-001     4.084e-001     3.308e-001     2.516e-
001
     0.4     3.170e-001     3.994e-001     3.139e-001     2.378e-
001
     0.5     3.085e-001     3.986e-001     3.036e-001     2.232e-
001
    0.75     2.551e-001     3.326e-001     2.503e-001     1.823e-
001
       1     2.035e-001     2.583e-001     1.993e-001     1.530e-
001
       2     8.736e-002     1.103e-001     8.450e-002     6.725e-
002
       3     4.984e-002     6.038e-002     4.930e-002     3.983e-
002
       4     3.555e-002     4.253e-002     3.697e-002     2.715e-
002


Source: Garlock
Region: USGS 2008 California
  Closest Distance: 71.84 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.72 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
```

PGA	1.215e-001	1.561e-001	9.435e-002	1.142e-001
0.05	1.361e-001	1.703e-001	1.059e-001	1.321e-001
0.1	1.787e-001	2.058e-001	1.381e-001	1.921e-001
0.2	2.357e-001	2.410e-001	2.000e-001	2.662e-001
0.3	2.512e-001	2.565e-001	2.263e-001	2.707e-001
0.4	2.522e-001	2.657e-001	2.260e-001	2.650e-001
0.5	2.559e-001	2.731e-001	2.422e-001	2.523e-001
0.75	2.334e-001	2.555e-001	2.323e-001	2.126e-001
1	2.070e-001	2.225e-001	2.125e-001	1.858e-001
2	1.237e-001	1.313e-001	1.367e-001	1.031e-001
3	8.779e-002	1.002e-001	9.568e-002	6.749e-002
4	6.540e-002	7.336e-002	7.488e-002	4.796e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.202e-001	2.829e-001	1.710e-001	2.069e-001
0.05	2.466e-001	3.085e-001	1.920e-001	2.394e-

```
001
     0.1     3.251e-001     3.767e-001     2.503e-001     3.481e-
001
     0.2     4.272e-001     4.367e-001     3.623e-001     4.824e-
001
     0.3     4.567e-001     4.694e-001     4.101e-001     4.906e-
001
     0.4     4.521e-001     4.839e-001     4.015e-001     4.709e-
001
     0.5     4.567e-001     5.034e-001     4.265e-001     4.402e-
001
    0.75     4.274e-001     4.852e-001     4.211e-001     3.758e-
001
       1     3.843e-001     4.235e-001     3.914e-001     3.380e-
001
       2     2.418e-001     2.633e-001     2.620e-001     2.000e-
001
       3     1.730e-001     2.000e-001     1.836e-001     1.354e-
001
       4     1.299e-001     1.469e-001     1.439e-001     9.891e-
002


Source: Hollywood
Region: USGS 2008 California
  Closest Distance: 68.57 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC
```

1	2	3	4	5
PGA	7.837e-002	1.125e-001	6.687e-002	5.568e-002
0.05	8.666e-002	1.177e-001	7.719e-002	6.505e-002
0.1	1.201e-001	1.551e-001	1.083e-001	9.699e-002
0.2	1.745e-001	2.356e-001	1.532e-001	1.346e-001
0.3	1.811e-001	2.457e-001	1.637e-001	1.340e-001
0.4	1.765e-001	2.442e-001	1.574e-001	1.280e-001
0.5	1.692e-001	2.364e-001	1.521e-001	1.189e-001
0.75	1.337e-001	1.850e-001	1.210e-001	9.502e-002
1	1.086e-001	1.493e-001	9.717e-002	7.934e-002
2	5.187e-002	7.058e-002	4.623e-002	3.879e-002
3	3.124e-002	4.074e-002	2.938e-002	2.362e-002
4	2.265e-002	3.003e-002	2.190e-002	1.602e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.420e-001	2.039e-001	1.212e-001	1.009e-001

0.05	1.570e-001	2.133e-001	1.399e-001	1.179e-001
0.1	2.187e-001	2.839e-001	1.963e-001	1.758e-001
0.2	3.162e-001	4.269e-001	2.777e-001	2.439e-001
0.3	3.297e-001	4.497e-001	2.967e-001	2.428e-001
0.4	3.173e-001	4.447e-001	2.797e-001	2.274e-001
0.5	3.060e-001	4.358e-001	2.695e-001	2.128e-001
0.75	2.485e-001	3.514e-001	2.202e-001	1.740e-001
1	2.040e-001	2.841e-001	1.794e-001	1.484e-001
2	1.021e-001	1.416e-001	8.858e-002	7.604e-002
3	6.177e-002	8.131e-002	5.637e-002	4.763e-002
4	4.512e-002	6.012e-002	4.208e-002	3.315e-002

Source: Holser, alt 1
Region: USGS 2008 California
  Closest Distance: 42.85 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.80 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.279e-001	1.673e-001	1.055e-001	1.108e-001
0.05	1.440e-001	1.764e-001	1.231e-001	1.325e-001
0.1	2.035e-001	2.368e-001	1.778e-001	1.960e-001
0.2	2.878e-001	3.603e-001	2.438e-001	2.593e-001
0.3	2.958e-001	3.828e-001	2.520e-001	2.525e-001
0.4	2.856e-001	3.747e-001	2.431e-001	2.389e-001
0.5	2.740e-001	3.641e-001	2.367e-001	2.212e-001
0.75	2.191e-001	2.910e-001	1.906e-001	1.758e-001
1	1.751e-001	2.243e-001	1.562e-001	1.448e-001
2	7.710e-002	9.123e-002	7.768e-002	6.239e-002
3	4.561e-002	5.089e-002	4.946e-002	3.649e-002
4	3.248e-002	3.608e-002	3.676e-002	2.461e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.317e-001	3.031e-001	1.912e-001	2.008e-

```
001
    0.05     2.610e-001     3.197e-001     2.230e-001     2.402e-
001
     0.1     3.703e-001     4.335e-001     3.222e-001     3.552e-
001
     0.2     5.215e-001     6.529e-001     4.417e-001     4.698e-
001
     0.3     5.383e-001     7.008e-001     4.566e-001     4.575e-
001
     0.4     5.130e-001     6.825e-001     4.319e-001     4.244e-
001
     0.5     4.909e-001     6.712e-001     4.158e-001     3.858e-
001
    0.75     4.042e-001     5.526e-001     3.450e-001     3.148e-
001
       1     3.268e-001     4.267e-001     2.873e-001     2.665e-
001
       2     1.512e-001     1.830e-001     1.488e-001     1.218e-
001
       3     8.998e-002     1.016e-001     9.491e-002     7.347e-
002
       4     6.458e-002     7.223e-002     7.063e-002     5.088e-
002


Source: Los Alamos-West Baseline
Region: USGS 2008 California
  Closest Distance: 95.82 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
```

MRC

1	2	3	4	5
PGA	6.074e-002	8.056e-002	5.343e-002	4.823e-002
0.05	6.602e-002	8.291e-002	6.053e-002	5.462e-002
0.1	8.912e-002	1.058e-001	8.129e-002	8.023e-002
0.2	1.342e-001	1.672e-001	1.185e-001	1.170e-001
0.3	1.488e-001	1.932e-001	1.320e-001	1.212e-001
0.4	1.476e-001	1.956e-001	1.282e-001	1.191e-001
0.5	1.457e-001	1.974e-001	1.269e-001	1.129e-001
0.75	1.219e-001	1.673e-001	1.054e-001	9.295e-002
1	9.915e-002	1.327e-001	8.651e-002	7.828e-002
2	4.504e-002	5.637e-002	4.333e-002	3.543e-002
3	2.731e-002	3.228e-002	2.815e-002	2.150e-002
4	1.967e-002	2.296e-002	2.126e-002	1.477e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5

PGA	1.101e-001	1.460e-001	9.682e-002	8.740e-002
0.05	1.196e-001	1.502e-001	1.097e-001	9.898e-002
0.1	1.621e-001	1.937e-001	1.473e-001	1.454e-001
0.2	2.432e-001	3.029e-001	2.147e-001	2.120e-001
0.3	2.709e-001	3.537e-001	2.392e-001	2.196e-001
0.4	2.652e-001	3.563e-001	2.278e-001	2.116e-001
0.5	2.634e-001	3.639e-001	2.255e-001	2.008e-001
0.75	2.264e-001	3.176e-001	1.922e-001	1.693e-001
1	1.860e-001	2.524e-001	1.599e-001	1.458e-001
2	8.846e-002	1.131e-001	8.302e-002	6.930e-002
3	5.390e-002	6.443e-002	5.401e-002	4.326e-002
4	3.911e-002	4.597e-002	4.086e-002	3.051e-002

Source: Malibu Coast
Region: USGS 2008 California
Closest Distance: 26.86 km
Amplitude Units: Acceleration (g)
Magnitude: 7.00 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC

Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.806e-001	2.104e-001	1.576e-001	1.738e-001
0.05	2.069e-001	2.287e-001	1.838e-001	2.083e-001
0.1	2.929e-001	3.103e-001	2.677e-001	3.005e-001
0.2	3.947e-001	4.376e-001	3.578e-001	3.886e-001
0.3	3.943e-001	4.390e-001	3.636e-001	3.803e-001
0.4	3.866e-001	4.407e-001	3.555e-001	3.638e-001
0.5	3.739e-001	4.267e-001	3.539e-001	3.410e-001
0.75	3.068e-001	3.455e-001	2.956e-001	2.793e-001
1	2.571e-001	2.820e-001	2.511e-001	2.382e-001
2	1.343e-001	1.429e-001	1.367e-001	1.234e-001
3	8.547e-002	8.991e-002	8.944e-002	7.707e-002
4	6.252e-002	6.721e-002	6.723e-002	5.313e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.273e-001	3.813e-001	2.856e-001	3.150e-001
0.05	3.750e-001	4.145e-001	3.331e-001	3.775e-001
0.1	5.326e-001	5.681e-001	4.852e-001	5.446e-001
0.2	7.152e-001	7.930e-001	6.484e-001	7.042e-001
0.3	7.172e-001	8.036e-001	6.589e-001	6.892e-001
0.4	6.936e-001	8.026e-001	6.316e-001	6.465e-001
0.5	6.663e-001	7.865e-001	6.174e-001	5.950e-001
0.75	5.592e-001	6.562e-001	5.313e-001	4.901e-001
1	4.756e-001	5.367e-001	4.598e-001	4.303e-001
2	2.625e-001	2.866e-001	2.620e-001	2.391e-001
3	1.686e-001	1.795e-001	1.716e-001	1.546e-001
4	1.244e-001	1.345e-001	1.292e-001	1.096e-001

Source: Mission Ridge-Arroyo Parida-Santa Ana
Region: USGS 2008 California
Closest Distance: 25.49 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA

USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.834e-001	2.068e-001	1.591e-001	1.842e-001
0.05	2.098e-001	2.230e-001	1.862e-001	2.201e-001
0.1	2.981e-001	3.051e-001	2.735e-001	3.157e-001
0.2	4.083e-001	4.532e-001	3.638e-001	4.078e-001
0.3	4.148e-001	4.773e-001	3.668e-001	4.002e-001
0.4	4.036e-001	4.695e-001	3.576e-001	3.838e-001
0.5	3.900e-001	4.572e-001	3.525e-001	3.603e-001
0.75	3.186e-001	3.723e-001	2.892e-001	2.944e-001
1	2.597e-001	2.890e-001	2.427e-001	2.473e-001
2	1.208e-001	1.216e-001	1.289e-001	1.119e-001
3	7.387e-002	7.055e-002	8.393e-002	6.714e-002
4	5.294e-002	5.001e-002	6.297e-002	4.583e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.323e-001	3.748e-001	2.884e-001	3.339e-001
0.05	3.801e-001	4.042e-001	3.375e-001	3.988e-001
0.1	5.420e-001	5.584e-001	4.956e-001	5.720e-001
0.2	7.398e-001	8.213e-001	6.592e-001	7.391e-001
0.3	7.546e-001	8.737e-001	6.647e-001	7.253e-001
0.4	7.242e-001	8.552e-001	6.354e-001	6.819e-001
0.5	6.955e-001	8.429e-001	6.150e-001	6.285e-001
0.75	5.811e-001	7.071e-001	5.196e-001	5.166e-001
1	4.805e-001	5.499e-001	4.444e-001	4.472e-001
2	2.360e-001	2.439e-001	2.471e-001	2.172e-001
3	1.456e-001	1.408e-001	1.611e-001	1.349e-001
4	1.052e-001	1.001e-001	1.210e-001	9.461e-002

Source: Newport-Inglewood
Region: USGS 2008 California
Closest Distance: 72.79 km
Amplitude Units: Acceleration (g)
Magnitude: 7.50 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC

Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.083e-001	1.437e-001	8.578e-002	9.547e-002
0.05	1.208e-001	1.548e-001	9.689e-002	1.106e-001
0.1	1.602e-001	1.902e-001	1.282e-001	1.621e-001
0.2	2.159e-001	2.373e-001	1.849e-001	2.254e-001
0.3	2.291e-001	2.520e-001	2.070e-001	2.284e-001
0.4	2.290e-001	2.596e-001	2.049e-001	2.225e-001
0.5	2.297e-001	2.637e-001	2.147e-001	2.108e-001
0.75	2.035e-001	2.371e-001	1.977e-001	1.759e-001
1	1.771e-001	2.031e-001	1.757e-001	1.526e-001
2	1.010e-001	1.140e-001	1.058e-001	8.313e-002
3	6.934e-002	8.147e-002	7.255e-002	5.400e-002
4	5.146e-002	5.992e-002	5.624e-002	3.822e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

MRC

1	2	3	4	5
PGA	1.963e-001	2.605e-001	1.554e-001	1.730e-001
0.05	2.188e-001	2.805e-001	1.756e-001	2.005e-001
0.1	2.914e-001	3.482e-001	2.323e-001	2.937e-001
0.2	3.912e-001	4.299e-001	3.350e-001	4.085e-001
0.3	4.168e-001	4.614e-001	3.751e-001	4.139e-001
0.4	4.108e-001	4.729e-001	3.641e-001	3.954e-001
0.5	4.109e-001	4.860e-001	3.788e-001	3.678e-001
0.75	3.741e-001	4.502e-001	3.588e-001	3.131e-001
1	3.298e-001	3.866e-001	3.239e-001	2.791e-001
2	1.976e-001	2.286e-001	2.027e-001	1.615e-001
3	1.367e-001	1.626e-001	1.392e-001	1.084e-001
4	1.023e-001	1.200e-001	1.081e-001	7.882e-002

Source: North Channel
Region: USGS 2008 California
Closest Distance: 27.75 km
Amplitude Units: Acceleration (g)
Magnitude: 6.80 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS

2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

1	2	3	4	5
PGA	1.795e-001	1.933e-001	1.796e-001	1.654e-001
0.05	2.033e-001	2.066e-001	2.061e-001	1.971e-001
0.1	2.889e-001	2.824e-001	3.001e-001	2.843e-001
0.2	3.999e-001	4.282e-001	4.032e-001	3.684e-001
0.3	4.075e-001	4.502e-001	4.120e-001	3.603e-001
0.4	3.966e-001	4.419e-001	4.041e-001	3.438e-001
0.5	3.824e-001	4.287e-001	3.973e-001	3.211e-001
0.75	3.087e-001	3.430e-001	3.238e-001	2.591e-001
1	2.478e-001	2.647e-001	2.632e-001	2.154e-001
2	1.071e-001	1.085e-001	1.180e-001	9.472e-002
3	6.238e-002	6.085e-002	7.018e-002	5.613e-002
4	4.461e-002	4.310e-002	5.278e-002	3.795e-002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC

Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.252e-001	3.503e-001	3.255e-001	2.997e-001
0.05	3.683e-001	3.744e-001	3.735e-001	3.571e-001
0.1	5.253e-001	5.169e-001	5.438e-001	5.151e-001
0.2	7.247e-001	7.760e-001	7.306e-001	6.675e-001
0.3	7.412e-001	8.241e-001	7.465e-001	6.530e-001
0.4	7.113e-001	8.050e-001	7.180e-001	6.110e-001
0.5	6.812e-001	7.903e-001	6.932e-001	5.601e-001
0.75	5.630e-001	6.514e-001	5.803e-001	4.572e-001
1	4.589e-001	5.038e-001	4.810e-001	3.920e-001
2	2.093e-001	2.176e-001	2.261e-001	1.843e-001
3	1.230e-001	1.214e-001	1.347e-001	1.129e-001
4	8.871e-002	8.627e-002	1.014e-001	7.843e-002

Source: Northridge
Region: USGS 2008 California
  Closest Distance: 42.83 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations

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  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
    PGA     1.560e-001     1.712e-001     1.360e-001     1.608e-
001
   0.05     1.753e-001     1.815e-001     1.553e-001     1.892e-
001
    0.1     2.442e-001     2.420e-001     2.204e-001     2.702e-
001
    0.2     3.388e-001     3.595e-001     3.049e-001     3.521e-
001
    0.3     3.494e-001     3.830e-001     3.208e-001     3.444e-
001
    0.4     3.390e-001     3.755e-001     3.136e-001     3.278e-
001
    0.5     3.272e-001     3.667e-001     3.105e-001     3.044e-
001
   0.75     2.656e-001     2.981e-001     2.572e-001     2.414e-
001
      1     2.126e-001     2.312e-001     2.094e-001     1.973e-
001
      2     8.983e-002     9.625e-002     9.324e-002     8.000e-
002
      3     5.145e-002     5.537e-002     5.504e-002     4.396e-
002
      4     3.634e-002     3.925e-002     4.127e-002     2.850e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
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USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.827e-001	3.103e-001	2.464e-001	2.914e-001
0.05	3.177e-001	3.289e-001	2.814e-001	3.428e-001
0.1	4.440e-001	4.431e-001	3.994e-001	4.896e-001
0.2	6.140e-001	6.515e-001	5.526e-001	6.380e-001
0.3	6.355e-001	7.012e-001	5.813e-001	6.241e-001
0.4	6.079e-001	6.840e-001	5.572e-001	5.824e-001
0.5	5.829e-001	6.759e-001	5.418e-001	5.311e-001
0.75	4.852e-001	5.662e-001	4.635e-001	4.259e-001
1	3.944e-001	4.399e-001	3.843e-001	3.591e-001
2	1.758e-001	1.931e-001	1.786e-001	1.556e-001
3	1.015e-001	1.105e-001	1.056e-001	8.837e-002
4	7.224e-002	7.858e-002	7.929e-002	5.885e-002

Source: Oak Ridge (Offshore)
Region: USGS 2008 California
Closest Distance: 9.85 km
Amplitude Units: Acceleration (g)
Magnitude: 7.00 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation

Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.140e-001	2.811e-001	2.909e-001	3.699e-001
0.05	3.596e-001	3.142e-001	3.323e-001	4.322e-001
0.1	4.925e-001	4.486e-001	4.593e-001	5.696e-001
0.2	6.606e-001	6.726e-001	5.894e-001	7.198e-001
0.3	6.860e-001	7.148e-001	6.051e-001	7.380e-001
0.4	6.933e-001	7.170e-001	6.202e-001	7.428e-001
0.5	6.892e-001	7.021e-001	6.364e-001	7.290e-001
0.75	5.956e-001	5.887e-001	5.517e-001	6.465e-001
1	5.063e-001	4.620e-001	4.850e-001	5.719e-001
2	2.600e-001	2.051e-001	2.906e-001	2.844e-001
3	1.635e-001	1.250e-001	1.921e-001	1.733e-001
4	1.171e-001	8.868e-002	1.437e-001	1.188e-001

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC

Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	5.689e-001	5.093e-001	5.272e-001	6.703e-001
0.05	6.516e-001	5.694e-001	6.021e-001	7.831e-001
0.1	8.953e-001	8.212e-001	8.324e-001	1.032e+000
0.2	1.197e+000	1.219e+000	1.068e+000	1.304e+000
0.3	1.247e+000	1.308e+000	1.097e+000	1.337e+000
0.4	1.243e+000	1.306e+000	1.102e+000	1.320e+000
0.5	1.225e+000	1.294e+000	1.110e+000	1.272e+000
0.75	1.076e+000	1.118e+000	9.746e-001	1.134e+000
1	9.220e-001	8.791e-001	8.782e-001	1.009e+000
2	5.053e-001	4.114e-001	5.568e-001	5.478e-001
3	3.219e-001	2.496e-001	3.687e-001	3.473e-001
4	2.329e-001	1.775e-001	2.761e-001	2.451e-001

Source: Oak Ridge (Onshore)
Region: USGS 2008 California
Closest Distance: 5.72 km
Amplitude Units: Acceleration (g)
Magnitude: 7.20 Mw
Fractile: 0.50
Column 1: Spectral Period

Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	5.252e-001	4.267e-001	5.366e-001	6.124e-001
0.05	5.852e-001	5.062e-001	5.469e-001	7.027e-001
0.1	7.329e-001	7.243e-001	6.387e-001	8.356e-001
0.2	9.638e-001	1.093e+000	7.957e-001	1.002e+000
0.3	1.046e+000	1.190e+000	9.037e-001	1.045e+000
0.4	1.107e+000	1.210e+000	1.029e+000	1.081e+000
0.5	1.146e+000	1.182e+000	1.165e+000	1.092e+000
0.75	1.077e+000	1.026e+000	1.183e+000	1.023e+000
1	9.545e-001	8.053e-001	1.122e+000	9.366e-001
2	5.172e-001	3.843e-001	6.833e-001	4.841e-001
3	3.002e-001	2.543e-001	3.617e-001	2.847e-001
4	2.042e-001	1.818e-001	2.391e-001	1.917e-001

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS

2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

1	2	3	4	5
PGA	9.518e-001	7.732e-001	9.724e-001	1.110e+000
0.05	1.061e+000	9.172e-001	9.910e-001	1.273e+000
0.1	1.333e+000	1.326e+000	1.157e+000	1.514e+000
0.2	1.747e+000	1.981e+000	1.442e+000	1.816e+000
0.3	1.903e+000	2.178e+000	1.638e+000	1.895e+000
0.4	1.984e+000	2.203e+000	1.828e+000	1.922e+000
0.5	2.038e+000	2.178e+000	2.032e+000	1.904e+000
0.75	1.940e+000	1.948e+000	2.076e+000	1.795e+000
1	1.729e+000	1.532e+000	2.004e+000	1.652e+000
2	1.003e+000	7.708e-001	1.309e+000	9.297e-001
3	5.906e-001	5.076e-001	6.941e-001	5.700e-001
4	4.063e-001	3.639e-001	4.595e-001	3.954e-001

Source: Oak Ridge Connected
Region: USGS 2008 California
  Closest Distance: 5.04 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.40 Mw
  Fractile: 0.50

Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	5.674e-001	4.283e-001	5.258e-001	7.480e-001
0.05	6.351e-001	5.085e-001	5.401e-001	8.568e-001
0.1	7.764e-001	7.305e-001	6.215e-001	9.771e-001
0.2	1.010e+000	1.097e+000	7.758e-001	1.158e+000
0.3	1.110e+000	1.216e+000	8.874e-001	1.228e+000
0.4	1.175e+000	1.221e+000	1.016e+000	1.290e+000
0.5	1.228e+000	1.191e+000	1.171e+000	1.322e+000
0.75	1.187e+000	1.059e+000	1.228e+000	1.273e+000
1	1.071e+000	8.281e-001	1.201e+000	1.184e+000
2	6.144e-001	4.150e-001	8.146e-001	6.137e-001
3	3.637e-001	2.950e-001	4.527e-001	3.435e-001
4	2.474e-001	2.145e-001	3.009e-001	2.268e-001

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations

Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.028e+000	7.762e-001	9.529e-001	1.356e+000
0.05	1.151e+000	9.215e-001	9.787e-001	1.553e+000
0.1	1.411e+000	1.337e+000	1.126e+000	1.771e+000
0.2	1.830e+000	1.988e+000	1.406e+000	2.098e+000
0.3	2.019e+000	2.225e+000	1.608e+000	2.224e+000
0.4	2.107e+000	2.223e+000	1.804e+000	2.293e+000
0.5	2.181e+000	2.195e+000	2.043e+000	2.306e+000
0.75	2.133e+000	2.011e+000	2.155e+000	2.233e+000
1	1.937e+000	1.576e+000	2.147e+000	2.088e+000
2	1.190e+000	8.325e-001	1.561e+000	1.177e+000
3	7.151e-001	5.888e-001	8.686e-001	6.878e-001
4	4.918e-001	4.294e-001	5.782e-001	4.676e-001

Source: Palos Verdes
Region: USGS 2008 California
Closest Distance: 61.07 km
Amplitude Units: Acceleration (g)
Magnitude: 7.30 Mw

Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.135e-001	1.524e-001	9.088e-002	9.730e-002
0.05	1.270e-001	1.632e-001	1.038e-001	1.140e-001
0.1	1.717e-001	2.059e-001	1.414e-001	1.678e-001
0.2	2.332e-001	2.699e-001	2.005e-001	2.292e-001
0.3	2.431e-001	2.818e-001	2.186e-001	2.289e-001
0.4	2.406e-001	2.864e-001	2.146e-001	2.207e-001
0.5	2.377e-001	2.855e-001	2.200e-001	2.075e-001
0.75	2.037e-001	2.456e-001	1.947e-001	1.707e-001
1	1.739e-001	2.060e-001	1.691e-001	1.466e-001
2	9.494e-002	1.103e-001	9.659e-002	7.791e-002
3	6.326e-002	7.461e-002	6.517e-002	5.001e-002
4	4.683e-002	5.528e-002	5.009e-002	3.513e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation

Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.057e-001	2.761e-001	1.647e-001	1.763e-001
0.05	2.301e-001	2.957e-001	1.882e-001	2.065e-001
0.1	3.124e-001	3.769e-001	2.562e-001	3.040e-001
0.2	4.226e-001	4.892e-001	3.633e-001	4.153e-001
0.3	4.423e-001	5.159e-001	3.961e-001	4.149e-001
0.4	4.317e-001	5.216e-001	3.813e-001	3.922e-001
0.5	4.253e-001	5.262e-001	3.877e-001	3.620e-001
0.75	3.746e-001	4.665e-001	3.531e-001	3.042e-001
1	3.240e-001	3.921e-001	3.114e-001	2.684e-001
2	1.859e-001	2.213e-001	1.851e-001	1.514e-001
3	1.248e-001	1.489e-001	1.251e-001	1.004e-001
4	9.312e-002	1.107e-001	9.625e-002	7.245e-002

Source: Palos Verdes Connected
Region: USGS 2008 California
Closest Distance: 61.07 km
Amplitude Units: Acceleration (g)

Magnitude: 7.70 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.339e-001	1.702e-001	1.048e-001	1.269e-001
0.05	1.509e-001	1.863e-001	1.183e-001	1.481e-001
0.1	2.001e-001	2.283e-001	1.567e-001	2.153e-001
0.2	2.621e-001	2.688e-001	2.239e-001	2.937e-001
0.3	2.761e-001	2.827e-001	2.495e-001	2.962e-001
0.4	2.759e-001	2.903e-001	2.488e-001	2.886e-001
0.5	2.786e-001	2.959e-001	2.657e-001	2.741e-001
0.75	2.523e-001	2.737e-001	2.531e-001	2.302e-001
1	2.229e-001	2.364e-001	2.314e-001	2.009e-001
2	1.330e-001	1.387e-001	1.489e-001	1.114e-001
3	9.428e-002	1.057e-001	1.041e-001	7.302e-002
4	7.039e-002	7.786e-002	8.138e-002	5.194e-002

Fractile: 0.84
Column 1: Spectral Period

Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.427e-001	3.085e-001	1.898e-001	2.299e-001
0.05	2.734e-001	3.376e-001	2.144e-001	2.683e-001
0.1	3.640e-001	4.179e-001	2.839e-001	3.901e-001
0.2	4.750e-001	4.872e-001	4.058e-001	5.322e-001
0.3	5.021e-001	5.175e-001	4.522e-001	5.367e-001
0.4	4.945e-001	5.287e-001	4.420e-001	5.129e-001
0.5	4.968e-001	5.455e-001	4.668e-001	4.782e-001
0.75	4.612e-001	5.198e-001	4.582e-001	4.057e-001
1	4.134e-001	4.499e-001	4.258e-001	3.646e-001
2	2.598e-001	2.782e-001	2.853e-001	2.160e-001
3	1.858e-001	2.110e-001	1.997e-001	1.465e-001
4	1.398e-001	1.559e-001	1.564e-001	1.071e-001

Source: Pitas Point (Lower)-Montalvo
Region: USGS 2008 California
Closest Distance: 29.94 km

Amplitude Units: Acceleration (g)
Magnitude: 7.30 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.927e-001	2.093e-001	1.723e-001	1.966e-001
0.05	2.192e-001	2.281e-001	1.970e-001	2.325e-001
0.1	3.034e-001	3.014e-001	2.784e-001	3.306e-001
0.2	4.058e-001	4.093e-001	3.776e-001	4.307e-001
0.3	4.203e-001	4.383e-001	3.947e-001	4.283e-001
0.4	4.129e-001	4.315e-001	3.918e-001	4.155e-001
0.5	4.084e-001	4.278e-001	4.035e-001	3.941e-001
0.75	3.530e-001	3.722e-001	3.582e-001	3.289e-001
1	2.961e-001	2.947e-001	3.124e-001	2.814e-001
2	1.471e-001	1.354e-001	1.721e-001	1.339e-001
3	9.434e-002	8.873e-002	1.114e-001	8.291e-002
4	6.884e-002	6.313e-002	8.561e-002	5.777e-002

Fractile: 0.84

Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.491e-001	3.792e-001	3.122e-001	3.562e-001
0.05	3.972e-001	4.134e-001	3.570e-001	4.214e-001
0.1	5.516e-001	5.517e-001	5.044e-001	5.990e-001
0.2	7.353e-001	7.418e-001	6.843e-001	7.805e-001
0.3	7.644e-001	8.023e-001	7.153e-001	7.761e-001
0.4	7.400e-001	7.860e-001	6.962e-001	7.383e-001
0.5	7.265e-001	7.886e-001	7.040e-001	6.875e-001
0.75	6.420e-001	7.068e-001	6.425e-001	5.771e-001
1	5.459e-001	5.608e-001	5.713e-001	5.058e-001
2	2.868e-001	2.716e-001	3.297e-001	2.592e-001
3	1.857e-001	1.771e-001	2.138e-001	1.663e-001
4	1.367e-001	1.264e-001	1.645e-001	1.191e-001

Source: Pitas Point (Lower, West)
Region: USGS 2008 California

Closest Distance: 49.40 km
Amplitude Units: Acceleration (g)
Magnitude: 7.30 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.483e-001	1.714e-001	1.358e-001	1.376e-001
0.05	1.663e-001	1.840e-001	1.530e-001	1.619e-001
0.1	2.267e-001	2.360e-001	2.094e-001	2.348e-001
0.2	3.087e-001	3.182e-001	2.946e-001	3.132e-001
0.3	3.254e-001	3.455e-001	3.198e-001	3.108e-001
0.4	3.195e-001	3.419e-001	3.171e-001	2.994e-001
0.5	3.168e-001	3.419e-001	3.271e-001	2.815e-001
0.75	2.738e-001	2.989e-001	2.917e-001	2.307e-001
1	2.276e-001	2.383e-001	2.494e-001	1.949e-001
2	1.076e-001	1.085e-001	1.245e-001	8.967e-002
3	6.713e-002	7.022e-002	7.664e-002	5.453e-002
4	4.868e-002	4.961e-002	5.879e-002	3.765e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.687e-001	3.106e-001	2.460e-001	2.494e-001
0.05	3.014e-001	3.335e-001	2.773e-001	2.934e-001
0.1	4.123e-001	4.320e-001	3.795e-001	4.254e-001
0.2	5.593e-001	5.766e-001	5.339e-001	5.675e-001
0.3	5.918e-001	6.324e-001	5.795e-001	5.633e-001
0.4	5.727e-001	6.228e-001	5.634e-001	5.320e-001
0.5	5.640e-001	6.302e-001	5.707e-001	4.911e-001
0.75	5.001e-001	5.677e-001	5.258e-001	4.066e-001
1	4.217e-001	4.535e-001	4.576e-001	3.541e-001
2	2.101e-001	2.177e-001	2.386e-001	1.741e-001
3	1.322e-001	1.402e-001	1.471e-001	1.095e-001
4	9.665e-002	9.931e-002	1.130e-001	7.766e-002

Source: Pitas Point (Upper)

Region: USGS 2008 California
Closest Distance: 41.04 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.435e-001	1.683e-001	1.378e-001	1.244e-001
0.05	1.611e-001	1.782e-001	1.577e-001	1.475e-001
0.1	2.258e-001	2.372e-001	2.246e-001	2.158e-001
0.2	3.156e-001	3.525e-001	3.096e-001	2.847e-001
0.3	3.264e-001	3.761e-001	3.244e-001	2.787e-001
0.4	3.169e-001	3.687e-001	3.170e-001	2.651e-001
0.5	3.068e-001	3.602e-001	3.138e-001	2.466e-001
0.75	2.500e-001	2.929e-001	2.596e-001	1.976e-001
1	2.008e-001	2.271e-001	2.115e-001	1.638e-001
2	8.702e-002	9.452e-002	9.481e-002	7.172e-002
3	5.117e-002	5.433e-002	5.657e-002	4.259e-002
4	3.672e-002	3.852e-002	4.273e-002	2.891e-002

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.600e-001	3.051e-001	2.496e-001	2.254e-001
0.05	2.920e-001	3.229e-001	2.857e-001	2.672e-001
0.1	4.107e-001	4.341e-001	4.069e-001	3.910e-001
0.2	5.719e-001	6.387e-001	5.610e-001	5.159e-001
0.3	5.938e-001	6.885e-001	5.879e-001	5.050e-001
0.4	5.686e-001	6.716e-001	5.632e-001	4.711e-001
0.5	5.472e-001	6.640e-001	5.474e-001	4.302e-001
0.75	4.585e-001	5.563e-001	4.678e-001	3.513e-001
1	3.733e-001	4.322e-001	3.880e-001	2.997e-001
2	1.703e-001	1.896e-001	1.817e-001	1.397e-001
3	1.009e-001	1.084e-001	1.086e-001	8.563e-002
4	7.297e-002	7.711e-002	8.211e-002	5.969e-002

Source: Pitas Point Connected
Region: USGS 2008 California
  Closest Distance: 11.29 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	3.258e-001	2.780e-001	3.269e-001	3.725e-001
0.05	3.683e-001	3.116e-001	3.619e-001	4.315e-001
0.1	4.974e-001	4.347e-001	4.907e-001	5.667e-001
0.2	6.569e-001	6.168e-001	6.346e-001	7.194e-001
0.3	6.909e-001	6.641e-001	6.661e-001	7.425e-001
0.4	7.019e-001	6.590e-001	6.948e-001	7.519e-001
0.5	7.102e-001	6.495e-001	7.393e-001	7.418e-001
0.75	6.394e-001	5.677e-001	6.852e-001	6.654e-001
1	5.529e-001	4.479e-001	6.158e-001	5.949e-001
2	2.912e-001	2.119e-001	3.555e-001	3.063e-001
3	1.865e-001	1.422e-001	2.250e-001	1.924e-001
4	1.363e-001	1.021e-001	1.728e-001	1.341e-

001

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	5.904e-001	5.038e-001	5.923e-001	6.751e-001
0.05	6.675e-001	5.647e-001	6.558e-001	7.819e-001
0.1	9.039e-001	7.958e-001	8.891e-001	1.027e+000
0.2	1.190e+000	1.118e+000	1.150e+000	1.304e+000
0.3	1.256e+000	1.216e+000	1.207e+000	1.346e+000
0.4	1.257e+000	1.200e+000	1.235e+000	1.336e+000
0.5	1.260e+000	1.197e+000	1.290e+000	1.294e+000
0.75	1.150e+000	1.078e+000	1.206e+000	1.167e+000
1	1.005e+000	8.523e-001	1.112e+000	1.049e+000
2	5.653e-001	4.251e-001	6.811e-001	5.896e-001
3	3.670e-001	2.838e-001	4.317e-001	3.855e-001
4	2.710e-001	2.044e-001	3.320e-001	2.765e-001

Source: Pleito
Region: USGS 2008 California
  Closest Distance: 70.89 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.10 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	9.473e-002	1.280e-001	7.557e-002	8.058e-002
0.05	1.048e-001	1.345e-001	8.631e-002	9.372e-002
0.1	1.424e-001	1.713e-001	1.176e-001	1.382e-001
0.2	2.020e-001	2.464e-001	1.680e-001	1.917e-001
0.3	2.166e-001	2.734e-001	1.838e-001	1.925e-001
0.4	2.125e-001	2.725e-001	1.792e-001	1.859e-001
0.5	2.092e-001	2.727e-001	1.804e-001	1.747e-001
0.75	1.766e-001	2.330e-001	1.543e-001	1.425e-001
1	1.450e-001	1.848e-001	1.304e-001	1.198e-001
2	6.832e-002	8.059e-002	6.970e-002	5.466e-002
3	4.270e-002	4.880e-002	4.597e-002	3.333e-002

```
       4     3.081e-002     3.444e-002     3.493e-002     2.305e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.717e-001     2.320e-001     1.369e-001     1.460e-
001
    0.05     1.900e-001     2.437e-001     1.564e-001     1.698e-
001
     0.1     2.591e-001     3.136e-001     2.131e-001     2.505e-
001
     0.2     3.661e-001     4.465e-001     3.044e-001     3.473e-
001
     0.3     3.941e-001     5.006e-001     3.330e-001     3.489e-
001
     0.4     3.817e-001     4.963e-001     3.185e-001     3.304e-
001
     0.5     3.754e-001     5.027e-001     3.189e-001     3.047e-
001
    0.75     3.262e-001     4.425e-001     2.805e-001     2.555e-
001
       1     2.709e-001     3.517e-001     2.405e-001     2.206e-
001
       2     1.339e-001     1.617e-001     1.335e-001     1.065e-
001
       3     8.419e-002     9.740e-002     8.822e-002     6.695e-
002
       4     6.120e-002     6.895e-002     6.712e-002     4.754e-
002
```

```
Source: Puente Hills
Region: USGS 2008 California
  Closest Distance: 80.79 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.10 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2             3             4             5
    PGA     9.484e-002    1.106e-001    8.664e-002    8.729e-
002
   0.05     1.042e-001    1.156e-001    9.718e-002    9.985e-
002
    0.1     1.403e-001    1.462e-001    1.299e-001    1.448e-
001
    0.2     2.012e-001    2.128e-001    1.886e-001    2.022e-
001
    0.3     2.185e-001    2.400e-001    2.106e-001    2.048e-
001
    0.4     2.156e-001    2.412e-001    2.069e-001    1.988e-
001
    0.5     2.132e-001    2.433e-001    2.094e-001    1.870e-
001
   0.75     1.808e-001    2.099e-001    1.808e-001    1.517e-
001
      1     1.478e-001    1.675e-001    1.493e-001    1.265e-
001
      2     6.563e-002    7.345e-002    6.853e-002    5.491e-
002
      3     3.926e-002    4.445e-002    4.135e-002    3.200e-
```

```
002
       4     2.812e-002     3.136e-002     3.150e-002     2.149e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.719e-001     2.004e-001     1.570e-001     1.582e-
001
    0.05     1.889e-001     2.095e-001     1.761e-001     1.809e-
001
     0.1     2.552e-001     2.676e-001     2.354e-001     2.624e-
001
     0.2     3.646e-001     3.856e-001     3.417e-001     3.664e-
001
     0.3     3.974e-001     4.394e-001     3.816e-001     3.711e-
001
     0.4     3.868e-001     4.393e-001     3.677e-001     3.532e-
001
     0.5     3.813e-001     4.484e-001     3.693e-001     3.262e-
001
    0.75     3.328e-001     3.987e-001     3.281e-001     2.715e-
001
       1     2.755e-001     3.188e-001     2.751e-001     2.325e-
001
       2     1.285e-001     1.473e-001     1.313e-001     1.070e-
001
       3     7.745e-002     8.871e-002     7.934e-002     6.429e-
002
       4     5.588e-002     6.278e-002     6.053e-002     4.432e-
002
```

Source: Puente Hills (LA)
Region: USGS 2008 California
  Closest Distance: 77.99 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	8.952e-002	1.097e-001	8.561e-002	7.328e-002
0.05	9.831e-002	1.142e-001	9.642e-002	8.434e-002
0.1	1.332e-001	1.458e-001	1.302e-001	1.237e-001
0.2	1.931e-001	2.179e-001	1.881e-001	1.732e-001
0.3	2.093e-001	2.447e-001	2.083e-001	1.751e-001
0.4	2.060e-001	2.447e-001	2.038e-001	1.695e-001
0.5	2.028e-001	2.450e-001	2.041e-001	1.592e-001
0.75	1.698e-001	2.072e-001	1.729e-001	1.292e-001
1	1.376e-001	1.639e-001	1.410e-001	1.079e-001
2	6.030e-002	7.023e-002	6.294e-002	4.772e-002

```
       3     3.580e-002     4.130e-002     3.766e-002     2.844e-
002
       4     2.572e-002     2.923e-002     2.857e-002     1.936e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.622e-001     1.988e-001     1.551e-001     1.328e-
001
    0.05     1.782e-001     2.069e-001     1.747e-001     1.528e-
001
     0.1     2.424e-001     2.669e-001     2.360e-001     2.242e-
001
     0.2     3.499e-001     3.949e-001     3.409e-001     3.139e-
001
     0.3     3.808e-001     4.479e-001     3.774e-001     3.172e-
001
     0.4     3.697e-001     4.457e-001     3.622e-001     3.012e-
001
     0.5     3.633e-001     4.516e-001     3.601e-001     2.783e-
001
    0.75     3.133e-001     3.936e-001     3.139e-001     2.324e-
001
       1     2.570e-001     3.119e-001     2.599e-001     1.991e-
001
       2     1.182e-001     1.409e-001     1.206e-001     9.306e-
002
       3     7.062e-002     8.244e-002     7.227e-002     5.715e-
002
       4     5.112e-002     5.851e-002     5.490e-002     3.993e-
```

002

Source: Puente Hills (Santa Fe Springs)
Region: USGS 2008 California
  Closest Distance: 91.80 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	6.528e-002	7.739e-002	6.606e-002	5.241e-002
0.05	7.122e-002	7.979e-002	7.453e-002	5.936e-002
0.1	9.730e-002	1.040e-001	1.012e-001	8.667e-002
0.2	1.470e-001	1.693e-001	1.472e-001	1.246e-001
0.3	1.614e-001	1.938e-001	1.629e-001	1.276e-001
0.4	1.580e-001	1.921e-001	1.578e-001	1.242e-001
0.5	1.536e-001	1.909e-001	1.536e-001	1.166e-001
0.75	1.244e-001	1.563e-001	1.235e-001	9.347e-002
1	9.847e-002	1.219e-001	9.676e-002	7.681e-002
2	4.031e-002	4.981e-002	3.926e-002	3.188e-

```
002
       3     2.278e-002     2.745e-002     2.280e-002     1.811e-
002
       4     1.610e-002     1.932e-002     1.705e-002     1.193e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.183e-001     1.402e-001     1.197e-001     9.498e-
002
    0.05     1.291e-001     1.446e-001     1.351e-001     1.076e-
001
     0.1     1.770e-001     1.904e-001     1.835e-001     1.571e-
001
     0.2     2.664e-001     3.068e-001     2.668e-001     2.258e-
001
     0.3     2.937e-001     3.547e-001     2.952e-001     2.313e-
001
     0.4     2.836e-001     3.498e-001     2.804e-001     2.207e-
001
     0.5     2.775e-001     3.518e-001     2.721e-001     2.087e-
001
    0.75     2.310e-001     2.969e-001     2.249e-001     1.712e-
001
       1     1.848e-001     2.319e-001     1.787e-001     1.438e-
001
       2     7.922e-002     9.991e-002     7.523e-002     6.256e-
002
       3     4.502e-002     5.478e-002     4.375e-002     3.654e-
002
```

4	3.204e-002	3.868e-002	3.276e-002	2.469e-002

Source: Raymond
Region: USGS 2008 California
  Closest Distance: 86.27 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.80 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	6.491e-002	8.851e-002	5.610e-002	5.011e-002
0.05	7.073e-002	9.088e-002	6.401e-002	5.731e-002
0.1	9.652e-002	1.176e-001	8.741e-002	8.458e-002
0.2	1.453e-001	1.887e-001	1.261e-001	1.212e-001
0.3	1.589e-001	2.145e-001	1.384e-001	1.239e-001
0.4	1.563e-001	2.147e-001	1.337e-001	1.205e-001
0.5	1.527e-001	2.139e-001	1.309e-001	1.135e-001
0.75	1.250e-001	1.763e-001	1.065e-001	9.223e-002
1	1.005e-001	1.380e-001	8.639e-002	7.697e-002

```
       2     4.442e-002     5.700e-002     4.214e-002     3.411e-
002
       3     2.644e-002     3.169e-002     2.715e-002     2.047e-
002
       4     1.900e-002     2.260e-002     2.042e-002     1.397e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.176e-001     1.604e-001     1.017e-001     9.081e-
002
    0.05     1.282e-001     1.647e-001     1.160e-001     1.038e-
001
     0.1     1.756e-001     2.152e-001     1.584e-001     1.533e-
001
     0.2     2.633e-001     3.419e-001     2.285e-001     2.197e-
001
     0.3     2.893e-001     3.926e-001     2.507e-001     2.245e-
001
     0.4     2.810e-001     3.911e-001     2.376e-001     2.142e-
001
     0.5     2.764e-001     3.943e-001     2.324e-001     2.025e-
001
    0.75     2.325e-001     3.349e-001     1.941e-001     1.685e-
001
       1     1.887e-001     2.627e-001     1.596e-001     1.437e-
001
       2     8.730e-002     1.143e-001     8.075e-002     6.681e-
002
       3     5.220e-002     6.326e-002     5.210e-002     4.125e-
```

```
002
       4     3.778e-002     4.524e-002     3.924e-002     2.888e-
002



Source: Red Mountain
Region: USGS 2008 California
  Closest Distance: 19.98 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.40 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
     PGA     2.375e-001     2.432e-001     2.018e-001     2.674e-
001
    0.05     2.723e-001     2.693e-001     2.332e-001     3.145e-
001
     0.1     3.760e-001     3.623e-001     3.321e-001     4.336e-
001
     0.2     4.959e-001     4.898e-001     4.392e-001     5.587e-
001
     0.3     5.136e-001     5.258e-001     4.504e-001     5.645e-
001
     0.4     5.087e-001     5.182e-001     4.500e-001     5.580e-
001
     0.5     5.068e-001     5.137e-001     4.683e-001     5.386e-
001
    0.75     4.472e-001     4.542e-001     4.224e-001     4.649e-
001
       1     3.826e-001     3.602e-001     3.808e-001     4.068e-
```

```
001
       2     2.051e-001     1.713e-001     2.404e-001     2.035e-
001
       3     1.371e-001     1.171e-001     1.657e-001     1.285e-
001
       4     1.007e-001     8.386e-002     1.279e-001     9.026e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     4.303e-001     4.407e-001     3.658e-001     4.845e-
001
    0.05     4.935e-001     4.880e-001     4.225e-001     5.699e-
001
     0.1     6.836e-001     6.632e-001     6.018e-001     7.857e-
001
     0.2     8.986e-001     8.875e-001     7.959e-001     1.013e+
000
     0.3     9.339e-001     9.626e-001     8.163e-001     1.023e+
000
     0.4     9.117e-001     9.439e-001     7.997e-001     9.915e-
001
     0.5     9.011e-001     9.469e-001     8.169e-001     9.396e-
001
    0.75     8.110e-001     8.627e-001     7.546e-001     8.157e-
001
       1     7.012e-001     6.855e-001     6.946e-001     7.235e-
001
       2     3.990e-001     3.436e-001     4.607e-001     3.928e-
001
```

```
       3     2.697e-001     2.337e-001     3.180e-001     2.575e-
001
       4     1.999e-001     1.679e-001     2.457e-001     1.861e-
001



Source: Southern San Andreas
Region: USGS 2008 California
  Closest Distance: 70.01 km
  Amplitude Units: Acceleration (g)
  Magnitude: 8.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.504e-001     1.809e-001     1.147e-001     1.556e-
001
    0.05     1.697e-001     2.028e-001     1.270e-001     1.795e-
001
     0.1     2.180e-001     2.369e-001     1.604e-001     2.566e-
001
     0.2     2.770e-001     2.456e-001     2.340e-001     3.539e-
001
     0.3     2.984e-001     2.608e-001     2.714e-001     3.638e-
001
     0.4     3.033e-001     2.729e-001     2.762e-001     3.608e-
001
     0.5     3.157e-001     2.883e-001     3.109e-001     3.478e-
001
    0.75     3.067e-001     2.941e-001     3.256e-001     3.004e-
001
```

```
       1     2.834e-001     2.655e-001     3.172e-001     2.675e-
001
       2     1.886e-001     1.746e-001     2.356e-001     1.556e-
001
       3     1.433e-001     1.538e-001     1.721e-001     1.039e-
001
       4     1.079e-001     1.116e-001     1.375e-001     7.464e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     2.725e-001     3.278e-001     2.078e-001     2.820e-
001
    0.05     3.076e-001     3.675e-001     2.301e-001     3.252e-
001
     0.1     3.964e-001     4.337e-001     2.906e-001     4.650e-
001
     0.2     5.019e-001     4.450e-001     4.240e-001     6.414e-
001
     0.3     5.423e-001     4.775e-001     4.917e-001     6.592e-
001
     0.4     5.430e-001     4.971e-001     4.907e-001     6.411e-
001
     0.5     5.610e-001     5.313e-001     5.450e-001     6.068e-
001
    0.75     5.581e-001     5.584e-001     5.887e-001     5.271e-
001
       1     5.233e-001     5.052e-001     5.830e-001     4.815e-
001
       2     3.675e-001     3.503e-001     4.515e-001     3.008e-
```

```
001
       3     2.818e-001     3.070e-001     3.302e-001     2.084e-
001
       4     2.139e-001     2.235e-001     2.642e-001     1.539e-
001



Source: San Cayetano
Region: USGS 2008 California
  Closest Distance: 25.48 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
     PGA     1.969e-001     2.166e-001     1.666e-001     2.075e-
001
    0.05     2.253e-001     2.363e-001     1.937e-001     2.460e-
001
     0.1     3.149e-001     3.169e-001     2.792e-001     3.485e-
001
     0.2     4.222e-001     4.419e-001     3.729e-001     4.520e-
001
     0.3     4.339e-001     4.707e-001     3.814e-001     4.494e-
001
     0.4     4.252e-001     4.633e-001     3.757e-001     4.365e-
001
     0.5     4.176e-001     4.567e-001     3.816e-001     4.146e-
001
    0.75     3.560e-001     3.906e-001     3.305e-001     3.469e-
```

```
001
       1     2.976e-001     3.075e-001     2.883e-001     2.971e-
001
       2     1.495e-001     1.386e-001     1.680e-001     1.418e-
001
       3     9.655e-002     8.834e-002     1.134e-001     8.793e-
002
       4     7.029e-002     6.289e-002     8.676e-002     6.122e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
     PGA     3.569e-001     3.926e-001     3.019e-001     3.761e-
001
    0.05     4.083e-001     4.281e-001     3.510e-001     4.458e-
001
     0.1     5.725e-001     5.802e-001     5.059e-001     6.316e-
001
     0.2     7.651e-001     8.007e-001     6.757e-001     8.190e-
001
     0.3     7.891e-001     8.617e-001     6.912e-001     8.144e-
001
     0.4     7.623e-001     8.439e-001     6.675e-001     7.756e-
001
     0.5     7.436e-001     8.418e-001     6.657e-001     7.232e-
001
    0.75     6.479e-001     7.419e-001     5.932e-001     6.087e-
001
       1     5.486e-001     5.851e-001     5.274e-001     5.332e-
001
```

2	2.914e-001	2.780e-001	3.220e-001	2.743e-001
3	1.901e-001	1.763e-001	2.176e-001	1.764e-001
4	1.396e-001	1.259e-001	1.667e-001	1.263e-001

Source: San Gabriel
Region: USGS 2008 California
  Closest Distance: 57.46 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.187e-001	1.581e-001	9.521e-002	1.028e-001
0.05	1.331e-001	1.696e-001	1.090e-001	1.208e-001
0.1	1.806e-001	2.149e-001	1.491e-001	1.777e-001
0.2	2.444e-001	2.813e-001	2.105e-001	2.413e-001
0.3	2.538e-001	2.925e-001	2.283e-001	2.404e-001
0.4	2.507e-001	2.966e-001	2.241e-001	2.315e-001
0.5	2.474e-001	2.951e-001	2.297e-001	2.174e-001

```
    0.75     2.117e-001     2.533e-001     2.031e-001     1.787e-
001
       1     1.807e-001     2.122e-001     1.765e-001     1.534e-
001
       2     9.873e-002     1.136e-001     1.011e-001     8.151e-
002
       3     6.583e-002     7.692e-002     6.825e-002     5.231e-
002
       4     4.875e-002     5.705e-002     5.245e-002     3.674e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
     PGA     2.151e-001     2.865e-001     1.725e-001     1.863e-
001
    0.05     2.413e-001     3.074e-001     1.975e-001     2.188e-
001
     0.1     3.285e-001     3.934e-001     2.703e-001     3.220e-
001
     0.2     4.429e-001     5.098e-001     3.815e-001     4.373e-
001
     0.3     4.616e-001     5.355e-001     4.138e-001     4.357e-
001
     0.4     4.499e-001     5.403e-001     3.983e-001     4.113e-
001
     0.5     4.425e-001     5.439e-001     4.044e-001     3.793e-
001
    0.75     3.891e-001     4.811e-001     3.682e-001     3.180e-
001
       1     3.365e-001     4.038e-001     3.250e-001     2.806e-
```

```
001
       2     1.933e-001     2.278e-001     1.937e-001     1.584e-
001
       3     1.298e-001     1.535e-001     1.310e-001     1.050e-
001
       4     9.692e-002     1.142e-001     1.008e-001     7.577e-
002



Source: Santa Cruz Island
Region: USGS 2008 California
  Closest Distance: 26.81 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.863e-001     2.136e-001     1.609e-001     1.843e-
001
    0.05     2.134e-001     2.337e-001     1.871e-001     2.194e-
001
     0.1     2.986e-001     3.121e-001     2.693e-001     3.145e-
001
     0.2     3.971e-001     4.212e-001     3.607e-001     4.094e-
001
     0.3     4.003e-001     4.260e-001     3.698e-001     4.053e-
001
     0.4     3.943e-001     4.276e-001     3.638e-001     3.915e-
001
     0.5     3.857e-001     4.176e-001     3.693e-001     3.701e-
```

```
001
    0.75     3.257e-001     3.495e-001     3.197e-001     3.081e-
001
       1     2.776e-001     2.880e-001     2.785e-001     2.662e-
001
       2     1.525e-001     1.526e-001     1.617e-001     1.433e-
001
       3     1.010e-001     1.021e-001     1.091e-001     9.194e-
002
       4     7.478e-002     7.650e-002     8.346e-002     6.437e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

      1          2              3              4              5
     PGA     3.376e-001     3.871e-001     2.916e-001     3.341e-
001
    0.05     3.867e-001     4.234e-001     3.390e-001     3.975e-
001
     0.1     5.431e-001     5.713e-001     4.880e-001     5.699e-
001
     0.2     7.196e-001     7.632e-001     6.537e-001     7.419e-
001
     0.3     7.281e-001     7.797e-001     6.701e-001     7.344e-
001
     0.4     7.070e-001     7.789e-001     6.464e-001     6.957e-
001
     0.5     6.866e-001     7.698e-001     6.443e-001     6.456e-
001
    0.75     5.928e-001     6.637e-001     5.743e-001     5.405e-
001
```

1	5.124e-001	5.481e-001	5.098e-001	4.792e-001
2	2.977e-001	3.060e-001	3.099e-001	2.771e-001
3	1.992e-001	2.038e-001	2.093e-001	1.844e-001
4	1.488e-001	1.532e-001	1.604e-001	1.327e-001

Source: Santa Monica
Region: USGS 2008 California
  Closest Distance: 18.75 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.40 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	2.823e-001	2.701e-001	2.626e-001	3.216e-001
0.05	3.219e-001	3.017e-001	2.929e-001	3.815e-001
0.1	4.399e-001	4.183e-001	4.075e-001	5.167e-001
0.2	5.806e-001	5.897e-001	5.407e-001	6.547e-001
0.3	6.061e-001	6.337e-001	5.665e-001	6.597e-001
0.4	6.062e-001	6.278e-001	5.784e-001	6.554e-001

```
     0.5     6.085e-001     6.189e-001     6.114e-001     6.356e-
001
    0.75     5.432e-001     5.403e-001     5.649e-001     5.523e-
001
       1     4.654e-001     4.263e-001     5.071e-001     4.835e-
001
       2     2.392e-001     2.009e-001     2.883e-001     2.348e-
001
       3     1.509e-001     1.344e-001     1.784e-001     1.402e-
001
       4     1.086e-001     9.648e-002     1.338e-001     9.583e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     5.116e-001     4.894e-001     4.759e-001     5.828e-
001
    0.05     5.832e-001     5.467e-001     5.307e-001     6.913e-
001
     0.1     7.997e-001     7.658e-001     7.384e-001     9.364e-
001
     0.2     1.052e+000     1.069e+000     9.798e-001     1.186e+
000
     0.3     1.102e+000     1.160e+000     1.027e+000     1.195e+
000
     0.4     1.086e+000     1.144e+000     1.028e+000     1.164e+
000
     0.5     1.081e+000     1.141e+000     1.067e+000     1.109e+
000
    0.75     9.811e-001     1.026e+000     1.001e+000     9.690e-
```

```
001
       1     8.494e-001     8.113e-001     9.203e-001     8.560e-
001
       2     4.651e-001     4.031e-001     5.524e-001     4.527e-
001
       3     2.969e-001     2.683e-001     3.424e-001     2.809e-
001
       4     2.158e-001     1.931e-001     2.571e-001     1.976e-
001


Source: Santa Rosa Island
Region: USGS 2008 California
  Closest Distance: 72.51 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     8.079e-002     1.139e-001     6.799e-002     6.052e-
002
    0.05     8.898e-002     1.187e-001     7.799e-002     7.024e-
002
     0.1     1.216e-001     1.531e-001     1.075e-001     1.042e-
001
     0.2     1.752e-001     2.268e-001     1.532e-001     1.456e-
001
     0.3     1.839e-001     2.394e-001     1.662e-001     1.462e-
001
     0.4     1.814e-001     2.427e-001     1.609e-001     1.407e-
```

```
001
     0.5     1.763e-001     2.385e-001     1.587e-001     1.317e-
001
    0.75     1.436e-001     1.930e-001     1.310e-001     1.068e-
001
       1     1.188e-001     1.582e-001     1.078e-001     9.033e-
002
       2     5.938e-002     7.782e-002     5.445e-002     4.587e-
002
       3     3.694e-002     4.673e-002     3.543e-002     2.867e-
002
       4     2.715e-002     3.490e-002     2.676e-002     1.977e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.464e-001     2.063e-001     1.232e-001     1.097e-
001
    0.05     1.612e-001     2.151e-001     1.413e-001     1.273e-
001
     0.1     2.213e-001     2.803e-001     1.948e-001     1.889e-
001
     0.2     3.175e-001     4.111e-001     2.777e-001     2.638e-
001
     0.3     3.348e-001     4.383e-001     3.012e-001     2.649e-
001
     0.4     3.260e-001     4.421e-001     2.860e-001     2.500e-
001
     0.5     3.178e-001     4.395e-001     2.811e-001     2.329e-
001
```

```
    0.75     2.662e-001     3.665e-001     2.384e-001     1.937e-
001
       1     2.226e-001     3.010e-001     1.991e-001     1.677e-
001
       2     1.167e-001     1.561e-001     1.043e-001     8.959e-
002
       3     7.298e-002     9.327e-002     6.798e-002     5.768e-
002
       4     5.404e-002     6.987e-002     5.142e-002     4.083e-
002
```

```
Source: Santa Susana, alt 1
Region: USGS 2008 California
  Closest Distance: 39.42 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.351e-001     1.714e-001     1.124e-001     1.215e-
001
    0.05     1.525e-001     1.817e-001     1.313e-001     1.446e-
001
     0.1     2.148e-001     2.423e-001     1.896e-001     2.124e-
001
     0.2     2.997e-001     3.599e-001     2.587e-001     2.804e-
001
     0.3     3.082e-001     3.834e-001     2.669e-001     2.744e-
001
```

```
     0.4     2.984e-001     3.758e-001     2.582e-001     2.611e-
001
     0.5     2.879e-001     3.670e-001     2.538e-001     2.430e-
001
    0.75     2.338e-001     2.984e-001     2.077e-001     1.953e-
001
       1     1.888e-001     2.314e-001     1.726e-001     1.624e-
001
       2     8.603e-002     9.633e-002     8.944e-002     7.232e-
002
       3     5.249e-002     5.541e-002     5.847e-002     4.358e-
002
       4     3.777e-002     3.929e-002     4.417e-002     2.984e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     2.448e-001     3.105e-001     2.037e-001     2.202e-
001
    0.05     2.764e-001     3.292e-001     2.379e-001     2.620e-
001
     0.1     3.907e-001     4.435e-001     3.436e-001     3.849e-
001
     0.2     5.430e-001     6.521e-001     4.689e-001     5.081e-
001
     0.3     5.609e-001     7.018e-001     4.836e-001     4.973e-
001
     0.4     5.358e-001     6.845e-001     4.589e-001     4.639e-
001
     0.5     5.151e-001     6.765e-001     4.451e-001     4.238e-
```

```
001
    0.75     4.299e-001     5.667e-001     3.757e-001     3.474e-
001
       1     3.516e-001     4.403e-001     3.173e-001     2.973e-
001
       2     1.685e-001     1.932e-001     1.714e-001     1.408e-
001
       3     1.035e-001     1.106e-001     1.122e-001     8.760e-
002
       4     7.505e-002     7.865e-002     8.487e-002     6.162e-
002



Source: Santa Ynez (East)
Region: USGS 2008 California
  Closest Distance: 33.84 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.680e-001     2.023e-001     1.410e-001     1.606e-
001
    0.05     1.919e-001     2.203e-001     1.633e-001     1.920e-
001
     0.1     2.676e-001     2.916e-001     2.325e-001     2.785e-
001
     0.2     3.576e-001     3.921e-001     3.163e-001     3.643e-
001
     0.3     3.615e-001     3.974e-001     3.288e-001     3.581e-
```

```
001
     0.4     3.550e-001     3.989e-001     3.228e-001     3.433e-
001
     0.5     3.466e-001     3.901e-001     3.275e-001     3.222e-
001
    0.75     2.916e-001     3.265e-001     2.836e-001     2.648e-
001
       1     2.474e-001     2.693e-001     2.460e-001     2.268e-
001
       2     1.336e-001     1.421e-001     1.397e-001     1.190e-
001
       3     8.732e-002     9.479e-002     9.243e-002     7.473e-
002
       4     6.422e-002     7.092e-002     6.989e-002     5.186e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     3.044e-001     3.666e-001     2.556e-001     2.910e-
001
    0.05     3.477e-001     3.991e-001     2.959e-001     3.480e-
001
     0.1     4.866e-001     5.338e-001     4.214e-001     5.048e-
001
     0.2     6.480e-001     7.106e-001     5.731e-001     6.602e-
001
     0.3     6.574e-001     7.275e-001     5.959e-001     6.490e-
001
     0.4     6.367e-001     7.265e-001     5.736e-001     6.100e-
001
```

0.5	6.176e-001	7.191e-001	5.714e-001	5.621e-001
0.75	5.318e-001	6.200e-001	5.109e-001	4.646e-001
1	4.579e-001	5.125e-001	4.511e-001	4.102e-001
2	2.611e-001	2.851e-001	2.677e-001	2.305e-001
3	1.722e-001	1.892e-001	1.774e-001	1.499e-001
4	1.277e-001	1.420e-001	1.343e-001	1.069e-001

Source: Santa Ynez (West)
Region: USGS 2008 California
  Closest Distance: 54.32 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.100e-001	1.510e-001	9.023e-002	8.867e-002
0.05	1.229e-001	1.598e-001	1.043e-001	1.047e-001
0.1	1.698e-001	2.078e-001	1.462e-001	1.553e-001
0.2	2.361e-001	2.938e-001	2.044e-001	2.099e-001

```
     0.3     2.423e-001     3.024e-001     2.173e-001     2.071e-
001
     0.4     2.375e-001     3.040e-001     2.109e-001     1.975e-
001
     0.5     2.302e-001     2.970e-001     2.096e-001     1.840e-
001
    0.75     1.884e-001     2.413e-001     1.753e-001     1.486e-
001
       1     1.567e-001     1.977e-001     1.468e-001     1.257e-
001
       2     8.001e-002     9.884e-002     7.704e-002     6.415e-
002
       3     5.066e-002     6.127e-002     5.052e-002     4.019e-
002
       4     3.724e-002     4.565e-002     3.825e-002     2.780e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.993e-001     2.736e-001     1.635e-001     1.607e-
001
    0.05     2.228e-001     2.896e-001     1.890e-001     1.897e-
001
     0.1     3.089e-001     3.804e-001     2.650e-001     2.813e-
001
     0.2     4.278e-001     5.325e-001     3.705e-001     3.803e-
001
     0.3     4.409e-001     5.536e-001     3.938e-001     3.752e-
001
     0.4     4.265e-001     5.537e-001     3.748e-001     3.510e-
```

```
001
     0.5     4.126e-001     5.475e-001     3.695e-001     3.210e-
001
    0.75     3.475e-001     4.583e-001     3.181e-001     2.662e-
001
       1     2.926e-001     3.762e-001     2.704e-001     2.311e-
001
       2     1.569e-001     1.983e-001     1.476e-001     1.248e-
001
       3     9.998e-002     1.223e-001     9.695e-002     8.072e-
002
       4     7.408e-002     9.139e-002     7.351e-002     5.734e-
002


Source: Santa Ynez Connected
Region: USGS 2008 California
  Closest Distance: 33.84 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.40 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.777e-001     2.098e-001     1.471e-001     1.762e-
001
    0.05     2.032e-001     2.303e-001     1.695e-001     2.097e-
001
     0.1     2.802e-001     3.008e-001     2.381e-001     3.017e-
001
     0.2     3.690e-001     3.866e-001     3.250e-001     3.953e-
```

```
001
     0.3     3.758e-001     3.944e-001     3.413e-001     3.917e-
001
     0.4     3.709e-001     3.967e-001     3.376e-001     3.783e-
001
     0.5     3.662e-001     3.915e-001     3.495e-001     3.576e-
001
    0.75     3.169e-001     3.390e-001     3.140e-001     2.979e-
001
       1     2.733e-001     2.827e-001     2.794e-001     2.579e-
001
       2     1.548e-001     1.562e-001     1.688e-001     1.393e-
001
       3     1.047e-001     1.108e-001     1.141e-001     8.901e-
002
       4     7.758e-002     8.302e-002     8.733e-002     6.239e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     3.220e-001     3.801e-001     2.666e-001     3.192e-
001
    0.05     3.682e-001     4.174e-001     3.071e-001     3.800e-
001
     0.1     5.097e-001     5.507e-001     4.315e-001     5.468e-
001
     0.2     6.686e-001     7.006e-001     5.889e-001     7.164e-
001
     0.3     6.834e-001     7.220e-001     6.185e-001     7.097e-
001
```

0.4	6.649e-001	7.225e-001	5.998e-001	6.722e-001
0.5	6.518e-001	7.217e-001	6.098e-001	6.238e-001
0.75	5.772e-001	6.438e-001	5.651e-001	5.226e-001
1	5.049e-001	5.380e-001	5.121e-001	4.647e-001
2	3.021e-001	3.134e-001	3.234e-001	2.695e-001
3	2.063e-001	2.212e-001	2.190e-001	1.785e-001
4	1.542e-001	1.662e-001	1.678e-001	1.287e-001

Source: Sierra Madre
Region: USGS 2008 California
  Closest Distance: 79.86 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	8.792e-002	1.168e-001	7.083e-002	7.613e-002
0.05	9.695e-002	1.228e-001	8.035e-002	8.768e-002
0.1	1.302e-001	1.541e-001	1.076e-001	1.288e-001

```
     0.2     1.848e-001     2.175e-001     1.554e-001     1.815e-
001
     0.3     2.008e-001     2.453e-001     1.727e-001     1.845e-
001
     0.4     1.986e-001     2.470e-001     1.692e-001     1.797e-
001
     0.5     1.974e-001     2.503e-001     1.722e-001     1.698e-
001
    0.75     1.700e-001     2.196e-001     1.503e-001     1.400e-
001
       1     1.412e-001     1.765e-001     1.285e-001     1.187e-
001
       2     6.827e-002     7.903e-002     7.057e-002     5.522e-
002
       3     4.347e-002     4.921e-002     4.711e-002     3.410e-
002
       4     3.147e-002     3.461e-002     3.605e-002     2.375e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.593e-001     2.117e-001     1.284e-001     1.380e-
001
    0.05     1.757e-001     2.226e-001     1.456e-001     1.589e-
001
     0.1     2.368e-001     2.820e-001     1.950e-001     2.334e-
001
     0.2     3.349e-001     3.942e-001     2.816e-001     3.288e-
001
     0.3     3.654e-001     4.489e-001     3.130e-001     3.344e-
```

```
001
     0.4     3.566e-001     4.498e-001     3.007e-001     3.193e-
001
     0.5     3.542e-001     4.614e-001     3.048e-001     2.963e-
001
    0.75     3.139e-001     4.170e-001     2.735e-001     2.512e-
001
       1     2.638e-001     3.358e-001     2.371e-001     2.185e-
001
       2     1.338e-001     1.585e-001     1.352e-001     1.076e-
001
       3     8.571e-002     9.822e-002     9.040e-002     6.851e-
002
       4     6.252e-002     6.930e-002     6.928e-002     4.900e-
002


Source: Sierra Madre (San Fernando)
Region: USGS 2008 California
  Closest Distance: 63.13 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     8.468e-002     1.177e-001     7.097e-002     6.539e-
002
    0.05     9.384e-002     1.228e-001     8.224e-002     7.651e-
002
     0.1     1.308e-001     1.623e-001     1.163e-001     1.138e-
```

```
001
     0.2     1.910e-001     2.532e-001     1.634e-001     1.563e-
001
     0.3     2.017e-001     2.768e-001     1.732e-001     1.550e-
001
     0.4     1.945e-001     2.692e-001     1.664e-001     1.478e-
001
     0.5     1.869e-001     2.627e-001     1.606e-001     1.372e-
001
    0.75     1.488e-001     2.096e-001     1.275e-001     1.092e-
001
       1     1.179e-001     1.614e-001     1.025e-001     8.983e-
002
       2     5.082e-002     6.473e-002     4.906e-002     3.868e-
002
       3     2.994e-002     3.554e-002     3.139e-002     2.290e-
002
       4     2.129e-002     2.487e-002     2.351e-002     1.550e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.535e-001     2.133e-001     1.286e-001     1.185e-
001
    0.05     1.700e-001     2.225e-001     1.490e-001     1.386e-
001
     0.1     2.380e-001     2.972e-001     2.107e-001     2.062e-
001
     0.2     3.461e-001     4.589e-001     2.961e-001     2.832e-
001
```

0.3	3.672e-001	5.067e-001	3.139e-001	2.808e-001
0.4	3.495e-001	4.903e-001	2.956e-001	2.626e-001
0.5	3.376e-001	4.842e-001	2.843e-001	2.443e-001
0.75	2.764e-001	3.981e-001	2.319e-001	1.992e-001
1	2.213e-001	3.070e-001	1.892e-001	1.676e-001
2	9.988e-002	1.298e-001	9.399e-002	7.581e-002
3	5.912e-002	7.093e-002	6.023e-002	4.619e-002
4	4.234e-002	4.978e-002	4.517e-002	3.207e-002

Source: Sierra Madre Connected
Region: USGS 2008 California
  Closest Distance: 63.13 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.133e-001	1.485e-001	8.860e-002	1.030e-001
0.05	1.265e-001	1.581e-001	1.011e-001	1.202e-001

```
     0.1     1.710e-001     1.994e-001     1.373e-001     1.762e-
001
     0.2     2.354e-001     2.700e-001     1.952e-001     2.411e-
001
     0.3     2.509e-001     2.978e-001     2.134e-001     2.416e-
001
     0.4     2.467e-001     2.970e-001     2.096e-001     2.335e-
001
     0.5     2.447e-001     2.993e-001     2.149e-001     2.200e-
001
    0.75     2.116e-001     2.636e-001     1.903e-001     1.809e-
001
       1     1.767e-001     2.114e-001     1.652e-001     1.534e-
001
       2     8.741e-002     9.620e-002     9.423e-002     7.180e-
002
       3     5.664e-002     6.186e-002     6.356e-002     4.451e-
002
       4     4.115e-002     4.351e-002     4.885e-002     3.109e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     2.054e-001     2.690e-001     1.606e-001     1.866e-
001
    0.05     2.292e-001     2.865e-001     1.833e-001     2.179e-
001
     0.1     3.111e-001     3.650e-001     2.488e-001     3.194e-
001
     0.2     4.266e-001     4.892e-001     3.537e-001     4.369e-
```

001
0.3 4.565e-001 5.451e-001 3.868e-001 4.377e-
001
0.4 4.427e-001 5.409e-001 3.723e-001 4.149e-
001
0.5 4.381e-001 5.516e-001 3.789e-001 3.838e-
001
0.75 3.892e-001 5.006e-001 3.452e-001 3.218e-
001
1 3.291e-001 4.023e-001 3.043e-001 2.805e-
001
2 1.710e-001 1.930e-001 1.806e-001 1.396e-
001
3 1.116e-001 1.235e-001 1.220e-001 8.938e-
002
4 8.170e-002 8.710e-002 9.387e-002 6.413e-
002

Source: Simi-Santa Rosa
Region: USGS 2008 California
Closest Distance: 5.25 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

1 2 3 4 5
PGA 3.704e-001 3.190e-001 3.608e-001 4.313e-
001
0.05 4.219e-001 3.639e-001 4.046e-001 4.972e-

```
001
     0.1     5.586e-001     5.318e-001     5.070e-001     6.371e-
001
     0.2     7.473e-001     7.968e-001     6.446e-001     8.005e-
001
     0.3     7.783e-001     8.046e-001     6.962e-001     8.340e-
001
     0.4     8.130e-001     8.375e-001     7.475e-001     8.539e-
001
     0.5     8.176e-001     8.133e-001     7.884e-001     8.511e-
001
    0.75     7.156e-001     6.635e-001     7.052e-001     7.780e-
001
       1     6.269e-001     5.472e-001     6.253e-001     7.082e-
001
       2     3.613e-001     2.835e-001     3.888e-001     4.118e-
001
       3     2.333e-001     1.767e-001     2.596e-001     2.636e-
001
       4     1.690e-001     1.308e-001     1.944e-001     1.818e-
001

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     6.711e-001     5.781e-001     6.538e-001     7.816e-
001
    0.05     7.645e-001     6.594e-001     7.331e-001     9.010e-
001
     0.1     1.016e+000     9.734e-001     9.188e-001     1.155e+
000
```

```
     0.2     1.354e+000     1.444e+000     1.168e+000     1.451e+
000
     0.3     1.415e+000     1.473e+000     1.262e+000     1.511e+
000
     0.4     1.457e+000     1.526e+000     1.328e+000     1.517e+
000
     0.5     1.453e+000     1.499e+000     1.375e+000     1.485e+
000
    0.75     1.287e+000     1.260e+000     1.237e+000     1.365e+
000
       1     1.139e+000     1.041e+000     1.127e+000     1.249e+
000
       2     7.020e-001     5.686e-001     7.449e-001     7.924e-
001
       3     4.598e-001     3.528e-001     4.982e-001     5.285e-
001
       4     3.369e-001     2.619e-001     3.735e-001     3.752e-
001
```

```
Source: Ventura-Pitas Point
Region: USGS 2008 California
  Closest Distance: 11.27 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     3.079e-001     2.654e-001     3.184e-001     3.399e-
001
```

```
    0.05     3.485e-001     2.946e-001     3.549e-001     3.961e-
001
     0.1     4.777e-001     4.163e-001     4.889e-001     5.278e-
001
     0.2     6.399e-001     6.191e-001     6.309e-001     6.698e-
001
     0.3     6.647e-001     6.559e-001     6.545e-001     6.835e-
001
     0.4     6.715e-001     6.545e-001     6.760e-001     6.840e-
001
     0.5     6.687e-001     6.403e-001     6.983e-001     6.674e-
001
    0.75     5.778e-001     5.351e-001     6.129e-001     5.853e-
001
       1     4.877e-001     4.191e-001     5.297e-001     5.142e-
001
       2     2.393e-001     1.847e-001     2.795e-001     2.536e-
001
       3     1.469e-001     1.122e-001     1.723e-001     1.562e-
001
       4     1.059e-001     7.964e-002     1.306e-001     1.075e-
001

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     5.579e-001     4.809e-001     5.770e-001     6.159e-
001
    0.05     6.316e-001     5.338e-001     6.430e-001     7.178e-
001
     0.1     8.682e-001     7.620e-001     8.860e-001     9.564e-
```

```
001
     0.2     1.160e+000     1.122e+000     1.143e+000     1.214e+
000
     0.3     1.208e+000     1.201e+000     1.186e+000     1.239e+
000
     0.4     1.203e+000     1.192e+000     1.201e+000     1.215e+
000
     0.5     1.188e+000     1.180e+000     1.218e+000     1.164e+
000
    0.75     1.041e+000     1.016e+000     1.079e+000     1.027e+
000
       1     8.879e-001     7.975e-001     9.572e-001     9.089e-
001
       2     4.650e-001     3.706e-001     5.356e-001     4.888e-
001
       3     2.892e-001     2.240e-001     3.306e-001     3.130e-
001
       4     2.107e-001     1.594e-001     2.510e-001     2.216e-
001



Source: Verdugo
Region: USGS 2008 California
  Closest Distance: 67.78 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     8.807e-002     1.210e-001     7.201e-002     7.121e-
```

```
002
    0.05     9.721e-002     1.259e-001     8.282e-002     8.295e-
002
     0.1     1.336e-001     1.631e-001     1.148e-001     1.228e-
001
     0.2     1.935e-001     2.479e-001     1.629e-001     1.698e-
001
     0.3     2.063e-001     2.737e-001     1.755e-001     1.697e-
001
     0.4     2.013e-001     2.711e-001     1.699e-001     1.630e-
001
     0.5     1.960e-001     2.682e-001     1.675e-001     1.524e-
001
    0.75     1.607e-001     2.210e-001     1.380e-001     1.229e-
001
       1     1.296e-001     1.727e-001     1.137e-001     1.024e-
001
       2     5.837e-002     7.202e-002     5.754e-002     4.556e-
002
       3     3.536e-002     4.115e-002     3.745e-002     2.749e-
002
       4     2.544e-002     2.918e-002     2.829e-002     1.885e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.596e-001     2.193e-001     1.305e-001     1.290e-
001
    0.05     1.762e-001     2.281e-001     1.501e-001     1.503e-
001
```

```
     0.1     2.431e-001     2.986e-001     2.081e-001     2.226e-
001
     0.2     3.507e-001     4.492e-001     2.951e-001     3.078e-
001
     0.3     3.756e-001     5.011e-001     3.181e-001     3.076e-
001
     0.4     3.618e-001     4.938e-001     3.019e-001     2.897e-
001
     0.5     3.529e-001     4.943e-001     2.963e-001     2.679e-
001
    0.75     2.976e-001     4.198e-001     2.510e-001     2.221e-
001
       1     2.427e-001     3.286e-001     2.098e-001     1.896e-
001
       2     1.146e-001     1.445e-001     1.103e-001     8.898e-
002
       3     6.977e-002     8.214e-002     7.187e-002     5.530e-
002
       4     5.057e-002     5.842e-002     5.437e-002     3.892e-
002


Source: White Wolf
Region: USGS 2008 California
  Closest Distance: 90.64 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.20 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
```

```
     PGA     7.803e-002     1.027e-001     6.420e-002     6.716e-
002
    0.05     8.559e-002     1.077e-001     7.242e-002     7.665e-
002
     0.1     1.142e-001     1.343e-001     9.584e-002     1.124e-
001
     0.2     1.643e-001     1.916e-001     1.398e-001     1.614e-
001
     0.3     1.809e-001     2.193e-001     1.573e-001     1.661e-
001
     0.4     1.800e-001     2.226e-001     1.544e-001     1.630e-
001
     0.5     1.798e-001     2.273e-001     1.573e-001     1.547e-
001
    0.75     1.558e-001     2.013e-001     1.377e-001     1.284e-
001
       1     1.298e-001     1.628e-001     1.175e-001     1.092e-
001
       2     6.284e-002     7.331e-002     6.426e-002     5.097e-
002
       3     3.995e-002     4.564e-002     4.278e-002     3.144e-
002
       4     2.889e-002     3.209e-002     3.269e-002     2.189e-
002

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC

       1          2              3              4              5
     PGA     1.414e-001     1.861e-001     1.163e-001     1.217e-
001
    0.05     1.551e-001     1.951e-001     1.312e-001     1.389e-
```

```
001
     0.1     2.077e-001     2.458e-001     1.737e-001     2.037e-
001
     0.2     2.977e-001     3.472e-001     2.534e-001     2.925e-
001
     0.3     3.292e-001     4.014e-001     2.851e-001     3.010e-
001
     0.4     3.231e-001     4.055e-001     2.743e-001     2.895e-
001
     0.5     3.229e-001     4.189e-001     2.788e-001     2.709e-
001
    0.75     2.880e-001     3.823e-001     2.508e-001     2.310e-
001
       1     2.427e-001     3.097e-001     2.170e-001     2.014e-
001
       2     1.232e-001     1.471e-001     1.231e-001     9.936e-
002
       3     7.878e-002     9.109e-002     8.209e-002     6.317e-
002
       4     5.740e-002     6.424e-002     6.281e-002     4.514e-
002


Source: Extensional Gridded
Region: USGS 2008 Western US
  Closest Distance: 5.87 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation
Equations
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS
2008 MRC
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
MRC
```

1	2	3	4	5
PGA	3.933e-001	3.535e-001	3.447e-001	4.818e-001
0.05	4.487e-001	4.094e-001	3.890e-001	5.476e-001
0.1	5.946e-001	6.026e-001	4.967e-001	6.846e-001
0.2	7.964e-001	9.017e-001	6.706e-001	8.552e-001
0.3	8.314e-001	9.207e-001	7.186e-001	8.978e-001
0.4	8.691e-001	9.622e-001	7.575e-001	9.262e-001
0.5	8.741e-001	9.356e-001	7.933e-001	9.283e-001
0.75	7.706e-001	7.764e-001	7.042e-001	8.542e-001
1	6.761e-001	6.415e-001	6.243e-001	7.785e-001
2	3.904e-001	3.426e-001	3.875e-001	4.428e-001
3	2.533e-001	2.217e-001	2.626e-001	2.756e-001
4	1.835e-001	1.647e-001	1.993e-001	1.867e-001

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	7.128e-001	6.406e-001	6.247e-001	8.731e-001

0.05	8.131e-001	7.418e-001	7.050e-001	9.924e-001
0.1	1.081e+000	1.103e+000	9.001e-001	1.241e+000
0.2	1.443e+000	1.634e+000	1.215e+000	1.550e+000
0.3	1.512e+000	1.685e+000	1.302e+000	1.627e+000
0.4	1.559e+000	1.753e+000	1.346e+000	1.646e+000
0.5	1.556e+000	1.725e+000	1.384e+000	1.619e+000
0.75	1.390e+000	1.475e+000	1.240e+000	1.499e+000
1	1.230e+000	1.221e+000	1.128e+000	1.373e+000
2	7.591e-001	6.872e-001	7.425e-001	8.506e-001
3	4.994e-001	4.425e-001	5.039e-001	5.519e-001
4	3.658e-001	3.297e-001	3.829e-001	3.849e-001

```
*********************************************
*****              EZ-FRISK               *****
***** SEISMIC HAZARD ANALYSIS DEFINITION *****
*****       FUGRO CONSULTANTS, INC.       *****
*****        WALNUT CREEK, CA  USA        *****
*********************************************

PROGRAM VERSION
  EZ-FRISK 7.65 Build 004

ANALYSIS TITLE:
  High School No. 8

ANALYSIS TYPE:
  Single Site Analysis

SITE COORDINATES
  Latitude 34.2077
  Longitude -119.155

INTENSITY TYPE:  Maximum Rotated Component of Spectral Response @
5% Damping

HAZARD DEAGGREGATION
  Status: ON
  Deagregation Scenario 1
    Period:             PGA
    Amplitude:          0.0001 Acceleration (g)
  Bin Configuration
    Magnitude
      Scale:          Moment Magnitude
      Lowest Value:  5 Mw
      Highest Value: 9 Mw
      Bin Size:      0.1
    Distance
      Lowest Value:  0 km
      Highest Value: 102.5 km
      Bin Size:      2.5 km
    Epsilon
      Lowest Value:  -2.2
```

```
      Highest Value: 4.2
      Bin Size:      0.2

SOIL AMPLIFICATION
  Method: Do not use soil amplification

ATTENUATION EQUATION SITE PARAMETERS
  Depth[Vs=1000m/s] (m): 40
  Estimate Z1 from Vs30 for CY NGA: 1
  Vs30 (m/s): 215
  Vs30 Is Measured: 1
  Z25 (km): 2

AMPLITUDES - Acceleration (g)
  0.0001
  0.001
  0.01
  0.02
  0.05
  0.07
  0.1
  0.2
  0.3
  0.4
  0.5
  0.7
  1
  2
  3

PERIODS (s)
  PGA
  0.05
  0.1
  0.2
  0.3
  0.4
  0.5
  0.75
  1
```

```
  2
  3
  4

DETERMINISTIC FRACTILES
  0.5
  0.84

PLOTTING PARAMETERS
  Period at which to plot PGA: 0.005

CALCULATIONAL PARAMETERS
  Fault Seismic Sources -
    Maximum inclusion distance           :   105 km
    Down dip integration increment       :   1 km
    Horizontal integration increment     :   1 km
    Number rupture length per earthquake :   1
  Subduction Interface Seismic Sources -
    Maximum inclusion distance           :   1000 km
    Down dip integration increment       :   5 km
    Horizontal integration increment     :   20 km
    Number rupture length per earthquake :   1
  Subduction Slab Seismic Sources -
    Maximum inclusion distance           :   1000 km
    Down dip integration increment       :   5 km
    Horizontal integration increment     :   20 km
    Number rupture length per earthquake :   1
  Area Seismic Sources -
    Maximum inclusion distance           :   200 km
    Vertical integration increment       :   3 km
    Number of rupture azimuths           :   3
    Minimum epicentral distance step     :   0.5 km
    Maximum epicentral distance step     :   10 km
  Gridded Seismic Sources -
    Maximum inclusion distance            :   200 km
    Default number of rupture azimuths    :   20
    Maximum distance for default azimuths :   40 km
    Minimum distance for one azimuth      :   150
    Use binned calcuations if possible    :   true
    Bins per decade in distance (km)      :   20
```

```
  All Seismic Sources -
    Magnitude integration step          :   0.1 M
    Apply magnitude scaling             :   NO
    Include near-source directivity     :   NO

ATTENUATION EQUATIONS

  Name: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Database: C:\Program Files (x86)\EZ-FRISK 7.65\Files
\standard.bin-attendb
  Base: FEMA P-750 Table C21.2-1
  Truncation Type: No Truncation
  Truncation Value: 0
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Database: C:\Program Files (x86)\EZ-FRISK 7.65\Files
\standard.bin-attendb
  Base: FEMA P-750 Table C21.2-1
  Truncation Type: No Truncation
  Truncation Value: 0
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Chiou-Youngs (2007) NGA USGS 2008 MRC
  Database: C:\Program Files (x86)\EZ-FRISK 7.65\Files
\standard.bin-attendb
  Base: FEMA P-750 Table C21.2-1
  Truncation Type: No Truncation
  Truncation Value: 0
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

SEISMIC SOURCE SUMMARY TABLE


Closest Deterministic Fault              Dip Dips     Site
Source                                      Region
Distance     Magnitude Mechanism        Angle To       Lies
```

```
Anacapa-Dume                                    USGS 2008 California
18.17        7.2000 Reverse          41-45 N        N
California Gridded                              USGS 2008 California
0.00        7.0000 SS|R           90.0000 --       Above
Channel Islands Thrust                          USGS 2008 California
18.53        7.3000 Reverse         20.0000 N        NE
Clamshell-Sawpit                                USGS 2008 California
100.79        6.7000 Reverse         50.0000 NW       W
Elsinore                                        USGS 2008 California
104.58        7.8490 Strike Slip       75-90 NE       W
Elysian Park (Upper)                            USGS 2008 California
79.69        6.7000 Reverse         50.0000 N        W
Garlock                                         USGS 2008 California
71.80        7.7230 Strike Slip     90.0000 --       S
Hollywood                                       USGS 2008 California
68.53        6.7000 Strike Slip     70.0000 N        W
Holser, alt 1                                   USGS 2008 California
42.83        6.8000 Reverse         58.0000 S        SW
Los Alamos-West Baseline                        USGS 2008 California
95.77        6.9000 Reverse         30.0000 SW       SE
Malibu Coast                                    USGS 2008 California
26.84        7.0000 Strike Slip       74-75 N        NW
Mission Ridge-Arroyo Parida-Santa Ana           USGS 2008 California
25.48        6.9000 Reverse         70.0000 S        S
Newport-Inglewood                               USGS 2008 California
72.75        7.5000 Strike Slip       88-90 NE       W
North Channel                                   USGS 2008 California
27.73        6.8000 Reverse         26.0000 N        SE
Northridge                                      USGS 2008 California
42.81        6.9000 Reverse         35.0000 S        W
Oak Ridge (Offshore)                            USGS 2008 California
9.85        7.0000 Reverse         32.0000 S        E
Oak Ridge (Onshore)                             USGS 2008 California
5.72        7.2000 Reverse         65.0000 S        S
Oak Ridge Connected                             USGS 2008 California
5.04        7.4000 Reverse         53.1000 S        S
Palos Verdes                                    USGS 2008 California
61.04        7.3000 Strike Slip     90.0000 --       NW
Palos Verdes Connected                          USGS 2008 California
61.04        7.7000 Strike Slip     90.0000 --       NW
```

```
Pitas Point (Lower)-Montalvo                    USGS 2008 California
29.92        7.3000 Reverse         16.0000 N        E
Pitas Point (Lower, West)                       USGS 2008 California
49.37        7.3000 Reverse         13.0000 N        SE
Pitas Point (Upper)                             USGS 2008 California
41.02        6.9000 Reverse         42.0000 N        E
Pitas Point Connected                           USGS 2008 California
11.28        7.3000 Reverse         55.3000 N        SE
Pleito                                          USGS 2008 California
70.86        7.1000 Reverse         46.0000 S        S
Puente Hills                                    USGS 2008 California
80.75        7.1000 Reverse         25.0000 N        W
Puente Hills (LA)                               USGS 2008 California
77.95        7.0000 Reverse         27.0000 N        W
Puente Hills (Santa Fe Springs)                 USGS 2008 California
91.75        6.7000 Reverse         29.0000 N        W
Raymond                                         USGS 2008 California
86.23        6.8000 Reverse         79.0000 N        W
Red Mountain                                    USGS 2008 California
19.97        7.4000 Reverse         56.0000 N        SE
Southern San Andreas                            USGS 2008 California
69.97        8.2000 Strike Slip       58-90 N,NE     S
San Cayetano                                    USGS 2008 California
25.46        7.2000 Reverse         42.0000 N        S
San Gabriel                                     USGS 2008 California
57.43        7.3000 Strike Slip     61.0000 NE       SW
Santa Cruz Island                               USGS 2008 California
26.80        7.2000 Strike Slip     90.0000 --       N
Santa Monica                                    USGS 2008 California
18.80        7.4000 SS|R              44-75 N        N
Santa Rosa Island                               USGS 2008 California
72.47        6.9000 Strike Slip     90.0000 --       E
Santa Susana, alt 1                             USGS 2008 California
39.40        6.9000 Reverse         55.0000 N        SW
Santa Ynez (East)                               USGS 2008 California
33.82        7.2000 Strike Slip     70.0000 S        S
Santa Ynez (West)                               USGS 2008 California
54.29        7.0000 Strike Slip     70.0000 S        SE
Santa Ynez Connected                            USGS 2008 California
33.82        7.4000 Strike Slip     70.0000 S        S
```

```
Sierra Madre                                    USGS 2008 California
79.82        7.2000 Reverse         53.0000 N        W
Sierra Madre (San Fernando)                     USGS 2008 California
63.10        6.7000 Reverse         45.0000 N        W
Sierra Madre Connected                          USGS 2008 California
63.10        7.3000 Reverse         51.0000 N        W
Simi-Santa Rosa                                 USGS 2008 California
5.25        6.9000 Strike Slip     60.0000 N        W
Ventura-Pitas Point                             USGS 2008 California
11.26        7.0000 Reverse         64.0000 N        SE
Verdugo                                         USGS 2008 California
67.74        6.9000 Reverse         55.0000 NE       W
White Wolf                                      USGS 2008 California
90.59        7.2000 Reverse         75.0000 SE       S
Extensional Gridded                             USGS 2008 Western US
0.00        7.0000 N|SS            90.0000 --       Above

SEISMIC SOURCES

Name: Anacapa-Dume
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forAnacapa-Dume -------
Name: Anacapa-Dume, alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        45         0     0.001     15.56
```

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.16666	Activity	1.188e-003	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.166660	Activity	1.678e-003	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.166670	Activity	4.349e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.166670	Activity	3.405e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.166670	Activity	5.148e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.166670	Activity	4.297e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
33.9832	-118.6950
33.9731	-118.7430
33.9581	-118.8190
33.9474	-118.9350
33.9698	-119.0200
33.9748	-119.1450

```
    33.9388  -119.2280

Name: Anacapa-Dume, alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        41       1.2     1.201      11.7

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.33334    Activity  1.072e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.333340    Activity  1.513e-003  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.083330    Activity  3.922e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  3.071e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  4.642e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  3.875e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0202  -118.5520
    33.9919  -118.6492
    33.9731  -118.7430
    33.9581  -118.8190
    33.9474  -118.9350
    33.9698  -119.0200
    33.9748  -119.1450
    33.9388  -119.2280

 ------ End Nested Sources for Anacapa-Dume -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: California Gridded
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forCalifornia Gridded -------
Name: California Gridded, Char, 2.1, Reverse
```

```
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Reverse
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, Char, 2.1, Strike Slip
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
```

```
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, Char, 2.4, Reverse
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Reverse
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, Char, 2.4, Strike Slip
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
```

```
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, GR, 2.1, Reverse
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.0833
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Reverse
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, GR, 2.1, Strike Slip
```

Region: USGS 2008 California
Category:Gridded
FileType: USGS2008

General Parameters
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.0833
Latitude Increment, degrees: 0.1
Longitude Increment, degrees: 0.1
Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters	**(Varies point to point?)**
Cell Weight: 1	**Yes**
Fault Mechanism: Strike Slip	
Depth to Top of Rupture, km: 5	
Minimum Magnitude: 5	
Maximum Magnitude: 7	**Yes**
Rate at Minimum Magnitude, events per year: 0	**Yes**
Beta: 1.84207	
Horizontal Rupture Length, A parameter: -3.22	
Horizontal Rupture Length, B parameter: 0.69	
Rupture Strike Azimuth Model: Random Strike	

Name: California Gridded, GR, 2.4, Reverse
Region: USGS 2008 California
Category:Gridded
FileType: USGS2008

General Parameters
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.0833
Latitude Increment, degrees: 0.1
Longitude Increment, degrees: 0.1
Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters	**(Varies point to point?)**
Cell Weight: 1	**Yes**
Fault Mechanism: Reverse	
Depth to Top of Rupture, km: 5	
Minimum Magnitude: 5	

```
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: California Gridded, GR, 2.4, Strike Slip
Region: USGS 2008 California
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.0833
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.84207
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

 ------ End Nested Sources for California Gridded -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
```

MRC

****

Name: Channel Islands Thrust
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	20	5	5.001	12.18

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	4.761e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	6.725e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	2.081e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.516e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	2.462e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.927e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	4.761e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	6.725e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	2.081e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.020833    Activity  1.516e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.462e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.927e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  4.761e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  6.725e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  2.081e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.516e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.462e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.927e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  4.761e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  6.725e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  2.081e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.516e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.462e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.927e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0258  -119.2630
    34.0010  -119.3610
    33.9884  -119.4660
    33.9866  -119.5250
    33.9612  -119.6330
    33.9431  -119.6800
    33.9431  -119.7570
    33.9457  -119.8150
    33.9745  -119.8820

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Clamshell-Sawpit
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        50         0     0.001     13.79
```

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	2.927e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	8.249e-004	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	4.453e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	4.377e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083335	Activity	8.863e-004	6.399000	6.401000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	2.927e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	8.249e-004	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	4.453e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	4.377e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	8.863e-004	6.399000	6.401000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	2.927e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	8.249e-004	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	4.453e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	4.377e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	8.863e-004	6.399000	6.401000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	2.927e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	8.249e-004	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	4.453e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.020833    Activity  4.377e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.041665    Activity  8.863e-004  6.399000
6.401000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.2402  -117.8458
    34.2218  -117.8844
    34.2181  -117.9279
    34.1777  -117.9990

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Elsinore
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forElsinore -------
Name: Elsinore
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
```

Magnitude Scale: Moment Magnitude
Probability of Activity: 0.05000000
Deterministic Magnitude: 7.8

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	83.8	0	0.001	14.91

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Exponential	0.5	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.200000	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.300000	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
32.7790	-116.0060
32.8144	-116.0990
32.8377	-116.1780
32.8892	-116.2302
32.9308	-116.2644
32.9748	-116.3367
32.9496	-116.3557
32.9826	-116.4070
33.0109	-116.4602
33.0493	-116.5192

```
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082
    33.3703  -117.0152
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

Name: Elsinore HB M(A)
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.05000000
Deterministic Magnitude: 7.8

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      83.8         0     0.001     14.91
```

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Exponential	0.5	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.200000	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.300000	Activity	3.558e-003	6.500000	7.800000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
32.7790	-116.0060
32.8144	-116.0990
32.8377	-116.1780
32.8892	-116.2302
32.9308	-116.2644
32.9748	-116.3367
32.9496	-116.3557
32.9826	-116.4070
33.0109	-116.4602
33.0493	-116.5192
33.1225	-116.6280
33.1781	-116.6903
33.2087	-116.7292
33.2465	-116.7910
33.2790	-116.8440
33.3320	-116.9520
33.3409	-117.0082
33.3703	-117.0152

```
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

Name: Elsinore;CM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.914

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        82         0     0.001     12.87

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.752e-004  6.674000
7.154000  2.300000  6.914000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.752e-004  6.454000
6.934000  2.300000  6.694000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.123e-003  6.454000
```

```
6.934000  2.300000  6.694000  0.120000  0.010000 10.000000
          Normal  0.050000    Activity  2.123e-003  6.454000
6.934000  2.300000  6.694000  0.120000  0.010000 10.000000
          Normal  0.075000    Activity  2.123e-003  6.454000
6.934000  2.300000  6.694000  0.120000  0.010000 10.000000
          Normal  0.125000    Activity  1.040e-003  6.674000
7.154000  2.300000  6.914000  0.120000  0.010000 10.000000
          Normal  0.050000    Activity  1.040e-003  6.674000
7.154000  2.300000  6.914000  0.120000  0.010000 10.000000
          Normal  0.075000    Activity  1.040e-003  6.674000
7.154000  2.300000  6.914000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.7790  -116.0060
    32.8144  -116.0990
    32.8377  -116.1780
    32.8892  -116.2302
    32.9308  -116.2644
    32.9748  -116.3367
```

Name: Elsinore;GI
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.889

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	13

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	2.567e-003	6.649000	7.129000	2.300000	6.889000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	2.567e-003	6.429000	6.909000	2.300000	6.669000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.226e-003	6.429000	6.909000	2.300000	6.669000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	2.226e-003	6.429000	6.909000	2.300000	6.669000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	2.226e-003	6.429000	6.909000	2.300000	6.669000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.197e-003	6.649000	7.129000	2.300000	6.889000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	1.197e-003	6.649000	7.129000	2.300000	6.889000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.197e-003	6.649000	7.129000	2.300000	6.889000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.8289  -117.5900
    33.8129  -117.5480
    33.7451  -117.4633
    33.7318  -117.4457
    33.7185  -117.4242
    33.7045  -117.4026
    33.6852  -117.3727
    33.6265  -117.2744

Name: Elsinore;GI+T
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.288

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
          Normal      0.25    Activity  8.957e-004  7.048000
```

```
7.528000  2.300000  7.288000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  8.957e-004  6.947000
7.427000  2.300000  7.187000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.258e-004  6.947000
7.427000  2.300000  7.187000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.258e-004  6.947000
7.427000  2.300000  7.187000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.258e-004  6.947000
7.427000  2.300000  7.187000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.258e-004  7.048000
7.528000  2.300000  7.288000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.258e-004  7.048000
7.528000  2.300000  7.288000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.258e-004  7.048000
7.528000  2.300000  7.288000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.8289  -117.5900
    33.8129  -117.5480
```

```
    33.7451  -117.4633
    33.7318  -117.4457
    33.7185  -117.4242
    33.7045  -117.4026
    33.6852  -117.3727
    33.6116  -117.2810
    33.5590  -117.2045
    33.5289  -117.1721
    33.4975  -117.1417
    33.4230  -117.0533
    33.3914  -117.0309
    33.3703  -117.0152
    33.3409  -117.0082

Name: Elsinore;GI+T+J
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.634

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      86.3         0     0.001     16.96

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.258e-004  7.394000
7.874000  2.300000  7.634000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.258e-004  7.394000
7.874000  2.300000  7.634000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.258e-004  7.394000
7.874000  2.300000  7.634000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.258e-004  7.383000
7.863000  2.300000  7.623000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.258e-004  7.383000
7.863000  2.300000  7.623000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.258e-004  7.383000
```

```
7.863000  2.300000  7.623000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.9496  -116.3557
    32.9826  -116.4070
    33.0109  -116.4602
    33.0493  -116.5192
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082
    33.3703  -117.0152
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
```

```
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900

Name: Elsinore;GI+T+J+CM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.737

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      85.5         0     0.001     15.95

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.516e-004  7.461000
7.941000  2.300000  7.701000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.516e-004  7.497000
7.977000  2.300000  7.737000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.258e-004  7.497000
7.977000  2.300000  7.737000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.258e-004  7.497000
7.977000  2.300000  7.737000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.258e-004  7.497000
7.977000  2.300000  7.737000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.846e-004  7.461000
7.941000  2.300000  7.701000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.846e-004  7.461000
7.941000  2.300000  7.701000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.846e-004  7.461000
7.941000  2.300000  7.701000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
```

Bw	Sigw	Aa	Ba	Sigw	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	
	Length and width	4.000000	0.000000	0.001000	4.000000
0.000000	0.001000	--	--	--	

Trace Coordinates:

Latitude	Longitude
32.7790	-116.0060
32.8144	-116.0990
32.8377	-116.1780
32.8892	-116.2302
32.9308	-116.2644
32.9748	-116.3367
32.9496	-116.3557
32.9826	-116.4070
33.0109	-116.4602
33.0493	-116.5192
33.1225	-116.6280
33.1781	-116.6903
33.2087	-116.7292
33.2465	-116.7910
33.2790	-116.8440
33.3320	-116.9520
33.3409	-117.0082
33.3703	-117.0152
33.3914	-117.0309
33.4230	-117.0533

```
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900

Name: Elsinore;J
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.354

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        84         0     0.001      18.9

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType         Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.516e-005  7.036000
7.516000  2.300000  7.276000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.036000
7.516000  2.300000  7.276000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.036000
7.516000  2.300000  7.276000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.828e-005  7.114000
7.594000  2.300000  7.354000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  3.828e-005  7.114000
7.594000  2.300000  7.354000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  3.828e-005  7.114000
7.594000  2.300000  7.354000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
32.9496	-116.3557
32.9826	-116.4070
33.0109	-116.4602
33.0493	-116.5192
33.1225	-116.6280
33.1781	-116.6903
33.2087	-116.7292
33.2465	-116.7910
33.2790	-116.8440
33.3320	-116.9520
33.3409	-117.0082

Name: Elsinore;J+CM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.489

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3

```
          90      83.5         0     0.001     16.89

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
            Normal      0.25    Activity  2.902e-004  7.215000
7.695000  2.300000  7.455000  0.120000  0.010000 10.000000
            Normal  0.100000    Activity  2.902e-004  7.215000
7.695000  2.300000  7.455000  0.120000  0.010000 10.000000
            Normal  0.150000    Activity  2.902e-004  7.215000
7.695000  2.300000  7.455000  0.120000  0.010000 10.000000
            Normal  0.250000    Activity  1.756e-004  7.249000
7.729000  2.300000  7.489000  0.120000  0.010000 10.000000
            Normal  0.100000    Activity  1.756e-004  7.249000
7.729000  2.300000  7.489000  0.120000  0.010000 10.000000
            Normal  0.150000    Activity  1.756e-004  7.249000
7.729000  2.300000  7.489000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw         Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.7790  -116.0060
    32.8144  -116.0990
    32.8377  -116.1780
    32.8892  -116.2302
```

```
    32.9308  -116.2644
    32.9748  -116.3367
    32.9496  -116.3557
    32.9826  -116.4070
    33.0109  -116.4602
    33.0493  -116.5192
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082

Name: Elsinore;T
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.066

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  6.142e-004  6.826000
7.306000  2.300000  7.066000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  6.142e-004  6.652000
7.132000  2.300000  6.892000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  3.494e-004  6.652000
7.132000  2.300000  6.892000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.494e-004  6.652000
7.132000  2.300000  6.892000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.494e-004  6.652000
7.132000  2.300000  6.892000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.258e-004  6.826000
```

```
7.306000  2.300000  7.066000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.258e-004  6.826000
7.306000  2.300000  7.066000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.258e-004  6.826000
7.306000  2.300000  7.066000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.6677  -117.3890
    33.6310  -117.3157
    33.6116  -117.2810
    33.5590  -117.2045
    33.5289  -117.1721
    33.4975  -117.1417
    33.4230  -117.0533
    33.3914  -117.0309
    33.3703  -117.0152
    33.3409  -117.0082

Name: Elsinore;T+J
```

Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.535

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	86	0	0.001	16.96

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.258e-004	7.276000	7.756000	2.300000	7.516000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.258e-004	7.276000	7.756000	2.300000	7.516000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.258e-004	7.276000	7.756000	2.300000	7.516000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.258e-004	7.295000	7.775000	2.300000	7.535000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.258e-004	7.295000	7.775000	2.300000	7.535000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.258e-004	7.295000	7.775000	2.300000	7.535000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.9496  -116.3557
    32.9826  -116.4070
    33.0109  -116.4602
    33.0493  -116.5192
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082
    33.3703  -117.0152
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6310  -117.3157
    33.6677  -117.3890

Name: Elsinore;T+J+CM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.64

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      85.3         0     0.001     15.95

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
```

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
	Normal	0.25	Activity	2.516e-004	7.388000
7.868000	2.300000	7.628000	0.120000	0.010000	10.000000
	Normal	0.250000	Activity	2.516e-004	7.400000
7.880000	2.300000	7.640000	0.120000	0.010000	10.000000
	Normal	0.125000	Activity	2.552e-004	7.400000
7.880000	2.300000	7.640000	0.120000	0.010000	10.000000
	Normal	0.050000	Activity	2.552e-004	7.400000
7.880000	2.300000	7.640000	0.120000	0.010000	10.000000
	Normal	0.075000	Activity	2.552e-004	7.400000
7.880000	2.300000	7.640000	0.120000	0.010000	10.000000
	Normal	0.125000	Activity	2.819e-004	7.388000
7.868000	2.300000	7.628000	0.120000	0.010000	10.000000
	Normal	0.050000	Activity	2.819e-004	7.388000
7.868000	2.300000	7.628000	0.120000	0.010000	10.000000
	Normal	0.075000	Activity	2.819e-004	7.388000
7.868000	2.300000	7.628000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude

```
    32.7790  -116.0060
    32.8144  -116.0990
    32.8377  -116.1780
    32.8892  -116.2302
    32.9308  -116.2644
    32.9748  -116.3367
    32.9496  -116.3557
    32.9826  -116.4070
    33.0109  -116.4602
    33.0493  -116.5192
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082
    33.3703  -117.0152
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6310  -117.3157
    33.6677  -117.3890

Name: Elsinore;W
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.029

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        75         0     0.001     14.49

Magnitude Recurrence Distributions:
```

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	7.190e-004	6.789000	7.269000	2.300000	7.029000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	7.190e-004	6.602000	7.082000	2.300000	6.842000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.377e-003	6.602000	7.082000	2.300000	6.842000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	1.377e-003	6.602000	7.082000	2.300000	6.842000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.377e-003	6.602000	7.082000	2.300000	6.842000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	9.239e-004	6.789000	7.269000	2.300000	7.029000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	9.239e-004	6.789000	7.269000	2.300000	7.029000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	9.239e-004	6.789000	7.269000	2.300000	7.029000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
33.8289	-117.5900
33.8511	-117.6360
33.8733	-117.7170
33.9074	-117.7920
33.9297	-117.8520
33.9712	-117.9920
33.9950	-118.0480

Name: Elsinore;W+GI
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.266

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	81.3	0	0.001	13.84

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.411e-004	6.918000	7.398000	2.300000	7.158000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.411e-004	6.918000	7.398000	2.300000	7.158000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.411e-004	6.918000	7.398000	2.300000	7.158000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	2.516e-005	7.026000	7.506000	2.300000	7.266000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	2.516e-005	7.026000	7.506000	2.300000	7.266000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	2.516e-005	7.026000	7.506000	2.300000	7.266000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.6265  -117.2744
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

Name: Elsinore;W+GI+T
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.478

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
```

```
          90      83.6         0     0.001     13.91

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  9.100e-005  7.201000
7.681000  2.300000  7.441000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  9.100e-005  7.201000
7.681000  2.300000  7.441000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  9.100e-005  7.201000
7.681000  2.300000  7.441000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.516e-005  7.238000
7.718000  2.300000  7.478000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.238000
7.718000  2.300000  7.478000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.238000
7.718000  2.300000  7.478000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw         Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3409  -117.0082
    33.3703  -117.0152
    33.3914  -117.0309
    33.4230  -117.0533
```

```
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

Name: Elsinore;W+GI+T+J
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.766

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      83.8         0     0.001     15.91

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.516e-005  7.526000
8.006000  2.300000  7.766000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.526000
8.006000  2.300000  7.766000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.526000
8.006000  2.300000  7.766000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.516e-005  7.482000
```

```
7.962000  2.300000  7.722000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.482000
7.962000  2.300000  7.722000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.482000
7.962000  2.300000  7.722000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
32.9496	-116.3557
32.9826	-116.4070
33.0109	-116.4602
33.0493	-116.5192
33.1225	-116.6280
33.1781	-116.6903
33.2087	-116.7292
33.2465	-116.7910
33.2790	-116.8440
33.3320	-116.9520
33.3409	-117.0082
33.3703	-117.0152
33.3914	-117.0309
33.4230	-117.0533
33.4975	-117.1417
33.5289	-117.1721

```
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

Name: Elsinore;W+GI+T+J+CM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.849

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      83.5         0     0.001      15.9

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.516e-005  7.609000
8.089000  2.300000  7.849000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.609000
8.089000  2.300000  7.849000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.609000
8.089000  2.300000  7.849000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.516e-005  7.545000
8.025000  2.300000  7.785000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  2.516e-005  7.545000
```

```
8.025000  2.300000  7.785000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  2.516e-005  7.545000
8.025000  2.300000  7.785000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.7790  -116.0060
    32.8144  -116.0990
    32.8377  -116.1780
    32.8892  -116.2302
    32.9308  -116.2644
    32.9748  -116.3367
    32.9496  -116.3557
    32.9826  -116.4070
    33.0109  -116.4602
    33.0493  -116.5192
    33.1225  -116.6280
    33.1781  -116.6903
    33.2087  -116.7292
    33.2465  -116.7910
    33.2790  -116.8440
    33.3320  -116.9520
    33.3409  -117.0082
    33.3703  -117.0152
```

```
    33.3914  -117.0309
    33.4230  -117.0533
    33.4975  -117.1417
    33.5289  -117.1721
    33.5590  -117.2045
    33.6116  -117.2810
    33.6852  -117.3727
    33.7045  -117.4026
    33.7185  -117.4242
    33.7318  -117.4457
    33.7451  -117.4633
    33.8129  -117.5480
    33.8289  -117.5900
    33.8511  -117.6360
    33.8733  -117.7170
    33.9074  -117.7920
    33.9297  -117.8520
    33.9712  -117.9920
    33.9950  -118.0480

 ------ End Nested Sources for Elsinore -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: Elysian Park (Upper)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
```

Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	3	3.001	15.26

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	8.193e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	1.635e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	1.246e-003	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.225e-003	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083335	Activity	1.756e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	8.193e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.635e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.246e-003	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.225e-003	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	1.756e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	8.193e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.635e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.246e-003	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.225e-003	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	1.756e-003	6.499000						

```
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000
           Normal  0.083335    Activity  8.193e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.635e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.246e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.225e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.041665    Activity  1.756e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.0683  -118.0998
    34.0612  -118.1304
    34.0675  -118.2348
    34.1126  -118.2968

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Garlock
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
```

```
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forGarlock -------
Name: Garlock
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.10000000
Deterministic Magnitude: 7.7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.3     0.301      12.3

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
      Exponential      0.25    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.100000    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.150000    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.250000    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.100000    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.150000    Activity  5.235e-003  6.500000
7.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000

Trace Coordinates:
  Latitude   Longitude
    35.5904  -116.3797
    35.5864  -116.4670
    35.5936  -116.5908
    35.5967  -116.8180
    35.5983  -116.8789
    35.6018  -117.0107
    35.5676  -117.1579
    35.4972  -117.4869
    35.4232  -117.7493
    35.2835  -118.0240
    35.2713  -118.0103
    35.2233  -118.0613
    35.1865  -118.1191
    35.0788  -118.3326
    35.0477  -118.3754
    34.9958  -118.4747
    34.9314  -118.6670
    34.8822  -118.7708
    34.8492  -118.8228
    34.8284  -118.8712
    34.8236  -118.9183

Name: Garlock;GC
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.306

Fault Profile Parameters:
```

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	12

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	7.888e-005	7.066000	7.546000	2.300000	7.306000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	7.888e-005	6.971000	7.451000	2.300000	7.211000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	8.351e-005	6.971000	7.451000	2.300000	7.211000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	8.351e-005	6.971000	7.451000	2.300000	7.211000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	8.351e-005	6.971000	7.451000	2.300000	7.211000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	9.306e-005	7.066000	7.546000	2.300000	7.306000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	9.306e-005	7.066000	7.546000	2.300000	7.306000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	9.306e-005	7.066000	7.546000	2.300000	7.306000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.2835  -118.0240
    35.4232  -117.7493
    35.4972  -117.4869
    35.5676  -117.1579
    35.6018  -117.0107
    35.5983  -116.8789

Name: Garlock;GC+GW
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.616

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.4     0.401      12.4

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  3.155e-004  7.369000
7.849000  2.300000  7.609000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.155e-004  7.376000
7.856000  2.300000  7.616000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.506e-004  7.376000
7.856000  2.300000  7.616000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.506e-004  7.376000
7.856000  2.300000  7.616000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.506e-004  7.376000
7.856000  2.300000  7.616000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.016e-004  7.369000
7.849000  2.300000  7.609000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  6.016e-004  7.369000
```

```
7.849000  2.300000  7.609000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.016e-004  7.369000
7.849000  2.300000  7.609000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8236  -118.9183
    34.8284  -118.8712
    34.8492  -118.8228
    34.8822  -118.7708
    34.9314  -118.6670
    34.9958  -118.4747
    35.0477  -118.3754
    35.0788  -118.3326
    35.1865  -118.1191
    35.2233  -118.0613
    35.2713  -118.0103
    35.2835  -118.0240
    35.4232  -117.7493
    35.4972  -117.4869
```

```
    35.5676  -117.1579
    35.6018  -117.0107
    35.5983  -116.8789

Name: Garlock;GE
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.915

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        12

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  6.840e-004  6.675000
7.155000  2.300000  6.915000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  6.840e-004  6.455000
6.935000  2.300000  6.695000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.258e-004  6.455000
6.935000  2.300000  6.695000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  6.258e-004  6.455000
6.935000  2.300000  6.695000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.258e-004  6.455000
6.935000  2.300000  6.695000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  3.614e-004  6.675000
7.155000  2.300000  6.915000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.614e-004  6.675000
7.155000  2.300000  6.915000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.614e-004  6.675000
7.155000  2.300000  6.915000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.5983  -116.8789
    35.5967  -116.8180
    35.5936  -116.5908
    35.5864  -116.4670
    35.5904  -116.3797

Name: Garlock;GE+GC
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.454

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        12

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
          Normal      0.25    Activity  7.888e-005  7.214000
```

```
7.694000  2.300000  7.454000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.888e-005  7.169000
7.649000  2.300000  7.409000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.357e-005  7.169000
7.649000  2.300000  7.409000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.357e-005  7.169000
7.649000  2.300000  7.409000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.357e-005  7.169000
7.649000  2.300000  7.409000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.999e-005  7.214000
7.694000  2.300000  7.454000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.999e-005  7.214000
7.694000  2.300000  7.454000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.999e-005  7.214000
7.694000  2.300000  7.454000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.5904  -116.3797
    35.5864  -116.4670
```

```
    35.5936  -116.5908
    35.5967  -116.8180
    35.5983  -116.8789
    35.6018  -117.0107
    35.5676  -117.1579
    35.4972  -117.4869
    35.4232  -117.7493
    35.2835  -118.0240

Name: Garlock;GE+GC+GW
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.723

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.3     0.301      12.3

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  3.155e-004  7.449000
7.929000  2.300000  7.689000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.155e-004  7.483000
7.963000  2.300000  7.723000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.775e-004  7.483000
7.963000  2.300000  7.723000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.775e-004  7.483000
7.963000  2.300000  7.723000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.775e-004  7.483000
7.963000  2.300000  7.723000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.885e-004  7.449000
7.929000  2.300000  7.689000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.885e-004  7.449000
7.929000  2.300000  7.689000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.885e-004  7.449000
7.929000  2.300000  7.689000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.5904	-116.3797
35.5864	-116.4670
35.5936	-116.5908
35.5967	-116.8180
35.5983	-116.8789
35.6018	-117.0107
35.5676	-117.1579
35.4972	-117.4869
35.4232	-117.7493
35.2835	-118.0240
35.2713	-118.0103
35.2233	-118.0613
35.1865	-118.1191
35.0788	-118.3326
35.0477	-118.3754
34.9958	-118.4747
34.9314	-118.6670

```
    34.8822  -118.7708
    34.8492  -118.8228
    34.8284  -118.8712
    34.8236  -118.9183

Name: Garlock;GW
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.311

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.7     0.701      13.7

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.374e-004  7.071000
7.551000  2.300000  7.311000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.374e-004  6.978000
7.458000  2.300000  7.218000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.614e-004  6.978000
7.458000  2.300000  7.218000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  2.614e-004  6.978000
7.458000  2.300000  7.218000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.614e-004  6.978000
7.458000  2.300000  7.218000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.195e-004  7.071000
7.551000  2.300000  7.311000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  2.195e-004  7.071000
7.551000  2.300000  7.311000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.195e-004  7.071000
7.551000  2.300000  7.311000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8236  -118.9183
    34.8284  -118.8712
    34.8492  -118.8228
    34.8822  -118.7708
    34.9314  -118.6670
    34.9958  -118.4747
    35.0477  -118.3754
    35.0788  -118.3326
    35.1865  -118.1191
    35.2233  -118.0613
    35.2713  -118.0103

 ------ End Nested Sources for Garlock -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
```

MRC

****

Name: Hollywood
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	70	0	0.001	16.91

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	6.185e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	1.234e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	9.410e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	9.249e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083335	Activity	1.326e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	6.185e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.234e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	9.410e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	9.249e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000

```
   Characteristic  0.041665    Activity  1.326e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000
           Normal  0.083335    Activity  6.185e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.234e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  9.410e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.249e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.041665    Activity  1.326e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000
           Normal  0.083335    Activity  6.185e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.234e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  9.410e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.249e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.041665    Activity  1.326e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --

Trace Coordinates:
  Latitude   Longitude
    34.1192  -118.2302
    34.1104  -118.3170
    34.0991  -118.3723
    34.0840  -118.4063

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
```

```
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Holser, alt 1
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.8

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        58         0     0.001     18.66

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  2.431e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  4.850e-004  6.360000
6.840000  2.300000  6.600000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  4.403e-004  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  4.215e-004  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  6.202e-004  6.500000
6.600000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  6.194e-004  6.500000
6.600000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  2.431e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  4.850e-004  6.360000
6.840000  2.300000  6.600000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  4.403e-004  6.500000
```

```
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  4.215e-004  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  6.202e-004  6.500000
6.600000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  6.194e-004  6.500000
6.600000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.4386  -118.7533
    34.4386  -118.7345
```

```
    34.4499  -118.6741
    34.4487  -118.6427
    34.4172  -118.5483

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: Los Alamos-West Baseline
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        30         0     0.001        10

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.041665    Activity  3.890e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  7.761e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  8.392e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  7.749e-004  6.500000
```

```
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.181e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.161e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.890e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  7.761e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  8.392e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.749e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.181e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.161e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.890e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  7.761e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  8.392e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.749e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.181e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.161e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.890e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  7.761e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  8.392e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.749e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.181e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.161e-003  6.500000
```

```
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.7589  -120.3184
    34.7308  -120.2117
    34.6719  -120.1443
    34.6315  -120.0646

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Malibu Coast
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
```

```
 ------ Start Nested Sources forMalibu Coast -------
Name: Malibu Coast, alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        75         0     0.001     7.727

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  1.827e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  3.645e-004  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  2.779e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  2.732e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.166670    Activity  3.917e-004  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000
           Normal  0.166670    Activity  1.827e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  3.645e-004  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  2.779e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.732e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.083330    Activity  3.917e-004  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.0287  -118.5250
    34.0374  -118.6200
    34.0392  -118.6800
    34.0323  -118.7270
    34.0330  -118.7980
    34.0464  -118.9330

Name: Malibu Coast, alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
```

```
          90        74         0     0.001     16.34

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.16667    Activity  1.386e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  2.766e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  3.565e-004  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.144e-004  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  5.009e-004  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  4.796e-004  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  1.386e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  2.766e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  3.565e-004  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.144e-004  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  5.009e-004  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  4.796e-004  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0287  -118.5250
    34.0374  -118.6200
    34.0392  -118.6800
    34.0323  -118.7270
    34.0330  -118.7980
    34.0464  -118.9330

 ------ End Nested Sources for Malibu Coast -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************
```

Name: Mission Ridge-Arroyo Parida-Santa Ana
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.58330000
Deterministic Magnitude: 6.9

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	70	0	0.001	7.518

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.04166	Activity	2.228e-004	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.041660	Activity	4.445e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	2.228e-004	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	4.445e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	2.228e-004	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	4.445e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	2.228e-004	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	4.445e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Exponential	0.041660	Activity	4.806e-004	6.500000	6.900000	1.842100	0.000000	0.000000	0.000000	0.000000
Exponential	0.041660	Activity	4.438e-004	6.500000	6.900000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041660	Activity	6.763e-004	6.500000	6.700000	1.842100	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.041660    Activity  6.647e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.806e-004  6.500000
6.900000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.438e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.763e-004  6.500000
6.700000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.647e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.806e-004  6.500000
6.900000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.438e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.763e-004  6.500000
6.700000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.647e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.806e-004  6.500000
6.900000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  4.438e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.763e-004  6.500000
6.700000  1.842100  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020830    Activity  6.647e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
                  Area         --        --        --        --
--        -- -4.153100  1.020400  0.240000
```

Latitude	Longitude
34.4298	-119.8977
34.4248	-119.8688
34.4336	-119.8071
34.4336	-119.7857
34.4411	-119.7506
34.4424	-119.7430
34.4499	-119.6914
34.4411	-119.6110
34.4311	-119.5104
34.4273	-119.4714
34.4160	-119.4261
34.4235	-119.3456
34.4298	-119.2878
34.4499	-119.2023
34.4701	-119.1658

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
1	0.333333	Boore-Atkinson (2008) NGA USGS 2008 MRC
1	0.333333	Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
1	0.333333	Chiou-Youngs (2007) NGA USGS 2008 MRC

****

Name: Newport-Inglewood
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
------ Start Nested Sources forNewport-Inglewood -------
Name: Newport Inglewood Connected al
Region: USGS 2008 California
Category:Fault

Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.16660000
Deterministic Magnitude: 7.5

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	11

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Exponential	0.125	Activity	2.205e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	1.360e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	2.205e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	1.360e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	2.213e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	1.366e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	2.213e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.125000	Activity	1.366e-003	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

```
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
                  Area          --          --          --          --
--          -- -4.153061   1.020408   0.240000
```

Trace Coordinates:

Latitude	Longitude
32.5603	-117.1473
32.6033	-117.1505
32.6478	-117.1654
32.7099	-117.1621
32.7290	-117.1704
32.7595	-117.1976
32.8011	-117.2100
32.8355	-117.2413
32.8545	-117.2636
33.0189	-117.3251
33.0858	-117.3769
33.0971	-117.3961
33.1082	-117.4110
33.1225	-117.4234
33.1559	-117.4291
33.2163	-117.4870
33.2515	-117.5473
33.4024	-117.6882
33.5080	-117.7989
33.5910	-117.9146
33.6127	-117.9340
33.6745	-117.9930
33.7045	-118.0436
33.7179	-118.0630
33.7355	-118.0757
33.7649	-118.1138
33.7887	-118.1504
33.8267	-118.2057
33.8321	-118.2128

```
    33.8438  -118.2322
    33.8847  -118.2643
    33.9115  -118.2881
    33.9306  -118.3038
    33.9333  -118.3182
    33.9479  -118.3288
    33.9616  -118.3531
    33.9888  -118.3603
    34.0024  -118.3672
    34.0433  -118.3896

Name: Newport Inglewood Connected alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.16667000
Deterministic Magnitude: 7.5

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      89.1         0     0.001        11

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal       0.5    Activity  3.531e-004  7.260000
7.740000  2.300000  7.500000  0.120000  0.010000 10.000000
           Normal  0.500000    Activity  3.531e-004  7.260000
7.740000  2.300000  7.500000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
```

Latitude	Longitude
32.5603	-117.1473
32.6033	-117.1505
32.6478	-117.1654
32.7099	-117.1621
32.7290	-117.1704
32.7595	-117.1976
32.8011	-117.2100
32.8355	-117.2413
32.8545	-117.2636
33.0189	-117.3251
33.0858	-117.3769
33.0971	-117.3961
33.1082	-117.4110
33.1225	-117.4234
33.1559	-117.4291
33.2163	-117.4870
33.2515	-117.5473
33.4024	-117.6882
33.5080	-117.7989
33.5910	-117.9146
33.6127	-117.9340
33.6745	-117.9930
33.7045	-118.0436
33.7179	-118.0630
33.7355	-118.0757
33.7649	-118.1138
33.7887	-118.1504
33.8267	-118.2057
33.8321	-118.2128
33.8438	-118.2322
33.8847	-118.2643
33.9115	-118.2881
33.9306	-118.3038
33.9333	-118.3182
33.9479	-118.3288
33.9616	-118.3531
33.9888	-118.3603
34.0024	-118.3672
34.0433	-118.3896

```
Name: Newport Inglewood Connected alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.16667000
Deterministic Magnitude: 7.5

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        11

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal       0.5    Activity  3.546e-004  7.260000
7.740000  2.300000  7.500000  0.120000  0.010000 10.000000
           Normal  0.500000    Activity  3.546e-004  7.260000
7.740000  2.300000  7.500000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    32.5603  -117.1473
    32.6033  -117.1505
    32.6478  -117.1654
    32.7099  -117.1621
    32.7290  -117.1704
    32.7595  -117.1976
    32.8011  -117.2100
    32.8355  -117.2413
    32.8545  -117.2636
```

```
    33.0189  -117.3251
    33.0858  -117.3769
    33.0971  -117.3961
    33.1082  -117.4110
    33.1225  -117.4234
    33.1559  -117.4291
    33.2163  -117.4870
    33.2515  -117.5473
    33.4024  -117.6882
    33.5080  -117.7989
    33.5910  -117.9146
    33.6060  -117.9247
    33.6780  -117.9949
    33.6954  -118.0326
    33.7512  -118.0927
    33.8204  -118.1951
    33.8503  -118.2157
    33.8715  -118.2479
    33.9132  -118.2811
    33.9566  -118.3315
    34.0433  -118.3896

Name: Newport-Inglewood (Offshore)
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        10

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  7.198e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  1.436e-003  6.560000
```

```
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  1.851e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  1.632e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  2.601e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  2.490e-003  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  7.198e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  1.436e-003  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  1.851e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  1.632e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.601e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.490e-003  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.5910  -117.9146
    33.5080  -117.7989
    33.4024  -117.6882
    33.2515  -117.5473
    33.2163  -117.4870
    33.1559  -117.4291

Name: Newport-Inglewood, alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        88         0     0.001     14.99

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.16666    Activity  3.481e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.166660    Activity  4.916e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.166670    Activity  1.274e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
```

```
      Exponential  0.166670    Activity  9.976e-004  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.166670    Activity  1.508e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.166670    Activity  1.259e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.6127  -117.9340
    33.6745  -117.9930
    33.7045  -118.0436
    33.7179  -118.0630
    33.7355  -118.0757
    33.7649  -118.1138
    33.7887  -118.1504
    33.8267  -118.2057
    33.8321  -118.2128
    33.8438  -118.2322
    33.8847  -118.2643
    33.9115  -118.2881
    33.9306  -118.3038
    33.9333  -118.3182
    33.9479  -118.3288
```

```
    33.9616  -118.3531
    33.9888  -118.3603
    34.0024  -118.3672
    34.0433  -118.3896

Name: Newport-Inglewood, alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.33334    Activity  3.521e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.333340    Activity  4.973e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.083330    Activity  1.289e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  1.009e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  1.525e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  1.273e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.6060  -117.9247
    33.6780  -117.9949
    33.6954  -118.0326
    33.7512  -118.0927
    33.8204  -118.1951
    33.8503  -118.2157
    33.8715  -118.2479
    33.9132  -118.2811
    33.9566  -118.3315
    34.0433  -118.3896

 ------ End Nested Sources for Newport-Inglewood -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: North Channel
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
```

ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.8

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	26	1.1	1.101	4.607

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.16667	Activity	5.550e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.107e-003	6.360000	6.840000	2.300000	6.600000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	1.005e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	9.625e-004	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.416e-003	6.500000	6.600000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.414e-003	6.500000	6.600000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	5.550e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.107e-003	6.360000	6.840000	2.300000	6.600000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	1.005e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	9.625e-004	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.416e-003	6.500000	6.600000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.414e-003	6.500000	6.600000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw

```
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.3188  -119.4251
    34.3013  -119.4755
    34.2974  -119.5097
    34.3002  -119.5593
    34.2981  -119.6047
    34.2940  -119.6437
    34.3111  -119.7172
    34.3336  -119.7885
    34.3537  -119.9095
    34.3914  -119.9346

Attenuation Equations for Source:
```

```
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Northridge
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35       7.4     7.401     16.58

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.041665    Activity  8.199e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  1.636e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  1.769e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.634e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  2.489e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  2.446e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
```

```
           Normal  0.083335    Activity  8.199e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.636e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.769e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.634e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.489e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.446e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  8.199e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.636e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.769e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.634e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.489e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.446e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  8.199e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.636e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.769e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.634e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.489e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.446e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.4172  -118.7120
    34.4040  -118.6340
    34.3837  -118.5960
    34.3541  -118.5450
    34.3421  -118.4780
    34.3282  -118.4240
    34.3097  -118.3780

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Oak Ridge (Offshore)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7
```

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	32	0	0.001	7.949

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.33334	Activity	1.201e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Normal	0.333340	Activity	3.386e-003	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Exponential	0.083330	Activity	3.089e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	2.725e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	5.151e-003	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	5.063e-003	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
34.2523	-119.6780

```
    34.2614  -119.6060
    34.2504  -119.5150
    34.2338  -119.4320
    34.2315  -119.3510
    34.2515  -119.2730

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Oak Ridge (Onshore)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.75000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        65         1     1.001     19.13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal 0.0555533    Activity  1.422e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.055553    Activity  2.008e-003  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.055557    Activity  5.205e-003  6.500000
```

```
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  4.075e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  6.160e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  5.142e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.111113    Activity  1.422e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.111113    Activity  2.008e-003  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.027777    Activity  5.205e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  4.075e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  6.160e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  5.142e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.111113    Activity  1.422e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.111113    Activity  2.008e-003  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.027777    Activity  5.205e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  4.075e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  6.160e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  5.142e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
```

```
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.2481  -119.2050
    34.2631  -119.1582
    34.3165  -119.0974
    34.3522  -119.0402
    34.3631  -118.9589
    34.3813  -118.8805
```

```
    34.3850  -118.8104
    34.4013  -118.7742
    34.3978  -118.7227

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: Oak Ridge Connected
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.4

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      53.1       0.6     0.601     14.99

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.33334    Activity  1.014e-003  7.160000
7.640000  2.300000  7.400000  0.120000  0.010000 10.000000
           Normal  0.333340    Activity  1.433e-003  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
      Exponential  0.083330    Activity  5.297e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  3.564e-003  6.500000
```

```
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  6.263e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  4.563e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.2523  -119.6780
    34.2614  -119.6060
    34.2504  -119.5150
    34.2338  -119.4320
    34.2315  -119.3510
    34.2515  -119.2730
    34.2481  -119.2050
    34.2631  -119.1582
    34.3165  -119.0974
    34.3522  -119.0402
    34.3631  -118.9589
    34.3813  -118.8805
    34.3850  -118.8104
    34.4013  -118.7742
    34.3978  -118.7227
```

```
Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Palos Verdes
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  1.016e-003  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  1.435e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  4.442e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  3.236e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  5.254e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  4.114e-003  6.500000
```

```
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  1.016e-003  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  1.435e-003  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  4.442e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.236e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  5.254e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  4.114e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.2798  -117.9170
    33.3184  -117.9430
    33.3546  -117.9860
    33.4428  -118.0600
    33.4816  -118.0800
    33.5449  -118.1190
    33.5835  -118.1460
    33.6919  -118.2330
    33.7472  -118.2540
    33.7895  -118.3340
    33.8175  -118.4000
    33.8637  -118.4390
    33.9021  -118.4960
    33.9702  -118.5570

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Palos Verdes Connected
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.7
```

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	10

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.16667	Activity	5.586e-004	7.460000	7.940000	2.300000	7.700000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	5.586e-004	7.460000	7.940000	2.300000	7.700000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	4.991e-003	6.500000	7.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.540e-003	6.500000	7.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	4.991e-003	6.500000	7.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.540e-003	6.500000	7.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	5.586e-004	7.460000	7.940000	2.300000	7.700000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	5.586e-004	7.460000	7.940000	2.300000	7.700000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	4.991e-003	6.500000	7.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.540e-003	6.500000	7.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	4.991e-003	6.500000	7.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.540e-003	6.500000	7.700000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
```

Trace Coordinates:

Latitude	Longitude
33.9702	-118.5570
33.9021	-118.4960
33.8637	-118.4390
33.8175	-118.4000
33.7895	-118.3340
33.7472	-118.2540
33.6919	-118.2330
33.5835	-118.1460
33.5449	-118.1190
33.4816	-118.0800
33.4428	-118.0600
33.3546	-117.9860
33.3184	-117.9430
33.2798	-117.9170
33.2066	-117.8380
33.0732	-117.7420
33.0269	-117.6870

```
    32.9520  -117.6160
    32.9251  -117.5740
    32.8655  -117.5200
    32.8085  -117.5070
    32.7524  -117.4670
    32.7235  -117.4330
    32.6786  -117.4130
    32.6238  -117.3440
    32.5940  -117.3150
    32.5519  -117.2980
    32.4949  -117.2660
    31.8900  -116.8400

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Pitas Point (Lower)-Montalvo
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        16       0.4     0.401      12.8

Magnitude Recurrence Distributions:
```

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.08333	Activity	8.476e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	1.197e-003	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Exponential	0.083335	Activity	3.705e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	2.699e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	4.382e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	3.431e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	8.476e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.197e-003	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	3.705e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.699e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	4.382e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.431e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.1716  -119.4775
    34.1545  -119.5721
    34.1503  -119.6394
    34.1555  -119.6834
    34.1679  -119.8025

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Pitas Point (Lower, West)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
```

Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	13	1.5	1.501	8.698

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.08333	Activity	7.081e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	1.413e-003	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.083335	Activity	3.095e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	2.255e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	4.334e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	3.617e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	7.081e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.413e-003	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	3.095e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.255e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	4.334e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.617e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.2338  -119.7757
    34.2654  -119.8320
    34.2877  -119.9117
    34.3044  -119.9784
    34.2755  -120.0602
    34.2488  -120.1194

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
```

```
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: Pitas Point (Upper)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        42       1.4     1.401      10.1

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.33334    Activity  4.492e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.333340    Activity  1.266e-003  6.360000
6.840000  2.300000  6.600000  0.120000  0.010000 10.000000
      Exponential  0.083330    Activity  9.691e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  8.949e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  1.619e-003  6.500000
6.600000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  1.617e-003  6.500000
6.600000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.2919  -119.5895
    34.3024  -119.6884
    34.3111  -119.7172
    34.3167  -119.7447
    34.3345  -119.8394
    34.3434  -119.9011
    34.3694  -119.9548

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Pitas Point Connected
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
```

Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	55.3	1.2	1.201	12.71

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.33334	Activity	2.842e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.333340	Activity	5.670e-004	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.083330	Activity	1.242e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	9.049e-004	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	1.739e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	1.451e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw					
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--					
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--					
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					

```
Trace Coordinates:
  Latitude   Longitude
    34.3435  -119.1410
    34.2910  -119.2240
    34.2874  -119.3030
    34.3077  -119.4130
    34.3027  -119.4630
    34.2919  -119.5895
    34.3024  -119.6884
    34.3111  -119.7172
    34.3167  -119.7447
    34.3345  -119.8394
    34.3434  -119.9011
    34.3694  -119.9548

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Pleito
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.1

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        46         0     0.001     13.67
```

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	8.261e-004	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	1.167e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	2.534e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	2.115e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	3.001e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	2.647e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	8.261e-004	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.167e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	2.534e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.115e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	3.001e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.647e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	8.261e-004	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.167e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	2.534e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.115e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	3.001e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.647e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000

```
           Normal  0.083335    Activity  8.261e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.167e-003  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  2.534e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.115e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.001e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.647e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --        --        --
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area         --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

Trace Coordinates:

Latitude	Longitude
34.9415	-119.2959
34.9562	-119.2371
34.9556	-119.2062
34.9869	-119.1282
35.0071	-119.0809
35.0075	-119.0505
34.9917	-119.0361
34.9783	-119.0129
34.9684	-118.9941
34.9439	-118.9795
34.9350	-118.9687
34.9315	-118.9486
34.9327	-118.9278

```
    34.9391  -118.9107
    34.9350  -118.8790

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Puente Hills
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.1

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        25         5     5.001     13.03

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta       Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  2.933e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  4.143e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  8.996e-004  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  7.508e-004  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
```

```
      Exponential  0.083335    Activity  1.065e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  9.397e-004  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  2.933e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  4.143e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  8.996e-004  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  7.508e-004  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  1.065e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  9.397e-004  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.9269  -117.8673
    33.9315  -118.0432
    33.9541  -118.1435
    34.0586  -118.2976

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Puente Hills (LA)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        27       2.1     2.101     14.81

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
```

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
	Normal	0.16667	Activity	3.084e-004	6.760000
7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
	Normal	0.166670	Activity	6.153e-004	6.560000
7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
	Exponential	0.041665	Activity	7.930e-004	6.500000
7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	6.994e-004	6.500000
7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	1.114e-003	6.500000
6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	1.067e-003	6.500000
6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
	Normal	0.166670	Activity	3.084e-004	6.760000
7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
	Normal	0.166670	Activity	6.153e-004	6.560000
7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
	Exponential	0.041665	Activity	7.930e-004	6.500000
7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	6.994e-004	6.500000
7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	1.114e-003	6.500000
6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041665	Activity	1.067e-003	6.500000
6.800000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning		Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw					
	Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--					
	Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--					
	Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
	Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
	Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000					
	Area	--	--	--	--										

```
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    33.9690  -118.1260
    33.9579  -118.2006
    34.0326  -118.3350

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Puente Hills (Santa Fe Springs)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
```

Deterministic Magnitude: 6.7

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	29	2.8	2.801	14.92

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.16667	Activity	4.024e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.134e-003	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	6.122e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	6.018e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083330	Activity	1.219e-003	6.399000	6.401000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.166670	Activity	4.024e-004	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.134e-003	6.160000	6.640000	2.300000	6.400000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	6.122e-004	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	6.018e-004	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083330	Activity	1.219e-003	6.399000	6.401000	2.300000	0.000000	0.000000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--			

```
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.9311  -118.0178
    33.9157  -118.0790
    33.9071  -118.1383

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Raymond
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
```

Deterministic Magnitude: 6.8

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	79	0	0.001	15.71

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	7.572e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	2.134e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	1.371e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.313e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.083335	Activity	2.293e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	7.572e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	2.134e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.371e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.313e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	2.293e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	7.572e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	2.134e-003	6.260000	6.740000	2.300000	6.500000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.371e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.313e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Characteristic	0.041665	Activity	2.293e-003	6.499000	6.501000	2.300000	0.000000	0.000000	0.010000	10.000000
Normal	0.083335	Activity	7.572e-004	6.560000						

```
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  2.134e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.371e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.313e-003  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.041665    Activity  2.293e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.1630  -117.9901
    34.1609  -118.0025
    34.1555  -118.0150
    34.1507  -118.0292
    34.1409  -118.0493
    34.1391  -118.0575
    34.1296  -118.0805
    34.1229  -118.1151
    34.1213  -118.1231
    34.1183  -118.1290
    34.1217  -118.2230

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Red Mountain
```

Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.4

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	56	0	0.001	14.09

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	6.083e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	6.083e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	3.177e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	2.137e-003	6.500000	7.400000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	3.177e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	2.137e-003	6.500000	7.400000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	6.083e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	6.083e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	3.177e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.137e-003	6.500000	7.400000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	3.177e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	2.137e-003	6.500000						

```
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  6.083e-004  7.160000
7.640000  2.300000  7.400000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  6.083e-004  7.160000
7.640000  2.300000  7.400000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  3.177e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.137e-003  6.500000
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.177e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.137e-003  6.500000
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  6.083e-004  7.160000
7.640000  2.300000  7.400000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  6.083e-004  7.160000
7.640000  2.300000  7.400000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  3.177e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.137e-003  6.500000
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.177e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  2.137e-003  6.500000
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
```

```
    34.3386  -119.3040
    34.3370  -119.3800
    34.3560  -119.4240
    34.3573  -119.4700
    34.3572  -119.5310
    34.3582  -119.6310
    34.3617  -119.7490
    34.3822  -119.8610
    34.3991  -119.9390
    34.3573  -120.3860

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Southern San Andreas
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forSouthern San Andreas -------
Name: S. San Andreas
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.10000000
Deterministic Magnitude: 8.2

Fault Profile Parameters:
```

Dip1	Dip2	Depth1	Depth2	Depth3
90	86.1	0.1	0.101	13.07

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.25	Activity	2.233e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.000000	0.000000	0.000000	0.000000	0.000000	0.000000

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.100000	Activity	2.080e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.000000	0.000000	0.000000	0.000000	0.000000	0.000000

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.150000	Activity	2.296e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.000000	0.000000	0.000000	0.000000	0.000000	0.000000

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.250000	Activity	1.265e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.200000	0.000000	0.000000	0.000000	0.000000	0.000000

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.100000	Activity	1.178e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.200000	0.000000	0.000000	0.000000	0.000000	0.000000

ModelType	Weight	RateType	Rate	MinMag
Exponential	0.150000	Activity	1.300e-002	6.500000

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
8.200000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
33.3501	-115.7119
33.7882	-116.2463
33.8485	-116.3830

```
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001
    36.0027  -120.5609

Name: S. San Andreas;BB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
```

Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.076

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma
Normal	0.25	Activity	3.020e-004	6.836000	7.316000	2.300000	7.076000	0.120000
Normal	0.250000	Activity	3.020e-004	6.664000	7.144000	2.300000	6.904000	0.120000
Normal	0.125000	Activity	5.293e-004	6.664000	7.144000	2.300000	6.904000	0.120000
Normal	0.050000	Activity	5.399e-004	6.664000	7.144000	2.300000	6.904000	0.120000
Normal	0.075000	Activity	5.158e-004	6.664000	7.144000	2.300000	6.904000	0.120000
Normal	0.125000	Activity	5.762e-004	6.836000	7.316000	2.300000	7.076000	0.120000
Normal	0.050000	Activity	5.818e-004	6.836000	7.316000	2.300000	7.076000	0.120000
Normal	0.075000	Activity	5.644e-004	6.836000	7.316000	2.300000	7.076000	0.120000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000					

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901

Name: S. San Andreas;BB+NM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.316

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  6.985000
7.465000  2.300000  7.225000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  6.985000
7.465000  2.300000  7.225000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  6.985000
7.465000  2.300000  7.225000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.076000
7.556000  2.300000  7.316000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.076000
```

```
7.556000  2.300000  7.316000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.076000
7.556000  2.300000  7.316000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090

Name: S. San Andreas;BB+NM+SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.62

Fault Profile Parameters:
```

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	14

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	2.516e-004	7.373000	7.853000	2.300000	7.613000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	2.516e-004	7.380000	7.860000	2.300000	7.620000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.670e-004	7.380000	7.860000	2.300000	7.620000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	2.691e-004	7.380000	7.860000	2.300000	7.620000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	2.424e-004	7.380000	7.860000	2.300000	7.620000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.888e-004	7.373000	7.853000	2.300000	7.613000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	1.909e-004	7.373000	7.853000	2.300000	7.613000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.787e-004	7.373000	7.853000	2.300000	7.613000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490

Name: S. San Andreas;BB+NM+SM+NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.714

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  7.474000
7.954000  2.300000  7.714000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.474000
7.954000  2.300000  7.714000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.474000
7.954000  2.300000  7.714000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.443000
7.923000  2.300000  7.683000  0.120000  0.010000 10.000000
```

```
           Normal  0.100000    Activity  1.007e-006  7.443000
7.923000  2.300000  7.683000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.443000
7.923000  2.300000  7.683000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220

Name: S. San Andreas;BB+NM+SM+NSB+SSB
```

Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.811

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	14

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	5.033e-005	7.516000	7.996000	2.300000	7.756000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	5.033e-005	7.571000	8.051000	2.300000	7.811000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	5.437e-005	7.571000	8.051000	2.300000	7.811000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	5.262e-005	7.571000	8.051000	2.300000	7.811000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	5.845e-005	7.571000	8.051000	2.300000	7.811000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	4.893e-005	7.516000	7.996000	2.300000	7.756000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	4.812e-005	7.516000	7.996000	2.300000	7.756000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	5.158e-005	7.516000	7.996000	2.300000	7.756000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220
    34.0928  -117.0677
    34.0738  -117.0139
    34.0338  -116.9024
    34.0114  -116.8735
    33.9591  -116.8198

Name: S. San Andreas;BB+NM+SM+NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
```

Deterministic Magnitude: 7.933

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	83.9	0	0.001	13.92

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.007e-006	7.693000	8.173000	2.300000	7.933000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.693000	8.173000	2.300000	7.933000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.693000	8.173000	2.300000	7.933000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.007e-006	7.607000	8.087000	2.300000	7.847000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.607000	8.087000	2.300000	7.847000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.607000	8.087000	2.300000	7.847000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude

```
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029

Name: S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.017

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
```

```
          90      84.7       0.1     0.101     13.04

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  7.670000
8.150000  2.300000  7.910000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  7.777000
8.257000  2.300000  8.017000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.709e-005  7.777000
8.257000  2.300000  8.017000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.995e-005  7.777000
8.257000  2.300000  8.017000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.133e-005  7.777000
8.257000  2.300000  8.017000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.511e-005  7.670000
8.150000  2.300000  7.910000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.111e-005  7.670000
8.150000  2.300000  7.910000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.745e-005  7.670000
8.150000  2.300000  7.910000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029

Name: S. San Andreas;BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
```

Probability of Activity: 0.90000000
Deterministic Magnitude: 7.126

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	58	0	0.001	12.72

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	5.033e-004	6.886000	7.366000	2.300000	7.126000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	5.033e-004	6.731000	7.211000	2.300000	6.971000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.369e-005	6.731000	7.211000	2.300000	6.971000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	4.420e-005	6.731000	7.211000	2.300000	6.971000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	6.300e-005	6.731000	7.211000	2.300000	6.971000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.876e-004	6.886000	7.366000	2.300000	7.126000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	1.713e-004	6.886000	7.366000	2.300000	7.126000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	2.841e-004	6.886000	7.366000	2.300000	7.126000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014

Name: S. San Andreas;BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.386

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      72.4       0.3     0.301     11.74

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  7.046e-004  7.146000
7.626000  2.300000  7.386000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.046e-004  7.079000
7.559000  2.300000  7.319000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.099e-004  7.079000
7.559000  2.300000  7.319000  0.120000  0.010000 10.000000
```

```
           Normal  0.050000    Activity  3.456e-004  7.079000
7.559000  2.300000  7.319000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  9.594e-004  7.079000
7.559000  2.300000  7.319000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.863e-004  7.146000
7.626000  2.300000  7.386000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.666e-004  7.146000
7.626000  2.300000  7.386000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.950e-004  7.146000
7.626000  2.300000  7.386000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
```

```
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014

Name: S. San Andreas;CC
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.15

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  3.020e-004  6.910000
7.390000  2.300000  7.150000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.020e-004  6.763000
7.243000  2.300000  7.003000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.774e-005  6.763000
7.243000  2.300000  7.003000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.891e-005  6.763000
7.243000  2.300000  7.003000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.525e-005  6.763000
7.243000  2.300000  7.003000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.591e-004  6.910000
7.390000  2.300000  7.150000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.606e-004  6.910000
7.390000  2.300000  7.150000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.563e-004  6.910000
7.390000  2.300000  7.150000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3142  -119.8659
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029

Name: S. San Andreas;CC+BB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.415

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
          Normal      0.25    Activity  5.033e-006  7.117000
```

```
7.597000  2.300000  7.357000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  5.033e-006  7.117000
7.597000  2.300000  7.357000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  5.033e-006  7.117000
7.597000  2.300000  7.357000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-006  7.175000
7.655000  2.300000  7.415000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  5.033e-006  7.175000
7.655000  2.300000  7.415000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  5.033e-006  7.175000
7.655000  2.300000  7.415000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3142  -119.8659
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
```

Name: S. San Andreas;CC+BB+NM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.542

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.007e-006	7.286000	7.766000	2.300000	7.526000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.286000	7.766000	2.300000	7.526000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.286000	7.766000	2.300000	7.526000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.007e-006	7.302000	7.782000	2.300000	7.542000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.302000	7.782000	2.300000	7.542000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.302000	7.782000	2.300000	7.542000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000					

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8659

Name: S. San Andreas;CC+BB+NM+SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.792

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  4.026e-004  7.501000
7.981000  2.300000  7.741000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  4.026e-004  7.552000
8.032000  2.300000  7.792000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.033e-006  7.552000
8.032000  2.300000  7.792000  0.120000  0.010000 10.000000
```

```
           Normal  0.050000    Activity  5.033e-006  7.552000
8.032000  2.300000  7.792000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.033e-006  7.552000
8.032000  2.300000  7.792000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.955e-004  7.501000
7.981000  2.300000  7.741000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.983e-004  7.501000
7.981000  2.300000  7.741000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.753e-004  7.501000
7.981000  2.300000  7.741000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3142  -119.8659
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
```

```
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490

Name: S. San Andreas;CC+BB+NM+SM+NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.862

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-004  7.554000
8.034000  2.300000  7.794000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-004  7.622000
8.102000  2.300000  7.862000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.652e-005  7.622000
8.102000  2.300000  7.862000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  6.008e-005  7.622000
8.102000  2.300000  7.862000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  7.330e-005  7.622000
8.102000  2.300000  7.862000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.710e-005  7.554000
8.034000  2.300000  7.794000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.906e-005  7.554000
8.034000  2.300000  7.794000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  9.820e-005  7.554000
8.034000  2.300000  7.794000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.3142	-119.8659
35.1607	-119.7068
35.0475	-119.5583
34.9878	-119.4711
34.9441	-119.4029
34.9157	-119.3629
34.8639	-119.2100
34.8290	-119.0301
34.8076	-118.8901
34.8072	-118.8876
34.7732	-118.7673
34.6985	-118.5090
34.5478	-118.1039
34.4029	-117.7536
34.3163	-117.5490
34.2709	-117.4510
34.2328	-117.3887

```
    34.1731  -117.2742
    34.1500  -117.2220

Name: S. San Andreas;CC+BB+NM+SM+NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.939

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-004  7.612000
8.092000  2.300000  7.852000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-004  7.699000
8.179000  2.300000  7.939000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.712e-005  7.699000
8.179000  2.300000  7.939000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.983e-005  7.699000
8.179000  2.300000  7.939000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.612e-005  7.699000
8.179000  2.300000  7.939000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  9.002e-005  7.612000
8.092000  2.300000  7.852000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.690e-005  7.612000
8.092000  2.300000  7.852000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.016e-004  7.612000
8.092000  2.300000  7.852000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
```

```
    35.3142  -119.8659

Name: S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.039

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      84.9         0     0.001     13.94

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  7.687000
8.167000  2.300000  7.927000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  7.799000
8.279000  2.300000  8.039000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.973e-005  7.799000
8.279000  2.300000  8.039000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  2.475e-005  7.799000
8.279000  2.300000  8.039000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.120e-005  7.799000
8.279000  2.300000  8.039000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.431e-005  7.687000
8.167000  2.300000  7.927000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.150e-005  7.687000
8.167000  2.300000  7.927000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.593e-005  7.687000
8.167000  2.300000  7.927000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
```

```
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8659

Name: S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.11

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      85.5       0.1     0.101     13.06

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-005  7.740000
8.220000  2.300000  7.980000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-005  7.870000
8.350000  2.300000  8.110000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  9.271e-006  7.870000
8.350000  2.300000  8.110000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.960e-006  7.870000
8.350000  2.300000  8.110000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  9.460e-006  7.870000
8.350000  2.300000  8.110000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  9.784e-006  7.740000
8.220000  2.300000  7.980000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  9.622e-006  7.740000
8.220000  2.300000  7.980000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  9.887e-006  7.740000
```

```
8.220000  2.300000  7.980000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
```

```
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8659

Name: S. San Andreas;CH
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.075

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        12

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  6.835000
7.315000  2.300000  7.075000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  6.664000
7.144000  2.300000  6.904000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.492e-005  6.664000
7.144000  2.300000  6.904000  0.120000  0.010000 10.000000
```

```
           Normal  0.050000    Activity  5.491e-005  6.664000
7.144000  2.300000  6.904000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.497e-005  6.664000
7.144000  2.300000  6.904000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.280e-005  6.835000
7.315000  2.300000  7.075000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.280e-005  6.835000
7.315000  2.300000  7.075000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.281e-005  6.835000
7.315000  2.300000  7.075000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001

Name: S. San Andreas;CH+CC
Region: USGS 2008 California
```

Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.415

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	14

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	3.020e-004	7.175000	7.655000	2.300000	7.415000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	3.020e-004	7.117000	7.597000	2.300000	7.357000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.132e-004	7.117000	7.597000	2.300000	7.357000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	2.144e-004	7.117000	7.597000	2.300000	7.357000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	2.125e-004	7.117000	7.597000	2.300000	7.357000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.397e-004	7.175000	7.655000	2.300000	7.415000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	2.416e-004	7.175000	7.655000	2.300000	7.415000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	2.363e-004	7.175000	7.655000	2.300000	7.415000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000					

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029

Name: S. San Andreas;CH+CC+BB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.579

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  7.335000
7.815000  2.300000  7.575000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.335000
7.815000  2.300000  7.575000  0.120000  0.010000 10.000000
```

```
           Normal  0.150000    Activity  1.007e-006  7.335000
7.815000  2.300000  7.575000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.339000
7.819000  2.300000  7.579000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.339000
7.819000  2.300000  7.579000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.339000
7.819000  2.300000  7.579000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
```

Name: S. San Andreas;CH+CC+BB+NM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.696

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	14

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.007e-006	7.456000	7.936000	2.300000	7.696000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.456000	7.936000	2.300000	7.696000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.456000	7.936000	2.300000	7.696000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.007e-006	7.430000	7.910000	2.300000	7.670000	0.120000	0.010000	10.000000
Normal	0.100000	Activity	1.007e-006	7.430000	7.910000	2.300000	7.670000	0.120000	0.010000	10.000000
Normal	0.150000	Activity	1.007e-006	7.430000	7.910000	2.300000	7.670000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000					

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090

Name: S. San Andreas;CH+CC+BB+NM+SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.905

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-004  7.586000
8.066000  2.300000  7.826000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-004  7.665000
```

```
8.145000  2.300000  7.905000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.686e-004  7.665000
8.145000  2.300000  7.905000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  2.737e-004  7.665000
8.145000  2.300000  7.905000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.585e-004  7.665000
8.145000  2.300000  7.905000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.150e-004  7.586000
8.066000  2.300000  7.826000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.174e-004  7.586000
8.066000  2.300000  7.826000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.888e-004  7.586000
8.066000  2.300000  7.826000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
```

```
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490

Name: S. San Andreas;CH+CC+BB+NM+SM+NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 7.964

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  7.724000
8.204000  2.300000  7.964000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.724000
8.204000  2.300000  7.964000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.724000
8.204000  2.300000  7.964000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.630000
8.110000  2.300000  7.870000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.630000
8.110000  2.300000  7.870000  0.120000  0.010000 10.000000
```

```
           Normal  0.150000    Activity  1.007e-006  7.630000
8.110000  2.300000  7.870000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
```

```
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220

Name: S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.029

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  7.679000
8.159000  2.300000  7.919000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  7.789000
8.269000  2.300000  8.029000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.072e-005  7.789000
8.269000  2.300000  8.029000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.878e-005  7.789000
8.269000  2.300000  8.029000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.625e-005  7.789000
8.269000  2.300000  8.029000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.999e-005  7.679000
8.159000  2.300000  7.919000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.923e-005  7.679000
8.159000  2.300000  7.919000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.302e-005  7.679000
8.159000  2.300000  7.919000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
```

```
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001

Name: S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 8.115

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      85.6         0     0.001     13.96

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  7.875000
8.355000  2.300000  8.115000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.875000
8.355000  2.300000  8.115000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.875000
8.355000  2.300000  8.115000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.744000
8.224000  2.300000  7.984000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.744000
8.224000  2.300000  7.984000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.744000
8.224000  2.300000  7.984000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
```

```
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001

Name: S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.45000000
Deterministic Magnitude: 8.178

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        86       0.1     0.101     13.07

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-006  7.938000
8.418000  2.300000  8.178000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.938000
8.418000  2.300000  8.178000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.938000
8.418000  2.300000  8.178000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-006  7.791000
8.271000  2.300000  8.031000  0.120000  0.010000 10.000000
           Normal  0.100000    Activity  1.007e-006  7.791000
8.271000  2.300000  8.031000  0.120000  0.010000 10.000000
           Normal  0.150000    Activity  1.007e-006  7.791000
8.271000  2.300000  8.031000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
```

```
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001

Name: S. San Andreas;CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.041

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.6     0.601      10.6

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.516e-003  6.801000
7.281000  2.300000  7.041000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.516e-003  6.618000
7.098000  2.300000  6.858000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.200e-002  6.618000
7.098000  2.300000  6.858000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.090e-002  6.618000
7.098000  2.300000  6.858000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.424e-002  6.618000
7.098000  2.300000  6.858000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.720e-003  6.801000
7.281000  2.300000  7.041000  0.120000  0.010000 10.000000
```

```
           Normal  0.050000    Activity  6.043e-003  6.801000
7.281000  2.300000  7.041000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.002e-003  6.801000
7.281000  2.300000  7.041000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.3501  -115.7119

Name: S. San Andreas;NM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.945

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
```

```
          90        90         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
            Normal      0.25    Activity  2.013e-004  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
            Normal  0.250000    Activity  2.013e-004  6.491000
6.971000  2.300000  6.731000  0.120000  0.010000 10.000000
            Normal  0.125000    Activity  1.437e-004  6.491000
6.971000  2.300000  6.731000  0.120000  0.010000 10.000000
            Normal  0.050000    Activity  1.319e-004  6.491000
6.971000  2.300000  6.731000  0.120000  0.010000 10.000000
            Normal  0.075000    Activity  1.604e-004  6.491000
6.971000  2.300000  6.731000  0.120000  0.010000 10.000000
            Normal  0.125000    Activity  1.052e-004  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
            Normal  0.050000    Activity  9.460e-005  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
            Normal  0.075000    Activity  1.274e-004  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090

Name: S. San Andreas;NM+SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.464

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        14

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  7.046e-004  7.224000
7.704000  2.300000  7.464000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.046e-004  7.182000
7.662000  2.300000  7.422000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.033e-006  7.182000
7.662000  2.300000  7.422000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.033e-006  7.182000
7.662000  2.300000  7.422000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.033e-006  7.182000
7.662000  2.300000  7.422000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.033e-006  7.224000
7.704000  2.300000  7.464000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.033e-006  7.224000
7.704000  2.300000  7.464000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.033e-006  7.224000
7.704000  2.300000  7.464000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.3163	-117.5490
34.4029	-117.7536
34.5478	-118.1039
34.6985	-118.5090
34.7732	-118.7673
34.8072	-118.8876
34.8076	-118.8901

Name: S. San Andreas;NM+SM+NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.559

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	13

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.007e-004	7.319000	7.799000	2.300000	7.559000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.007e-004	7.309000	7.789000	2.300000	7.549000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	6.680e-005	7.309000	7.789000	2.300000	7.549000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	7.187e-005	7.309000	7.789000	2.300000	7.549000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	7.805e-005	7.309000	7.789000	2.300000	7.549000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	7.172e-005	7.319000	7.799000	2.300000	7.559000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	7.527e-005	7.319000	7.799000	2.300000	7.559000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	8.072e-005	7.319000	7.799000	2.300000	7.559000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901

Name: S. San Andreas;NM+SM+NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.675

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.013e-004  7.414000
7.894000  2.300000  7.654000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.013e-004  7.435000
7.915000  2.300000  7.675000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.037e-004  7.435000
7.915000  2.300000  7.675000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.691e-005  7.435000
7.915000  2.300000  7.675000  0.120000  0.010000 10.000000
```

```
           Normal  0.075000    Activity  1.444e-004  7.435000
7.915000  2.300000  7.675000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.035e-004  7.414000
7.894000  2.300000  7.654000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  9.484e-005  7.414000
7.894000  2.300000  7.654000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.325e-004  7.414000
7.894000  2.300000  7.654000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
```

```
    34.1731  -117.2742
    34.1500  -117.2220
    34.0928  -117.0677
    34.0738  -117.0139
    34.0338  -116.9024
    34.0114  -116.8735
    33.9591  -116.8198

Name: S. San Andreas;NM+SM+NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.825

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      82.7         0     0.001     13.89

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-004  7.527000
8.007000  2.300000  7.767000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-004  7.585000
8.065000  2.300000  7.825000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  3.285e-005  7.585000
8.065000  2.300000  7.825000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.881e-005  7.585000
8.065000  2.300000  7.825000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.269e-005  7.585000
8.065000  2.300000  7.825000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.288e-005  7.527000
8.007000  2.300000  7.767000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.289e-005  7.527000
8.007000  2.300000  7.767000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.534e-005  7.527000
8.007000  2.300000  7.767000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
33.7882	-116.2463
33.8485	-116.3830
33.8481	-116.4265
33.8847	-116.5169
33.9070	-116.5849
33.9176	-116.6239
33.9442	-116.6858
33.9374	-116.7786
33.9532	-116.8014
33.9591	-116.8198
34.0114	-116.8735
34.0338	-116.9024
34.0738	-117.0139
34.0928	-117.0677
34.1500	-117.2220
34.1731	-117.2742
34.2328	-117.3887
34.2709	-117.4510

```
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901

Name: S. San Andreas;NM+SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.925

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      83.8       0.1     0.101     13.02

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-004  7.601000
8.081000  2.300000  7.841000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-004  7.685000
8.165000  2.300000  7.925000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  3.893e-005  7.685000
8.165000  2.300000  7.925000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.533e-005  7.685000
8.165000  2.300000  7.925000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.003e-005  7.685000
8.165000  2.300000  7.925000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.028e-005  7.601000
8.081000  2.300000  7.841000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.562e-005  7.601000
8.081000  2.300000  7.841000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.649e-005  7.601000
8.081000  2.300000  7.841000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
33.3501	-115.7119
33.7882	-116.2463
33.8485	-116.3830
33.8481	-116.4265
33.8847	-116.5169
33.9070	-116.5849
33.9176	-116.6239
33.9442	-116.6858
33.9374	-116.7786
33.9532	-116.8014
33.9591	-116.8198
34.0114	-116.8735
34.0338	-116.9024
34.0738	-117.0139
34.0928	-117.0677
34.1500	-117.2220
34.1731	-117.2742
34.2328	-117.3887

```
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901

Name: S. San Andreas;NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.855

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  7.046e-004  6.615000
7.095000  2.300000  6.855000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.046e-004  6.395000
6.875000  2.300000  6.635000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.604e-004  6.395000
6.875000  2.300000  6.635000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  6.359e-004  6.395000
6.875000  2.300000  6.635000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.078e-003  6.395000
6.875000  2.300000  6.635000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  7.074e-004  6.615000
7.095000  2.300000  6.855000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  7.048e-004  6.615000
7.095000  2.300000  6.855000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.324e-003  6.615000
7.095000  2.300000  6.855000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.3163	-117.5490
34.2709	-117.4510
34.2328	-117.3887
34.1731	-117.2742
34.1500	-117.2220

Name: S. San Andreas;NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.203

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	13

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	8.052e-004	6.963000	7.443000	2.300000	7.203000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	8.052e-004	6.834000	7.314000	2.300000	7.074000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.240e-003	6.834000	7.314000	2.300000	7.074000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	7.943e-004	6.834000	7.314000	2.300000	7.074000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.379e-003	6.834000	7.314000	2.300000	7.074000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.053e-003	6.963000	7.443000	2.300000	7.203000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	6.413e-004	6.963000	7.443000	2.300000	7.203000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.176e-003	6.963000	7.443000	2.300000	7.203000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.3163	-117.5490
34.2709	-117.4510
34.2328	-117.3887
34.1731	-117.2742
34.1500	-117.2220
34.0928	-117.0677
34.0738	-117.0139
34.0338	-116.9024
34.0114	-116.8735
33.9591	-116.8198

Name: S. San Andreas;NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.467

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	75.4	0	0.001	13.55

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	4.026e-004	7.227000	7.707000	2.300000	7.467000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	4.026e-004	7.186000	7.666000	2.300000	7.426000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	3.040e-005	7.186000	7.666000	2.300000	7.426000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	5.033e-006	7.186000	7.666000	2.300000	7.426000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	5.033e-006	7.186000	7.666000	2.300000	7.426000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.255e-004	7.227000						

```
7.707000  2.300000  7.467000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.675e-005  7.227000
7.707000  2.300000  7.467000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.786e-004  7.227000
7.707000  2.300000  7.467000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
```

```
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490

Name: S. San Andreas;NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.611

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      79.4       0.2     0.201        12

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  4.026e-004  7.365000
7.845000  2.300000  7.605000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  4.026e-004  7.371000
7.851000  2.300000  7.611000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.181e-004  7.371000
7.851000  2.300000  7.611000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.033e-006  7.371000
7.851000  2.300000  7.611000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.755e-004  7.371000
7.851000  2.300000  7.611000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.241e-004  7.365000
7.845000  2.300000  7.605000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.033e-006  7.365000
7.845000  2.300000  7.605000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.454e-004  7.365000
7.845000  2.300000  7.605000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
33.3501	-115.7119
33.7882	-116.2463
33.8485	-116.3830
33.8481	-116.4265
33.8847	-116.5169
33.9070	-116.5849
33.9176	-116.6239
33.9442	-116.6858
33.9374	-116.7786
33.9532	-116.8014
33.9591	-116.8198
34.0114	-116.8735
34.0338	-116.9024
34.0738	-117.0139
34.0928	-117.0677
34.1500	-117.2220
34.1731	-117.2742
34.2328	-117.3887

```
    34.2709  -117.4510
    34.3163  -117.5490

Name: S. San Andreas;PK
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.092

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         4     4.001         6

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  3.483e-002  5.852000
6.332000  2.300000  6.092000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.483e-002  5.632000
6.112000  2.300000  5.872000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.337e-002  5.632000
6.112000  2.300000  5.872000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.341e-002  5.632000
6.112000  2.300000  5.872000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.256e-002  5.632000
6.112000  2.300000  5.872000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.516e-002  5.852000
6.332000  2.300000  6.092000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  2.517e-002  5.852000
6.332000  2.300000  6.092000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.508e-002  5.852000
6.332000  2.300000  6.092000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.7520  -120.3001
    36.0027  -120.5609

Name: S. San Andreas;PK+CH
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.118

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.4     0.401       8.4

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.610e-003  6.878000
7.358000  2.300000  7.118000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.610e-003  6.721000
7.201000  2.300000  6.961000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  7.135e-003  6.721000
```

```
7.201000  2.300000  6.961000  0.120000  0.010000 10.000000
          Normal  0.050000    Activity  7.120e-003  6.721000
7.201000  2.300000  6.961000  0.120000  0.010000 10.000000
          Normal  0.075000    Activity  7.190e-003  6.721000
7.201000  2.300000  6.961000  0.120000  0.010000 10.000000
          Normal  0.125000    Activity  4.366e-003  6.878000
7.358000  2.300000  7.118000  0.120000  0.010000 10.000000
          Normal  0.050000    Activity  4.363e-003  6.878000
7.358000  2.300000  7.118000  0.120000  0.010000 10.000000
          Normal  0.075000    Activity  4.374e-003  6.878000
7.358000  2.300000  7.118000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
```

```
Name: S. San Andreas;PK+CH+CC
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.435

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.2     0.201      11.2

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  7.046e-004  7.195000
7.675000  2.300000  7.435000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.046e-004  7.144000
7.624000  2.300000  7.384000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.243e-004  7.144000
7.624000  2.300000  7.384000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.304e-004  7.144000
7.624000  2.300000  7.384000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.213e-004  7.144000
7.624000  2.300000  7.384000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.234e-004  7.195000
7.675000  2.300000  7.435000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.337e-004  7.195000
7.675000  2.300000  7.435000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.046e-004  7.195000
7.675000  2.300000  7.435000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029

Name: S. San Andreas;PK+CH+CC+BB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.594

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.1     0.101      12.1

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
          Normal      0.25    Activity  4.026e-004  7.353000
```

```
7.833000  2.300000  7.593000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  4.026e-004  7.354000
7.834000  2.300000  7.594000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.412e-004  7.354000
7.834000  2.300000  7.594000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.947e-004  7.354000
7.834000  2.300000  7.594000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  7.728e-004  7.354000
7.834000  2.300000  7.594000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.278e-004  7.353000
7.833000  2.300000  7.593000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.473e-004  7.353000
7.833000  2.300000  7.593000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  7.881e-004  7.353000
7.833000  2.300000  7.593000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
```

```
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901

Name: S. San Andreas;PK+CH+CC+BB+NM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.711

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.1     0.101      12.1

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType         Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  7.046e-004  7.441000
7.921000  2.300000  7.681000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  7.046e-004  7.471000
7.951000  2.300000  7.711000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.664e-003  7.471000
7.951000  2.300000  7.711000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.478e-003  7.471000
7.951000  2.300000  7.711000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.956e-003  7.471000
7.951000  2.300000  7.711000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.557e-003  7.441000
7.921000  2.300000  7.681000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.465e-003  7.441000
```

```
7.921000  2.300000  7.681000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.753e-003  7.441000
7.921000  2.300000  7.681000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
```

```
    34.7732  -118.7673
    34.6985  -118.5090

Name: S. San Andreas;PK+CH+CC+BB+NM+SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.915

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90       0.1     0.101      13.1

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  2.013e-003  7.594000
8.074000  2.300000  7.834000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  2.013e-003  7.675000
8.155000  2.300000  7.915000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.443e-004  7.675000
8.155000  2.300000  7.915000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  7.149e-004  7.675000
8.155000  2.300000  7.915000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  5.033e-006  7.675000
8.155000  2.300000  7.915000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.032e-003  7.594000
8.074000  2.300000  7.834000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.067e-003  7.594000
8.074000  2.300000  7.834000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.211e-004  7.594000
8.074000  2.300000  7.834000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490

Name: S. San Andreas;PK+CH+CC+BB+NM+SM+NSB
Region: USGS 2008 California
Category:Fault
```

Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.973

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0.1	0.101	13.1

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	5.033e-004	7.637000	8.117000	2.300000	7.877000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	5.033e-004	7.733000	8.213000	2.300000	7.973000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	3.545e-004	7.733000	8.213000	2.300000	7.973000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	4.472e-004	7.733000	8.213000	2.300000	7.973000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	8.035e-004	7.733000	8.213000	2.300000	7.973000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	4.268e-004	7.637000	8.117000	2.300000	7.877000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	4.738e-004	7.637000	8.117000	2.300000	7.877000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	6.935e-004	7.637000	8.117000	2.300000	7.877000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    36.0027  -120.5609
    35.7520  -120.3001
    35.5333  -120.0867
    35.4139  -119.9703
    35.3142  -119.8660
    35.1607  -119.7068
    35.0475  -119.5583
    34.9878  -119.4711
    34.9441  -119.4029
    34.9157  -119.3629
    34.8639  -119.2100
    34.8290  -119.0301
    34.8076  -118.8901
    34.8072  -118.8876
    34.7732  -118.7673
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220

Name: S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
```

Probability of Activity: 0.90000000
Deterministic Magnitude: 8.037

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0.1	0.101	13.1

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	1.007e-004	7.685000	8.165000	2.300000	7.925000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	1.007e-004	7.797000	8.277000	2.300000	8.037000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.085e-004	7.797000	8.277000	2.300000	8.037000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	1.007e-004	7.797000	8.277000	2.300000	8.037000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.310e-004	7.797000	8.277000	2.300000	8.037000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	1.002e-004	7.685000	8.165000	2.300000	7.925000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	9.723e-005	7.685000	8.165000	2.300000	7.925000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	1.125e-004	7.685000	8.165000	2.300000	7.925000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001
    36.0027  -120.5609

Name: S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG
Region: USGS 2008 California
```

```
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.122

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      85.6       0.1     0.101     13.06

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  7.749000
8.229000  2.300000  7.989000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  7.882000
8.362000  2.300000  8.122000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.085e-005  7.882000
8.362000  2.300000  8.122000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.540e-005  7.882000
8.362000  2.300000  8.122000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.277e-005  7.882000
8.362000  2.300000  8.122000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.696e-005  7.749000
8.229000  2.300000  7.989000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.414e-005  7.749000
8.229000  2.300000  7.989000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.869e-005  7.749000
8.229000  2.300000  7.989000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
```

```
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001
    36.0027  -120.5609

Name: S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 8.184

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      86.1       0.1     0.101     13.07

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  1.007e-004  7.796000
8.276000  2.300000  8.036000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  1.007e-004  7.944000
8.424000  2.300000  8.184000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.662e-005  7.944000
8.424000  2.300000  8.184000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  3.292e-005  7.944000
8.424000  2.300000  8.184000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.830e-005  7.944000
8.424000  2.300000  8.184000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.242e-005  7.796000
8.276000  2.300000  8.036000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  6.595e-005  7.796000
8.276000  2.300000  8.036000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  9.337e-005  7.796000
```

```
8.276000  2.300000  8.036000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
```

```
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090
    34.7732  -118.7673
    34.8072  -118.8876
    34.8076  -118.8901
    34.8290  -119.0301
    34.8639  -119.2100
    34.9157  -119.3629
    34.9441  -119.4029
    34.9878  -119.4711
    35.0475  -119.5583
    35.1607  -119.7068
    35.3142  -119.8660
    35.4139  -119.9703
    35.5333  -120.0867
    35.7520  -120.3001
    36.0027  -120.5609

Name: S. San Andreas;SM
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.307

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-004  7.067000
7.547000  2.300000  7.307000  0.120000  0.010000 10.000000
```

```
           Normal  0.250000    Activity  5.033e-004  6.972000
7.452000  2.300000  7.212000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.802e-004  6.972000
7.452000  2.300000  7.212000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  8.646e-004  6.972000
7.452000  2.300000  7.212000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.723e-004  6.972000
7.452000  2.300000  7.212000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  6.481e-004  7.067000
7.547000  2.300000  7.307000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  7.680e-004  7.067000
7.547000  2.300000  7.307000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.799e-004  7.067000
7.547000  2.300000  7.307000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
```

```
    34.3163  -117.5490

Name: S. San Andreas;SM+NSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.438

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  6.039e-004  7.198000
7.678000  2.300000  7.438000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  6.039e-004  7.148000
7.628000  2.300000  7.388000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.991e-004  7.148000
7.628000  2.300000  7.388000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.247e-003  7.148000
7.628000  2.300000  7.388000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.026e-003  7.148000
7.628000  2.300000  7.388000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  8.729e-004  7.198000
7.678000  2.300000  7.438000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.090e-003  7.198000
7.678000  2.300000  7.438000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.025e-003  7.198000
7.678000  2.300000  7.438000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.6985  -118.5090
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220

Name: S. San Andreas;SM+NSB+SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.559

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
```

```
           Normal      0.25    Activity  4.026e-004  7.319000
7.799000  2.300000  7.559000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  4.026e-004  7.309000
7.789000  2.300000  7.549000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  7.535e-004  7.309000
7.789000  2.300000  7.549000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  7.810e-004  7.309000
7.789000  2.300000  7.549000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  7.649e-004  7.309000
7.789000  2.300000  7.549000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.996e-004  7.319000
7.799000  2.300000  7.559000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.990e-004  7.319000
7.799000  2.300000  7.559000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  6.242e-004  7.319000
7.799000  2.300000  7.559000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.6985  -118.5090
```

```
    34.5478  -118.1039
    34.4029  -117.7536
    34.3163  -117.5490
    34.2709  -117.4510
    34.2328  -117.3887
    34.1731  -117.2742
    34.1500  -117.2220
    34.0928  -117.0677
    34.0738  -117.0139
    34.0338  -116.9024
    34.0114  -116.8735
    33.9591  -116.8198

Name: S. San Andreas;SM+NSB+SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.731

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      81.4         0     0.001     12.85

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  3.020e-004  7.455000
7.935000  2.300000  7.695000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  3.020e-004  7.491000
7.971000  2.300000  7.731000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  1.963e-004  7.491000
7.971000  2.300000  7.731000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.419e-004  7.491000
7.971000  2.300000  7.731000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  1.035e-004  7.491000
7.971000  2.300000  7.731000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.941e-004  7.455000
7.935000  2.300000  7.695000  0.120000  0.010000 10.000000
```

```
           Normal  0.050000    Activity  2.257e-004  7.455000
7.935000  2.300000  7.695000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  2.629e-004  7.455000
7.935000  2.300000  7.695000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
```

```
    34.0928  -117.0677
    34.1500  -117.2220
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090

Name: S. San Andreas;SM+NSB+SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.847

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      82.9       0.1     0.101        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  4.026e-004  7.542000
8.022000  2.300000  7.782000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  4.026e-004  7.607000
8.087000  2.300000  7.847000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  4.162e-004  7.607000
8.087000  2.300000  7.847000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.926e-004  7.607000
8.087000  2.300000  7.847000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.008e-004  7.607000
8.087000  2.300000  7.847000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  3.622e-004  7.542000
8.022000  2.300000  7.782000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  1.710e-004  7.542000
8.022000  2.300000  7.782000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  3.641e-004  7.542000
```

```
8.022000  2.300000  7.782000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220
```

```
    34.1731  -117.2742
    34.2328  -117.3887
    34.2709  -117.4510
    34.3163  -117.5490
    34.4029  -117.7536
    34.5478  -118.1039
    34.6985  -118.5090

Name: S. San Andreas;SSB
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 6.945

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001        13

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal      0.25    Activity  5.033e-005  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
           Normal  0.250000    Activity  5.033e-005  6.490000
6.970000  2.300000  6.730000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.151e-005  6.490000
6.970000  2.300000  6.730000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.069e-005  6.490000
6.970000  2.300000  6.730000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.943e-005  6.490000
6.970000  2.300000  6.730000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  5.103e-005  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  4.985e-005  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  4.793e-005  6.705000
7.185000  2.300000  6.945000  0.120000  0.010000 10.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.1500	-117.2220
34.0928	-117.0677
34.0738	-117.0139
34.0338	-116.9024
34.0114	-116.8735
33.9591	-116.8198

Name: S. San Andreas;SSB+BG
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.346

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	70.7	0	0.001	13.21

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	9.059e-004	7.106000	7.586000	2.300000	7.346000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	9.059e-004	7.024000	7.504000	2.300000	7.264000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	5.033e-006	7.024000	7.504000	2.300000	7.264000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	5.033e-006	7.024000	7.504000	2.300000	7.264000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	5.033e-006	7.024000	7.504000	2.300000	7.264000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	5.033e-006	7.106000	7.586000	2.300000	7.346000	0.120000	0.010000	10.000000
Normal	0.050000	Activity	5.033e-006	7.106000	7.586000	2.300000	7.346000	0.120000	0.010000	10.000000
Normal	0.075000	Activity	5.033e-006	7.106000	7.586000	2.300000	7.346000	0.120000	0.010000	10.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Trace Coordinates:

Latitude	Longitude
33.7882	-116.2463
33.8485	-116.3830
33.8481	-116.4265
33.8847	-116.5169
33.9070	-116.5849
33.9176	-116.6239
33.9442	-116.6858
33.9374	-116.7786
33.9532	-116.8014
33.9591	-116.8198
34.0114	-116.8735
34.0338	-116.9024
34.0738	-117.0139
34.0928	-117.0677
34.1500	-117.2220

Name: S. San Andreas;SSB+BG+CO
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.90000000
Deterministic Magnitude: 7.521

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	77.1	0.2	0.201	11.9

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.25	Activity	4.026e-004	7.281000	7.761000	2.300000	7.521000	0.120000	0.010000	10.000000
Normal	0.250000	Activity	4.026e-004	7.257000	7.737000	2.300000	7.497000	0.120000	0.010000	10.000000
Normal	0.125000	Activity	2.499e-004	7.257000	7.737000	2.300000	7.497000	0.120000	0.010000	10.000000

```
           Normal  0.050000    Activity  8.073e-005  7.257000
7.737000  2.300000  7.497000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  8.054e-005  7.257000
7.737000  2.300000  7.497000  0.120000  0.010000 10.000000
           Normal  0.125000    Activity  2.233e-004  7.281000
7.761000  2.300000  7.521000  0.120000  0.010000 10.000000
           Normal  0.050000    Activity  5.831e-005  7.281000
7.761000  2.300000  7.521000  0.120000  0.010000 10.000000
           Normal  0.075000    Activity  7.863e-005  7.281000
7.761000  2.300000  7.521000  0.120000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    33.3501  -115.7119
    33.7882  -116.2463
    33.8485  -116.3830
    33.8481  -116.4265
    33.8847  -116.5169
    33.9070  -116.5849
    33.9176  -116.6239
```

```
    33.9442  -116.6858
    33.9374  -116.7786
    33.9532  -116.8014
    33.9591  -116.8198
    34.0114  -116.8735
    34.0338  -116.9024
    34.0738  -117.0139
    34.0928  -117.0677
    34.1500  -117.2220

 ------ End Nested Sources for Southern San Andreas -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: San Cayetano
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        42         0     0.001     16.06

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
```

MaxMag	Beta	Mean	Sigma	Delta1	Delta2
	Normal	0.041665	Activity	2.140e-003	6.960000
7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
	Normal	0.041665	Activity	3.023e-003	6.860000
7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
	Exponential	0.041668	Activity	7.835e-003	6.500000
7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041668	Activity	6.135e-003	6.500000
7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041668	Activity	9.274e-003	6.500000
7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.041668	Activity	7.740e-003	6.500000
7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
	Normal	0.083335	Activity	2.140e-003	6.960000
7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
	Normal	0.083335	Activity	3.023e-003	6.860000
7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
	Exponential	0.020833	Activity	7.835e-003	6.500000
7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	6.135e-003	6.500000
7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	9.274e-003	6.500000
7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	7.740e-003	6.500000
7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
	Normal	0.083335	Activity	2.140e-003	6.960000
7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
	Normal	0.083335	Activity	3.023e-003	6.860000
7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
	Exponential	0.020833	Activity	7.835e-003	6.500000
7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	6.135e-003	6.500000
7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	9.274e-003	6.500000
7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.020833	Activity	7.740e-003	6.500000
7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
	Normal	0.083335	Activity	2.140e-003	6.960000
7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
	Normal	0.083335	Activity	3.023e-003	6.860000

```
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  7.835e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  6.135e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.274e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.740e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.4361  -118.7620
    34.4047  -118.8310
    34.4021  -118.8650
    34.4173  -118.9130
    34.4270  -118.9239
    34.4495  -118.9279
    34.4484  -118.9436
    34.4221  -118.9769
    34.4218  -119.0075
    34.4229  -119.0367
    34.4357  -119.0818
    34.4329  -119.1038
    34.4500  -119.1591

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
```

```
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: San Gabriel
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        61         0     0.001     14.87

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType         Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.041665    Activity  3.012e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  4.255e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  1.317e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  9.592e-004  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.557e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.219e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.012e-004  7.060000
```

```
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  4.255e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.317e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.592e-004  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.557e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.219e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.012e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  4.255e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.317e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.592e-004  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.557e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.219e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.012e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  4.255e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.317e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.592e-004  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.557e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.219e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
```

```
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.3178  -118.2800
    34.3311  -118.3010
    34.3705  -118.4280
    34.3947  -118.4890
    34.4363  -118.5610
    34.5142  -118.6440
    34.5606  -118.6960
    34.6203  -118.7720
    34.6621  -118.8160
    34.7140  -118.8750

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Santa Cruz Island
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
```

Probability of Activity: 1.00000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	90	0	0.001	13

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	3.262e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	6.509e-004	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	1.194e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	9.350e-004	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.674e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.476e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	3.262e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	6.509e-004	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.194e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	9.350e-004	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.674e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.476e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	3.262e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	6.509e-004	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	1.194e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.020833    Activity  9.350e-004  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.674e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.476e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  3.262e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  6.509e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.194e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.350e-004  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.674e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.476e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0727  -119.9940
    34.0314  -119.8740
    34.0155  -119.7780
    34.0048  -119.7250
    33.9857  -119.6120
    33.9871  -119.5150
    33.9785  -119.3470
```

```
    33.9828  -119.2600

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Santa Monica
Region: USGS 2008 California
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forSanta Monica -------
Name: Santa Monica Connected alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90      50.8         0     0.001     16.27

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.33334    Activity  9.083e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.333340    Activity  9.083e-004  7.060000
```

```
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
      Exponential  0.083330    Activity  3.970e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  2.893e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  3.970e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083330    Activity  2.893e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0691  -118.4118
    34.0421  -118.4558
    34.0356  -118.4749
    34.0316  -118.4813
    34.0304  -118.5247
    34.0324  -118.5544
    33.9832  -118.6950
    33.9731  -118.7430
    33.9581  -118.8190
    33.9474  -118.9350
    33.9698  -119.0200
    33.9748  -119.1450
```

33.9388 -119.2280

Name: Santa Monica Connected alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 7.4

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	43.7	0.8	0.801	11.16

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.33334	Activity	6.124e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Normal	0.333340	Activity	8.650e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Exponential	0.083330	Activity	3.198e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	2.152e-003	6.500000	7.400000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	3.781e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	2.755e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--			

```
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.1093  -118.2840
    34.0724  -118.3890
    34.0503  -118.4340
    34.0330  -118.4580
    34.0419  -118.4670
    34.0364  -118.4980
    34.0302  -118.5410
    34.0202  -118.5520
    33.9919  -118.6492
    33.9731  -118.7430
    33.9581  -118.8190
    33.9474  -118.9350
    33.9698  -119.0200
    33.9748  -119.1450
    33.9388  -119.2280

Name: Santa Monica, alt 1
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 6.401

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        75         0     0.001     18.35

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.16666    Activity  7.539e-004  6.360000
```

```
6.840000  2.300000  6.600000  0.120000  0.010000 10.000000
           Normal  0.166660    Activity  1.504e-003  6.160000
6.640000  2.300000  6.400000  0.120000  0.010000 10.000000
      Exponential  0.166670    Activity  9.641e-004  6.500000
6.600000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.166670    Activity  9.628e-004  6.500000
6.600000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.333340    Activity  1.616e-003  6.399000
6.401000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.0691  -118.4118
    34.0421  -118.4558
    34.0356  -118.4749
    34.0316  -118.4813
    34.0304  -118.5247
    34.0324  -118.5544

Name: Santa Monica, alt 2
Region: USGS 2008 California
Category:Fault
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.25000000
Deterministic Magnitude: 6.8
```

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	11.49

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.33334	Activity	5.985e-004	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Normal	0.333340	Activity	1.194e-003	6.360000	6.840000	2.300000	6.600000	0.120000	0.010000	10.000000
Exponential	0.083330	Activity	1.084e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	1.038e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	1.527e-003	6.500000	6.600000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083330	Activity	1.525e-003	6.500000	6.600000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000
Area	--	--	--	--	--	--	-4.153061	1.020408	0.240000

Trace Coordinates:

Latitude	Longitude
34.1093	-118.2840

```
    34.0724  -118.3890
    34.0503  -118.4340
    34.0330  -118.4580
    34.0419  -118.4670
    34.0364  -118.4980
    34.0302  -118.5410
    34.0202  -118.5520

 ------ End Nested Sources for Santa Monica -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Santa Rosa Island
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        90         0     0.001         9

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
          Normal  0.041665    Activity  5.007e-004  6.660000
```

```
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  9.991e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  1.080e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  9.976e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.520e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.494e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.007e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  9.991e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.080e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.976e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.520e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.494e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.007e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  9.991e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.080e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.976e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.520e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.494e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.007e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  9.991e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.080e-003  6.500000
```

```
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  9.976e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.520e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.494e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                 Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.0112  -119.9060
    33.9855  -119.9660
    33.9714  -120.1110
    33.9722  -120.1800
    33.9833  -120.2300
    33.9844  -120.3000
    33.9873  -120.3580
    33.9873  -120.4300
    34.0199  -120.5110

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC
```

****

Name: Santa Susana, alt 1
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	55	0	0.001	16.38

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.08333	Activity	2.704e-003	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	5.396e-003	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Exponential	0.083335	Activity	5.835e-003	6.500000	6.900000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	5.388e-003	6.500000	6.900000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	8.209e-003	6.500000	6.700000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	8.069e-003	6.500000	6.700000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	2.704e-003	6.660000	7.140000	2.300000	6.900000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	5.396e-003	6.460000	6.940000	2.300000	6.700000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	5.835e-003	6.500000	6.900000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	5.388e-003	6.500000						

```
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  8.209e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  8.069e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.3242  -118.4955
    34.3053  -118.5232
    34.3003  -118.5458
    34.3204  -118.5811
```

```
    34.3229  -118.6163
    34.3330  -118.6339
    34.3506  -118.7081
    34.3594  -118.7672

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

*****************************************

Name: Santa Ynez (East)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        70         0     0.001     13.16

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta       Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  6.868e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  9.702e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  2.514e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
```

```
      Exponential  0.083335    Activity  1.968e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  2.976e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  2.484e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  6.868e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  9.702e-004  6.860000
7.340000  2.300000  7.100000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  2.514e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  1.968e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.976e-003  6.500000
7.100000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.484e-003  6.500000
7.100000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.4992  -119.6360
    34.4880  -119.5530
    34.4888  -119.5010
    34.4987  -119.4350
    34.5067  -119.3200
    34.5293  -119.2300
    34.5315  -119.1640
    34.5697  -118.9540
    34.5839  -118.9040

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Santa Ynez (West)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7
```

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	70	0	0.001	9.397

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.08333	Activity	8.796e-004	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	1.755e-003	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Exponential	0.083335	Activity	2.262e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	1.995e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	3.178e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	3.043e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	8.796e-004	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.755e-003	6.560000	7.040000	2.300000	6.800000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	2.262e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.995e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.178e-003	6.500000	6.800000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.043e-003	6.500000	6.800000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.5121  -120.3070
    34.5147  -120.2630
    34.5239  -120.2080
    34.5442  -120.1200
    34.5618  -120.0310
    34.5603  -119.9770
    34.5474  -119.9350
    34.5533  -119.8670
    34.5484  -119.8060
    34.5205  -119.7320
    34.4992  -119.6355

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
           1          0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
           1          0.333333          Campbell-Bozorgnia (2008) NGA
```

USGS 2008 MRC
1 0.333333 Chiou-Youngs (2007) NGA USGS 2008 MRC

****

Name: Santa Ynez Connected
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.4

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	70	0	0.001	11.28

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.16667	Activity	5.652e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	7.983e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	2.951e-003	6.500000	7.400000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	1.986e-003	6.500000	7.400000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.489e-003	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.542e-003	6.500000	7.300000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	5.652e-004	7.160000	7.640000	2.300000	7.400000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	7.983e-004	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000

```
      Exponential  0.041665    Activity  2.951e-003  6.500000
7.400000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  1.986e-003  6.500000
7.400000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.489e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.542e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.5121  -120.3070
```

```
    34.5147  -120.2630
    34.5239  -120.2080
    34.5442  -120.1200
    34.5618  -120.0310
    34.5603  -119.9770
    34.5474  -119.9350
    34.5533  -119.8670
    34.5484  -119.8060
    34.5205  -119.7320
    34.4992  -119.6355
    34.4880  -119.5530
    34.4888  -119.5010
    34.4987  -119.4350
    34.5067  -119.3200
    34.5293  -119.2300
    34.5315  -119.1640
    34.5697  -118.9540
    34.5839  -118.9040

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Sierra Madre
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.2
```

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	53	0	0.001	14.38

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.08333	Activity	7.184e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.083330	Activity	1.015e-003	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.083335	Activity	2.630e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	2.059e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	3.113e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.083335	Activity	2.598e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.166670	Activity	7.184e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.166670	Activity	1.015e-003	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Exponential	0.041665	Activity	2.630e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.059e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	3.113e-003	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041665	Activity	2.598e-003	6.500000	7.100000	0.000000	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
```

Trace Coordinates:

Latitude	Longitude
34.1231	-117.7400
34.1219	-117.7550
34.1317	-117.7690
34.1305	-117.8070
34.1323	-117.8180
34.1587	-117.8600
34.1470	-117.8810
34.1501	-117.9400
34.1611	-117.9850
34.1752	-118.0030
34.1758	-118.0680
34.2010	-118.1120
34.2028	-118.1490
34.2107	-118.1890
34.2349	-118.2227
34.2495	-118.2623
34.2585	-118.2793

```
    34.2751  -118.2900

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Sierra Madre (San Fernando)
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        45         0     0.001     12.73

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.08333    Activity  1.328e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.083330    Activity  2.649e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.083335    Activity  2.020e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.083335    Activity  1.985e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.166670    Activity  2.846e-003  6.499000
```

```
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000
           Normal  0.166670    Activity  1.328e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  2.649e-003  6.260000
6.740000  2.300000  6.500000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  2.020e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  1.985e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
   Characteristic  0.083330    Activity  2.846e-003  6.499000
6.501000  2.300000  0.000000  0.000000  0.010000 10.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.2782  -118.2951
    34.2745  -118.3196
```

```
    34.2905  -118.3956
    34.3039  -118.4189
    34.3027  -118.4337
    34.2929  -118.4619
    34.3027  -118.4778

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Sierra Madre Connected
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        51         0     0.001     13.99

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal   0.16667    Activity  6.757e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  9.545e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  2.954e-003  6.500000
```

```
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.152e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.494e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.736e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.166670    Activity  6.757e-004  7.060000
7.540000  2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.166670    Activity  9.545e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
      Exponential  0.041665    Activity  2.954e-003  6.500000
7.300000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.152e-003  6.500000
7.300000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  3.494e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041665    Activity  2.736e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
```

```
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.1231  -117.7400
    34.1219  -117.7550
    34.1317  -117.7690
    34.1305  -117.8070
    34.1323  -117.8180
    34.1587  -117.8600
    34.1470  -117.8810
    34.1501  -117.9400
    34.1611  -117.9850
    34.1752  -118.0030
    34.1758  -118.0680
    34.2010  -118.1120
    34.2028  -118.1490
    34.2107  -118.1890
    34.2349  -118.2227
    34.2495  -118.2623
    34.2585  -118.2793
    34.2782  -118.2951
    34.2745  -118.3196
    34.2905  -118.3956
    34.3039  -118.4189
    34.3027  -118.4337
    34.2929  -118.4619
    34.3027  -118.4778

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
```

```
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Simi-Santa Rosa
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Strike Slip
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        60         1     1.001     12.26

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.041665    Activity  5.020e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  1.002e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  1.083e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.000e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.524e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  1.498e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.020e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.002e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
```

```
      Exponential  0.020833    Activity  1.083e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.000e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.524e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.498e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.020e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.002e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.083e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.000e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.524e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.498e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  5.020e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.002e-003  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  1.083e-003  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.000e-003  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.524e-003  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.498e-003  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.3038  -118.6960
    34.2835  -118.7580
    34.2708  -118.8360
    34.2523  -118.8850
    34.2468  -118.9510
    34.2346  -119.0000
    34.2422  -119.0430
    34.2168  -119.1000

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Ventura-Pitas Point
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.75000000
Deterministic Magnitude: 7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
```

```
          90        64         1     1.001     15.38

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag       Beta      Mean     Sigma    Delta1    Delta2
           Normal 0.0555533    Activity  4.829e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.055553    Activity  9.635e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.055557    Activity  1.242e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  1.095e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  1.745e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.055557    Activity  1.671e-003  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.111113    Activity  4.829e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.111113    Activity  9.635e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.027777    Activity  1.242e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.095e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.745e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.671e-003  6.500000
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.111113    Activity  4.829e-004  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
           Normal  0.111113    Activity  9.635e-004  6.560000
7.040000  2.300000  6.800000  0.120000  0.010000 10.000000
      Exponential  0.027777    Activity  1.242e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.095e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.745e-003  6.500000
6.800000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.027777    Activity  1.671e-003  6.500000
```

```
6.800000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
```

```
--        -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.3435  -119.1410
    34.2910  -119.2240
    34.2874  -119.3030
    34.3077  -119.4130
    34.3027  -119.4630
    34.2974  -119.5930

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Verdugo
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        55         0     0.001     14.74

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag
MaxMag      Beta      Mean     Sigma    Delta1    Delta2
```

```
           Normal  0.041665    Activity  2.568e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.041665    Activity  5.125e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.041668    Activity  5.541e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  5.117e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  7.797e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.041668    Activity  7.663e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  2.568e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  5.125e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  5.541e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  5.117e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.797e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.663e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  2.568e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  5.125e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  5.541e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  5.117e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.797e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.663e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  2.568e-004  6.660000
7.140000  2.300000  6.900000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  5.125e-004  6.460000
6.940000  2.300000  6.700000  0.120000  0.010000 10.000000
```

```
      Exponential  0.020833    Activity  5.541e-004  6.500000
6.900000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  5.117e-004  6.500000
6.900000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.797e-004  6.500000
6.700000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  7.663e-004  6.500000
6.700000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
```

```
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000         --         --         --
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000
                  Area         --         --         --         --
--         -- -4.153061  1.020408  0.240000

Trace Coordinates:
  Latitude   Longitude
    34.1313  -118.1536
    34.1496  -118.1865
    34.1551  -118.2285
    34.1971  -118.2907
    34.2227  -118.3657
    34.2538  -118.4077
    34.2612  -118.4206

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC
```

****

Name: White Wolf
Region: USGS 2008 California
Category:Fault
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-ssdb
Fault Mechanism: Reverse
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.2

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	75	0	0.001	14.49

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.041665	Activity	6.798e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.041665	Activity	1.356e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.041668	Activity	2.489e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	1.948e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	3.488e-003	6.500000	7.000000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.041668	Activity	3.077e-003	6.500000	7.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Normal	0.083335	Activity	6.798e-004	6.960000	7.440000	2.300000	7.200000	0.120000	0.010000	10.000000
Normal	0.083335	Activity	1.356e-003	6.760000	7.240000	2.300000	7.000000	0.120000	0.010000	10.000000
Exponential	0.020833	Activity	2.489e-003	6.500000	7.200000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.020833	Activity	1.948e-003	6.500000	7.200000	0.000000	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.020833    Activity  3.488e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.077e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  6.798e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.356e-003  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  2.489e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.948e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.488e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.077e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000
           Normal  0.083335    Activity  6.798e-004  6.960000
7.440000  2.300000  7.200000  0.120000  0.010000 10.000000
           Normal  0.083335    Activity  1.356e-003  6.760000
7.240000  2.300000  7.000000  0.120000  0.010000 10.000000
      Exponential  0.020833    Activity  2.489e-003  6.500000
7.200000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  1.948e-003  6.500000
7.200000  0.000000  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.488e-003  6.500000
7.000000  1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.020833    Activity  3.077e-003  6.500000
7.000000  0.000000  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw
Bw      Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000        --        --        --
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
                  Area        --        --        --        --
--        -- -4.153061  1.020408  0.240000
```

```
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
      Length and width  4.000000  0.000000  0.001000  4.000000
0.000000  0.001000          --          --          --
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
                  Area          --          --          --          --
--          -- -4.153061  1.020408  0.240000
```

```
Trace Coordinates:
  Latitude   Longitude
    35.0276  -119.0070
    35.1464  -118.8110
    35.1776  -118.7790
    35.2097  -118.7350
    35.2322  -118.6720
    35.2673  -118.6020
    35.3204  -118.5380
    35.3711  -118.4870
    35.3839  -118.4708

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

Name: Extensional Gridded
Region: USGS 2008 Western US
Category:Composite Seismic Source
Database: C:\Users\jim.steele\AppData\Local\Risk Engineering\EZ-
FRISK\Regions\USGS2008 Lower 48 v2.00\Files\USGS 2008 Lower 48.bin-
ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forExtensional Gridded -------
Name: Extensional Gridded, Char, Normal
Region: USGS 2008 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
```

```
  Probability of Activity: 0.3333
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                   Yes
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                             Yes
  Rate at Minimum Magnitude, events per year: 0    Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, Char, Strike Slip
Region: USGS 2008 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3333
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                   Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                             Yes
  Rate at Minimum Magnitude, events per year: 0    Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike
```

```
Name: Extensional Gridded, GR, Normal
Region: USGS 2008 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                   Yes
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                             Yes
  Rate at Minimum Magnitude, events per year: 0    Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, GR, Strike Slip
Region: USGS 2008 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.1666
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 6.5

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                   Yes
  Fault Mechanism: Strike Slip
```

```
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

 ------ End Nested Sources for Extensional Gridded -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
         1      0.333333          Boore-Atkinson (2008) NGA USGS
2008 MRC
         1      0.333333          Campbell-Bozorgnia (2008) NGA
USGS 2008 MRC
         1      0.333333          Chiou-Youngs (2007) NGA USGS 2008
MRC

****************************************

MAGNITUDE CONVERSIONS

This analysis does not require any magnitude conversions.
Note:  Your analysis may indirectly use magnitude conversions that
are not listed here.

Echo File Creation Time: 17:08:41 Tuesday, May 28, 2019
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Probabilistic Hazard Results for EZ-FRISK 7.65 Build 004

SPECTRAL PERIOD: PGA
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.750e-001	4.791e-001	4.802e-001	4.658e-001
0.010	2.949e-001	2.962e-001	3.611e-001	2.274e-001
0.020	1.953e-001	2.005e-001	2.360e-001	1.496e-001
0.050	9.639e-002	1.074e-001	1.040e-001	7.780e-002
0.070	7.106e-002	8.234e-002	7.238e-002	5.847e-002
0.100	4.917e-002	5.924e-002	4.701e-002	4.126e-002
0.200	1.940e-002	2.389e-002	1.690e-002	1.741e-002
0.300	9.471e-003	1.102e-002	8.173e-003	9.219e-003
0.400	5.224e-003	5.582e-003	4.579e-003	5.511e-003
0.500	3.130e-003	3.044e-003	2.797e-003	3.548e-003
0.700	1.321e-003	1.066e-003	1.215e-003	1.682e-003
1.000	4.609e-004	2.906e-004	4.293e-004	6.628e-004
2.000	3.463e-005	1.231e-005	3.017e-005	6.142e-005
3.000	5.013e-006	1.226e-006	3.965e-006	9.848e-006

SPECTRAL PERIOD: 0.05
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.743e-001	4.796e-001	4.803e-001	4.629e-001
0.010	3.103e-001	3.146e-001	3.802e-001	2.360e-001
0.020	2.124e-001	2.172e-001	2.593e-001	1.608e-001
0.050	1.090e-001	1.187e-001	1.203e-001	8.805e-002
0.070	8.161e-002	9.165e-002	8.551e-002	6.768e-002

0.100	5.764e-002	6.679e-002	5.699e-002	4.915e-002
0.200	2.409e-002	2.843e-002	2.166e-002	2.219e-002
0.300	1.226e-002	1.383e-002	1.073e-002	1.223e-002
0.400	6.978e-003	7.358e-003	6.062e-003	7.514e-003
0.500	4.283e-003	4.198e-003	3.703e-003	4.946e-003
0.700	1.875e-003	1.597e-003	1.594e-003	2.435e-003
1.000	6.837e-004	4.859e-004	5.541e-004	1.011e-003
2.000	5.783e-005	2.695e-005	3.785e-005	1.087e-004
3.000	9.220e-006	3.211e-006	4.937e-006	1.951e-005

SPECTRAL PERIOD: 0.1
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.771e-001	4.802e-001	4.803e-001	4.707e-001
0.010	3.551e-001	3.708e-001	4.178e-001	2.766e-001
0.020	2.599e-001	2.703e-001	3.119e-001	1.974e-001
0.050	1.437e-001	1.544e-001	1.614e-001	1.152e-001
0.070	1.109e-001	1.215e-001	1.197e-001	9.160e-002
0.100	8.180e-002	9.144e-002	8.425e-002	6.971e-002
0.200	3.897e-002	4.454e-002	3.687e-002	3.551e-002
0.300	2.200e-002	2.478e-002	2.012e-002	2.110e-002
0.400	1.353e-002	1.483e-002	1.217e-002	1.358e-002
0.500	8.803e-003	9.373e-003	7.816e-003	9.220e-003
0.700	4.187e-003	4.227e-003	3.606e-003	4.726e-003
1.000	1.653e-003	1.576e-003	1.341e-003	2.043e-003
2.000	1.633e-004	1.427e-004	1.049e-004	2.422e-004
3.000	2.879e-005	2.420e-005	1.503e-005	4.715e-005

SPECTRAL PERIOD: 0.2
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.798e-001	4.803e-001	4.803e-001	4.789e-001
0.010	4.078e-001	4.299e-001	4.491e-001	3.444e-001
0.020	3.193e-001	3.382e-001	3.664e-001	2.534e-001
0.050	1.841e-001	1.970e-001	2.077e-001	1.477e-001
0.070	1.431e-001	1.545e-001	1.573e-001	1.175e-001
0.100	1.070e-001	1.170e-001	1.137e-001	9.037e-002
0.200	5.479e-002	6.173e-002	5.381e-002	4.884e-002
0.300	3.323e-002	3.781e-002	3.120e-002	3.067e-002
0.400	2.173e-002	2.474e-002	1.984e-002	2.063e-002
0.500	1.492e-002	1.694e-002	1.333e-002	1.451e-002
0.700	7.766e-003	8.763e-003	6.673e-003	7.864e-003
1.000	3.421e-003	3.869e-003	2.763e-003	3.629e-003
2.000	4.401e-004	5.315e-004	2.826e-004	5.061e-004
3.000	9.376e-005	1.217e-004	4.872e-005	1.109e-004

SPECTRAL PERIOD: 0.3
- Column 1: Acceleration (g)
- Column 2: Mean
- Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
- Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
- Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.801e-001	4.803e-001	4.803e-001	4.798e-001
0.010	4.195e-001	4.459e-001	4.483e-001	3.644e-001
0.020	3.317e-001	3.634e-001	3.638e-001	2.680e-001
0.050	1.892e-001	2.123e-001	2.039e-001	1.513e-001
0.070	1.457e-001	1.644e-001	1.541e-001	1.187e-001
0.100	1.080e-001	1.227e-001	1.114e-001	8.993e-002
0.200	5.504e-002	6.409e-002	5.332e-002	4.772e-002
0.300	3.355e-002	3.967e-002	3.118e-002	2.981e-002
0.400	2.208e-002	2.629e-002	1.993e-002	2.003e-002
0.500	1.527e-002	1.822e-002	1.348e-002	1.411e-002
0.700	8.074e-003	9.643e-003	6.872e-003	7.708e-003
1.000	3.657e-003	4.387e-003	2.962e-003	3.622e-003
2.000	5.170e-004	6.613e-004	3.519e-004	5.376e-004

3.000	1.191e-004	1.650e-004	6.867e-005	1.237e-004

SPECTRAL PERIOD: 0.4
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.802e-001	4.803e-001	4.803e-001	4.799e-001
0.010	4.135e-001	4.350e-001	4.372e-001	3.682e-001
0.020	3.168e-001	3.419e-001	3.405e-001	2.679e-001
0.050	1.737e-001	1.913e-001	1.827e-001	1.472e-001
0.070	1.330e-001	1.472e-001	1.375e-001	1.143e-001
0.100	9.849e-002	1.100e-001	9.965e-002	8.585e-002
0.200	5.058e-002	5.862e-002	4.829e-002	4.482e-002
0.300	3.092e-002	3.675e-002	2.836e-002	2.765e-002
0.400	2.037e-002	2.450e-002	1.819e-002	1.841e-002
0.500	1.410e-002	1.704e-002	1.238e-002	1.290e-002
0.700	7.506e-003	9.061e-003	6.442e-003	7.016e-003
1.000	3.454e-003	4.162e-003	2.893e-003	3.305e-003
2.000	5.115e-004	6.515e-004	3.892e-004	4.938e-004
3.000	1.200e-004	1.664e-004	8.164e-005	1.120e-004

SPECTRAL PERIOD: 0.5
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.802e-001	4.803e-001	4.803e-001	4.799e-001
0.010	4.034e-001	4.260e-001	4.235e-001	3.606e-001
0.020	3.019e-001	3.283e-001	3.201e-001	2.573e-001
0.050	1.626e-001	1.807e-001	1.692e-001	1.379e-001
0.070	1.243e-001	1.389e-001	1.277e-001	1.064e-001

```
    0.100  9.227e-002  1.041e-001  9.318e-002  7.953e-002
    0.200  4.773e-002  5.607e-002  4.607e-002  4.104e-002
    0.300  2.921e-002  3.538e-002  2.730e-002  2.496e-002
    0.400  1.923e-002  2.368e-002  1.758e-002  1.643e-002
    0.500  1.331e-002  1.651e-002  1.199e-002  1.142e-002
    0.700  7.097e-003  8.807e-003  6.311e-003  6.173e-003
    1.000  3.295e-003  4.057e-003  2.921e-003  2.907e-003
    2.000  5.033e-004  6.408e-004  4.394e-004  4.298e-004
    3.000  1.197e-004  1.660e-004  9.876e-005  9.440e-005

SPECTRAL PERIOD: 0.75
  Column 1: Acceleration (g)
  Column 2: Mean
  Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

        1           2           3           4           5
 1.0e-004  4.803e-001  4.803e-001  4.803e-001  4.803e-001
 1.0e-003  4.799e-001  4.802e-001  4.802e-001  4.793e-001
    0.010  3.584e-001  3.836e-001  3.728e-001  3.189e-001
    0.020  2.492e-001  2.738e-001  2.596e-001  2.141e-001
    0.050  1.281e-001  1.434e-001  1.312e-001  1.099e-001
    0.070  9.789e-002  1.103e-001  9.908e-002  8.426e-002
    0.100  7.273e-002  8.310e-002  7.255e-002  6.255e-002
    0.200  3.709e-002  4.427e-002  3.573e-002  3.125e-002
    0.300  2.224e-002  2.720e-002  2.100e-002  1.851e-002
    0.400  1.442e-002  1.779e-002  1.346e-002  1.200e-002
    0.500  9.878e-003  1.217e-002  9.174e-003  8.288e-003
    0.700  5.222e-003  6.326e-003  4.863e-003  4.477e-003
    1.000  2.425e-003  2.847e-003  2.306e-003  2.123e-003
    2.000  3.774e-004  4.348e-004  3.800e-004  3.173e-004
    3.000  9.082e-005  1.115e-004  9.121e-005  6.972e-005

SPECTRAL PERIOD: 1
  Column 1: Acceleration (g)
  Column 2: Mean
  Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
  Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
  Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC
```

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.790e-001	4.798e-001	4.797e-001	4.775e-001
0.010	3.075e-001	3.280e-001	3.186e-001	2.759e-001
0.020	2.020e-001	2.189e-001	2.091e-001	1.779e-001
0.050	1.024e-001	1.130e-001	1.038e-001	9.048e-002
0.070	7.868e-002	8.781e-002	7.878e-002	6.944e-002
0.100	5.857e-002	6.648e-002	5.788e-002	5.135e-002
0.200	2.901e-002	3.390e-002	2.813e-002	2.501e-002
0.300	1.683e-002	1.960e-002	1.628e-002	1.460e-002
0.400	1.064e-002	1.216e-002	1.035e-002	9.420e-003
0.500	7.168e-003	7.967e-003	7.041e-003	6.496e-003
0.700	3.711e-003	3.871e-003	3.762e-003	3.500e-003
1.000	1.693e-003	1.618e-003	1.819e-003	1.642e-003
2.000	2.512e-004	2.060e-004	3.149e-004	2.327e-004
3.000	5.764e-005	4.572e-005	7.836e-005	4.885e-005

SPECTRAL PERIOD: 2
- Column 1: Acceleration (g)
- Column 2: Mean
- Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
- Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
- Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.803e-001	4.803e-001	4.803e-001	4.803e-001
1.0e-003	4.457e-001	4.561e-001	4.479e-001	4.330e-001
0.010	1.585e-001	1.757e-001	1.585e-001	1.413e-001
0.020	9.865e-002	1.103e-001	9.771e-002	8.796e-002
0.050	5.115e-002	5.788e-002	5.087e-002	4.470e-002
0.070	3.853e-002	4.367e-002	3.873e-002	3.320e-002
0.100	2.705e-002	3.044e-002	2.770e-002	2.300e-002
0.200	1.092e-002	1.158e-002	1.187e-002	9.321e-003
0.300	5.547e-003	5.427e-003	6.331e-003	4.882e-003
0.400	3.223e-003	2.895e-003	3.852e-003	2.921e-003
0.500	2.045e-003	1.689e-003	2.555e-003	1.889e-003
0.700	9.685e-004	6.866e-004	1.316e-003	9.034e-004
1.000	3.970e-004	2.334e-004	5.978e-004	3.600e-004
2.000	4.596e-005	1.834e-005	8.440e-005	3.513e-005

3.000	9.288e-006	2.981e-006	1.879e-005	6.089e-006

SPECTRAL PERIOD: 3
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.799e-001	4.801e-001	4.800e-001	4.795e-001
1.0e-003	3.638e-001	3.879e-001	3.586e-001	3.448e-001
0.010	1.011e-001	1.140e-001	9.754e-002	9.188e-002
0.020	6.524e-002	7.319e-002	6.426e-002	5.827e-002
0.050	3.270e-002	3.641e-002	3.379e-002	2.789e-002
0.070	2.336e-002	2.575e-002	2.473e-002	1.960e-002
0.100	1.520e-002	1.641e-002	1.657e-002	1.263e-002
0.200	5.111e-003	5.046e-003	5.926e-003	4.360e-003
0.300	2.284e-003	2.052e-003	2.759e-003	2.041e-003
0.400	1.190e-003	9.798e-004	1.486e-003	1.105e-003
0.500	6.823e-004	5.201e-004	8.761e-004	6.507e-004
0.700	2.674e-004	1.800e-004	3.586e-004	2.637e-004
1.000	8.517e-005	5.021e-005	1.192e-004	8.604e-005
2.000	5.341e-006	2.502e-006	7.952e-006	5.570e-006
3.000	7.213e-007	3.027e-007	1.092e-006	7.692e-007

SPECTRAL PERIOD: 4
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
1.0e-004	4.766e-001	4.788e-001	4.768e-001	4.742e-001
1.0e-003	2.856e-001	3.169e-001	2.735e-001	2.664e-001
0.010	7.646e-002	8.477e-002	7.585e-002	6.876e-002
0.020	5.007e-002	5.531e-002	5.172e-002	4.320e-002
0.050	2.331e-002	2.529e-002	2.587e-002	1.878e-002
0.070	1.578e-002	1.675e-002	1.810e-002	1.249e-002

0.100	9.574e-003	9.794e-003	1.138e-002	7.550e-003
0.200	2.718e-003	2.462e-003	3.429e-003	2.263e-003
0.300	1.072e-003	8.771e-004	1.385e-003	9.524e-004
0.400	5.019e-004	3.790e-004	6.558e-004	4.709e-004
0.500	2.617e-004	1.853e-004	3.433e-004	2.566e-004
0.700	8.727e-005	5.608e-005	1.142e-004	9.154e-005
1.000	2.296e-005	1.338e-005	2.953e-005	2.595e-005
2.000	9.705e-007	4.756e-007	1.145e-006	1.291e-006
3.000	1.049e-007	4.656e-008	1.127e-007	1.555e-007

```
Start:  17:08:37 Tuesday, May 28, 2019
****************************************
Start processing input file: P:\ProjectsOther\Commercial\38628 High
School No. 8 Geohaz\EZFRISK\May 2019 Seconed Analysis\Project 1
High School No 8 - High School No. 8.ez f-shad
Application version: EZ-FRISK 7.65 Build 004
Vs30 (m/s) used in hazard calculations:  215
Analyzing site  Latitude: 34.2077 Longitude: -119.155
Validating setup.
Input data validated.
Preparing to calculate PSHA and DSHA.
Calculating hazard for each source.
Information: Using parallel processing of sources.
Start loop on sources:  17:08:41 Tuesday, May 28, 2019
Calculating hazard for: California Gridded : USGS 2008 California
Calculating hazard for: Clamshell-Sawpit : USGS 2008 California
Calculating hazard for: Elysian Park (Upper) : USGS 2008 California
Calculating hazard for: Anacapa-Dume : USGS 2008 California
Calculating hazard for: Channel Islands Thrust : USGS 2008
California
Calculating hazard for: Elsinore : USGS 2008 California
Calculating hazard for: Garlock : USGS 2008 California
Calculating hazard for: Hollywood : USGS 2008 California
Calculating hazard for nested source: Anacapa-Dume, alt 1 of
Anacapa-Dume.
Calculating hazard for nested source: Anacapa-Dume, alt 2 of
Anacapa-Dume.
Calculating hazard for nested source: California Gridded, Char,
2.1, Reverse of California Gridded.
Calculating hazard for nested source: California Gridded, Char,
2.1, Strike Slip of California Gridded.
Calculating hazard for nested source: Elsinore of Elsinore.
Calculating hazard for nested source: California Gridded, Char,
2.4, Strike Slip of California Gridded.
Calculating hazard for nested source: Garlock of Garlock.
Done calculating hazard for: Elysian Park (Upper) : USGS 2008
California.
Calculating hazard for: Holser, alt 1 : USGS 2008 California
Done calculating hazard for: Hollywood : USGS 2008 California.
Done calculating hazard for: Clamshell-Sawpit : USGS 2008
```

California.
Calculating hazard for: Malibu Coast : USGS 2008 California
Calculating hazard for nested source: Malibu Coast, alt 1 of Malibu Coast.
Calculating hazard for: Los Alamos-West Baseline : USGS 2008 California
Done calculating hazard for nested source: Malibu Coast, alt 1 of Malibu Coast.
Calculating hazard for nested source: Malibu Coast, alt 2 of Malibu Coast.
Calculating hazard for nested source: California Gridded, GR, 2.1, Strike Slip of California Gridded.
Done calculating hazard for: Holser, alt 1 : USGS 2008 California.
Calculating hazard for: Mission Ridge-Arroyo Parida-Santa Ana : USGS 2008 California
Calculating hazard for nested source: California Gridded, Char, 2.4, Reverse of California Gridded.
Done calculating hazard for nested source: Malibu Coast, alt 2 of Malibu Coast.
Calculating hazard for nested source: California Gridded, GR, 2.1, Reverse of California Gridded.
Done calculating hazard for nested source: Anacapa-Dume, alt 2 of Anacapa-Dume.
Done calculating hazard for: Los Alamos-West Baseline : USGS 2008 California.
Calculating hazard for: Newport-Inglewood : USGS 2008 California
Calculating hazard for nested source: Newport Inglewood Connected al of Newport-Inglewood.
Calculating hazard for nested source: California Gridded, GR, 2.4, Reverse of California Gridded.
Calculating hazard for nested source: California Gridded, GR, 2.4, Strike Slip of California Gridded.
Calculating hazard for nested source: Garlock;GE+GC of Garlock.
Done calculating hazard for nested source: Garlock;GE+GC of Garlock.
Calculating hazard for nested source: Garlock;GE+GC+GW of Garlock.
Calculating hazard for nested source: Garlock;GC+GW of Garlock.
Calculating hazard for nested source: Garlock;GC of Garlock.
Done calculating hazard for nested source: Garlock;GC of Garlock.
Calculating hazard for nested source: Garlock;GW of Garlock.

Done calculating hazard for nested source: Garlock;GE+GC+GW of Garlock.
Calculating hazard for nested source: Garlock;GE of Garlock.
Done calculating hazard for nested source: Garlock;GE of Garlock.
Done calculating hazard for nested source: Garlock;GC+GW of Garlock.
Calculating hazard for nested source: Elsinore HB M(A) of Elsinore.
Calculating hazard for nested source: Elsinore;GI of Elsinore.
Done calculating hazard for nested source: Elsinore;GI of Elsinore.
Calculating hazard for nested source: Elsinore;GI+T of Elsinore.
Done calculating hazard for nested source: Elsinore;GI+T of Elsinore.
Calculating hazard for nested source: Elsinore;CM of Elsinore.
Done calculating hazard for nested source: Elsinore;CM of Elsinore.
Calculating hazard for nested source: Elsinore;GI+T+J of Elsinore.
Done calculating hazard for nested source: Elsinore;GI+T+J of Elsinore.
Calculating hazard for nested source: Elsinore;GI+T+J+CM of Elsinore.
Done calculating hazard for nested source: Elsinore;GI+T+J+CM of Elsinore.
Calculating hazard for nested source: Elsinore;J of Elsinore.
Done calculating hazard for nested source: Elsinore;J of Elsinore.
Calculating hazard for nested source: Elsinore;J+CM of Elsinore.
Done calculating hazard for nested source: Elsinore;J+CM of Elsinore.
Calculating hazard for nested source: Elsinore;T+J of Elsinore.
Done calculating hazard for nested source: Elsinore;T+J of Elsinore.
Calculating hazard for nested source: Elsinore;T of Elsinore.
Done calculating hazard for nested source: Elsinore;T of Elsinore.
Done calculating hazard for nested source: Garlock;GW of Garlock.
Calculating hazard for nested source: Elsinore;T+J+CM of Elsinore.
Done calculating hazard for nested source: Elsinore;T+J+CM of Elsinore.
Calculating hazard for nested source: Elsinore;W of Elsinore.
Calculating hazard for nested source: Elsinore;W+GI+T of Elsinore.
Calculating hazard for nested source: Elsinore;W+GI of Elsinore.
Done calculating hazard for nested source: Elsinore;W+GI+T of Elsinore.

Done calculating hazard for nested source: Elsinore;W+GI of Elsinore.
Calculating hazard for nested source: Elsinore;W+GI+T+J of Elsinore.
Done calculating hazard for nested source: Elsinore;W of Elsinore.
Calculating hazard for nested source: Elsinore;W+GI+T+J+CM of Elsinore.
Calculating hazard for nested source: Newport Inglewood Connected alt 1 of Newport-Inglewood.
Done calculating hazard for: Malibu Coast : USGS 2008 California.
Calculating hazard for: North Channel : USGS 2008 California
Done calculating hazard for nested source: Newport Inglewood Connected alt 1 of Newport-Inglewood.
Calculating hazard for nested source: Newport Inglewood Connected alt 2 of Newport-Inglewood.
Done calculating hazard for nested source: Elsinore;W+GI+T+J of Elsinore.
Done calculating hazard for nested source: Newport Inglewood Connected alt 2 of Newport-Inglewood.
Calculating hazard for nested source: Newport-Inglewood (Offshore) of Newport-Inglewood.
Done calculating hazard for nested source: Newport-Inglewood (Offshore) of Newport-Inglewood.
Calculating hazard for nested source: Newport-Inglewood, alt 1 of Newport-Inglewood.
Done calculating hazard for nested source: Elsinore;W+GI+T+J+CM of Elsinore.
Calculating hazard for nested source: Newport-Inglewood, alt 2 of Newport-Inglewood.
Done calculating hazard for: North Channel : USGS 2008 California.
Calculating hazard for: Northridge : USGS 2008 California
Done calculating hazard for: Mission Ridge-Arroyo Parida-Santa Ana : USGS 2008 California.
Done calculating hazard for nested source: Anacapa-Dume, alt 1 of Anacapa-Dume.
Done calculating hazard for: Anacapa-Dume : USGS 2008 California.
Calculating hazard for: Oak Ridge (Onshore) : USGS 2008 California
Done calculating hazard for: Northridge : USGS 2008 California.
Calculating hazard for: Oak Ridge Connected : USGS 2008 California
Calculating hazard for: Oak Ridge (Offshore) : USGS 2008 California

Done calculating hazard for: Oak Ridge (Offshore) : USGS 2008 California.
Calculating hazard for: Palos Verdes : USGS 2008 California
Done calculating hazard for nested source: Newport-Inglewood, alt 2 of Newport-Inglewood.
Done calculating hazard for nested source: Newport-Inglewood, alt 1 of Newport-Inglewood.
Done calculating hazard for: Oak Ridge Connected : USGS 2008 California.
Calculating hazard for: Palos Verdes Connected : USGS 2008 California
Done calculating hazard for: Oak Ridge (Onshore) : USGS 2008 California.
Calculating hazard for: Pitas Point (Lower)-Montalvo : USGS 2008 California
Done calculating hazard for nested source: California Gridded, GR, 2.1, Strike Slip of California Gridded.
Done calculating hazard for nested source: California Gridded, Char, 2.1, Reverse of California Gridded.
Done calculating hazard for nested source: California Gridded, Char, 2.1, Strike Slip of California Gridded.
Done calculating hazard for nested source: Elsinore of Elsinore.
Done calculating hazard for: Puente Hills (Santa Fe Springs) : USGS 2008 California.
Done calculating hazard for: Puente Hills (LA) : USGS 2008 California.
Done calculating hazard for: Raymond : USGS 2008 California.
Calculating hazard for: Southern San Andreas : USGS 2008 California
Done calculating hazard for nested source: S. San Andreas;BB+NM+SM+NSB+SSB+BG of Southern San Andreas.
Calculating hazard for nested source: S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG of Southern San Andreas.
Done calculating hazard for nested source: S. San Andreas;SM+NSB+SSB of Southern San Andreas.
Done calculating hazard for nested source: S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO of Southern San Andreas.
Done calculating hazard for: Pitas Point (Lower, West) : USGS 2008 California.
Done calculating hazard for nested source: Newport Inglewood Connected al of Newport-Inglewood.

Done calculating hazard for: Newport-Inglewood : USGS 2008 California.
Calculating hazard for nested source: Santa Monica Connected alt 1 of Santa Monica.
Done calculating hazard for: Pitas Point (Lower)-Montalvo : USGS 2008 California.
Calculating hazard for: Santa Susana, alt 1 : USGS 2008 California
Calculating hazard for: Santa Ynez (East) : USGS 2008 California
Done calculating hazard for: San Gabriel : USGS 2008 California.
Done calculating hazard for: Red Mountain : USGS 2008 California.
Calculating hazard for: Simi-Santa Rosa : USGS 2008 California
Done calculating hazard for: San Cayetano : USGS 2008 California.
Done calculating hazard for: Simi-Santa Rosa : USGS 2008 California.
Calculating hazard for nested source: Extensional Gridded, GR, Strike Slip of Extensional Gridded.
Done calculating hazard for: Verdugo : USGS 2008 California.
Done calculating hazard for nested source: Extensional Gridded, GR, Normal of Extensional Gridded.
Done calculating hazard for nested source: Extensional Gridded, GR, Strike Slip of Extensional Gridded.
Done calculating hazard for: Santa Ynez Connected : USGS 2008 California.
Done calculating hazard for nested source: Extensional Gridded, Char, Normal of Extensional Gridded.
Done calculating hazard for nested source: Extensional Gridded, Char, Strike Slip of Extensional Gridded.
Done calculating hazard for: Extensional Gridded : USGS 2008 Western US.
Done calculating hazard for nested source: S. San Andreas of Southern San Andreas.
Done calculating hazard for: Southern San Andreas : USGS 2008 California.
End loop on sources: 17:08:52 Tuesday, May 28, 2019
Combining hazard from sources.
P:\ProjectsOther\Commercial\38628 High School No. 8 Geohaz\EZFRISK \May 2019 Seconed Analysis\Project 1 High School No 8 - High School No. 8.ezf-shad calculated successfully
Writing hazard results
Writing TSV Export Report

```
Writing probabilistic spectra results
Writing source contribution results
Writing activity rate results
Writing deaggregation results
Writing deterministic results
Finish: 17:08:56 Tuesday, May 28, 2019
```

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Probabilistic Spectra results for EZ-FRISK 7.65 Build 004

ANNUAL FREQUENCY OF EXCEEDANCE: 4.041e-004
RETURN PERIOD: 2474.9
PROBABILITY OF EXCEEDENCE: 2.0% IN 50.0 YEARS
Column 1: Spectral Period
Column 2: Acceleration (g) for: Mean
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS 2008 MRC
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008 MRC

1	2	3	4	5
PGA	1.036e+000	9.136e-001	1.016e+000	1.155e+000
0.05	1.159e+000	1.045e+000	1.085e+000	1.330e+000
0.1	1.525e+000	1.481e+000	1.386e+000	1.693e+000
0.2	2.045e+000	2.157e+000	1.794e+000	2.124e+000
0.3	2.141e+000	2.309e+000	1.912e+000	2.164e+000
0.4	2.136e+000	2.305e+000	1.974e+000	2.113e+000
0.5	2.128e+000	2.297e+000	2.046e+000	2.033e+000
0.75	1.950e+000	2.044e+000	1.953e+000	1.831e+000
1	1.683e+000	1.594e+000	1.812e+000	1.644e+000
2	9.930e-001	8.341e-001	1.149e+000	9.562e-001
3	6.035e-001	5.417e-001	6.692e-001	5.971e-001
4	4.309e-001	3.913e-001	4.727e-001	4.232e-001

Source Contribution results for EZ-FRISK 7.65 Build 004

Source: Anacapa-Dume
Region: USGS 2008 California
Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC

Period	Amp=0.0001	Amp=0.001	Amp=0.01	Amp=0.02	Amp=0.05	Amp=0.07	Amp=0.1	Amp=0.2	Amp=0.3	Amp=0.4	Amp=0.5	Amp=0.7	Amp=1	Amp=2	Amp=3
PGA	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.368e-003	1.345e-003	1.273e-003	8.579e-004	5.006e-004	2.837e-004	1.621e-004	5.641e-005	1.375e-005	3.571e-007	2.377e-008
0.05	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.370e-003	1.355e-003	1.301e-003	9.422e-004	5.897e-004	3.547e-004	2.131e-004	8.042e-005	2.147e-005	6.726e-007	5.016e-008
0.1	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.370e-003	1.352e-003	1.164e-003	8.876e-004	6.394e-004	4.507e-004	2.223e-004	8.119e-005	4.999e-006	5.723e-007
0.2	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.371e-003	1.310e-003	1.162e-003	9.747e-004	7.897e-004	4.937e-004	2.373e-004	2.573e-005	4.116e-006
0.3	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.371e-003	1.316e-003	1.182e-003	1.007e-003	8.309e-004	5.393e-004	2.735e-004	3.423e-005	6.102e-006
0.4	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.371e-003	1.313e-003	1.175e-003	9.968e-004	8.188e-004	5.268e-004	2.639e-004	3.192e-005	5.534e-006
0.5	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.374e-003	1.370e-003	1.302e-003	1.154e-003	9.715e-004	7.936e-004	5.081e-004	2.549e-004	3.181e-005	5.731e-006
0.75	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.374e-003	1.371e-003	1.358e-003	1.228e-003	1.020e-003	8.087e-004	6.282e-004	3.727e-004	1.739e-004	1.976e-005	3.507e-006
1	1.375e-003	1.375e-003	1.375e-003	1.375e-003	1.372e-003	1.363e-003	1.333e-003	1.111e-003	8.379e-004	6.075e-004	4.356e-004	2.260e-004	9.020e-005	7.393e-006	1.075e-006
2	1.375e-003	1.375e-003	1.374e-003	1.370e-003	1.285e-003	1.177e-003	9.922e-004	5.024e-004	2.551e-004	1.362e-004	7.648e-005	2.741e-005	7.462e-006	3.095e-007	3.183e-008
3	1.375e-003	1.375e-003	1.372e-003	1.343e-003	1.081e-003	8.774e-004	6.234e-004	2.046e-004	7.710e-005	3.285e-005					

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1.540e-005  4.167e-006  8.354e-007  1.880e-008  1.342e-009
         4  1.375e-003  1.375e-003  1.363e-003  1.281e-003  8.586e-
004  6.223e-004  3.837e-004  9.098e-005  2.776e-005  1.012e-005
4.193e-006  9.391e-007  1.536e-007  2.319e-009  1.310e-010
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.364e-
003  1.334e-003  1.246e-003  8.006e-004  4.506e-004  2.486e-004
1.391e-004  4.696e-005  1.109e-005  2.725e-007  1.761e-008
      0.05  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.369e-
003  1.350e-003  1.288e-003  9.090e-004  5.566e-004  3.291e-004
1.951e-004  7.210e-005  1.883e-005  5.650e-007  4.112e-008
       0.1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.370e-003  1.352e-003  1.161e-003  8.781e-004  6.256e-004
4.354e-004  2.092e-004  7.351e-005  4.064e-006  4.278e-007
       0.2  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.368e-003  1.277e-003  1.087e-003  8.708e-004
6.749e-004  3.897e-004  1.700e-004  1.489e-005  2.083e-006
       0.3  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.368e-003  1.282e-003  1.099e-003  8.869e-004
6.926e-004  4.057e-004  1.802e-004  1.646e-005  2.369e-006
       0.4  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.375e-
003  1.374e-003  1.369e-003  1.287e-003  1.105e-003  8.893e-004
6.900e-004  3.965e-004  1.700e-004  1.372e-005  1.771e-006
       0.5  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.375e-
003  1.374e-003  1.370e-003  1.292e-003  1.111e-003  8.927e-004
6.897e-004  3.907e-004  1.627e-004  1.184e-005  1.389e-006
      0.75  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.371e-003  1.359e-003  1.212e-003  9.693e-004  7.292e-004
5.331e-004  2.778e-004  1.067e-004  6.947e-006  7.911e-007
         1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.372e-
003  1.365e-003  1.336e-003  1.109e-003  8.224e-004  5.818e-004
4.053e-004  1.974e-004  7.161e-005  4.420e-006  5.100e-007
         2  1.375e-003  1.375e-003  1.375e-003  1.372e-003  1.313e-
003  1.228e-003  1.069e-003  5.884e-004  3.139e-004  1.725e-004
9.854e-005  3.579e-005  9.696e-006  3.723e-007  3.496e-008
         3  1.375e-003  1.375e-003  1.373e-003  1.356e-003  1.150e-
003  9.656e-004  7.148e-004  2.528e-004  9.791e-005  4.201e-005
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1.963e-005  5.206e-006  9.987e-007  1.918e-008  1.190e-009
         4  1.375e-003  1.375e-003  1.370e-003  1.322e-003  9.711e-
004  7.364e-004  4.760e-004  1.211e-004  3.761e-005  1.368e-005
5.604e-006  1.213e-006  1.870e-007  2.330e-009  1.121e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.365e-
003  1.342e-003  1.275e-003  9.115e-004  5.771e-004  3.536e-004
2.168e-004  8.498e-005  2.381e-005  8.321e-007  6.662e-008
      0.05  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.370e-
003  1.358e-003  1.317e-003  1.041e-003  7.312e-004  4.908e-004
3.256e-004  1.453e-004  4.716e-005  2.238e-006  2.157e-007
       0.1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.371e-003  1.358e-003  1.218e-003  9.902e-004  7.623e-004
5.715e-004  3.134e-004  1.293e-004  1.018e-005  1.338e-006
       0.2  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.369e-003  1.295e-003  1.141e-003  9.546e-004
7.747e-004  4.887e-004  2.391e-004  2.733e-005  4.541e-006
       0.3  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.373e-003  1.368e-003  1.290e-003  1.133e-003  9.451e-004
7.653e-004  4.815e-004  2.351e-004  2.681e-005  4.458e-006
       0.4  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.373e-003  1.368e-003  1.287e-003  1.122e-003  9.269e-004
7.413e-004  4.530e-004  2.110e-004  2.072e-005  3.039e-006
       0.5  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.373e-003  1.367e-003  1.276e-003  1.097e-003  8.893e-004
6.965e-004  4.070e-004  1.772e-004  1.432e-005  1.796e-006
      0.75  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.369e-003  1.353e-003  1.201e-003  9.639e-004  7.304e-004
5.375e-004  2.824e-004  1.088e-004  6.874e-006  7.504e-007
         1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.371e-
003  1.360e-003  1.328e-003  1.105e-003  8.274e-004  5.895e-004
4.116e-004  1.990e-004  7.011e-005  3.776e-006  3.804e-007
         2  1.375e-003  1.375e-003  1.374e-003  1.369e-003  1.278e-
003  1.170e-003  9.891e-004  5.031e-004  2.532e-004  1.329e-004
7.309e-005  2.499e-005  6.329e-006  2.120e-007  1.835e-008
         3  1.375e-003  1.375e-003  1.370e-003  1.328e-003  1.038e-
003  8.321e-004  5.848e-004  1.892e-004  7.095e-005  3.018e-005
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1.413e-005  3.827e-006  7.688e-007  1.744e-008  1.255e-009
         4  1.375e-003  1.375e-003  1.350e-003  1.234e-003  7.728e-
004  5.469e-004  3.307e-004  7.778e-005  2.419e-005  9.047e-006
3.851e-006  9.104e-007  1.604e-007  2.947e-009  1.928e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.366e-
003  1.340e-003  1.265e-003  8.567e-004  5.094e-004  2.953e-004
1.727e-004  6.278e-005  1.622e-005  4.872e-007  3.600e-008
      0.05  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.370e-
003  1.354e-003  1.302e-003  9.642e-004  6.259e-004  3.915e-004
2.446e-004  9.926e-005  2.915e-005  1.158e-006  1.023e-007
       0.1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.370e-003  1.354e-003  1.181e-003  9.186e-004  6.758e-004
4.859e-004  2.483e-004  9.468e-005  6.413e-006  7.794e-007
       0.2  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.369e-003  1.294e-003  1.130e-003  9.334e-004
7.464e-004  4.574e-004  2.155e-004  2.265e-005  3.580e-006
       0.3  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.369e-003  1.296e-003  1.138e-003  9.464e-004
7.630e-004  4.755e-004  2.296e-004  2.584e-005  4.310e-006
       0.4  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.369e-003  1.296e-003  1.134e-003  9.377e-004
7.500e-004  4.588e-004  2.149e-004  2.212e-005  3.448e-006
       0.5  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.374e-003  1.369e-003  1.290e-003  1.120e-003  9.178e-004
7.266e-004  4.352e-004  1.983e-004  1.932e-005  2.972e-006
      0.75  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.374e-
003  1.371e-003  1.357e-003  1.214e-003  9.843e-004  7.561e-004
5.663e-004  3.110e-004  1.298e-004  1.119e-005  1.683e-006
         1  1.375e-003  1.375e-003  1.375e-003  1.375e-003  1.372e-
003  1.363e-003  1.332e-003  1.108e-003  8.292e-004  5.929e-004
4.175e-004  2.075e-004  7.731e-005  5.196e-006  6.550e-007
         2  1.375e-003  1.375e-003  1.374e-003  1.370e-003  1.292e-
003  1.192e-003  1.017e-003  5.313e-004  2.741e-004  1.472e-004
8.271e-005  2.940e-005  7.829e-006  2.979e-007  2.838e-008
         3  1.375e-003  1.375e-003  1.372e-003  1.342e-003  1.090e-
003  8.917e-004  6.410e-004  2.155e-004  8.199e-005  3.501e-005
```

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1.639e-005  4.400e-006  8.677e-007  1.847e-008  1.262e-009
         4  1.375e-003  1.375e-003  1.361e-003  1.279e-003  8.675e-
004  6.352e-004  3.968e-004  9.663e-005  2.985e-005  1.095e-005
4.549e-006  1.021e-006  1.670e-007  2.532e-009  1.453e-010


Source: California Gridded
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.132e-001  4.121e-001  2.363e-001  1.424e-001  5.444e-
002  3.450e-002  1.967e-002  4.847e-003  1.660e-003  6.745e-004
3.071e-004  8.022e-005  1.558e-005  3.289e-007  2.223e-008
      0.05  4.132e-001  4.126e-001  2.543e-001  1.589e-001  6.507e-
002  4.271e-002  2.551e-002  7.176e-003  2.746e-003  1.227e-003
6.067e-004  1.816e-004  4.123e-005  1.203e-006  9.897e-008
       0.1  4.132e-001  4.131e-001  3.089e-001  2.112e-001  9.873e-
002  6.888e-002  4.441e-002  1.534e-002  6.961e-003  3.608e-003
2.032e-003  7.591e-004  2.244e-004  1.171e-005  1.397e-006
       0.2  4.132e-001  4.132e-001  3.655e-001  2.770e-001  1.391e-
001  9.820e-002  6.389e-002  2.253e-002  1.046e-002  5.544e-003
3.191e-003  1.241e-003  3.888e-004  2.440e-005  3.458e-006
       0.3  4.132e-001  4.132e-001  3.808e-001  3.014e-001  1.539e-
001  1.075e-001  6.858e-002  2.297e-002  1.033e-002  5.367e-003
3.050e-003  1.172e-003  3.661e-004  2.390e-005  3.568e-006
       0.4  4.132e-001  4.132e-001  3.703e-001  2.802e-001  1.328e-
001  9.018e-002  5.581e-002  1.763e-002  7.668e-003  3.900e-003
2.184e-003  8.256e-004  2.567e-004  1.745e-005  2.740e-006
       0.5  4.132e-001  4.132e-001  3.616e-001  2.668e-001  1.223e-
001  8.201e-002  5.013e-002  1.546e-002  6.651e-003  3.365e-003
1.882e-003  7.141e-004  2.250e-004  1.609e-005  2.636e-006
      0.75  4.132e-001  4.132e-001  3.206e-001  2.134e-001  8.584e-
002  5.499e-002  3.200e-002  8.914e-003  3.604e-003  1.750e-003
9.518e-004  3.495e-004  1.080e-004  7.744e-006  1.288e-006
         1  4.132e-001  4.128e-001  2.663e-001  1.592e-001  5.672e-
002  3.482e-002  1.932e-002  4.856e-003  1.837e-003  8.507e-004
4.465e-004  1.560e-004  4.591e-005  2.958e-006  4.504e-007
         2  4.132e-001  3.903e-001  1.164e-001  5.373e-002  1.346e-
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002  7.160e-003  3.384e-003  6.149e-004  1.941e-004  7.983e-005
3.841e-005  1.182e-005  3.027e-006  1.429e-007  1.780e-008
         3  4.131e-001  3.242e-001  5.663e-002  2.206e-002  4.131e-
003  1.946e-003  8.053e-004  1.134e-004  3.090e-005  1.137e-005
4.986e-006  1.309e-006  2.754e-007  8.155e-009  7.414e-010
         4  4.119e-001  2.545e-001  2.992e-002  1.012e-002  1.538e-
003  6.688e-004  2.547e-004  3.056e-005  7.553e-006  2.583e-006
1.066e-006  2.535e-007  4.758e-008  1.100e-009  8.524e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.132e-001  4.132e-001  2.990e-001  1.776e-001  5.697e-
002  3.348e-002  1.796e-002  4.445e-003  1.681e-003  7.628e-004
3.846e-004  1.191e-004  2.784e-005  8.073e-007  6.267e-008
      0.05  4.132e-001  4.132e-001  3.176e-001  2.002e-001  7.071e-
002  4.320e-002  2.418e-002  6.540e-003  2.630e-003  1.253e-003
6.581e-004  2.177e-004  5.479e-005  1.841e-006  1.558e-007
       0.1  4.132e-001  4.132e-001  3.539e-001  2.514e-001  1.072e-
001  7.058e-002  4.292e-002  1.390e-002  6.354e-003  3.363e-003
1.933e-003  7.417e-004  2.215e-004  1.066e-005  1.123e-006
       0.2  4.132e-001  4.132e-001  3.837e-001  3.040e-001  1.501e-
001  1.028e-001  6.449e-002  2.174e-002  1.022e-002  5.589e-003
3.328e-003  1.374e-003  4.548e-004  2.856e-005  3.630e-006
       0.3  4.132e-001  4.132e-001  3.828e-001  3.012e-001  1.458e-
001  9.860e-002  6.062e-002  1.916e-002  8.563e-003  4.509e-003
2.611e-003  1.039e-003  3.353e-004  2.101e-005  2.752e-006
       0.4  4.132e-001  4.132e-001  3.722e-001  2.786e-001  1.247e-
001  8.218e-002  4.920e-002  1.479e-002  6.430e-003  3.321e-003
1.896e-003  7.395e-004  2.340e-004  1.418e-005  1.813e-006
       0.5  4.132e-001  4.132e-001  3.590e-001  2.586e-001  1.114e-
001  7.253e-002  4.286e-002  1.248e-002  5.280e-003  2.668e-003
1.496e-003  5.684e-004  1.754e-004  1.013e-005  1.242e-006
      0.75  4.132e-001  4.132e-001  3.097e-001  1.992e-001  7.513e-
002  4.669e-002  2.629e-002  6.995e-003  2.816e-003  1.375e-003
7.508e-004  2.741e-004  8.089e-005  4.219e-006  4.835e-007
         1  4.132e-001  4.127e-001  2.569e-001  1.497e-001  5.000e-
002  2.981e-002  1.612e-002  4.008e-003  1.561e-003  7.459e-004
4.014e-004  1.437e-004  4.175e-005  2.165e-006  2.534e-007
         2  4.132e-001  3.821e-001  9.975e-002  4.280e-002  9.857e-
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003  5.228e-003  2.533e-003  5.279e-004  1.870e-004  8.326e-005
4.225e-005  1.374e-005  3.584e-006  1.535e-007  1.672e-008
         3  4.129e-001  2.952e-001  4.105e-002  1.497e-002  2.843e-
003  1.418e-003  6.464e-004  1.183e-004  3.768e-005  1.522e-005
7.062e-006  1.961e-006  4.204e-007  1.150e-008  9.321e-010
         4  4.098e-001  2.120e-001  2.170e-002  7.330e-003  1.273e-
003  6.176e-004  2.732e-004  4.572e-005  1.337e-005  5.002e-006
2.166e-006  5.350e-007  9.976e-008  2.005e-009  1.335e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.132e-001  3.997e-001  1.687e-001  9.344e-002  3.285e-
002  2.075e-002  1.218e-002  3.671e-003  1.570e-003  7.805e-004
4.236e-004  1.475e-004  3.938e-005  1.519e-006  1.415e-007
      0.05  4.132e-001  3.970e-001  1.772e-001  1.041e-001  4.050e-
002  2.661e-002  1.628e-002  5.318e-003  2.403e-003  1.250e-003
7.059e-004  2.627e-004  7.591e-005  3.476e-006  3.608e-007
       0.1  4.132e-001  4.043e-001  2.170e-001  1.394e-001  6.231e-
002  4.322e-002  2.801e-002  1.030e-002  5.066e-003  2.834e-003
1.709e-003  7.127e-004  2.367e-004  1.477e-005  1.866e-006
       0.2  4.132e-001  4.120e-001  2.830e-001  1.941e-001  9.168e-
002  6.440e-002  4.221e-002  1.593e-002  8.075e-003  4.680e-003
2.929e-003  1.317e-003  4.851e-004  3.939e-005  5.970e-006
       0.3  4.132e-001  4.127e-001  3.022e-001  2.081e-001  9.502e-
002  6.523e-002  4.153e-002  1.479e-002  7.285e-003  4.159e-003
2.581e-003  1.153e-003  4.253e-004  3.548e-005  5.540e-006
       0.4  4.132e-001  4.129e-001  3.056e-001  2.078e-001  9.085e-
002  6.095e-002  3.778e-002  1.276e-002  6.111e-003  3.419e-003
2.088e-003  9.074e-004  3.235e-004  2.476e-005  3.618e-006
       0.5  4.132e-001  4.129e-001  2.982e-001  1.972e-001  8.185e-
002  5.368e-002  3.246e-002  1.050e-002  4.919e-003  2.711e-003
1.633e-003  6.922e-004  2.381e-004  1.643e-005  2.201e-006
      0.75  4.132e-001  4.123e-001  2.572e-001  1.546e-001  5.591e-
002  3.484e-002  2.000e-002  5.921e-003  2.658e-003  1.424e-003
8.403e-004  3.457e-004  1.155e-004  7.541e-006  9.766e-007
         1  4.132e-001  4.106e-001  2.148e-001  1.191e-001  3.895e-
002  2.345e-002  1.302e-002  3.649e-003  1.595e-003  8.406e-004
4.910e-004  1.998e-004  6.630e-005  4.301e-006  5.546e-007
         2  4.132e-001  3.675e-001  8.313e-002  3.518e-002  8.203e-
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003  4.458e-003  2.260e-003  5.461e-004  2.165e-004  1.050e-004
5.692e-005  2.045e-005  5.905e-006  3.051e-007  3.688e-008
         3  4.125e-001  2.815e-001  3.752e-002  1.358e-002  2.688e-
003  1.404e-003  6.853e-004  1.495e-004  5.366e-005  2.378e-005
1.192e-005  3.761e-006  9.414e-007  3.735e-008  3.962e-009
         4  4.073e-001  2.047e-001  1.936e-002  6.335e-003  1.150e-
003  5.856e-004  2.762e-004  5.363e-005  1.741e-005  7.104e-006
3.327e-006  9.455e-007  2.118e-007  6.885e-009  6.612e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.132e-001  4.084e-001  2.347e-001  1.378e-001  4.809e-
002  2.957e-002  1.660e-002  4.321e-003  1.637e-003  7.393e-004
3.718e-004  1.156e-004  2.760e-005  8.849e-007  7.547e-008
      0.05  4.132e-001  4.076e-001  2.497e-001  1.544e-001  5.876e-
002  3.751e-002  2.199e-002  6.345e-003  2.593e-003  1.243e-003
6.569e-004  2.206e-004  5.731e-005  2.173e-006  2.052e-007
       0.1  4.132e-001  4.102e-001  2.933e-001  2.006e-001  8.942e-
002  6.089e-002  3.844e-002  1.318e-002  6.127e-003  3.268e-003
1.891e-003  7.378e-004  2.276e-004  1.238e-005  1.462e-006
       0.2  4.132e-001  4.128e-001  3.441e-001  2.584e-001  1.269e-
001  8.847e-002  5.686e-002  2.007e-002  9.585e-003  5.271e-003
3.150e-003  1.311e-003  4.429e-004  3.078e-005  4.353e-006
       0.3  4.132e-001  4.131e-001  3.553e-001  2.702e-001  1.316e-
001  9.043e-002  5.691e-002  1.897e-002  8.725e-003  4.678e-003
2.748e-003  1.121e-003  3.756e-004  2.680e-005  3.953e-006
       0.4  4.132e-001  4.131e-001  3.494e-001  2.555e-001  1.161e-
001  7.777e-002  4.760e-002  1.506e-002  6.736e-003  3.547e-003
2.056e-003  8.242e-004  2.714e-004  1.880e-005  2.724e-006
       0.5  4.132e-001  4.131e-001  3.396e-001  2.409e-001  1.052e-
001  6.941e-002  4.182e-002  1.281e-002  5.617e-003  2.915e-003
1.671e-003  6.582e-004  2.128e-004  1.422e-005  2.026e-006
      0.75  4.132e-001  4.129e-001  2.958e-001  1.891e-001  7.229e-
002  4.551e-002  2.610e-002  7.276e-003  3.026e-003  1.516e-003
8.476e-004  3.231e-004  1.015e-004  6.501e-006  9.160e-007
         1  4.132e-001  4.120e-001  2.460e-001  1.427e-001  4.856e-
002  2.936e-002  1.615e-002  4.171e-003  1.664e-003  8.124e-004
4.463e-004  1.665e-004  5.132e-005  3.141e-006  4.195e-007
         2  4.132e-001  3.800e-001  9.975e-002  4.391e-002  1.051e-
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002  5.615e-003  2.726e-003  5.630e-004  1.992e-004  8.935e-005
4.586e-005  1.534e-005  4.172e-006  2.005e-007  2.380e-008
         3  4.128e-001  3.003e-001  4.507e-002  1.687e-002  3.221e-
003  1.589e-003  7.123e-004  1.271e-004  4.074e-005  1.679e-005
7.988e-006  2.344e-006  5.457e-007  1.900e-008  1.879e-009
         4  4.097e-001  2.237e-001  2.366e-002  7.929e-003  1.320e-
003  6.240e-004  2.680e-004  4.330e-005  1.278e-005  4.897e-006
2.186e-006  5.780e-007  1.197e-007  3.330e-009  2.933e-010


Source: Channel Islands Thrust
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.153e-
003  1.120e-003  1.030e-003  6.274e-004  3.393e-004  1.818e-004
9.950e-005  3.249e-005  7.420e-006  1.711e-007  1.066e-008
      0.05  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.157e-
003  1.131e-003  1.057e-003  6.911e-004  3.990e-004  2.260e-004
1.296e-004  4.567e-005  1.137e-005  3.138e-007  2.182e-008
       0.1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.164e-
003  1.155e-003  1.123e-003  8.916e-004  6.272e-004  4.227e-004
2.821e-004  1.279e-004  4.273e-005  2.221e-006  2.311e-007
       0.2  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.167e-
003  1.165e-003  1.158e-003  1.060e-003  8.826e-004  6.938e-004
5.298e-004  2.996e-004  1.283e-004  1.095e-005  1.518e-006
       0.3  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.167e-
003  1.165e-003  1.159e-003  1.072e-003  9.096e-004  7.313e-004
5.716e-004  3.383e-004  1.542e-004  1.547e-005  2.414e-006
       0.4  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.167e-
003  1.165e-003  1.158e-003  1.066e-003  8.971e-004  7.157e-004
5.553e-004  3.242e-004  1.451e-004  1.388e-005  2.087e-006
       0.5  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.155e-003  1.053e-003  8.773e-004  6.954e-004
5.377e-004  3.138e-004  1.416e-004  1.418e-005  2.239e-006
      0.75  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.165e-
003  1.158e-003  1.135e-003  9.654e-004  7.496e-004  5.609e-004
4.147e-004  2.275e-004  9.735e-005  9.349e-006  1.504e-006
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         1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.160e-
003  1.144e-003  1.097e-003  8.390e-004  5.853e-004  3.988e-004
2.718e-004  1.304e-004  4.788e-005  3.342e-006  4.425e-007
         2  1.167e-003  1.167e-003  1.166e-003  1.157e-003  1.036e-
003  9.148e-004  7.340e-004  3.330e-004  1.586e-004  8.107e-005
4.407e-005  1.506e-005  3.905e-006  1.477e-007  1.440e-008
         3  1.167e-003  1.167e-003  1.160e-003  1.111e-003  8.224e-
004  6.409e-004  4.375e-004  1.352e-004  4.975e-005  2.091e-005
9.704e-006  2.591e-006  5.122e-007  1.118e-008  7.814e-010
         4  1.167e-003  1.167e-003  1.144e-003  1.035e-003  6.309e-
004  4.421e-004  2.645e-004  6.020e-005  1.807e-005  6.518e-006
2.679e-006  5.928e-007  9.565e-008  1.399e-009  7.728e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.145e-
003  1.101e-003  9.996e-004  6.003e-004  3.277e-004  1.782e-004
9.905e-005  3.327e-005  7.864e-006  1.951e-007  1.271e-008
      0.05  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.154e-
003  1.123e-003  1.045e-003  6.874e-004  4.052e-004  2.347e-004
1.374e-004  5.019e-005  1.302e-005  3.910e-007  2.857e-008
       0.1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.164e-
003  1.155e-003  1.124e-003  9.087e-004  6.554e-004  4.520e-004
3.075e-004  1.436e-004  4.927e-005  2.640e-006  2.747e-007
       0.2  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.153e-003  1.036e-003  8.476e-004  6.583e-004
4.985e-004  2.791e-004  1.186e-004  1.005e-005  1.390e-006
       0.3  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.154e-003  1.046e-003  8.659e-004  6.803e-004
5.210e-004  2.977e-004  1.297e-004  1.166e-005  1.675e-006
       0.4  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.155e-003  1.049e-003  8.671e-004  6.792e-004
5.173e-004  2.910e-004  1.231e-004  9.931e-006  1.292e-006
       0.5  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.165e-003  1.155e-003  1.050e-003  8.710e-004  6.839e-004
5.215e-004  2.928e-004  1.226e-004  9.289e-006  1.127e-006
      0.75  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.165e-
003  1.158e-003  1.136e-003  9.695e-004  7.563e-004  5.655e-004
4.151e-004  2.209e-004  8.812e-005  6.323e-006  7.660e-007
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         1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.160e-
003  1.144e-003  1.101e-003  8.698e-004  6.350e-004  4.513e-004
3.186e-004  1.607e-004  6.130e-005  4.257e-006  5.273e-007
         2  1.167e-003  1.167e-003  1.166e-003  1.159e-003  1.060e-
003  9.614e-004  8.117e-004  4.391e-004  2.404e-004  1.364e-004
8.031e-005  3.073e-005  8.840e-006  3.825e-007  3.842e-008
         3  1.167e-003  1.167e-003  1.162e-003  1.123e-003  8.846e-
004  7.264e-004  5.349e-004  1.992e-004  8.191e-005  3.695e-005
1.799e-005  5.088e-006  1.046e-006  2.289e-008  1.529e-009
         4  1.167e-003  1.167e-003  1.153e-003  1.076e-003  7.481e-
004  5.704e-004  3.802e-004  1.094e-004  3.735e-005  1.460e-005
6.335e-006  1.496e-006  2.527e-007  3.744e-009  1.986e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.167e-003  1.167e-003  1.167e-003  1.166e-003  1.145e-
003  1.107e-003  1.025e-003  6.983e-004  4.405e-004  2.737e-004
1.711e-004  7.000e-005  2.080e-005  8.351e-007  7.312e-008
      0.05  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.154e-
003  1.130e-003  1.070e-003  7.946e-004  5.437e-004  3.628e-004
2.414e-004  1.096e-004  3.671e-005  1.899e-006  1.944e-007
       0.1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.164e-
003  1.156e-003  1.130e-003  9.593e-004  7.490e-004  5.628e-004
4.162e-004  2.257e-004  9.323e-005  7.564e-006  1.025e-006
       0.2  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.163e-003  1.152e-003  1.048e-003  8.884e-004  7.233e-004
5.763e-004  3.567e-004  1.732e-004  2.016e-005  3.437e-006
       0.3  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.163e-003  1.150e-003  1.043e-003  8.816e-004  7.174e-004
5.721e-004  3.554e-004  1.738e-004  2.066e-005  3.576e-006
       0.4  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.162e-003  1.149e-003  1.035e-003  8.682e-004  7.005e-004
5.535e-004  3.369e-004  1.592e-004  1.682e-005  2.619e-006
       0.5  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.161e-003  1.146e-003  1.018e-003  8.409e-004  6.676e-004
5.189e-004  3.051e-004  1.367e-004  1.227e-005  1.664e-006
      0.75  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.162e-
003  1.151e-003  1.118e-003  9.335e-004  7.252e-004  5.449e-004
4.031e-004  2.177e-004  8.827e-005  6.422e-006  7.705e-007
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         1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.154e-
003  1.131e-003  1.079e-003  8.432e-004  6.192e-004  4.429e-004
3.136e-004  1.573e-004  5.853e-005  3.582e-006  3.902e-007
         2  1.167e-003  1.167e-003  1.165e-003  1.149e-003  1.015e-
003  9.033e-004  7.456e-004  3.811e-004  1.993e-004  1.088e-004
6.203e-005  2.252e-005  6.107e-006  2.348e-007  2.201e-008
         3  1.167e-003  1.167e-003  1.152e-003  1.081e-003  7.937e-
004  6.318e-004  4.492e-004  1.570e-004  6.312e-005  2.838e-005
1.391e-005  4.043e-006  8.766e-007  2.305e-008  1.804e-009
         4  1.167e-003  1.167e-003  1.115e-003  9.729e-004  5.888e-
004  4.226e-004  2.640e-004  6.873e-005  2.301e-005  9.099e-006
4.047e-006  1.023e-006  1.934e-007  4.063e-009  2.870e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.148e-
003  1.109e-003  1.018e-003  6.420e-004  3.692e-004  2.112e-004
1.232e-004  4.525e-005  1.203e-005  4.004e-007  3.216e-008
      0.05  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.155e-
003  1.128e-003  1.058e-003  7.244e-004  4.493e-004  2.745e-004
1.695e-004  6.848e-005  2.037e-005  8.681e-007  8.161e-008
       0.1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.164e-
003  1.155e-003  1.126e-003  9.199e-004  6.772e-004  4.792e-004
3.353e-004  1.657e-004  6.174e-005  4.142e-006  5.102e-007
       0.2  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.154e-003  1.048e-003  8.729e-004  6.918e-004
5.349e-004  3.118e-004  1.400e-004  1.372e-005  2.115e-006
       0.3  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.155e-003  1.054e-003  8.857e-004  7.097e-004
5.549e-004  3.305e-004  1.526e-004  1.593e-005  2.555e-006
       0.4  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.164e-003  1.154e-003  1.050e-003  8.775e-004  6.984e-004
5.420e-004  3.173e-004  1.425e-004  1.354e-005  1.999e-006
       0.5  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.166e-
003  1.163e-003  1.152e-003  1.040e-003  8.631e-004  6.823e-004
5.260e-004  3.039e-004  1.336e-004  1.191e-005  1.677e-006
      0.75  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.164e-
003  1.156e-003  1.130e-003  9.561e-004  7.437e-004  5.571e-004
4.110e-004  2.220e-004  9.125e-005  7.365e-006  1.013e-006
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         1  1.167e-003  1.167e-003  1.167e-003  1.167e-003  1.158e-
003  1.140e-003  1.092e-003  8.507e-004  6.132e-004  4.310e-004
3.014e-004  1.495e-004  5.590e-005  3.727e-006  4.533e-007
         2  1.167e-003  1.167e-003  1.166e-003  1.155e-003  1.037e-
003  9.265e-004  7.638e-004  3.844e-004  1.994e-004  1.088e-004
6.213e-005  2.277e-005  6.284e-006  2.550e-007  2.495e-008
         3  1.167e-003  1.167e-003  1.158e-003  1.105e-003  8.336e-
004  6.664e-004  4.739e-004  1.638e-004  6.493e-005  2.875e-005
1.387e-005  3.907e-006  8.114e-007  1.904e-008  1.371e-009
         4  1.167e-003  1.167e-003  1.137e-003  1.028e-003  6.559e-
004  4.784e-004  3.029e-004  7.943e-005  2.614e-005  1.007e-005
4.354e-006  1.037e-006  1.806e-007  3.069e-009  1.876e-010


Source: Clamshell-Sawpit
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.026e-004  6.026e-004  6.010e-004  5.728e-004  3.368e-
004  2.070e-004  9.754e-005  1.024e-005  1.625e-006  3.450e-007
8.995e-008  9.347e-009  6.186e-010  1.235e-012  1.818e-014
      0.05  6.026e-004  6.026e-004  6.015e-004  5.790e-004  3.609e-
004  2.294e-004  1.123e-004  1.271e-005  2.099e-006  4.572e-007
1.214e-007  1.295e-008  8.779e-010  1.824e-012  2.739e-014
       0.1  6.026e-004  6.026e-004  6.023e-004  5.943e-004  4.593e-
004  3.410e-004  2.045e-004  3.712e-005  8.363e-006  2.297e-006
7.347e-007  1.045e-007  9.721e-009  3.840e-011  8.544e-013
       0.2  6.026e-004  6.026e-004  6.026e-004  6.018e-004  5.617e-
004  4.975e-004  3.836e-004  1.291e-004  4.357e-005  1.607e-005
6.479e-006  1.308e-006  1.761e-007  1.411e-009  4.703e-011
       0.3  6.026e-004  6.026e-004  6.026e-004  6.021e-004  5.759e-
004  5.282e-004  4.334e-004  1.773e-004  6.971e-005  2.908e-005
1.298e-005  3.094e-006  5.036e-007  6.067e-009  2.624e-010
       0.4  6.026e-004  6.026e-004  6.026e-004  6.020e-004  5.707e-
004  5.172e-004  4.157e-004  1.604e-004  6.055e-005  2.452e-005
1.070e-005  2.464e-006  3.870e-007  4.355e-009  1.808e-010
       0.5  6.026e-004  6.026e-004  6.026e-004  6.018e-004  5.668e-
004  5.109e-004  4.086e-004  1.587e-004  6.118e-005  2.538e-005
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1.135e-005  2.740e-006  4.585e-007  6.069e-009  2.840e-010
      0.75  6.026e-004  6.026e-004  6.025e-004  5.994e-004  5.304e-
004  4.509e-004  3.329e-004  1.092e-004  3.876e-005  1.538e-005
6.709e-006  1.586e-006  2.662e-007  3.827e-009  1.974e-010
         1  6.026e-004  6.026e-004  6.022e-004  5.932e-004  4.713e-
004  3.667e-004  2.400e-004  5.919e-005  1.747e-005  6.063e-006
2.381e-006  4.802e-007  6.806e-008  7.055e-010  3.008e-011
         2  6.026e-004  6.026e-004  5.749e-004  4.616e-004  1.778e-
004  9.529e-005  4.082e-005  4.360e-006  8.075e-007  2.049e-007
6.393e-008  9.314e-009  9.648e-010  5.997e-012  2.020e-013
         3  6.026e-004  6.026e-004  4.887e-004  2.815e-004  5.305e-
005  2.078e-005  6.261e-006  3.240e-007  3.854e-008  7.096e-009
1.719e-009  1.702e-010  1.163e-011  3.165e-014  6.511e-016
         4  6.026e-004  6.024e-004  3.731e-004  1.569e-004  1.782e-
005  5.756e-006  1.415e-006  4.963e-008  4.717e-009  7.416e-010
1.591e-010  1.311e-011  7.378e-013  1.377e-015  2.271e-017
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.026e-004  6.026e-004  5.969e-004  5.335e-004  2.265e-
004  1.152e-004  4.311e-005  2.710e-006  3.087e-007  5.120e-008
1.096e-008  8.375e-010  3.958e-011  3.988e-014  3.878e-016
      0.05  6.026e-004  6.026e-004  5.995e-004  5.556e-004  2.774e-
004  1.539e-004  6.381e-005  4.975e-006  6.465e-007  1.179e-007
2.716e-008  2.323e-009  1.237e-010  1.573e-013  1.753e-015
       0.1  6.026e-004  6.026e-004  6.020e-004  5.868e-004  3.994e-
004  2.682e-004  1.402e-004  1.810e-005  3.217e-006  7.356e-007
2.024e-007  2.267e-008  1.609e-009  3.587e-012  5.553e-014
       0.2  6.026e-004  6.026e-004  6.025e-004  5.993e-004  5.111e-
004  4.105e-004  2.726e-004  6.171e-005  1.579e-005  4.724e-006
1.608e-006  2.492e-007  2.512e-008  1.119e-010  2.611e-012
       0.3  6.026e-004  6.026e-004  6.025e-004  6.003e-004  5.289e-
004  4.390e-004  3.061e-004  7.861e-005  2.196e-005  7.020e-006
2.521e-006  4.249e-007  4.696e-008  2.522e-010  6.591e-012
       0.4  6.026e-004  6.026e-004  6.025e-004  6.003e-004  5.228e-
004  4.257e-004  2.861e-004  6.458e-005  1.611e-005  4.669e-006
1.539e-006  2.243e-007  2.078e-008  7.433e-011  1.471e-012
       0.5  6.026e-004  6.026e-004  6.025e-004  5.995e-004  5.107e-
004  4.077e-004  2.670e-004  5.701e-005  1.379e-005  3.922e-006
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1.275e-006  1.824e-007  1.664e-008  5.822e-011  1.144e-012
      0.75  6.026e-004  6.026e-004  6.021e-004  5.905e-004  4.322e-
004  3.091e-004  1.771e-004  2.930e-005  6.274e-006  1.666e-006
5.201e-007  7.149e-008  6.434e-009  2.403e-011  5.190e-013
         1  6.026e-004  6.026e-004  6.006e-004  5.707e-004  3.432e-
004  2.180e-004  1.086e-004  1.363e-005  2.510e-006  6.040e-007
1.756e-007  2.191e-008  1.804e-009  5.924e-012  1.219e-013
         2  6.026e-004  6.026e-004  5.485e-004  3.765e-004  9.127e-
005  3.842e-005  1.226e-005  6.650e-007  7.787e-008  1.390e-008
3.249e-009  2.988e-010  1.838e-011  3.760e-014  6.219e-016
         3  6.026e-004  6.026e-004  4.393e-004  2.083e-004  2.558e-
005  8.191e-006  1.945e-006  5.891e-008  4.891e-009  6.831e-010
1.319e-010  9.080e-012  4.101e-013  4.577e-016  5.293e-018
         4  6.026e-004  6.024e-004  3.352e-004  1.191e-004  9.320e-
006  2.510e-006  4.950e-007  1.039e-008  6.937e-010  8.286e-011
1.416e-011  8.101e-013  3.002e-014  2.273e-017  2.092e-019
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.026e-004  6.026e-004  5.811e-004  4.515e-004  1.243e-
004  5.180e-005  1.562e-005  6.520e-007  5.944e-008  8.497e-009
1.630e-009  1.067e-010  4.329e-012  3.350e-015  2.838e-017
      0.05  6.026e-004  6.026e-004  5.885e-004  4.850e-004  1.590e-
004  7.200e-005  2.384e-005  1.207e-006  1.238e-007  1.927e-008
3.951e-009  2.862e-010  1.295e-011  1.244e-014  1.198e-016
       0.1  6.026e-004  6.026e-004  5.997e-004  5.603e-004  2.999e-
004  1.755e-004  7.830e-005  7.408e-006  1.111e-006  2.274e-007
5.774e-008  5.782e-009  3.697e-010  6.993e-013  1.005e-014
       0.2  6.026e-004  6.026e-004  6.022e-004  5.922e-004  4.446e-
004  3.236e-004  1.894e-004  3.267e-005  7.147e-006  1.923e-006
6.052e-007  8.406e-008  7.624e-009  2.863e-011  6.168e-013
       0.3  6.026e-004  6.026e-004  6.023e-004  5.939e-004  4.582e-
004  3.406e-004  2.050e-004  3.772e-005  8.599e-006  2.385e-006
7.686e-007  1.107e-007  1.043e-008  4.221e-011  9.499e-013
       0.4  6.026e-004  6.026e-004  6.022e-004  5.932e-004  4.534e-
004  3.347e-004  1.994e-004  3.553e-005  7.842e-006  2.106e-006
6.583e-007  8.943e-008  7.787e-009  2.549e-011  4.878e-013
       0.5  6.026e-004  6.026e-004  6.021e-004  5.902e-004  4.342e-
004  3.127e-004  1.810e-004  3.061e-005  6.600e-006  1.752e-006
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5.441e-007  7.358e-008  6.421e-009  2.154e-011  4.235e-013
      0.75  6.026e-004  6.026e-004  6.007e-004  5.734e-004  3.583e-
004  2.341e-004  1.210e-004  1.651e-005  3.193e-006  7.939e-007
2.362e-007  3.037e-008  2.560e-009  8.530e-012  1.734e-013
         1  6.026e-004  6.026e-004  5.972e-004  5.466e-004  2.873e-
004  1.721e-004  8.107e-005  9.398e-006  1.689e-006  4.035e-007
1.173e-007  1.476e-008  1.240e-009  4.345e-012  9.435e-014
         2  6.026e-004  6.026e-004  5.082e-004  3.078e-004  6.162e-
005  2.444e-005  7.403e-006  3.759e-007  4.333e-008  7.729e-009
1.817e-009  1.701e-010  1.081e-011  2.455e-014  4.426e-016
         3  6.026e-004  6.024e-004  3.562e-004  1.437e-004  1.531e-
005  4.823e-006  1.154e-006  3.848e-008  3.562e-009  5.508e-010
1.168e-010  9.487e-012  5.278e-013  9.757e-016  1.614e-017
         4  6.026e-004  6.006e-004  2.277e-004  6.729e-005  4.755e-
006  1.305e-006  2.729e-007  7.248e-009  6.013e-010  8.698e-011
1.763e-011  1.352e-012  7.185e-014  1.269e-016  2.102e-018
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.026e-004  6.026e-004  5.930e-004  5.193e-004  2.292e-
004  1.247e-004  5.209e-005  4.535e-006  6.645e-007  1.349e-007
3.418e-008  3.430e-009  2.208e-010  4.261e-013  6.200e-015
      0.05  6.026e-004  6.026e-004  5.965e-004  5.399e-004  2.658e-
004  1.518e-004  6.667e-005  6.297e-006  9.564e-007  1.981e-007
5.085e-008  5.185e-009  3.382e-010  6.644e-013  9.754e-015
       0.1  6.026e-004  6.026e-004  6.013e-004  5.805e-004  3.862e-
004  2.616e-004  1.410e-004  2.087e-005  4.230e-006  1.087e-006
3.316e-007  4.432e-008  3.900e-009  1.423e-011  3.067e-013
       0.2  6.026e-004  6.026e-004  6.024e-004  5.977e-004  5.058e-
004  4.105e-004  2.819e-004  7.450e-005  2.217e-005  7.574e-006
2.897e-006  5.470e-007  6.960e-008  5.173e-010  1.675e-011
       0.3  6.026e-004  6.026e-004  6.025e-004  5.988e-004  5.210e-
004  4.360e-004  3.148e-004  9.788e-005  3.342e-005  1.283e-005
5.424e-006  1.210e-006  1.870e-007  2.121e-009  8.999e-011
       0.4  6.026e-004  6.026e-004  6.024e-004  5.985e-004  5.156e-
004  4.259e-004  3.004e-004  8.683e-005  2.817e-005  1.043e-005
4.300e-006  9.259e-007  1.385e-007  1.485e-009  6.093e-011
       0.5  6.026e-004  6.026e-004  6.024e-004  5.972e-004  5.039e-
004  4.104e-004  2.855e-004  8.210e-005  2.719e-005  1.035e-005
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4.391e-006  9.987e-007  1.605e-007  2.050e-009  9.520e-011
      0.75  6.026e-004  6.026e-004  6.018e-004  5.878e-004  4.403e-
004  3.313e-004  2.103e-004  5.167e-005  1.608e-005  5.947e-006
2.488e-006  5.627e-007  9.174e-008  1.287e-009  6.603e-011
         1  6.026e-004  6.026e-004  6.000e-004  5.702e-004  3.673e-
004  2.523e-004  1.433e-004  2.741e-005  7.224e-006  2.357e-006
8.913e-007  1.723e-007  2.370e-008  2.386e-010  1.010e-011
         2  6.026e-004  6.026e-004  5.439e-004  3.820e-004  1.102e-
004  5.272e-005  2.016e-005  1.800e-006  3.096e-007  7.552e-008
2.300e-008  3.261e-009  3.313e-010  2.020e-012  6.769e-014
         3  6.026e-004  6.025e-004  4.281e-004  2.112e-004  3.131e-
005  1.126e-005  3.120e-006  1.405e-007  1.566e-008  2.776e-009
6.560e-010  6.294e-011  4.190e-012  1.103e-014  2.242e-016
         4  6.026e-004  6.018e-004  3.120e-004  1.144e-004  1.063e-
005  3.191e-006  7.278e-007  2.242e-008  2.004e-009  3.038e-010
6.362e-011  5.091e-012  2.799e-013  5.089e-016  8.342e-018


Source: Elsinore
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.283e-003  1.283e-003  1.232e-003  1.161e-003  8.303e-
004  5.991e-004  3.494e-004  6.114e-005  1.371e-005  3.791e-006
1.226e-006  1.792e-007  1.738e-008  7.667e-011  1.838e-012
      0.05  1.283e-003  1.283e-003  1.233e-003  1.166e-003  8.525e-
004  6.266e-004  3.753e-004  7.060e-005  1.674e-005  4.848e-006
1.631e-006  2.545e-007  2.662e-008  1.378e-010  3.644e-012
       0.1  1.283e-003  1.283e-003  1.246e-003  1.192e-003  9.696e-
004  7.817e-004  5.328e-004  1.370e-004  3.976e-005  1.333e-005
5.031e-006  9.346e-007  1.180e-007  8.967e-010  3.022e-011
       0.2  1.283e-003  1.283e-003  1.274e-003  1.244e-003  1.125e-
003  1.013e-003  8.196e-004  3.259e-004  1.243e-004  5.025e-005
2.174e-005  4.876e-006  7.315e-007  7.128e-009  2.635e-010
       0.3  1.283e-003  1.283e-003  1.280e-003  1.263e-003  1.164e-
003  1.067e-003  8.936e-004  4.035e-004  1.718e-004  7.612e-005
3.562e-005  9.094e-006  1.587e-006  2.152e-008  9.870e-010
       0.4  1.283e-003  1.283e-003  1.282e-003  1.270e-003  1.184e-
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003  1.094e-003  9.278e-004  4.356e-004  1.905e-004  8.599e-005
4.080e-005  1.062e-005  1.885e-006  2.621e-008  1.212e-009
       0.5  1.283e-003  1.283e-003  1.282e-003  1.273e-003  1.191e-
003  1.102e-003  9.372e-004  4.510e-004  2.040e-004  9.536e-005
4.679e-005  1.296e-005  2.494e-006  4.245e-008  2.272e-009
      0.75  1.283e-003  1.283e-003  1.282e-003  1.270e-003  1.157e-
003  1.037e-003  8.403e-004  3.612e-004  1.556e-004  7.144e-005
3.501e-005  9.905e-006  2.017e-006  4.263e-008  2.772e-009
         1  1.283e-003  1.283e-003  1.281e-003  1.264e-003  1.109e-
003  9.562e-004  7.293e-004  2.670e-004  1.033e-004  4.390e-005
2.028e-005  5.262e-006  9.831e-007  1.790e-008  1.079e-009
         2  1.283e-003  1.283e-003  1.264e-003  1.172e-003  7.495e-
004  5.271e-004  3.126e-004  6.858e-005  2.024e-005  7.283e-006
3.010e-006  6.811e-007  1.148e-007  1.938e-009  1.201e-010
         3  1.283e-003  1.283e-003  1.214e-003  9.997e-004  4.454e-
004  2.632e-004  1.290e-004  1.999e-005  4.940e-006  1.585e-006
6.012e-007  1.200e-007  1.769e-008  2.255e-010  1.168e-011
         4  1.283e-003  1.283e-003  1.150e-003  8.409e-004  2.829e-
004  1.473e-004  6.265e-005  7.208e-006  1.475e-006  4.109e-007
1.392e-007  2.329e-008  2.830e-009  2.452e-011  1.010e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.283e-003  1.283e-003  1.268e-003  1.160e-003  6.099e-
004  3.580e-004  1.610e-004  1.568e-005  2.413e-006  5.049e-007
1.308e-007  1.356e-008  9.042e-010  1.880e-012  2.870e-014
      0.05  1.283e-003  1.283e-003  1.272e-003  1.189e-003  6.991e-
004  4.387e-004  2.139e-004  2.470e-005  4.208e-006  9.460e-007
2.590e-007  2.915e-008  2.120e-009  5.205e-012  8.760e-014
       0.1  1.283e-003  1.283e-003  1.278e-003  1.236e-003  8.957e-
004  6.478e-004  3.779e-004  6.483e-005  1.408e-005  3.759e-006
1.175e-006  1.612e-007  1.439e-008  5.219e-011  1.100e-012
       0.2  1.283e-003  1.283e-003  1.282e-003  1.271e-003  1.108e-
003  9.339e-004  6.755e-004  1.979e-004  6.149e-005  2.144e-005
8.285e-006  1.575e-006  2.002e-007  1.466e-009  4.699e-011
       0.3  1.283e-003  1.283e-003  1.283e-003  1.277e-003  1.160e-
003  1.015e-003  7.776e-004  2.672e-004  9.329e-005  3.560e-005
1.481e-005  3.168e-006  4.596e-007  4.438e-009  1.689e-010
       0.4  1.283e-003  1.283e-003  1.283e-003  1.277e-003  1.160e-
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003  1.010e-003  7.642e-004  2.462e-004  8.041e-005  2.889e-005
1.139e-005  2.218e-006  2.870e-007  2.113e-009  6.643e-011
       0.5  1.283e-003  1.283e-003  1.283e-003  1.277e-003  1.159e-
003  1.010e-003  7.665e-004  2.522e-004  8.454e-005  3.117e-005
1.259e-005  2.561e-006  3.494e-007  2.879e-009  9.651e-011
      0.75  1.283e-003  1.283e-003  1.282e-003  1.268e-003  1.082e-
003  8.965e-004  6.380e-004  1.896e-004  6.287e-005  2.375e-005
9.974e-006  2.227e-006  3.505e-007  4.284e-009  1.927e-010
         1  1.283e-003  1.283e-003  1.280e-003  1.251e-003  9.794e-
004  7.627e-004  5.032e-004  1.306e-004  4.117e-005  1.528e-005
6.400e-006  1.445e-006  2.341e-007  3.149e-009  1.532e-010
         2  1.283e-003  1.283e-003  1.242e-003  1.075e-003  5.323e-
004  3.283e-004  1.691e-004  2.952e-005  7.910e-006  2.680e-006
1.055e-006  2.196e-007  3.307e-008  4.065e-010  1.961e-011
         3  1.283e-003  1.283e-003  1.162e-003  8.541e-004  2.883e-
004  1.524e-004  6.721e-005  8.752e-006  1.939e-006  5.649e-007
1.962e-007  3.338e-008  4.013e-009  3.127e-011  1.151e-012
         4  1.283e-003  1.283e-003  1.066e-003  6.765e-004  1.755e-
004  8.455e-005  3.386e-005  3.585e-006  6.865e-007  1.785e-007
5.649e-008  8.311e-009  8.526e-010  4.857e-012  1.488e-013
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.283e-003  1.283e-003  1.200e-003  1.029e-003  4.574e-
004  2.524e-004  1.090e-004  1.103e-005  1.885e-006  4.377e-007
1.246e-007  1.510e-008  1.202e-009  3.547e-012  6.628e-014
      0.05  1.283e-003  1.283e-003  1.204e-003  1.064e-003  5.349e-
004  3.146e-004  1.461e-004  1.723e-005  3.243e-006  8.106e-007
2.448e-007  3.257e-008  2.873e-009  1.045e-011  2.212e-013
       0.1  1.283e-003  1.283e-003  1.231e-003  1.156e-003  7.960e-
004  5.649e-004  3.279e-004  6.165e-005  1.548e-005  4.796e-006
1.724e-006  3.020e-007  3.622e-008  2.476e-010  7.694e-012
       0.2  1.283e-003  1.283e-003  1.266e-003  1.225e-003  1.022e-
003  8.435e-004  5.986e-004  1.779e-004  5.950e-005  2.274e-005
9.669e-006  2.208e-006  3.565e-007  4.545e-009  2.076e-010
       0.3  1.283e-003  1.283e-003  1.275e-003  1.243e-003  1.056e-
003  8.839e-004  6.406e-004  2.009e-004  6.961e-005  2.732e-005
1.187e-005  2.805e-006  4.708e-007  6.519e-009  3.136e-010
       0.4  1.283e-003  1.283e-003  1.278e-003  1.252e-003  1.069e-
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003  8.935e-004  6.416e-004  1.918e-004  6.333e-005  2.381e-005
9.947e-006  2.192e-006  3.357e-007  3.654e-009  1.464e-010
       0.5  1.283e-003  1.283e-003  1.279e-003  1.254e-003  1.056e-
003  8.699e-004  6.128e-004  1.740e-004  5.480e-005  1.963e-005
7.813e-006  1.566e-006  2.105e-007  1.637e-009  5.144e-011
      0.75  1.283e-003  1.283e-003  1.278e-003  1.242e-003  9.656e-
004  7.481e-004  4.881e-004  1.201e-004  3.551e-005  1.231e-005
4.809e-006  9.486e-007  1.274e-007  1.042e-009  3.487e-011
         1  1.283e-003  1.283e-003  1.275e-003  1.223e-003  8.737e-
004  6.428e-004  3.960e-004  8.886e-005  2.550e-005  8.776e-006
3.440e-006  6.930e-007  9.746e-008  9.403e-010  3.648e-011
         2  1.283e-003  1.283e-003  1.225e-003  1.014e-003  4.459e-
004  2.594e-004  1.242e-004  1.788e-005  4.134e-006  1.247e-006
4.470e-007  8.058e-008  1.042e-008  9.646e-011  3.974e-012
         3  1.283e-003  1.283e-003  1.103e-003  7.467e-004  2.204e-
004  1.101e-004  4.521e-005  4.959e-006  9.926e-007  2.721e-007
9.094e-008  1.488e-008  1.761e-009  1.444e-011  5.753e-013
         4  1.283e-003  1.283e-003  9.319e-004  5.182e-004  1.131e-
004  5.091e-005  1.883e-005  1.712e-006  3.099e-007  7.948e-008
2.533e-008  3.884e-009  4.344e-010  3.320e-012  1.305e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.283e-003  1.283e-003  1.233e-003  1.117e-003  6.325e-
004  4.032e-004  2.065e-004  2.929e-005  6.003e-006  1.578e-006
4.938e-007  6.930e-008  6.496e-009  2.737e-011  6.443e-013
      0.05  1.283e-003  1.283e-003  1.236e-003  1.140e-003  6.955e-
004  4.600e-004  2.451e-004  3.751e-005  8.065e-006  2.202e-006
7.116e-007  1.054e-007  1.054e-008  5.114e-011  1.317e-012
       0.1  1.283e-003  1.283e-003  1.252e-003  1.195e-003  8.871e-
004  6.648e-004  4.129e-004  8.782e-005  2.311e-005  7.296e-006
2.643e-006  4.659e-007  5.620e-008  3.988e-010  1.301e-011
       0.2  1.283e-003  1.283e-003  1.274e-003  1.247e-003  1.085e-
003  9.302e-004  6.979e-004  2.339e-004  8.178e-005  3.148e-005
1.323e-005  2.886e-006  4.294e-007  4.380e-009  1.727e-010
       0.3  1.283e-003  1.283e-003  1.279e-003  1.261e-003  1.127e-
003  9.886e-004  7.706e-004  2.905e-004  1.116e-004  4.635e-005
2.077e-005  5.022e-006  8.390e-007  1.083e-008  4.899e-010
       0.4  1.283e-003  1.283e-003  1.281e-003  1.266e-003  1.138e-
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003  9.991e-004  7.779e-004  2.912e-004  1.114e-004  4.623e-005
2.071e-005  5.009e-006  8.359e-007  1.066e-008  4.749e-010
       0.5  1.283e-003  1.283e-003  1.281e-003  1.268e-003  1.135e-
003  9.939e-004  7.722e-004  2.924e-004  1.145e-004  4.872e-005
2.240e-005  5.694e-006  1.018e-006  1.566e-008  8.068e-010
      0.75  1.283e-003  1.283e-003  1.281e-003  1.260e-003  1.068e-
003  8.940e-004  6.555e-004  2.237e-004  8.466e-005  3.583e-005
1.660e-005  4.360e-006  8.317e-007  1.598e-008  9.997e-010
         1  1.283e-003  1.283e-003  1.279e-003  1.246e-003  9.874e-
004  7.873e-004  5.428e-004  1.622e-004  5.665e-005  2.265e-005
1.004e-005  2.467e-006  4.382e-007  7.330e-009  4.228e-010
         2  1.283e-003  1.283e-003  1.244e-003  1.087e-003  5.759e-
004  3.716e-004  2.020e-004  3.866e-005  1.076e-005  3.737e-006
1.504e-006  3.271e-007  5.278e-008  8.137e-010  4.790e-011
         3  1.283e-003  1.283e-003  1.160e-003  8.668e-004  3.180e-
004  1.752e-004  8.048e-005  1.123e-005  2.624e-006  8.072e-007
2.961e-007  5.608e-008  7.820e-009  9.042e-011  4.470e-012
         4  1.283e-003  1.283e-003  1.049e-003  6.785e-004  1.905e-
004  9.426e-005  3.845e-005  4.168e-006  8.238e-007  2.230e-007
7.368e-008  1.183e-008  1.372e-009  1.090e-011  4.297e-013


Source: Elysian Park (Upper)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.339e-003  1.339e-003  1.339e-003  1.326e-003  1.057e-
003  8.007e-004  4.903e-004  9.142e-005  2.063e-005  5.630e-006
1.783e-006  2.478e-007  2.225e-008  7.934e-011  1.629e-012
      0.05  1.339e-003  1.339e-003  1.339e-003  1.329e-003  1.094e-
003  8.502e-004  5.388e-004  1.086e-004  2.570e-005  7.252e-006
2.356e-006  3.400e-007  3.171e-008  1.212e-010  2.584e-012
       0.1  1.339e-003  1.339e-003  1.339e-003  1.336e-003  1.222e-
003  1.058e-003  7.875e-004  2.424e-004  7.720e-005  2.733e-005
1.067e-005  2.055e-006  2.637e-007  1.943e-009  6.204e-011
       0.2  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.316e-
003  1.258e-003  1.113e-003  5.683e-004  2.597e-004  1.205e-004
5.832e-005  1.558e-005  2.829e-006  4.053e-008  1.890e-009
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       0.3  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.323e-
003  1.280e-003  1.165e-003  6.672e-004  3.386e-004  1.717e-004
8.969e-005  2.720e-005  5.733e-006  1.140e-007  6.591e-009
       0.4  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.319e-
003  1.270e-003  1.141e-003  6.227e-004  3.032e-004  1.487e-004
7.552e-005  2.189e-005  4.386e-006  7.846e-008  4.243e-009
       0.5  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.315e-
003  1.259e-003  1.122e-003  6.042e-004  2.948e-004  1.459e-004
7.496e-005  2.232e-005  4.658e-006  9.368e-008  5.556e-009
      0.75  1.339e-003  1.339e-003  1.339e-003  1.338e-003  1.274e-
003  1.171e-003  9.739e-004  4.358e-004  1.903e-004  8.785e-005
4.310e-005  1.215e-005  2.450e-006  4.962e-008  3.103e-009
         1  1.339e-003  1.339e-003  1.339e-003  1.334e-003  1.198e-
003  1.033e-003  7.765e-004  2.646e-004  9.564e-005  3.831e-005
1.680e-005  3.987e-006  6.682e-007  9.449e-009  4.793e-010
         2  1.339e-003  1.339e-003  1.317e-003  1.173e-003  6.007e-
004  3.670e-004  1.816e-004  2.568e-005  5.571e-006  1.576e-006
5.337e-007  8.765e-008  1.026e-008  8.008e-011  3.067e-012
         3  1.339e-003  1.339e-003  1.211e-003  8.426e-004  2.247e-
004  1.008e-004  3.504e-005  2.366e-006  3.257e-007  6.624e-008
1.730e-008  1.912e-009  1.463e-010  4.923e-013  1.144e-014
         4  1.339e-003  1.339e-003  1.031e-003  5.493e-004  8.893e-
005  3.260e-005  9.113e-006  4.026e-007  4.339e-008  7.435e-009
1.703e-009  1.546e-010  9.634e-012  2.190e-014  4.059e-016
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.339e-003  1.339e-003  1.338e-003  1.314e-003  9.529e-
004  6.682e-004  3.686e-004  5.343e-005  1.018e-005  2.445e-006
6.985e-007  8.264e-008  6.210e-009  1.537e-011  2.521e-013
      0.05  1.339e-003  1.339e-003  1.339e-003  1.325e-003  1.046e-
003  7.830e-004  4.710e-004  8.338e-005  1.806e-005  4.763e-006
1.465e-006  1.940e-007  1.644e-008  5.156e-011  9.715e-013
       0.1  1.339e-003  1.339e-003  1.339e-003  1.336e-003  1.215e-
003  1.040e-003  7.582e-004  2.158e-004  6.407e-005  2.134e-005
7.895e-006  1.388e-006  1.594e-007  9.094e-010  2.438e-011
       0.2  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.302e-
003  1.223e-003  1.042e-003  4.667e-004  1.920e-004  8.190e-005
3.697e-005  8.840e-006  1.419e-006  1.573e-008  6.257e-010
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       0.3  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.312e-
003  1.248e-003  1.091e-003  5.331e-004  2.348e-004  1.057e-004
4.983e-005  1.276e-005  2.209e-006  2.851e-008  1.243e-009
       0.4  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.312e-
003  1.244e-003  1.077e-003  4.942e-004  2.024e-004  8.499e-005
3.758e-005  8.579e-006  1.285e-006  1.169e-008  3.984e-010
       0.5  1.339e-003  1.339e-003  1.339e-003  1.339e-003  1.307e-
003  1.231e-003  1.050e-003  4.568e-004  1.788e-004  7.233e-005
3.098e-005  6.717e-006  9.471e-007  7.556e-009  2.364e-010
      0.75  1.339e-003  1.339e-003  1.339e-003  1.337e-003  1.247e-
003  1.104e-003  8.510e-004  2.866e-004  9.679e-005  3.573e-005
1.440e-005  2.908e-006  3.916e-007  3.140e-009  1.047e-010
         1  1.339e-003  1.339e-003  1.339e-003  1.331e-003  1.137e-
003  9.224e-004  6.276e-004  1.572e-004  4.431e-005  1.445e-005
5.313e-006  9.419e-007  1.120e-007  7.378e-010  2.259e-011
         2  1.339e-003  1.339e-003  1.307e-003  1.104e-003  4.418e-
004  2.311e-004  9.333e-005  7.974e-006  1.208e-006  2.578e-007
6.902e-008  7.761e-009  5.886e-010  1.796e-012  3.749e-014
         3  1.339e-003  1.339e-003  1.166e-003  7.217e-004  1.379e-
004  5.193e-005  1.456e-005  5.952e-007  5.817e-008  9.079e-009
1.908e-009  1.489e-010  7.667e-012  1.105e-014  1.487e-016
         4  1.339e-003  1.339e-003  1.006e-003  4.887e-004  5.966e-
005  1.874e-005  4.311e-006  1.194e-007  9.282e-009  1.232e-009
2.283e-010  1.474e-011  6.218e-013  6.078e-016  6.522e-018
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.339e-003  1.339e-003  1.334e-003  1.256e-003  6.834e-
004  3.996e-004  1.768e-004  1.600e-005  2.298e-006  4.522e-007
1.109e-007  1.047e-008  6.239e-010  1.007e-012  1.307e-014
      0.05  1.339e-003  1.339e-003  1.337e-003  1.287e-003  8.021e-
004  5.096e-004  2.493e-004  2.810e-005  4.626e-006  1.005e-006
2.665e-007  2.833e-008  1.916e-009  3.968e-012  5.964e-014
       0.1  1.339e-003  1.339e-003  1.339e-003  1.328e-003  1.089e-
003  8.446e-004  5.350e-004  1.087e-004  2.604e-005  7.441e-006
2.448e-006  3.615e-007  3.477e-008  1.438e-010  3.247e-012
       0.2  1.339e-003  1.339e-003  1.339e-003  1.337e-003  1.242e-
003  1.094e-003  8.350e-004  2.726e-004  8.985e-005  3.254e-005
1.292e-005  2.546e-006  3.339e-007  2.544e-009  8.242e-011
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       0.3  1.339e-003  1.339e-003  1.339e-003  1.337e-003  1.245e-
003  1.099e-003  8.424e-004  2.782e-004  9.249e-005  3.371e-005
1.345e-005  2.672e-006  3.535e-007  2.741e-009  8.976e-011
       0.4  1.339e-003  1.339e-003  1.339e-003  1.337e-003  1.238e-
003  1.082e-003  8.130e-004  2.485e-004  7.673e-005  2.616e-005
9.819e-006  1.752e-006  2.026e-007  1.130e-009  2.926e-011
       0.5  1.339e-003  1.339e-003  1.339e-003  1.336e-003  1.209e-
003  1.032e-003  7.492e-004  2.119e-004  6.252e-005  2.068e-005
7.596e-006  1.314e-006  1.474e-007  7.794e-010  1.959e-011
      0.75  1.339e-003  1.339e-003  1.339e-003  1.326e-003  1.084e-
003  8.470e-004  5.466e-004  1.198e-004  3.076e-005  9.325e-006
3.227e-006  5.182e-007  5.489e-008  2.786e-010  7.145e-012
         1  1.339e-003  1.339e-003  1.337e-003  1.304e-003  9.390e-
004  6.736e-004  3.924e-004  7.054e-005  1.640e-005  4.691e-006
1.564e-006  2.409e-007  2.492e-008  1.285e-010  3.461e-012
         2  1.339e-003  1.339e-003  1.253e-003  9.360e-004  2.840e-
004  1.333e-004  4.830e-005  3.448e-006  4.815e-007  9.801e-008
2.547e-008  2.767e-009  2.051e-010  6.228e-013  1.327e-014
         3  1.339e-003  1.339e-003  1.004e-003  5.196e-004  8.089e-
005  2.930e-005  8.101e-006  3.526e-007  3.783e-008  6.476e-009
1.484e-009  1.351e-010  8.473e-012  1.970e-014  3.723e-016
         4  1.339e-003  1.338e-003  7.174e-004  2.704e-004  2.663e-
005  8.214e-006  1.934e-006  6.381e-008  5.967e-009  9.373e-010
2.023e-010  1.703e-011  9.980e-013  2.130e-015  3.942e-017
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.339e-003  1.339e-003  1.337e-003  1.299e-003  8.978e-
004  6.228e-004  3.452e-004  5.362e-005  1.104e-005  2.842e-006
8.642e-007  1.137e-007  9.694e-009  3.191e-011  6.313e-013
      0.05  1.339e-003  1.339e-003  1.338e-003  1.314e-003  9.805e-
004  7.142e-004  4.197e-004  7.336e-005  1.613e-005  4.340e-006
1.362e-006  1.874e-007  1.669e-008  5.892e-011  1.205e-012
       0.1  1.339e-003  1.339e-003  1.339e-003  1.334e-003  1.175e-
003  9.809e-004  6.936e-004  1.890e-004  5.577e-005  1.870e-005
7.004e-006  1.268e-006  1.526e-007  9.988e-010  2.989e-011
       0.2  1.339e-003  1.339e-003  1.339e-003  1.338e-003  1.287e-
003  1.192e-003  9.967e-004  4.358e-004  1.805e-004  7.833e-005
3.607e-005  8.987e-006  1.527e-006  1.960e-008  8.659e-010
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       0.3  1.339e-003  1.339e-003  1.339e-003  1.338e-003  1.293e-
003  1.209e-003  1.033e-003  4.928e-004  2.219e-004  1.037e-004
5.099e-005  1.421e-005  2.765e-006  4.843e-008  2.641e-009
       0.4  1.339e-003  1.339e-003  1.339e-003  1.338e-003  1.290e-
003  1.199e-003  1.010e-003  4.551e-004  1.941e-004  8.662e-005
4.097e-005  1.074e-005  1.958e-006  3.043e-008  1.557e-009
       0.5  1.339e-003  1.339e-003  1.339e-003  1.338e-003  1.277e-
003  1.174e-003  9.740e-004  4.243e-004  1.787e-004  7.962e-005
3.785e-005  1.012e-005  1.918e-006  3.400e-008  1.937e-009
      0.75  1.339e-003  1.339e-003  1.339e-003  1.334e-003  1.202e-
003  1.041e-003  7.905e-004  2.808e-004  1.060e-004  4.430e-005
2.025e-005  5.194e-006  9.654e-007  1.768e-008  1.072e-009
         1  1.339e-003  1.339e-003  1.338e-003  1.323e-003  1.091e-
003  8.762e-004  5.988e-004  1.641e-004  5.212e-005  1.915e-005
7.892e-006  1.723e-006  2.684e-007  3.438e-009  1.685e-010
         2  1.339e-003  1.339e-003  1.292e-003  1.071e-003  4.422e-
004  2.438e-004  1.077e-004  1.237e-005  2.420e-006  6.440e-007
2.094e-007  3.273e-008  3.685e-009  2.750e-011  1.039e-012
         3  1.339e-003  1.339e-003  1.127e-003  6.946e-004  1.478e-
004  6.068e-005  1.923e-005  1.104e-006  1.406e-007  2.727e-008
6.898e-009  7.321e-010  5.415e-011  1.743e-013  3.986e-015
         4  1.339e-003  1.339e-003  9.183e-004  4.361e-004  5.840e-
005  1.985e-005  5.120e-006  1.953e-007  1.955e-008  3.202e-009
7.111e-010  6.214e-011  3.751e-012  8.213e-015  1.506e-016


Source: Garlock
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.544e-003  1.544e-003  1.507e-003  1.448e-003  1.287e-
003  1.154e-003  9.314e-004  3.716e-004  1.427e-004  5.801e-005
2.523e-005  5.711e-006  8.657e-007  8.609e-009  3.219e-010
      0.05  1.544e-003  1.544e-003  1.508e-003  1.450e-003  1.302e-
003  1.185e-003  9.828e-004  4.288e-004  1.765e-004  7.579e-005
3.447e-005  8.369e-006  1.370e-006  1.593e-008  6.546e-010
       0.1  1.544e-003  1.544e-003  1.520e-003  1.472e-003  1.350e-
003  1.263e-003  1.108e-003  5.936e-004  2.909e-004  1.440e-004
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7.386e-005  2.177e-005  4.448e-006  8.279e-008  4.582e-009
       0.2  1.544e-003  1.544e-003  1.540e-003  1.518e-003  1.429e-
003  1.363e-003  1.246e-003  7.826e-004  4.361e-004  2.382e-004
1.319e-004  4.359e-005  9.992e-006  2.266e-007  1.381e-008
       0.3  1.544e-003  1.544e-003  1.543e-003  1.532e-003  1.459e-
003  1.397e-003  1.285e-003  8.401e-004  4.914e-004  2.812e-004
1.625e-004  5.789e-005  1.457e-005  4.111e-007  2.911e-008
       0.4  1.544e-003  1.544e-003  1.543e-003  1.536e-003  1.473e-
003  1.414e-003  1.307e-003  8.705e-004  5.170e-004  2.991e-004
1.742e-004  6.266e-005  1.588e-005  4.485e-007  3.151e-008
       0.5  1.544e-003  1.544e-003  1.544e-003  1.537e-003  1.479e-
003  1.421e-003  1.315e-003  8.843e-004  5.359e-004  3.174e-004
1.893e-004  7.132e-005  1.923e-005  6.379e-007  5.045e-008
      0.75  1.544e-003  1.544e-003  1.543e-003  1.535e-003  1.461e-
003  1.388e-003  1.258e-003  7.945e-004  4.654e-004  2.718e-004
1.618e-004  6.177e-005  1.733e-005  6.732e-007  6.153e-008
         1  1.544e-003  1.544e-003  1.543e-003  1.531e-003  1.434e-
003  1.341e-003  1.179e-003  6.696e-004  3.588e-004  1.952e-004
1.096e-004  3.820e-005  9.702e-006  3.103e-007  2.534e-008
         2  1.544e-003  1.544e-003  1.531e-003  1.476e-003  1.211e-
003  1.018e-003  7.631e-004  2.854e-004  1.167e-004  5.267e-005
2.579e-005  7.444e-006  1.595e-006  4.059e-008  3.105e-009
         3  1.544e-003  1.544e-003  1.501e-003  1.393e-003  1.006e-
003  7.770e-004  5.192e-004  1.463e-004  4.943e-005  1.933e-005
8.444e-006  2.042e-006  3.611e-007  6.258e-009  3.804e-010
         4  1.544e-003  1.544e-003  1.467e-003  1.304e-003  7.981e-
004  5.541e-004  3.229e-004  6.633e-005  1.825e-005  6.140e-006
2.381e-006  4.800e-007  6.983e-008  8.263e-010  4.017e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.544e-003  1.544e-003  1.533e-003  1.469e-003  1.104e-
003  8.381e-004  5.248e-004  1.066e-004  2.565e-005  7.341e-006
2.413e-006  3.548e-007  3.373e-008  1.334e-010  2.889e-012
      0.05  1.544e-003  1.544e-003  1.536e-003  1.485e-003  1.179e-
003  9.380e-004  6.280e-004  1.508e-004  4.056e-005  1.261e-005
4.427e-006  7.196e-007  7.623e-008  3.728e-010  9.156e-012
       0.1  1.544e-003  1.544e-003  1.540e-003  1.511e-003  1.315e-
003  1.139e-003  8.694e-004  2.980e-004  1.027e-004  3.850e-005
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1.568e-005  3.205e-006  4.348e-007  3.465e-009  1.135e-010
       0.2  1.544e-003  1.544e-003  1.544e-003  1.535e-003  1.438e-
003  1.336e-003  1.152e-003  5.858e-004  2.744e-004  1.306e-004
6.466e-005  1.793e-005  3.397e-006  5.284e-008  2.581e-009
       0.3  1.544e-003  1.544e-003  1.544e-003  1.539e-003  1.469e-
003  1.385e-003  1.228e-003  6.906e-004  3.532e-004  1.807e-004
9.499e-005  2.899e-005  6.112e-006  1.183e-007  6.591e-009
       0.4  1.544e-003  1.544e-003  1.544e-003  1.540e-003  1.469e-
003  1.386e-003  1.229e-003  6.814e-004  3.383e-004  1.671e-004
8.471e-005  2.409e-005  4.609e-006  6.918e-008  3.189e-009
       0.5  1.544e-003  1.544e-003  1.544e-003  1.539e-003  1.470e-
003  1.393e-003  1.249e-003  7.260e-004  3.742e-004  1.899e-004
9.815e-005  2.864e-005  5.597e-006  8.536e-008  3.904e-009
      0.75  1.544e-003  1.544e-003  1.543e-003  1.533e-003  1.434e-
003  1.340e-003  1.176e-003  6.543e-004  3.352e-004  1.725e-004
9.138e-005  2.835e-005  6.117e-006  1.259e-007  7.339e-009
         1  1.544e-003  1.544e-003  1.542e-003  1.522e-003  1.387e-
003  1.273e-003  1.088e-003  5.608e-004  2.740e-004  1.370e-004
7.128e-005  2.173e-005  4.672e-006  1.001e-007  6.162e-009
         2  1.544e-003  1.544e-003  1.516e-003  1.435e-003  1.151e-
003  9.611e-004  7.115e-004  2.506e-004  9.570e-005  4.041e-005
1.858e-005  4.786e-006  8.844e-007  1.555e-008  9.087e-010
         3  1.544e-003  1.544e-003  1.474e-003  1.341e-003  9.313e-
004  6.977e-004  4.442e-004  1.074e-004  3.182e-005  1.112e-005
4.397e-006  8.983e-007  1.294e-007  1.392e-009  6.095e-011
         4  1.544e-003  1.544e-003  1.432e-003  1.257e-003  7.569e-
004  5.164e-004  2.914e-004  5.332e-005  1.320e-005  4.040e-006
1.440e-006  2.507e-007  3.044e-008  2.345e-010  8.442e-012
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.544e-003  1.544e-003  1.480e-003  1.393e-003  1.118e-
003  9.068e-004  6.253e-004  1.630e-004  4.667e-005  1.525e-005
5.582e-006  9.706e-007  1.110e-007  6.397e-010  1.742e-011
      0.05  1.544e-003  1.544e-003  1.481e-003  1.403e-003  1.180e-
003  1.003e-003  7.428e-004  2.342e-004  7.651e-005  2.762e-005
1.094e-005  2.151e-006  2.811e-007  2.107e-009  6.711e-011
       0.1  1.544e-003  1.544e-003  1.505e-003  1.446e-003  1.302e-
003  1.197e-003  1.017e-003  4.891e-004  2.192e-004  1.010e-004
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4.871e-005  1.301e-005  2.376e-006  3.473e-008  1.645e-009
       0.2  1.544e-003  1.544e-003  1.533e-003  1.499e-003  1.390e-
003  1.319e-003  1.200e-003  7.581e-004  4.313e-004  2.412e-004
1.367e-004  4.717e-005  1.143e-005  2.966e-007  1.983e-008
       0.3  1.544e-003  1.544e-003  1.539e-003  1.514e-003  1.411e-
003  1.338e-003  1.216e-003  7.728e-004  4.433e-004  2.499e-004
1.426e-004  4.980e-005  1.224e-005  3.271e-007  2.228e-008
       0.4  1.544e-003  1.544e-003  1.541e-003  1.521e-003  1.421e-
003  1.346e-003  1.220e-003  7.573e-004  4.192e-004  2.272e-004
1.247e-004  4.039e-005  8.972e-006  1.845e-007  1.035e-008
       0.5  1.544e-003  1.544e-003  1.541e-003  1.522e-003  1.420e-
003  1.341e-003  1.207e-003  7.165e-004  3.740e-004  1.910e-004
9.908e-005  2.894e-005  5.626e-006  8.326e-008  3.692e-009
      0.75  1.544e-003  1.544e-003  1.540e-003  1.516e-003  1.386e-
003  1.282e-003  1.106e-003  5.642e-004  2.620e-004  1.228e-004
5.960e-005  1.583e-005  2.805e-006  3.577e-008  1.484e-009
         1  1.544e-003  1.544e-003  1.538e-003  1.506e-003  1.343e-
003  1.212e-003  1.003e-003  4.569e-004  1.994e-004  9.047e-005
4.326e-005  1.145e-005  2.078e-006  3.046e-008  1.455e-009
         2  1.544e-003  1.544e-003  1.509e-003  1.409e-003  1.035e-
003  8.023e-004  5.351e-004  1.451e-004  4.655e-005  1.729e-005
7.185e-006  1.588e-006  2.497e-007  3.232e-009  1.591e-010
         3  1.544e-003  1.544e-003  1.451e-003  1.264e-003  7.263e-
004  4.876e-004  2.731e-004  5.163e-005  1.352e-005  4.392e-006
1.658e-006  3.212e-007  4.484e-008  4.917e-010  2.292e-011
         4  1.544e-003  1.544e-003  1.367e-003  1.088e-003  4.863e-
004  2.890e-004  1.413e-004  2.057e-005  4.685e-006  1.391e-006
4.925e-007  8.759e-008  1.134e-008  1.124e-010  5.093e-012
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.544e-003  1.544e-003  1.507e-003  1.437e-003  1.169e-
003  9.664e-004  6.939e-004  2.137e-004  7.167e-005  2.687e-005
1.108e-005  2.346e-006  3.368e-007  3.127e-009  1.141e-010
      0.05  1.544e-003  1.544e-003  1.508e-003  1.446e-003  1.221e-
003  1.042e-003  7.845e-004  2.712e-004  9.786e-005  3.867e-005
1.661e-005  3.746e-006  5.759e-007  6.138e-009  2.436e-010
       0.1  1.544e-003  1.544e-003  1.522e-003  1.476e-003  1.322e-
003  1.200e-003  9.980e-004  4.602e-004  2.043e-004  9.450e-005
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4.608e-005  1.266e-005  2.420e-006  4.033e-008  2.114e-009
       0.2  1.544e-003  1.544e-003  1.539e-003  1.518e-003  1.419e-
003  1.339e-003  1.199e-003  7.088e-004  3.806e-004  2.034e-004
1.111e-004  3.623e-005  8.274e-006  1.920e-007  1.207e-008
       0.3  1.544e-003  1.544e-003  1.542e-003  1.529e-003  1.446e-
003  1.373e-003  1.243e-003  7.678e-004  4.293e-004  2.373e-004
1.334e-004  4.556e-005  1.097e-005  2.855e-007  1.933e-008
       0.4  1.544e-003  1.544e-003  1.543e-003  1.532e-003  1.454e-
003  1.382e-003  1.252e-003  7.697e-004  4.248e-004  2.311e-004
1.279e-004  4.238e-005  9.819e-006  2.340e-007  1.501e-008
       0.5  1.544e-003  1.544e-003  1.543e-003  1.533e-003  1.456e-
003  1.385e-003  1.257e-003  7.756e-004  4.280e-004  2.328e-004
1.289e-004  4.297e-005  1.015e-005  2.688e-007  1.935e-008
      0.75  1.544e-003  1.544e-003  1.542e-003  1.528e-003  1.427e-
003  1.336e-003  1.180e-003  6.710e-004  3.542e-004  1.890e-004
1.043e-004  3.531e-005  8.749e-006  2.783e-007  2.345e-008
         1  1.544e-003  1.544e-003  1.541e-003  1.519e-003  1.388e-
003  1.275e-003  1.090e-003  5.624e-004  2.774e-004  1.409e-004
7.471e-005  2.379e-005  5.484e-006  1.470e-007  1.098e-008
         2  1.544e-003  1.544e-003  1.519e-003  1.440e-003  1.132e-
003  9.272e-004  6.699e-004  2.270e-004  8.632e-005  3.679e-005
1.719e-005  4.606e-006  9.097e-007  1.979e-008  1.391e-009
         3  1.544e-003  1.544e-003  1.475e-003  1.333e-003  8.880e-
004  6.541e-004  4.122e-004  1.018e-004  3.159e-005  1.161e-005
4.833e-006  1.087e-006  1.784e-007  2.714e-009  1.547e-010
         4  1.544e-003  1.544e-003  1.422e-003  1.216e-003  6.804e-
004  4.531e-004  2.519e-004  4.674e-005  1.205e-005  3.857e-006
1.438e-006  2.728e-007  3.720e-008  3.911e-010  1.790e-011


Source: Hollywood
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.011e-003  1.011e-003  1.011e-003  1.007e-003  8.879e-
004  7.366e-004  5.125e-004  1.303e-004  3.602e-005  1.141e-005
4.063e-006  6.753e-007  7.338e-008  3.798e-010  9.690e-012
      0.05  1.011e-003  1.011e-003  1.011e-003  1.008e-003  9.103e-
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004  7.739e-004  5.582e-004  1.552e-004  4.548e-005  1.502e-005
5.527e-006  9.646e-007  1.103e-007  6.274e-010  1.688e-011
       0.1  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.695e-
004  8.923e-004  7.350e-004  3.008e-004  1.172e-004  4.828e-005
2.128e-005  4.942e-006  7.763e-007  8.516e-009  3.437e-010
       0.2  1.011e-003  1.011e-003  1.011e-003  1.011e-003  1.003e-
003  9.785e-004  9.056e-004  5.484e-004  2.885e-004  1.497e-004
7.933e-005  2.443e-005  5.187e-006  1.014e-007  5.680e-009
       0.3  1.011e-003  1.011e-003  1.011e-003  1.011e-003  1.003e-
003  9.805e-004  9.126e-004  5.718e-004  3.131e-004  1.688e-004
9.266e-005  3.039e-005  6.978e-006  1.646e-007  1.052e-008
       0.4  1.011e-003  1.011e-003  1.011e-003  1.011e-003  1.002e-
003  9.762e-004  9.016e-004  5.462e-004  2.899e-004  1.523e-004
8.177e-005  2.586e-005  5.699e-006  1.231e-007  7.435e-009
       0.5  1.011e-003  1.011e-003  1.011e-003  1.011e-003  9.988e-
004  9.674e-004  8.834e-004  5.188e-004  2.715e-004  1.420e-004
7.631e-005  2.437e-005  5.486e-006  1.281e-007  8.294e-009
      0.75  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.713e-
004  9.035e-004  7.668e-004  3.644e-004  1.662e-004  7.926e-005
3.992e-005  1.172e-005  2.465e-006  5.427e-008  3.560e-009
         1  1.011e-003  1.011e-003  1.011e-003  1.008e-003  9.311e-
004  8.250e-004  6.470e-004  2.461e-004  9.591e-005  4.063e-005
1.862e-005  4.730e-006  8.524e-007  1.388e-008  7.647e-010
         2  1.011e-003  1.011e-003  1.004e-003  9.456e-004  5.976e-
004  4.090e-004  2.315e-004  4.370e-005  1.134e-005  3.650e-006
1.368e-006  2.620e-007  3.617e-008  3.893e-010  1.801e-011
         3  1.011e-003  1.011e-003  9.695e-004  7.847e-004  2.994e-
004  1.578e-004  6.569e-005  6.410e-006  1.102e-006  2.627e-007
7.769e-008  1.036e-008  9.680e-010  4.811e-012  1.405e-013
         4  1.011e-003  1.011e-003  9.003e-004  6.100e-004  1.565e-
004  6.955e-005  2.401e-005  1.622e-006  2.254e-007  4.632e-008
1.222e-008  1.377e-009  1.079e-010  3.845e-013  9.291e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.011e-003  1.011e-003  1.010e-003  9.826e-004  6.562e-
004  4.341e-004  2.224e-004  2.725e-005  4.668e-006  1.037e-006
2.786e-007  3.001e-008  2.038e-009  4.136e-012  6.029e-014
      0.05  1.011e-003  1.011e-003  1.010e-003  9.952e-004  7.429e-
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004  5.324e-004  3.021e-004  4.665e-005  9.251e-006  2.287e-006
6.683e-007  8.183e-008  6.377e-009  1.693e-011  2.891e-013
       0.1  1.011e-003  1.011e-003  1.011e-003  1.008e-003  8.962e-
004  7.492e-004  5.263e-004  1.361e-004  3.786e-005  1.201e-005
4.272e-006  7.071e-007  7.615e-008  3.820e-010  9.491e-012
       0.2  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.729e-
004  8.982e-004  7.416e-004  3.006e-004  1.148e-004  4.622e-005
1.992e-005  4.430e-006  6.572e-007  6.224e-009  2.255e-010
       0.3  1.011e-003  1.011e-003  1.011e-003  1.011e-003  9.800e-
004  9.151e-004  7.720e-004  3.350e-004  1.347e-004  5.649e-005
2.515e-005  5.889e-006  9.242e-007  9.810e-009  3.807e-010
       0.4  1.011e-003  1.011e-003  1.011e-003  1.011e-003  9.787e-
004  9.088e-004  7.544e-004  3.016e-004  1.112e-004  4.306e-005
1.783e-005  3.674e-006  4.921e-007  3.582e-009  1.069e-010
       0.5  1.011e-003  1.011e-003  1.011e-003  1.011e-003  9.725e-
004  8.937e-004  7.274e-004  2.731e-004  9.590e-005  3.573e-005
1.433e-005  2.810e-006  3.556e-007  2.299e-009  6.368e-011
      0.75  1.011e-003  1.011e-003  1.011e-003  1.008e-003  9.087e-
004  7.737e-004  5.610e-004  1.605e-004  4.845e-005  1.645e-005
6.204e-006  1.131e-006  1.364e-007  8.820e-010  2.592e-011
         1  1.011e-003  1.011e-003  1.011e-003  1.001e-003  8.155e-
004  6.351e-004  4.083e-004  8.907e-005  2.293e-005  6.994e-006
2.439e-006  3.989e-007  4.348e-008  2.414e-010  6.682e-012
         2  1.011e-003  1.011e-003  9.906e-004  8.530e-004  3.616e-
004  1.945e-004  8.113e-005  7.401e-006  1.166e-006  2.557e-007
6.995e-008  8.120e-009  6.367e-010  2.072e-012  4.486e-014
         3  1.011e-003  1.011e-003  9.190e-004  6.258e-004  1.459e-
004  5.981e-005  1.840e-005  9.067e-007  9.896e-008  1.671e-008
3.733e-009  3.194e-010  1.814e-011  3.163e-014  4.762e-016
         4  1.011e-003  1.011e-003  8.185e-004  4.458e-004  6.692e-
005  2.285e-005  5.759e-006  1.909e-007  1.650e-008  2.361e-009
4.640e-010  3.273e-011  1.516e-012  1.779e-015  2.126e-017
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.011e-003  1.011e-003  1.007e-003  9.410e-004  4.928e-
004  2.817e-004  1.213e-004  1.033e-005  1.427e-006  2.729e-007
6.543e-008  5.963e-009  3.418e-010  5.103e-013  6.314e-015
      0.05  1.011e-003  1.011e-003  1.009e-003  9.694e-004  5.952e-
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004  3.744e-004  1.809e-004  1.979e-005  3.193e-006  6.835e-007
1.790e-007  1.866e-008  1.235e-009  2.446e-012  3.575e-014
       0.1  1.011e-003  1.011e-003  1.011e-003  1.003e-003  8.214e-
004  6.367e-004  4.027e-004  8.139e-005  1.942e-005  5.528e-006
1.812e-006  2.661e-007  2.541e-008  1.033e-010  2.308e-012
       0.2  1.011e-003  1.011e-003  1.011e-003  1.009e-003  9.340e-
004  8.182e-004  6.194e-004  1.974e-004  6.398e-005  2.286e-005
8.978e-006  1.739e-006  2.237e-007  1.636e-009  5.168e-011
       0.3  1.011e-003  1.011e-003  1.011e-003  1.009e-003  9.325e-
004  8.155e-004  6.156e-004  1.949e-004  6.285e-005  2.239e-005
8.766e-006  1.691e-006  2.167e-007  1.574e-009  4.953e-011
       0.4  1.011e-003  1.011e-003  1.011e-003  1.009e-003  9.234e-
004  7.965e-004  5.861e-004  1.695e-004  5.041e-005  1.671e-005
6.135e-006  1.058e-006  1.179e-007  6.118e-010  1.516e-011
       0.5  1.011e-003  1.011e-003  1.011e-003  1.008e-003  8.979e-
004  7.542e-004  5.346e-004  1.422e-004  4.031e-005  1.295e-005
4.651e-006  7.779e-007  8.424e-008  4.180e-010  1.015e-011
      0.75  1.011e-003  1.011e-003  1.011e-003  9.990e-004  7.977e-
004  6.115e-004  3.846e-004  7.941e-005  1.962e-005  5.785e-006
1.959e-006  3.046e-007  3.118e-008  1.484e-010  3.672e-012
         1  1.011e-003  1.011e-003  1.009e-003  9.819e-004  6.936e-
004  4.911e-004  2.814e-004  4.874e-005  1.107e-005  3.112e-006
1.024e-006  1.545e-007  1.564e-008  7.733e-011  2.034e-012
         2  1.011e-003  1.011e-003  9.664e-004  7.679e-004  2.713e-
004  1.364e-004  5.336e-005  4.452e-006  6.824e-007  1.485e-007
4.063e-008  4.771e-009  3.841e-010  1.368e-012  3.197e-014
         3  1.011e-003  1.011e-003  8.320e-004  4.923e-004  9.769e-
005  3.908e-005  1.204e-005  6.509e-007  7.945e-008  1.491e-008
3.669e-009  3.725e-010  2.620e-011  7.624e-014  1.644e-015
         4  1.011e-003  1.011e-003  6.475e-004  2.890e-004  3.731e-
005  1.280e-005  3.382e-006  1.402e-007  1.501e-008  2.597e-009
6.042e-010  5.702e-011  3.771e-012  1.020e-014  2.169e-016
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.011e-003  1.011e-003  1.009e-003  9.770e-004  6.790e-
004  4.842e-004  2.854e-004  5.596e-005  1.404e-005  4.239e-006
1.469e-006  2.371e-007  2.525e-008  1.281e-010  3.252e-012
      0.05  1.011e-003  1.011e-003  1.010e-003  9.910e-004  7.495e-
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004  5.602e-004  3.471e-004  7.388e-005  1.931e-005  5.997e-006
2.125e-006  3.550e-007  3.930e-008  2.156e-010  5.734e-012
       0.1  1.011e-003  1.011e-003  1.011e-003  1.007e-003  8.957e-
004  7.594e-004  5.547e-004  1.728e-004  5.815e-005  2.194e-005
9.122e-006  1.972e-006  2.926e-007  3.000e-009  1.185e-010
       0.2  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.699e-
004  8.983e-004  7.555e-004  3.488e-004  1.557e-004  7.292e-005
3.607e-005  1.020e-005  2.022e-006  3.641e-008  1.986e-009
       0.3  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.719e-
004  9.037e-004  7.667e-004  3.673e-004  1.702e-004  8.255e-005
4.219e-005  1.266e-005  2.706e-006  5.866e-008  3.650e-009
       0.4  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.680e-
004  8.938e-004  7.474e-004  3.391e-004  1.505e-004  7.068e-005
3.524e-005  1.020e-005  2.103e-006  4.242e-008  2.519e-009
       0.5  1.011e-003  1.011e-003  1.011e-003  1.010e-003  9.564e-
004  8.718e-004  7.151e-004  3.114e-004  1.359e-004  6.356e-005
3.177e-005  9.318e-006  1.975e-006  4.361e-008  2.789e-009
      0.75  1.011e-003  1.011e-003  1.011e-003  1.006e-003  8.926e-
004  7.629e-004  5.708e-004  2.014e-004  7.808e-005  3.383e-005
1.603e-005  4.384e-006  8.776e-007  1.843e-008  1.197e-009
         1  1.011e-003  1.011e-003  1.010e-003  9.971e-004  8.134e-
004  6.504e-004  4.455e-004  1.280e-004  4.330e-005  1.691e-005
7.362e-006  1.761e-006  3.038e-007  4.734e-009  2.578e-010
         2  1.011e-003  1.011e-003  9.871e-004  8.555e-004  4.102e-
004  2.466e-004  1.220e-004  1.852e-005  4.395e-006  1.351e-006
4.928e-007  9.165e-008  1.240e-008  1.309e-010  6.029e-012
         3  1.011e-003  1.011e-003  9.068e-004  6.342e-004  1.810e-
004  8.556e-005  3.205e-005  2.656e-006  4.267e-007  9.811e-008
2.836e-008  3.684e-009  3.374e-010  1.640e-012  4.754e-014
         4  1.011e-003  1.011e-003  7.888e-004  4.483e-004  8.692e-
005  3.507e-005  1.105e-005  6.511e-007  8.563e-008  1.709e-008
4.431e-009  4.888e-010  3.772e-011  1.322e-013  3.177e-015


Source: Holser, alt 1
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.158e-
004  2.018e-004  1.707e-004  7.467e-005  3.017e-005  1.270e-005
5.671e-006  1.334e-006  2.103e-007  2.254e-009  8.797e-011
      0.05  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.175e-
004  2.061e-004  1.788e-004  8.487e-005  3.648e-005  1.609e-005
7.463e-006  1.860e-006  3.123e-007  3.780e-009  1.584e-010
       0.1  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.209e-
004  2.164e-004  2.026e-004  1.295e-004  7.196e-005  3.917e-005
2.165e-005  7.158e-006  1.653e-006  3.906e-008  2.483e-009
       0.2  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.222e-
004  2.214e-004  2.176e-004  1.797e-004  1.283e-004  8.622e-005
5.680e-005  2.479e-005  7.753e-006  3.313e-007  2.961e-008
       0.3  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.222e-
004  2.215e-004  2.182e-004  1.839e-004  1.356e-004  9.414e-005
6.405e-005  2.965e-005  1.001e-005  5.147e-007  5.244e-008
       0.4  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.222e-
004  2.213e-004  2.173e-004  1.789e-004  1.279e-004  8.633e-005
5.723e-005  2.534e-005  8.109e-006  3.709e-007  3.501e-008
       0.5  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.221e-
004  2.209e-004  2.159e-004  1.738e-004  1.221e-004  8.151e-005
5.373e-005  2.374e-005  7.654e-006  3.676e-007  3.651e-008
      0.75  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.210e-
004  2.171e-004  2.055e-004  1.432e-004  8.893e-005  5.411e-005
3.325e-005  1.333e-005  3.941e-006  1.707e-007  1.671e-008
         1  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.182e-
004  2.092e-004  1.879e-004  1.072e-004  5.623e-005  2.990e-005
1.645e-005  5.540e-006  1.354e-006  4.019e-008  3.147e-009
         2  2.223e-004  2.223e-004  2.219e-004  2.160e-004  1.621e-
004  1.230e-004  7.914e-005  1.977e-005  6.107e-006  2.231e-006
9.225e-007  2.051e-007  3.315e-008  4.838e-010  2.669e-011
         3  2.223e-004  2.223e-004  2.180e-004  1.909e-004  9.117e-
005  5.345e-005  2.511e-005  3.142e-006  6.272e-007  1.664e-007
5.349e-008  8.087e-009  8.631e-010  5.550e-012  1.884e-013
         4  2.223e-004  2.223e-004  2.071e-004  1.547e-004  4.884e-
005  2.370e-005  9.014e-006  7.383e-007  1.149e-007  2.558e-008
7.180e-009  8.870e-010  7.660e-011  3.287e-013  8.840e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  2.223e-004  2.223e-004  2.223e-004  2.218e-004  2.004e-
004  1.708e-004  1.238e-004  3.519e-005  1.052e-005  3.535e-006
1.320e-006  2.364e-007  2.785e-008  1.691e-010  4.737e-012
      0.05  2.223e-004  2.223e-004  2.223e-004  2.221e-004  2.087e-
004  1.863e-004  1.453e-004  5.022e-005  1.719e-005  6.389e-006
2.586e-006  5.237e-007  7.044e-008  5.552e-010  1.815e-011
       0.1  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.190e-
004  2.104e-004  1.880e-004  9.957e-005  4.693e-005  2.233e-005
1.103e-005  3.045e-006  5.738e-007  8.864e-009  4.325e-010
       0.2  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.215e-
004  2.186e-004  2.086e-004  1.450e-004  8.662e-005  4.995e-005
2.893e-005  1.028e-005  2.560e-006  6.949e-008  4.755e-009
       0.3  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.216e-
004  2.190e-004  2.097e-004  1.487e-004  9.069e-005  5.321e-005
3.127e-005  1.138e-005  2.912e-006  8.363e-008  5.924e-009
       0.4  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.217e-
004  2.191e-004  2.093e-004  1.444e-004  8.430e-005  4.720e-005
2.649e-005  8.837e-006  2.017e-006  4.337e-008  2.487e-009
       0.5  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.216e-
004  2.188e-004  2.082e-004  1.390e-004  7.769e-005  4.160e-005
2.237e-005  6.898e-006  1.421e-006  2.357e-008  1.120e-009
      0.75  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.191e-
004  2.109e-004  1.893e-004  1.021e-004  4.884e-005  2.351e-005
1.172e-005  3.277e-006  6.252e-007  9.818e-009  4.808e-010
         1  2.223e-004  2.223e-004  2.223e-004  2.222e-004  2.136e-
004  1.976e-004  1.647e-004  7.093e-005  2.900e-005  1.247e-005
5.702e-006  1.409e-006  2.384e-007  3.085e-009  1.388e-010
         2  2.223e-004  2.223e-004  2.219e-004  2.146e-004  1.482e-
004  1.043e-004  5.983e-005  1.076e-005  2.569e-006  7.599e-007
2.625e-007  4.338e-008  4.948e-009  3.336e-011  1.106e-012
         3  2.223e-004  2.223e-004  2.182e-004  1.895e-004  8.275e-
005  4.527e-005  1.929e-005  1.855e-006  3.037e-007  6.868e-008
1.928e-008  2.336e-009  1.926e-010  6.986e-013  1.623e-014
         4  2.223e-004  2.223e-004  2.107e-004  1.605e-004  4.856e-
005  2.237e-005  7.855e-006  5.094e-007  6.591e-008  1.261e-008
3.108e-009  3.095e-010  2.073e-011  5.034e-014  9.253e-016
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  2.223e-004  2.223e-004  2.223e-004  2.215e-004  1.945e-
004  1.607e-004  1.111e-004  2.776e-005  7.582e-006  2.379e-006
8.406e-007  1.381e-007  1.481e-008  7.467e-011  1.877e-012
      0.05  2.223e-004  2.223e-004  2.223e-004  2.220e-004  2.059e-
004  1.807e-004  1.371e-004  4.369e-005  1.409e-005  5.006e-006
1.953e-006  3.735e-007  4.721e-008  3.293e-010  1.003e-011
       0.1  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.184e-
004  2.087e-004  1.844e-004  9.358e-005  4.254e-005  1.966e-005
9.474e-006  2.515e-006  4.536e-007  6.411e-009  2.966e-010
       0.2  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.212e-
004  2.174e-004  2.049e-004  1.343e-004  7.583e-005  4.168e-005
2.317e-005  7.701e-006  1.779e-006  4.134e-008  2.574e-009
       0.3  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.210e-
004  2.167e-004  2.031e-004  1.298e-004  7.166e-005  3.867e-005
2.118e-005  6.874e-006  1.548e-006  3.418e-008  2.066e-009
       0.4  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.209e-
004  2.162e-004  2.009e-004  1.213e-004  6.239e-005  3.143e-005
1.614e-005  4.672e-006  9.099e-007  1.417e-008  6.705e-010
       0.5  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.204e-
004  2.143e-004  1.958e-004  1.087e-004  5.143e-005  2.403e-005
1.154e-005  2.973e-006  5.020e-007  5.581e-009  2.087e-010
      0.75  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.154e-
004  2.011e-004  1.698e-004  7.400e-005  2.986e-005  1.255e-005
5.593e-006  1.309e-006  2.046e-007  2.121e-009  8.020e-011
         1  2.223e-004  2.223e-004  2.223e-004  2.219e-004  2.063e-
004  1.828e-004  1.422e-004  5.071e-005  1.825e-005  7.148e-006
3.042e-006  6.751e-007  1.022e-007  1.075e-009  4.307e-011
         2  2.223e-004  2.223e-004  2.205e-004  2.039e-004  1.157e-
004  7.344e-005  3.754e-005  5.451e-006  1.167e-006  3.226e-007
1.064e-007  1.654e-008  1.791e-009  1.132e-011  3.690e-013
         3  2.223e-004  2.223e-004  2.078e-004  1.571e-004  5.160e-
005  2.559e-005  1.000e-005  8.731e-007  1.419e-007  3.269e-008
9.437e-009  1.219e-009  1.109e-010  5.320e-013  1.538e-014
         4  2.223e-004  2.223e-004  1.815e-004  1.087e-004  2.327e-
005  9.795e-006  3.234e-006  2.093e-007  2.921e-008  6.109e-009
1.648e-009  1.945e-010  1.632e-011  7.030e-014  1.966e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  2.223e-004  2.223e-004  2.223e-004  2.219e-004  2.036e-
004  1.778e-004  1.352e-004  4.587e-005  1.609e-005  6.205e-006
2.611e-006  5.694e-007  8.432e-008  8.325e-010  3.153e-011
      0.05  2.223e-004  2.223e-004  2.223e-004  2.221e-004  2.107e-
004  1.910e-004  1.537e-004  5.959e-005  2.258e-005  9.163e-006
4.001e-006  9.192e-007  1.433e-007  1.555e-009  6.217e-011
       0.1  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.194e-
004  2.118e-004  1.917e-004  1.076e-004  5.381e-005  2.705e-005
1.405e-005  4.239e-006  8.936e-007  1.811e-008  1.071e-009
       0.2  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.216e-
004  2.191e-004  2.104e-004  1.530e-004  9.693e-005  5.928e-005
3.630e-005  1.426e-005  4.031e-006  1.474e-007  1.231e-008
       0.3  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.216e-
004  2.191e-004  2.103e-004  1.542e-004  9.930e-005  6.200e-005
3.883e-005  1.597e-005  4.822e-006  2.108e-007  2.014e-008
       0.4  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.216e-
004  2.188e-004  2.092e-004  1.482e-004  9.154e-005  5.499e-005
3.329e-005  1.295e-005  3.679e-006  1.428e-007  1.272e-008
       0.5  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.214e-
004  2.180e-004  2.066e-004  1.405e-004  8.374e-005  4.905e-005
2.921e-005  1.120e-005  3.192e-006  1.323e-007  1.261e-008
      0.75  2.223e-004  2.223e-004  2.223e-004  2.223e-004  2.185e-
004  2.097e-004  1.882e-004  1.064e-004  5.588e-005  3.006e-005
1.685e-005  5.971e-006  1.590e-006  6.089e-008  5.757e-009
         1  2.223e-004  2.223e-004  2.223e-004  2.222e-004  2.127e-
004  1.965e-004  1.650e-004  7.627e-005  3.449e-005  1.650e-005
8.397e-006  2.541e-006  5.649e-007  1.478e-008  1.110e-009
         2  2.223e-004  2.223e-004  2.214e-004  2.115e-004  1.420e-
004  1.003e-004  5.884e-005  1.199e-005  3.281e-006  1.105e-006
4.304e-007  8.835e-008  1.330e-008  1.762e-010  9.388e-012
         3  2.223e-004  2.223e-004  2.147e-004  1.792e-004  7.518e-
005  4.144e-005  1.813e-005  1.957e-006  3.576e-007  8.927e-008
2.740e-008  3.881e-009  3.889e-010  2.260e-012  7.332e-014
         4  2.223e-004  2.223e-004  1.998e-004  1.413e-004  4.022e-
005  1.862e-005  6.701e-006  4.857e-007  7.000e-008  1.476e-008
3.978e-009  4.636e-010  3.788e-011  1.498e-013  3.910e-015


Source: Los Alamos-West Baseline
Region: USGS 2008 California
```

```
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.518e-004  7.518e-004  7.512e-004  7.351e-004  5.221e-
004  3.632e-004  1.996e-004  2.934e-005  5.728e-006  1.410e-006
4.124e-007  5.088e-008  4.030e-009  1.129e-011  2.014e-013
      0.05  7.518e-004  7.518e-004  7.513e-004  7.376e-004  5.380e-
004  3.811e-004  2.141e-004  3.303e-005  6.638e-006  1.668e-006
4.959e-007  6.270e-008  5.098e-009  1.506e-011  2.773e-013
       0.1  7.518e-004  7.518e-004  7.517e-004  7.468e-004  6.308e-
004  5.051e-004  3.360e-004  7.840e-005  2.086e-005  6.478e-006
2.284e-006  3.772e-007  4.119e-008  2.230e-010  5.967e-012
       0.2  7.518e-004  7.518e-004  7.518e-004  7.515e-004  7.250e-
004  6.721e-004  5.602e-004  2.359e-004  9.322e-005  3.870e-005
1.712e-005  3.980e-006  6.221e-007  6.614e-009  2.582e-010
       0.3  7.518e-004  7.518e-004  7.518e-004  7.516e-004  7.353e-
004  6.983e-004  6.109e-004  3.048e-004  1.387e-004  6.460e-005
3.149e-005  8.572e-006  1.607e-006  2.527e-008  1.269e-009
       0.4  7.518e-004  7.518e-004  7.518e-004  7.516e-004  7.348e-
004  6.968e-004  6.077e-004  2.993e-004  1.345e-004  6.197e-005
2.991e-005  8.009e-006  1.470e-006  2.199e-008  1.065e-009
       0.5  7.518e-004  7.518e-004  7.518e-004  7.516e-004  7.329e-
004  6.934e-004  6.034e-004  3.001e-004  1.377e-004  6.501e-005
3.215e-005  9.014e-006  1.760e-006  3.086e-008  1.680e-009
      0.75  7.518e-004  7.518e-004  7.518e-004  7.507e-004  7.087e-
004  6.442e-004  5.261e-004  2.241e-004  9.459e-005  4.256e-005
2.046e-005  5.593e-006  1.090e-006  2.057e-008  1.231e-009
         1  7.518e-004  7.518e-004  7.517e-004  7.482e-004  6.651e-
004  5.675e-004  4.209e-004  1.389e-004  4.919e-005  1.942e-005
8.419e-006  1.964e-006  3.228e-007  4.379e-009  2.161e-010
         2  7.518e-004  7.518e-004  7.390e-004  6.577e-004  3.370e-
004  2.063e-004  1.025e-004  1.467e-005  3.214e-006  9.162e-007
3.121e-007  5.173e-008  6.115e-009  4.852e-011  1.873e-012
         3  7.518e-004  7.518e-004  6.803e-004  4.751e-004  1.294e-
004  5.889e-005  2.087e-005  1.482e-006  2.116e-007  4.429e-008
1.184e-008  1.359e-009  1.084e-010  3.976e-013  9.732e-015
         4  7.518e-004  7.518e-004  5.908e-004  3.255e-004  5.664e-
005  2.146e-005  6.228e-006  2.975e-007  3.360e-008  5.950e-009
1.398e-009  1.318e-010  8.535e-012  2.084e-014  4.020e-016
```

```
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.518e-004  7.518e-004  7.487e-004  7.007e-004  3.662e-
004  2.083e-004  8.884e-005  7.325e-006  9.825e-007  1.830e-007
4.287e-008  3.752e-009  2.045e-010  2.708e-013  3.081e-015
      0.05  7.518e-004  7.518e-004  7.502e-004  7.185e-004  4.295e-
004  2.646e-004  1.243e-004  1.262e-005  1.925e-006  3.937e-007
9.918e-008  9.699e-009  5.950e-010  9.932e-013  1.294e-014
       0.1  7.518e-004  7.518e-004  7.515e-004  7.417e-004  5.673e-
004  4.145e-004  2.414e-004  3.971e-005  8.217e-006  2.097e-006
6.289e-007  8.018e-008  6.532e-009  1.900e-011  3.431e-013
       0.2  7.518e-004  7.518e-004  7.518e-004  7.501e-004  6.806e-
004  5.820e-004  4.234e-004  1.203e-004  3.577e-005  1.194e-005
4.428e-006  7.822e-007  9.053e-008  5.267e-010  1.433e-011
       0.3  7.518e-004  7.518e-004  7.518e-004  7.508e-004  6.995e-
004  6.173e-004  4.721e-004  1.536e-004  5.020e-005  1.799e-005
7.066e-006  1.363e-006  1.737e-007  1.224e-009  3.736e-011
       0.4  7.518e-004  7.518e-004  7.518e-004  7.509e-004  6.983e-
004  6.111e-004  4.576e-004  1.354e-004  4.027e-005  1.326e-005
4.823e-006  8.148e-007  8.812e-008  4.222e-010  9.866e-012
       0.5  7.518e-004  7.518e-004  7.518e-004  7.507e-004  6.921e-
004  5.998e-004  4.423e-004  1.261e-004  3.667e-005  1.189e-005
4.274e-006  7.103e-007  7.560e-008  3.525e-010  8.126e-012
      0.75  7.518e-004  7.518e-004  7.517e-004  7.469e-004  6.293e-
004  5.018e-004  3.313e-004  7.538e-005  1.963e-005  5.994e-006
2.082e-006  3.358e-007  3.568e-008  1.822e-010  4.703e-012
         1  7.518e-004  7.518e-004  7.512e-004  7.369e-004  5.452e-
004  3.947e-004  2.308e-004  4.072e-005  9.210e-006  2.564e-006
8.341e-007  1.231e-007  1.209e-008  5.561e-011  1.391e-012
         2  7.518e-004  7.518e-004  7.257e-004  5.886e-004  2.115e-
004  1.058e-004  4.084e-005  3.243e-006  4.761e-007  9.983e-008
2.645e-008  2.940e-009  2.213e-010  6.721e-013  1.404e-014
         3  7.518e-004  7.518e-004  6.533e-004  4.057e-004  8.023e-
005  3.104e-005  9.034e-006  4.085e-007  4.297e-008  7.107e-009
1.566e-009  1.317e-010  7.370e-012  1.255e-014  1.864e-016
         4  7.518e-004  7.518e-004  5.678e-004  2.803e-004  3.645e-
005  1.191e-005  2.884e-006  9.066e-008  7.694e-009  1.092e-009
2.136e-010  1.500e-011  6.930e-013  8.114e-016  9.679e-018
```

```
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.518e-004  7.518e-004  7.419e-004  6.482e-004  2.585e-
004  1.289e-004  4.760e-005  3.013e-006  3.525e-007  6.020e-008
1.326e-008  1.068e-009  5.395e-011  6.378e-014  6.916e-016
      0.05  7.518e-004  7.518e-004  7.459e-004  6.771e-004  3.147e-
004  1.700e-004  6.895e-005  5.324e-006  7.044e-007  1.315e-007
3.106e-008  2.784e-009  1.578e-010  2.340e-013  2.902e-015
       0.1  7.518e-004  7.518e-004  7.509e-004  7.308e-004  4.982e-
004  3.378e-004  1.804e-004  2.528e-005  4.848e-006  1.185e-006
3.460e-007  4.285e-008  3.436e-009  1.010e-011  1.878e-013
       0.2  7.518e-004  7.518e-004  7.517e-004  7.477e-004  6.412e-
004  5.198e-004  3.516e-004  8.523e-005  2.324e-005  7.356e-006
2.633e-006  4.451e-007  4.987e-008  2.837e-010  7.803e-012
       0.3  7.518e-004  7.518e-004  7.517e-004  7.484e-004  6.519e-
004  5.363e-004  3.703e-004  9.440e-005  2.660e-005  8.622e-006
3.144e-006  5.471e-007  6.322e-008  3.822e-010  1.090e-011
       0.4  7.518e-004  7.518e-004  7.517e-004  7.485e-004  6.502e-
004  5.317e-004  3.621e-004  8.682e-005  2.292e-005  6.981e-006
2.402e-006  3.762e-007  3.796e-008  1.639e-010  3.669e-012
       0.5  7.518e-004  7.518e-004  7.517e-004  7.471e-004  6.326e-
004  5.065e-004  3.356e-004  7.588e-005  1.935e-005  5.751e-006
1.940e-006  2.945e-007  2.865e-008  1.136e-010  2.395e-012
      0.75  7.518e-004  7.518e-004  7.513e-004  7.382e-004  5.570e-
004  4.097e-004  2.445e-004  4.499e-005  1.036e-005  2.901e-006
9.436e-007  1.379e-007  1.320e-008  5.467e-011  1.239e-012
         1  7.518e-004  7.518e-004  7.500e-004  7.218e-004  4.779e-
004  3.253e-004  1.779e-004  2.798e-005  6.007e-006  1.623e-006
5.179e-007  7.465e-008  7.193e-009  3.225e-011  7.984e-013
         2  7.518e-004  7.518e-004  6.964e-004  5.080e-004  1.477e-
004  6.839e-005  2.448e-005  1.723e-006  2.399e-007  4.882e-008
1.270e-008  1.382e-009  1.028e-010  3.142e-013  6.714e-015
         3  7.518e-004  7.518e-004  5.644e-004  2.946e-004  4.741e-
005  1.751e-005  4.966e-006  2.295e-007  2.565e-008  4.526e-009
1.063e-009  1.005e-010  6.561e-012  1.649e-014  3.260e-016
         4  7.518e-004  7.513e-004  4.169e-004  1.639e-004  1.760e-
005  5.649e-006  1.394e-006  5.086e-008  5.069e-009  8.341e-010
1.867e-010  1.662e-011  1.033e-012  2.473e-015  4.888e-017
```

```
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.518e-004  7.518e-004  7.473e-004  6.947e-004  3.823e-
004  2.335e-004  1.120e-004  1.322e-005  2.354e-006  5.511e-007
1.562e-007  1.857e-008  1.429e-009  3.875e-012  6.840e-014
      0.05  7.518e-004  7.518e-004  7.492e-004  7.111e-004  4.274e-
004  2.719e-004  1.358e-004  1.699e-005  3.089e-006  7.311e-007
2.087e-007  2.506e-008  1.950e-009  5.428e-012  9.773e-014
       0.1  7.518e-004  7.518e-004  7.514e-004  7.398e-004  5.654e-
004  4.191e-004  2.526e-004  4.780e-005  1.131e-005  3.253e-006
1.086e-006  1.667e-007  1.705e-008  8.402e-011  2.166e-012
       0.2  7.518e-004  7.518e-004  7.518e-004  7.498e-004  6.823e-
004  5.913e-004  4.451e-004  1.471e-004  5.075e-005  1.933e-005
8.061e-006  1.736e-006  2.542e-007  2.475e-009  9.345e-011
       0.3  7.518e-004  7.518e-004  7.518e-004  7.503e-004  6.956e-
004  6.173e-004  4.844e-004  1.843e-004  7.183e-005  3.041e-005
1.390e-005  3.494e-006  6.145e-007  8.959e-009  4.391e-010
       0.4  7.518e-004  7.518e-004  7.518e-004  7.503e-004  6.944e-
004  6.132e-004  4.758e-004  1.738e-004  6.590e-005  2.740e-005
1.238e-005  3.067e-006  5.320e-007  7.525e-009  3.595e-010
       0.5  7.518e-004  7.518e-004  7.518e-004  7.498e-004  6.859e-
004  5.999e-004  4.604e-004  1.674e-004  6.459e-005  2.755e-005
1.279e-005  3.339e-006  6.214e-007  1.044e-008  5.637e-010
      0.75  7.518e-004  7.518e-004  7.516e-004  7.453e-004  6.317e-
004  5.186e-004  3.673e-004  1.148e-004  4.153e-005  1.715e-005
7.830e-006  2.022e-006  3.795e-007  6.937e-009  4.122e-010
         1  7.518e-004  7.518e-004  7.510e-004  7.356e-004  5.627e-
004  4.292e-004  2.765e-004  6.919e-005  2.147e-005  7.869e-006
3.257e-006  7.204e-007  1.140e-007  1.489e-009  7.277e-011
         2  7.518e-004  7.518e-004  7.204e-004  5.848e-004  2.321e-
004  1.268e-004  5.594e-005  6.547e-006  1.310e-006  3.550e-007
1.171e-007  1.868e-008  2.146e-009  1.650e-011  6.313e-013
         3  7.518e-004  7.518e-004  6.326e-004  3.918e-004  8.567e-
005  3.581e-005  1.162e-005  7.066e-007  9.340e-008  1.864e-008
4.824e-009  5.305e-010  4.079e-011  1.422e-013  3.415e-015
         4  7.518e-004  7.516e-004  5.252e-004  2.566e-004  3.690e-
005  1.300e-005  3.502e-006  1.463e-007  1.545e-008  2.625e-009
5.993e-010  5.447e-011  3.420e-012  8.043e-015  1.535e-016
```

```
Source: Malibu Coast
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.857e-
004  2.749e-004  2.465e-004  1.321e-004  6.269e-005  2.997e-005
1.485e-005  4.115e-006  7.779e-007  1.204e-008  5.871e-010
      0.05  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.871e-
004  2.792e-004  2.563e-004  1.500e-004  7.660e-005  3.878e-005
2.013e-005  5.999e-006  1.227e-006  2.218e-008  1.184e-009
       0.1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.892e-
004  2.866e-004  2.771e-004  2.076e-004  1.343e-004  8.314e-005
5.122e-005  2.017e-005  5.668e-006  2.003e-007  1.626e-008
       0.2  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.897e-
004  2.893e-004  2.868e-004  2.545e-004  1.997e-004  1.467e-004
1.046e-004  5.221e-005  1.908e-005  1.132e-006  1.238e-007
       0.3  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.897e-
004  2.892e-004  2.863e-004  2.522e-004  1.969e-004  1.445e-004
1.034e-004  5.206e-005  1.939e-005  1.232e-006  1.432e-007
       0.4  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.897e-
004  2.891e-004  2.860e-004  2.497e-004  1.925e-004  1.395e-004
9.860e-005  4.864e-005  1.766e-005  1.058e-006  1.181e-007
       0.5  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.896e-
004  2.887e-004  2.846e-004  2.430e-004  1.834e-004  1.308e-004
9.150e-005  4.465e-005  1.617e-005  9.955e-007  1.154e-007
      0.75  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.887e-
004  2.852e-004  2.741e-004  2.054e-004  1.371e-004  8.883e-005
5.763e-005  2.527e-005  8.290e-006  4.480e-007  5.037e-008
         1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.868e-
004  2.795e-004  2.600e-004  1.696e-004  9.997e-005  5.851e-005
3.489e-005  1.339e-005  3.793e-006  1.531e-007  1.449e-008
         2  2.898e-004  2.898e-004  2.897e-004  2.872e-004  2.497e-
004  2.121e-004  1.589e-004  5.781e-005  2.307e-005  1.023e-005
4.941e-006  1.401e-006  2.958e-007  7.411e-009  5.667e-010
         3  2.898e-004  2.898e-004  2.885e-004  2.749e-004  1.845e-
004  1.312e-004  7.800e-005  1.659e-005  4.679e-006  1.608e-006
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6.354e-007  1.326e-007  2.013e-008  2.644e-010  1.382e-011
         4  2.898e-004  2.898e-004  2.845e-004  2.527e-004  1.310e-
004  8.136e-005  4.141e-005  6.394e-006  1.491e-006  4.475e-007
1.593e-007  2.841e-008  3.654e-009  3.476e-011  1.504e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.898e-004  2.898e-004  2.898e-004  2.896e-004  2.771e-
004  2.537e-004  2.067e-004  8.099e-005  3.029e-005  1.203e-005
5.133e-006  1.126e-006  1.649e-007  1.530e-009  5.494e-011
      0.05  2.898e-004  2.898e-004  2.898e-004  2.897e-004  2.829e-
004  2.674e-004  2.312e-004  1.093e-004  4.702e-005  2.081e-005
9.685e-006  2.432e-006  4.124e-007  5.121e-009  2.184e-010
       0.1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.886e-
004  2.844e-004  2.701e-004  1.841e-004  1.079e-004  6.115e-005
3.488e-005  1.206e-005  2.909e-006  7.324e-008  4.761e-009
       0.2  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.895e-
004  2.883e-004  2.826e-004  2.300e-004  1.619e-004  1.075e-004
7.012e-005  3.016e-005  9.295e-006  3.865e-007  3.403e-008
       0.3  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.895e-
004  2.883e-004  2.826e-004  2.298e-004  1.616e-004  1.073e-004
6.998e-005  3.010e-005  9.281e-006  3.871e-007  3.418e-008
       0.4  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.896e-
004  2.883e-004  2.826e-004  2.266e-004  1.549e-004  9.925e-005
6.244e-005  2.501e-005  6.994e-006  2.257e-007  1.647e-008
       0.5  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.896e-
004  2.883e-004  2.823e-004  2.225e-004  1.472e-004  9.084e-005
5.501e-005  2.047e-005  5.184e-006  1.296e-007  7.832e-009
      0.75  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.883e-
004  2.835e-004  2.677e-004  1.776e-004  1.017e-004  5.658e-005
3.180e-005  1.076e-005  2.537e-006  6.134e-008  3.903e-009
         1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.853e-
004  2.745e-004  2.472e-004  1.385e-004  6.995e-005  3.562e-005
1.875e-005  5.805e-006  1.267e-006  2.796e-008  1.755e-009
         2  2.898e-004  2.898e-004  2.897e-004  2.866e-004  2.395e-
004  1.948e-004  1.360e-004  3.988e-005  1.340e-005  5.153e-006
2.207e-006  5.125e-007  8.552e-008  1.266e-009  6.805e-011
         3  2.898e-004  2.898e-004  2.886e-004  2.742e-004  1.761e-
004  1.201e-004  6.717e-005  1.198e-005  2.945e-006  9.034e-007
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3.240e-007  5.747e-008  7.194e-009  6.060e-011  2.336e-012
         4  2.898e-004  2.898e-004  2.855e-004  2.546e-004  1.265e-
004  7.519e-005  3.574e-005  4.528e-006  9.027e-007  2.382e-007
7.592e-008  1.126e-008  1.163e-009  6.725e-012  2.075e-013
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.898e-004  2.898e-004  2.898e-004  2.895e-004  2.750e-
004  2.497e-004  2.013e-004  7.774e-005  2.915e-005  1.169e-005
5.046e-006  1.136e-006  1.730e-007  1.790e-009  6.982e-011
      0.05  2.898e-004  2.898e-004  2.898e-004  2.897e-004  2.821e-
004  2.659e-004  2.292e-004  1.088e-004  4.753e-005  2.144e-005
1.017e-005  2.653e-006  4.739e-007  6.737e-009  3.174e-010
       0.1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.883e-
004  2.834e-004  2.679e-004  1.797e-004  1.046e-004  5.925e-005
3.389e-005  1.185e-005  2.917e-006  7.877e-008  5.435e-009
       0.2  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.894e-
004  2.877e-004  2.807e-004  2.222e-004  1.526e-004  9.949e-005
6.410e-005  2.715e-005  8.287e-006  3.469e-007  3.119e-008
       0.3  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.893e-
004  2.873e-004  2.794e-004  2.173e-004  1.464e-004  9.393e-005
5.970e-005  2.475e-005  7.383e-006  2.958e-007  2.596e-008
       0.4  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.893e-
004  2.871e-004  2.784e-004  2.101e-004  1.353e-004  8.274e-005
5.020e-005  1.909e-005  5.091e-006  1.543e-007  1.107e-008
       0.5  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.892e-
004  2.865e-004  2.761e-004  1.984e-004  1.199e-004  6.880e-005
3.932e-005  1.344e-005  3.127e-006  6.818e-008  3.880e-009
      0.75  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.871e-
004  2.795e-004  2.578e-004  1.550e-004  8.111e-005  4.181e-005
2.199e-005  6.646e-006  1.365e-006  2.376e-008  1.195e-009
         1  2.898e-004  2.898e-004  2.898e-004  2.897e-004  2.826e-
004  2.681e-004  2.351e-004  1.213e-004  5.767e-005  2.801e-005
1.418e-005  4.119e-006  8.328e-007  1.534e-008  8.447e-010
         2  2.898e-004  2.898e-004  2.895e-004  2.842e-004  2.253e-
004  1.774e-004  1.193e-004  3.273e-005  1.065e-005  4.024e-006
1.702e-006  3.891e-007  6.408e-008  9.331e-010  4.994e-011
         3  2.898e-004  2.898e-004  2.861e-004  2.612e-004  1.503e-
004  9.893e-005  5.398e-005  9.733e-006  2.508e-006  8.111e-007
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3.066e-007  5.999e-008  8.549e-009  1.003e-010  4.934e-012
         4  2.898e-004  2.898e-004  2.750e-004  2.221e-004  9.272e-
005  5.287e-005  2.471e-005  3.337e-006  7.372e-007  2.158e-007
7.593e-008  1.347e-008  1.756e-009  1.811e-011  8.507e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.898e-004  2.898e-004  2.898e-004  2.896e-004  2.793e-
004  2.594e-004  2.182e-004  9.693e-005  4.071e-005  1.790e-005
8.343e-006  2.126e-006  3.719e-007  5.121e-009  2.373e-010
      0.05  2.898e-004  2.898e-004  2.898e-004  2.897e-004  2.840e-
004  2.708e-004  2.389e-004  1.227e-004  5.705e-005  2.701e-005
1.333e-005  3.695e-006  7.043e-007  1.135e-008  5.734e-010
       0.1  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.887e-
004  2.848e-004  2.717e-004  1.905e-004  1.156e-004  6.785e-005
3.999e-005  1.469e-005  3.832e-006  1.174e-007  8.820e-009
       0.2  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.896e-
004  2.884e-004  2.834e-004  2.356e-004  1.714e-004  1.179e-004
7.962e-005  3.651e-005  1.222e-005  6.217e-007  6.301e-008
       0.3  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.895e-
004  2.882e-004  2.828e-004  2.331e-004  1.683e-004  1.152e-004
7.768e-005  3.564e-005  1.202e-005  6.384e-007  6.779e-008
       0.4  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.895e-
004  2.882e-004  2.823e-004  2.288e-004  1.609e-004  1.072e-004
7.041e-005  3.091e-005  9.914e-006  4.792e-007  4.853e-008
       0.5  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.895e-
004  2.879e-004  2.810e-004  2.213e-004  1.501e-004  9.683e-005
6.194e-005  2.619e-005  8.161e-006  3.977e-007  4.238e-008
      0.75  2.898e-004  2.898e-004  2.898e-004  2.898e-004  2.880e-
004  2.827e-004  2.665e-004  1.793e-004  1.066e-004  6.241e-005
3.714e-005  1.422e-005  4.064e-006  1.777e-007  1.849e-008
         1  2.898e-004  2.898e-004  2.898e-004  2.897e-004  2.849e-
004  2.740e-004  2.474e-004  1.431e-004  7.587e-005  4.071e-005
2.261e-005  7.771e-006  1.964e-006  6.545e-008  5.696e-009
         2  2.898e-004  2.898e-004  2.896e-004  2.860e-004  2.382e-
004  1.947e-004  1.381e-004  4.348e-005  1.571e-005  6.467e-006
2.950e-006  7.677e-007  1.485e-007  3.203e-009  2.282e-010
         3  2.898e-004  2.898e-004  2.877e-004  2.701e-004  1.703e-
004  1.167e-004  6.638e-005  1.277e-005  3.377e-006  1.107e-006
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4.220e-007 8.334e-008 1.196e-008 1.418e-010 7.030e-012
         4 2.898e-004 2.898e-004 2.817e-004 2.431e-004 1.167e-
004 6.981e-005 3.395e-005 4.753e-006 1.044e-006 3.005e-007
1.037e-007 1.771e-008 2.191e-009 1.986e-011 8.541e-013

Source: Mission Ridge-Arroyo Parida-Santa Ana
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period Amp=0.0001 Amp=0.001   Amp=0.01   Amp=0.02   Amp=
0.05   Amp=0.07   Amp=0.1   Amp=0.2   Amp=0.3   Amp=0.4
Amp=0.5   Amp=0.7   Amp=1   Amp=2   Amp=3
       PGA 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.481e-
004 2.398e-004 2.171e-004 1.202e-004 5.853e-005 2.850e-005
1.433e-005 4.056e-006 7.833e-007 1.258e-008 6.245e-010
      0.05 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.491e-
004 2.429e-004 2.243e-004 1.344e-004 6.990e-005 3.588e-005
1.883e-005 5.699e-006 1.184e-006 2.200e-008 1.190e-009
       0.1 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.507e-
004 2.487e-004 2.412e-004 1.839e-004 1.210e-004 7.594e-005
4.732e-005 1.896e-005 5.430e-006 1.987e-007 1.644e-008
       0.2 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.511e-
004 2.508e-004 2.493e-004 2.263e-004 1.832e-004 1.388e-004
1.018e-004 5.318e-005 2.047e-005 1.350e-006 1.572e-007
       0.3 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.511e-
004 2.509e-004 2.494e-004 2.283e-004 1.880e-004 1.454e-004
1.090e-004 5.944e-005 2.426e-005 1.860e-006 2.418e-007
       0.4 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.511e-
004 2.508e-004 2.492e-004 2.260e-004 1.833e-004 1.395e-004
1.029e-004 5.453e-005 2.146e-005 1.510e-006 1.852e-007
       0.5 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.511e-
004 2.507e-004 2.485e-004 2.221e-004 1.774e-004 1.335e-004
9.778e-005 5.150e-005 2.031e-005 1.482e-006 1.896e-007
      0.75 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.507e-
004 2.491e-004 2.430e-004 1.968e-004 1.418e-004 9.800e-005
6.710e-005 3.204e-005 1.153e-005 7.469e-007 9.309e-008
         1 2.511e-004 2.511e-004 2.511e-004 2.511e-004 2.496e-
004 2.452e-004 2.323e-004 1.628e-004 1.019e-004 6.246e-005
3.866e-005 1.569e-005 4.715e-006 2.118e-007 2.123e-008
         2 2.511e-004 2.511e-004 2.510e-004 2.486e-004 2.131e-

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004  1.785e-004  1.310e-004  4.476e-005  1.700e-005  7.235e-006
3.378e-006  9.048e-007  1.787e-007  3.869e-009  2.692e-010
         3  2.511e-004  2.511e-004  2.495e-004  2.347e-004  1.470e-
004  9.984e-005  5.592e-005  1.025e-005  2.599e-006  8.213e-007
3.029e-007  5.651e-008  7.560e-009  7.585e-011  3.347e-012
         4  2.511e-004  2.511e-004  2.444e-004  2.091e-004  9.460e-
005  5.442e-005  2.515e-005  3.091e-006  6.161e-007  1.640e-007
5.294e-008  8.086e-009  8.755e-010  5.844e-012  2.037e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.511e-004  2.511e-004  2.511e-004  2.510e-004  2.426e-
004  2.253e-004  1.881e-004  7.914e-005  3.109e-005  1.281e-005
5.622e-006  1.287e-006  1.971e-007  1.988e-009  7.480e-011
      0.05  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.466e-
004  2.355e-004  2.077e-004  1.046e-004  4.719e-005  2.164e-005
1.036e-005  2.714e-006  4.814e-007  6.512e-009  2.916e-010
       0.1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.504e-
004  2.476e-004  2.375e-004  1.693e-004  1.033e-004  6.051e-005
3.545e-005  1.279e-005  3.228e-006  8.881e-008  6.078e-009
       0.2  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.502e-004  2.464e-004  2.064e-004  1.501e-004  1.025e-004
6.855e-005  3.066e-005  9.863e-006  4.464e-007  4.128e-008
       0.3  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.502e-004  2.463e-004  2.062e-004  1.499e-004  1.023e-004
6.840e-005  3.058e-005  9.835e-006  4.453e-007  4.120e-008
       0.4  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.503e-004  2.465e-004  2.044e-004  1.450e-004  9.598e-005
6.205e-005  2.595e-005  7.601e-006  2.680e-007  2.054e-008
       0.5  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.503e-004  2.465e-004  2.019e-004  1.394e-004  8.922e-005
5.566e-005  2.170e-005  5.767e-006  1.574e-007  9.963e-009
      0.75  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.503e-
004  2.473e-004  2.366e-004  1.659e-004  9.943e-005  5.728e-005
3.306e-005  1.162e-005  2.841e-006  7.254e-008  4.715e-009
         1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.485e-
004  2.414e-004  2.219e-004  1.329e-004  7.041e-005  3.707e-005
2.000e-005  6.402e-006  1.438e-006  3.285e-008  2.077e-009
         2  2.511e-004  2.511e-004  2.511e-004  2.494e-004  2.169e-
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004  1.819e-004  1.320e-004  4.180e-005  1.456e-005  5.708e-006
2.470e-006  5.783e-007  9.634e-008  1.383e-009  7.198e-011
         3  2.511e-004  2.511e-004  2.505e-004  2.418e-004  1.671e-
004  1.184e-004  6.895e-005  1.309e-005  3.283e-006  1.013e-006
3.629e-007  6.378e-008  7.827e-009  6.196e-011  2.278e-012
         4  2.511e-004  2.511e-004  2.489e-004  2.285e-004  1.244e-
004  7.684e-005  3.788e-005  5.024e-006  1.009e-006  2.653e-007
8.392e-008  1.221e-008  1.225e-009  6.560e-012  1.919e-013
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.444e-
004  2.299e-004  1.972e-004  9.113e-005  3.870e-005  1.700e-005
7.870e-006  1.966e-006  3.325e-007  4.155e-009  1.791e-010
      0.05  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.479e-
004  2.393e-004  2.164e-004  1.203e-004  5.916e-005  2.914e-005
1.481e-005  4.282e-006  8.497e-007  1.460e-008  7.607e-010
       0.1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.506e-
004  2.484e-004  2.400e-004  1.788e-004  1.146e-004  7.018e-005
4.276e-005  1.648e-005  4.495e-006  1.467e-007  1.122e-008
       0.2  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.503e-004  2.469e-004  2.102e-004  1.565e-004  1.095e-004
7.486e-005  3.484e-005  1.178e-005  5.979e-007  5.975e-008
       0.3  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.502e-004  2.464e-004  2.074e-004  1.522e-004  1.051e-004
7.111e-005  3.252e-005  1.078e-005  5.262e-007  5.142e-008
       0.4  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.502e-004  2.461e-004  2.036e-004  1.446e-004  9.612e-005
6.250e-005  2.648e-005  7.918e-006  2.963e-007  2.380e-008
       0.5  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.500e-004  2.453e-004  1.965e-004  1.327e-004  8.352e-005
5.147e-005  1.975e-005  5.186e-006  1.407e-007  8.973e-009
      0.75  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.503e-
004  2.472e-004  2.360e-004  1.632e-004  9.570e-005  5.374e-005
3.021e-005  1.007e-005  2.284e-006  4.738e-008  2.615e-009
         1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.483e-
004  2.409e-004  2.209e-004  1.316e-004  6.935e-005  3.630e-005
1.946e-005  6.141e-006  1.349e-006  2.870e-008  1.704e-009
         2  2.511e-004  2.511e-004  2.510e-004  2.474e-004  2.017e-
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004  1.615e-004  1.106e-004  3.109e-005  1.015e-005  3.816e-006
1.603e-006  3.606e-007  5.794e-008  7.892e-010  4.025e-011
         3  2.511e-004  2.511e-004  2.484e-004  2.285e-004  1.335e-
004  8.795e-005  4.778e-005  8.361e-006  2.085e-006  6.545e-007
2.408e-007  4.497e-008  6.058e-009  6.258e-011  2.835e-012
         4  2.511e-004  2.511e-004  2.396e-004  1.954e-004  8.198e-
005  4.647e-005  2.143e-005  2.754e-006  5.824e-007  1.642e-007
5.593e-008  9.404e-009  1.150e-009  1.033e-011  4.445e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.450e-
004  2.317e-004  2.008e-004  9.683e-005  4.277e-005  1.944e-005
9.274e-006  2.436e-006  4.376e-007  6.241e-009  2.928e-010
      0.05  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.479e-
004  2.392e-004  2.162e-004  1.198e-004  5.875e-005  2.888e-005
1.467e-005  4.232e-006  8.385e-007  1.437e-008  7.476e-010
       0.1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.506e-
004  2.482e-004  2.396e-004  1.773e-004  1.130e-004  6.888e-005
4.184e-005  1.608e-005  4.384e-006  1.448e-007  1.125e-008
       0.2  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.504e-004  2.475e-004  2.143e-004  1.633e-004  1.169e-004
8.174e-005  3.956e-005  1.404e-005  7.982e-007  8.607e-008
       0.3  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.504e-004  2.474e-004  2.140e-004  1.634e-004  1.176e-004
8.285e-005  4.085e-005  1.496e-005  9.437e-007  1.115e-007
       0.4  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.504e-004  2.473e-004  2.113e-004  1.576e-004  1.105e-004
7.583e-005  3.566e-005  1.233e-005  6.916e-007  7.651e-008
       0.5  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.510e-
004  2.503e-004  2.468e-004  2.068e-004  1.498e-004  1.021e-004
6.831e-005  3.098e-005  1.042e-005  5.933e-007  6.950e-008
      0.75  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.504e-
004  2.479e-004  2.385e-004  1.753e-004  1.123e-004  6.967e-005
4.346e-005  1.791e-005  5.553e-006  2.890e-007  3.347e-008
         1  2.511e-004  2.511e-004  2.511e-004  2.511e-004  2.488e-
004  2.425e-004  2.250e-004  1.424e-004  8.054e-005  4.528e-005
2.604e-005  9.413e-006  2.501e-006  9.113e-008  8.338e-009
         2  2.511e-004  2.511e-004  2.510e-004  2.485e-004  2.106e-
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004  1.740e-004  1.245e-004  3.921e-005  1.390e-005  5.587e-006
2.484e-006  6.146e-007  1.110e-007  2.014e-009  1.271e-010
         3  2.511e-004  2.511e-004  2.495e-004  2.350e-004  1.492e-
004  1.021e-004  5.755e-005  1.057e-005  2.656e-006  8.295e-007
3.022e-007  5.509e-008  7.148e-009  6.680e-011  2.820e-012
         4  2.511e-004  2.511e-004  2.443e-004  2.110e-004  1.003e-
004  5.924e-005  2.815e-005  3.623e-006  7.359e-007  1.978e-007
6.426e-008  9.898e-009  1.084e-009  7.579e-012  2.800e-013


Source: Newport-Inglewood
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.374e-004  8.373e-004  8.190e-004  7.736e-004  6.174e-
004  5.068e-004  3.616e-004  1.087e-004  3.534e-005  1.283e-005
5.129e-006  1.028e-006  1.382e-007  1.109e-009  3.694e-011
      0.05  8.374e-004  8.373e-004  8.198e-004  7.762e-004  6.290e-
004  5.241e-004  3.828e-004  1.235e-004  4.241e-005  1.609e-005
6.671e-006  1.418e-006  2.035e-007  1.872e-009  6.781e-011
       0.1  8.374e-004  8.374e-004  8.272e-004  7.951e-004  6.842e-
004  6.030e-004  4.815e-004  2.013e-004  8.400e-005  3.718e-005
1.752e-005  4.571e-006  8.265e-007  1.238e-008  6.100e-010
       0.2  8.374e-004  8.374e-004  8.361e-004  8.259e-004  7.621e-
004  7.097e-004  6.223e-004  3.458e-004  1.773e-004  9.136e-005
4.843e-005  1.504e-005  3.243e-006  6.620e-008  3.821e-009
       0.3  8.374e-004  8.374e-004  8.370e-004  8.320e-004  7.830e-
004  7.351e-004  6.520e-004  3.797e-004  2.046e-004  1.104e-004
6.105e-005  2.040e-005  4.818e-006  1.218e-007  8.148e-009
       0.4  8.374e-004  8.374e-004  8.371e-004  8.336e-004  7.903e-
004  7.443e-004  6.621e-004  3.888e-004  2.109e-004  1.143e-004
6.333e-005  2.121e-005  5.005e-006  1.249e-007  8.225e-009
       0.5  8.374e-004  8.374e-004  8.372e-004  8.341e-004  7.924e-
004  7.456e-004  6.617e-004  3.876e-004  2.120e-004  1.165e-004
6.565e-005  2.275e-005  5.640e-006  1.613e-007  1.179e-008
      0.75  8.374e-004  8.374e-004  8.370e-004  8.316e-004  7.697e-
004  7.052e-004  5.989e-004  3.112e-004  1.586e-004  8.374e-005
4.612e-005  1.571e-005  3.926e-006  1.240e-007  1.014e-008
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         1  8.374e-004  8.374e-004  8.366e-004  8.278e-004  7.397e-
004  6.560e-004  5.294e-004  2.376e-004  1.088e-004  5.289e-005
2.727e-005  8.392e-006  1.880e-006  4.805e-008  3.478e-009
         2  8.374e-004  8.374e-004  8.258e-004  7.701e-004  5.276e-
004  3.947e-004  2.561e-004  7.057e-005  2.418e-005  9.669e-006
4.326e-006  1.096e-006  2.060e-007  4.145e-009  2.791e-010
         3  8.374e-004  8.373e-004  7.929e-004  6.654e-004  3.411e-
004  2.212e-004  1.216e-004  2.355e-005  6.485e-006  2.211e-006
8.720e-007  1.820e-007  2.772e-008  3.657e-010  1.909e-011
         4  8.374e-004  8.373e-004  7.506e-004  5.712e-004  2.332e-
004  1.353e-004  6.511e-005  9.377e-006  2.131e-006  6.303e-007
2.220e-007  3.894e-008  4.918e-009  4.482e-011  1.881e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.374e-004  8.374e-004  8.296e-004  7.741e-004  4.817e-
004  3.226e-004  1.735e-004  2.586e-005  5.230e-006  1.331e-006
4.011e-007  5.201e-008  4.360e-009  1.375e-011  2.632e-013
      0.05  8.374e-004  8.374e-004  8.319e-004  7.897e-004  5.377e-
004  3.825e-004  2.223e-004  3.967e-005  9.008e-006  2.497e-006
8.046e-007  1.156e-007  1.082e-008  4.238e-011  9.224e-013
       0.1  8.374e-004  8.374e-004  8.353e-004  8.143e-004  6.501e-
004  5.204e-004  3.557e-004  9.418e-005  2.781e-005  9.362e-006
3.520e-006  6.406e-007  7.734e-008  4.998e-010  1.461e-011
       0.2  8.374e-004  8.374e-004  8.371e-004  8.315e-004  7.511e-
004  6.648e-004  5.280e-004  2.118e-004  8.453e-005  3.591e-005
1.630e-005  3.983e-006  6.641e-007  8.221e-009  3.550e-010
       0.3  8.374e-004  8.374e-004  8.372e-004  8.342e-004  7.738e-
004  6.999e-004  5.741e-004  2.534e-004  1.091e-004  4.931e-005
2.356e-005  6.255e-006  1.146e-006  1.724e-008  8.397e-010
       0.4  8.374e-004  8.374e-004  8.373e-004  8.344e-004  7.728e-
004  6.962e-004  5.657e-004  2.386e-004  9.765e-005  4.199e-005
1.915e-005  4.672e-006  7.667e-007  8.756e-009  3.489e-010
       0.5  8.374e-004  8.374e-004  8.372e-004  8.339e-004  7.695e-
004  6.920e-004  5.622e-004  2.395e-004  9.935e-005  4.322e-005
1.989e-005  4.916e-006  8.154e-007  9.362e-009  3.694e-010
      0.75  8.374e-004  8.374e-004  8.368e-004  8.282e-004  7.225e-
004  6.219e-004  4.773e-004  1.832e-004  7.368e-005  3.203e-005
1.495e-005  3.869e-006  6.977e-007  1.047e-008  5.155e-010
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         1  8.374e-004  8.374e-004  8.356e-004  8.168e-004  6.618e-
004  5.428e-004  3.927e-004  1.340e-004  5.080e-005  2.136e-005
9.764e-006  2.473e-006  4.420e-007  6.806e-009  3.499e-010
         2  8.374e-004  8.373e-004  8.086e-004  7.056e-004  4.014e-
004  2.756e-004  1.625e-004  3.656e-005  1.090e-005  3.897e-006
1.582e-006  3.397e-007  5.211e-008  6.462e-010  3.093e-011
         3  8.374e-004  8.373e-004  7.549e-004  5.790e-004  2.481e-
004  1.491e-004  7.486e-005  1.166e-005  2.718e-006  8.071e-007
2.822e-007  4.808e-008  5.732e-009  4.296e-011  1.524e-012
         4  8.374e-004  8.373e-004  6.962e-004  4.796e-004  1.667e-
004  9.078e-005  4.051e-005  4.827e-006  9.449e-007  2.462e-007
7.762e-008  1.127e-008  1.130e-009  6.019e-012  1.745e-013
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.374e-004  8.373e-004  7.913e-004  6.958e-004  4.077e-
004  2.741e-004  1.518e-004  2.573e-005  5.821e-006  1.625e-006
5.288e-007  7.759e-008  7.476e-009  3.141e-011  7.169e-013
      0.05  8.374e-004  8.373e-004  7.945e-004  7.134e-004  4.596e-
004  3.283e-004  1.967e-004  4.035e-005  1.039e-005  3.194e-006
1.123e-006  1.859e-007  2.041e-008  1.114e-010  2.971e-012
       0.1  8.374e-004  8.373e-004  8.145e-004  7.633e-004  5.901e-
004  4.784e-004  3.407e-004  1.087e-004  3.815e-005  1.488e-005
6.343e-006  1.418e-006  2.165e-007  2.292e-009  9.100e-011
       0.2  8.374e-004  8.374e-004  8.323e-004  8.078e-004  6.923e-
004  6.056e-004  4.823e-004  2.101e-004  9.340e-005  4.394e-005
2.187e-005  6.253e-006  1.257e-006  2.334e-008  1.302e-009
       0.3  8.374e-004  8.374e-004  8.349e-004  8.174e-004  7.083e-
004  6.206e-004  4.946e-004  2.161e-004  9.645e-005  4.559e-005
2.279e-005  6.574e-006  1.335e-006  2.542e-008  1.441e-009
       0.4  8.374e-004  8.374e-004  8.356e-004  8.209e-004  7.130e-
004  6.218e-004  4.902e-004  2.039e-004  8.636e-005  3.881e-005
1.851e-005  4.899e-006  8.900e-007  1.279e-008  5.908e-010
       0.5  8.374e-004  8.374e-004  8.357e-004  8.206e-004  7.045e-
004  6.077e-004  4.706e-004  1.836e-004  7.270e-005  3.060e-005
1.371e-005  3.244e-006  5.103e-007  5.158e-009  1.855e-010
      0.75  8.374e-004  8.374e-004  8.346e-004  8.116e-004  6.527e-
004  5.353e-004  3.870e-004  1.283e-004  4.605e-005  1.816e-005
7.775e-006  1.731e-006  2.588e-007  2.479e-009  8.909e-011
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         1  8.374e-004  8.374e-004  8.325e-004  7.980e-004  5.985e-
004  4.697e-004  3.216e-004  9.551e-005  3.257e-005  1.254e-005
5.313e-006  1.185e-006  1.822e-007  2.002e-009  8.229e-011
         2  8.374e-004  8.373e-004  7.966e-004  6.685e-004  3.385e-
004  2.174e-004  1.176e-004  2.145e-005  5.559e-006  1.790e-006
6.697e-007  1.271e-007  1.715e-008  1.679e-010  7.072e-012
         3  8.374e-004  8.373e-004  7.178e-004  5.105e-004  1.854e-
004  1.030e-004  4.737e-005  6.263e-006  1.355e-006  3.872e-007
1.328e-007  2.238e-008  2.710e-009  2.280e-011  9.147e-013
         4  8.374e-004  8.369e-004  6.147e-004  3.732e-004  1.034e-
004  5.140e-005  2.096e-005  2.206e-006  4.222e-007  1.114e-007
3.612e-008  5.646e-009  6.399e-010  4.948e-012  1.945e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.374e-004  8.373e-004  8.133e-004  7.478e-004  5.022e-
004  3.678e-004  2.289e-004  5.344e-005  1.546e-005  5.261e-006
2.020e-006  3.860e-007  5.000e-008  3.846e-010  1.264e-011
      0.05  8.374e-004  8.373e-004  8.154e-004  7.598e-004  5.421e-
004  4.116e-004  2.673e-004  6.785e-005  2.060e-005  7.259e-006
2.866e-006  5.733e-007  7.825e-008  6.752e-010  2.390e-011
       0.1  8.374e-004  8.373e-004  8.257e-004  7.909e-004  6.415e-
004  5.339e-004  3.926e-004  1.347e-004  4.998e-005  2.047e-005
9.128e-006  2.210e-006  3.734e-007  5.058e-009  2.385e-010
       0.2  8.374e-004  8.374e-004  8.352e-004  8.217e-004  7.352e-
004  6.601e-004  5.442e-004  2.559e-004  1.184e-004  5.707e-005
2.887e-005  8.424e-006  1.721e-006  3.259e-008  1.826e-009
       0.3  8.374e-004  8.374e-004  8.364e-004  8.278e-004  7.550e-
004  6.852e-004  5.735e-004  2.831e-004  1.367e-004  6.844e-005
3.580e-005  1.108e-005  2.433e-006  5.483e-008  3.476e-009
       0.4  8.374e-004  8.374e-004  8.367e-004  8.296e-004  7.587e-
004  6.874e-004  5.727e-004  2.771e-004  1.316e-004  6.502e-005
3.367e-005  1.026e-005  2.221e-006  4.882e-008  3.055e-009
       0.5  8.374e-004  8.374e-004  8.367e-004  8.295e-004  7.555e-
004  6.818e-004  5.648e-004  2.702e-004  1.280e-004  6.345e-005
3.309e-005  1.030e-005  2.322e-006  5.861e-008  4.115e-009
      0.75  8.374e-004  8.374e-004  8.361e-004  8.238e-004  7.150e-
004  6.208e-004  4.878e-004  2.076e-004  9.279e-005  4.465e-005
2.295e-005  7.104e-006  1.628e-006  4.565e-008  3.582e-009
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         1  8.374e-004  8.374e-004  8.349e-004  8.142e-004  6.667e-
004  5.562e-004  4.146e-004  1.557e-004  6.405e-005  2.893e-005
1.412e-005  4.017e-006  8.348e-007  1.895e-008  1.303e-009
         2  8.374e-004  8.373e-004  8.103e-004  7.148e-004  4.225e-
004  2.959e-004  1.787e-004  4.286e-005  1.355e-005  5.119e-006
2.192e-006  5.209e-007  9.176e-008  1.653e-009  1.057e-010
         3  8.374e-004  8.373e-004  7.552e-004  5.850e-004  2.582e-
004  1.578e-004  8.126e-005  1.382e-005  3.519e-006  1.135e-006
4.290e-007  8.415e-008  1.205e-008  1.438e-010  7.175e-012
         4  8.374e-004  8.372e-004  6.872e-004  4.746e-004  1.678e-
004  9.250e-005  4.219e-005  5.470e-006  1.166e-006  3.293e-007
1.119e-007  1.862e-008  2.229e-009  1.860e-011  7.501e-013


Source: North Channel
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.692e-
004  4.496e-004  3.992e-004  2.058e-004  9.455e-005  4.399e-005
2.131e-005  5.692e-006  1.032e-006  1.461e-008  6.733e-010
      0.05  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.716e-
004  4.567e-004  4.150e-004  2.328e-004  1.145e-004  5.617e-005
2.841e-005  8.114e-006  1.582e-006  2.584e-008  1.295e-009
       0.1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.757e-
004  4.707e-004  4.528e-004  3.297e-004  2.070e-004  1.248e-004
7.515e-005  2.850e-005  7.673e-006  2.475e-007  1.899e-008
       0.2  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.769e-
004  4.761e-004  4.720e-004  4.178e-004  3.263e-004  2.385e-004
1.694e-004  8.380e-005  3.029e-005  1.752e-006  1.884e-007
       0.3  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.769e-
004  4.762e-004  4.724e-004  4.224e-004  3.365e-004  2.516e-004
1.830e-004  9.470e-005  3.637e-005  2.458e-006  2.961e-007
       0.4  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.768e-
004  4.760e-004  4.714e-004  4.152e-004  3.235e-004  2.365e-004
1.684e-004  8.400e-005  3.085e-005  1.884e-006  2.123e-007
       0.5  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.768e-
004  4.755e-004  4.696e-004  4.062e-004  3.109e-004  2.246e-004
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1.587e-004  7.869e-005  2.898e-005  1.837e-006  2.163e-007
      0.75  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.756e-
004  4.710e-004  4.553e-004  3.505e-004  2.396e-004  1.582e-004
1.042e-004  4.676e-005  1.570e-005  8.837e-007  1.014e-007
         1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.723e-
004  4.606e-004  4.288e-004  2.796e-004  1.642e-004  9.561e-005
5.671e-005  2.153e-005  6.009e-006  2.335e-007  2.150e-008
         2  4.770e-004  4.770e-004  4.766e-004  4.695e-004  3.841e-
004  3.104e-004  2.167e-004  6.577e-005  2.310e-005  9.285e-006
4.142e-006  1.036e-006  1.900e-007  3.564e-009  2.281e-010
         3  4.770e-004  4.770e-004  4.721e-004  4.334e-004  2.453e-
004  1.574e-004  8.230e-005  1.299e-005  2.998e-006  8.850e-007
3.092e-007  5.314e-008  6.506e-009  5.478e-011  2.178e-012
         4  4.770e-004  4.770e-004  4.574e-004  3.715e-004  1.454e-
004  7.809e-005  3.336e-005  3.484e-006  6.294e-007  1.561e-007
4.769e-008  6.700e-009  6.636e-010  3.719e-012  1.169e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.668e-
004  4.431e-004  3.859e-004  1.860e-004  8.106e-005  3.619e-005
1.696e-005  4.298e-006  7.355e-007  9.280e-009  3.991e-010
      0.05  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.714e-
004  4.560e-004  4.136e-004  2.306e-004  1.129e-004  5.525e-005
2.789e-005  7.944e-006  1.545e-006  2.514e-008  1.258e-009
       0.1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.761e-
004  4.725e-004  4.581e-004  3.464e-004  2.244e-004  1.383e-004
8.462e-005  3.273e-005  8.934e-006  2.886e-007  2.177e-008
       0.2  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.768e-
004  4.759e-004  4.711e-004  4.114e-004  3.154e-004  2.264e-004
1.582e-004  7.611e-005  2.663e-005  1.436e-006  1.478e-007
       0.3  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.769e-
004  4.760e-004  4.714e-004  4.137e-004  3.193e-004  2.307e-004
1.621e-004  7.879e-005  2.789e-005  1.543e-006  1.614e-007
       0.4  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.769e-
004  4.761e-004  4.718e-004  4.127e-004  3.137e-004  2.216e-004
1.518e-004  6.983e-005  2.283e-005  1.012e-006  8.926e-008
       0.5  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.769e-
004  4.762e-004  4.720e-004  4.098e-004  3.052e-004  2.096e-004
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1.392e-004  6.020e-005  1.802e-005  6.295e-007  4.633e-008
      0.75  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.763e-
004  4.730e-004  4.595e-004  3.501e-004  2.278e-004  1.405e-004
8.586e-005  3.303e-005  8.912e-006  2.762e-007  2.007e-008
         1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.739e-
004  4.643e-004  4.351e-004  2.820e-004  1.596e-004  8.858e-005
4.988e-005  1.707e-005  4.121e-006  1.085e-007  7.439e-009
         2  4.770e-004  4.770e-004  4.769e-004  4.728e-004  4.020e-
004  3.303e-004  2.329e-004  6.854e-005  2.271e-005  8.580e-006
3.604e-006  8.056e-007  1.276e-007  1.656e-009  8.104e-011
         3  4.770e-004  4.770e-004  4.748e-004  4.490e-004  2.769e-
004  1.830e-004  9.769e-005  1.530e-005  3.396e-006  9.579e-007
3.198e-007  5.041e-008  5.500e-009  3.441e-011  1.098e-012
         4  4.770e-004  4.770e-004  4.695e-004  4.148e-004  1.950e-
004  1.114e-004  5.012e-005  5.468e-006  9.727e-007  2.340e-007
6.900e-008  9.012e-009  8.051e-010  3.414e-012  8.681e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.770e-004  4.770e-004  4.770e-004  4.767e-004  4.585e-
004  4.230e-004  3.497e-004  1.439e-004  5.606e-005  2.304e-005
1.012e-005  2.328e-006  3.607e-007  3.790e-009  1.476e-010
      0.05  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.675e-
004  4.453e-004  3.911e-004  1.957e-004  8.840e-005  4.074e-005
1.963e-005  5.218e-006  9.458e-007  1.359e-008  6.376e-010
       0.1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.752e-
004  4.690e-004  4.473e-004  3.112e-004  1.863e-004  1.077e-004
6.253e-005  2.231e-005  5.588e-006  1.538e-007  1.063e-008
       0.2  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.766e-
004  4.745e-004  4.652e-004  3.788e-004  2.672e-004  1.779e-004
1.165e-004  5.054e-005  1.577e-005  6.799e-007  6.163e-008
       0.3  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.765e-
004  4.741e-004  4.638e-004  3.722e-004  2.583e-004  1.696e-004
1.097e-004  4.668e-005  1.426e-005  5.897e-007  5.218e-008
       0.4  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.765e-
004  4.740e-004  4.628e-004  3.624e-004  2.414e-004  1.515e-004
9.374e-005  3.664e-005  1.000e-005  3.116e-007  2.243e-008
       0.5  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.764e-
004  4.734e-004  4.601e-004  3.451e-004  2.163e-004  1.275e-004
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7.429e-005  2.603e-005  6.181e-006  1.369e-007  7.739e-009
      0.75  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.740e-
004  4.645e-004  4.345e-004  2.735e-004  1.476e-004  7.762e-005
4.139e-005  1.274e-005  2.656e-006  4.710e-008  2.386e-009
         1  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.678e-
004  4.472e-004  3.973e-004  2.116e-004  1.022e-004  5.002e-005
2.543e-005  7.406e-006  1.496e-006  2.730e-008  1.491e-009
         2  4.770e-004  4.770e-004  4.763e-004  4.652e-004  3.521e-
004  2.671e-004  1.705e-004  4.075e-005  1.199e-005  4.183e-006
1.656e-006  3.407e-007  4.978e-008  5.643e-010  2.587e-011
         3  4.770e-004  4.770e-004  4.681e-004  4.148e-004  2.120e-
004  1.303e-004  6.521e-005  9.594e-006  2.152e-006  6.256e-007
2.168e-007  3.698e-008  4.522e-009  3.867e-011  1.567e-012
         4  4.770e-004  4.770e-004  4.430e-004  3.374e-004  1.198e-
004  6.295e-005  2.665e-005  2.873e-006  5.466e-007  1.428e-007
4.585e-008  7.045e-009  7.829e-010  5.825e-012  2.242e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.648e-
004  4.386e-004  3.783e-004  1.786e-004  7.723e-005  3.441e-005
1.613e-005  4.106e-006  7.093e-007  9.226e-009  4.067e-010
      0.05  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.702e-
004  4.527e-004  4.066e-004  2.197e-004  1.053e-004  5.072e-005
2.531e-005  7.092e-006  1.357e-006  2.153e-008  1.064e-009
       0.1  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.757e-
004  4.707e-004  4.527e-004  3.291e-004  2.059e-004  1.236e-004
7.410e-005  2.785e-005  7.398e-006  2.300e-007  1.713e-008
       0.2  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.768e-
004  4.755e-004  4.695e-004  4.027e-004  3.030e-004  2.143e-004
1.480e-004  7.015e-005  2.423e-005  1.289e-006  1.326e-007
       0.3  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.767e-
004  4.754e-004  4.692e-004  4.028e-004  3.047e-004  2.173e-004
1.516e-004  7.339e-005  2.617e-005  1.530e-006  1.699e-007
       0.4  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.767e-
004  4.754e-004  4.687e-004  3.968e-004  2.929e-004  2.032e-004
1.380e-004  6.349e-005  2.123e-005  1.069e-006  1.080e-007
       0.5  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.767e-
004  4.750e-004  4.672e-004  3.870e-004  2.774e-004  1.872e-004
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1.241e-004  5.497e-005  1.772e-005  8.678e-007  9.011e-008
      0.75  4.770e-004  4.770e-004  4.770e-004  4.770e-004  4.753e-
004  4.695e-004  4.497e-004  3.247e-004  2.050e-004  1.255e-004
7.717e-005  3.084e-005  9.090e-006  4.023e-007  4.128e-008
         1  4.770e-004  4.770e-004  4.770e-004  4.769e-004  4.713e-
004  4.574e-004  4.204e-004  2.577e-004  1.420e-004  7.807e-005
4.401e-005  1.533e-005  3.875e-006  1.231e-007  1.014e-008
         2  4.770e-004  4.770e-004  4.766e-004  4.692e-004  3.794e-
004  3.026e-004  2.067e-004  5.835e-005  1.927e-005  7.349e-006
3.134e-006  7.273e-007  1.225e-007  1.928e-009  1.117e-010
         3  4.770e-004  4.770e-004  4.716e-004  4.324e-004  2.447e-
004  1.569e-004  8.174e-005  1.263e-005  2.849e-006  8.228e-007
2.819e-007  4.684e-008  5.509e-009  4.262e-011  1.615e-012
         4  4.770e-004  4.770e-004  4.566e-004  3.746e-004  1.534e-
004  8.415e-005  3.671e-005  3.942e-006  7.162e-007  1.776e-007
5.418e-008  7.586e-009  7.505e-010  4.320e-012  1.426e-013


Source: Northridge
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.540e-
003  1.443e-003  1.226e-003  5.458e-004  2.239e-004  9.545e-005
4.309e-005  1.032e-005  1.661e-006  1.860e-008  7.470e-010
      0.05  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.550e-
003  1.470e-003  1.277e-003  6.112e-004  2.648e-004  1.177e-004
5.496e-005  1.386e-005  2.360e-006  2.952e-008  1.264e-009
       0.1  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.574e-
003  1.542e-003  1.443e-003  9.221e-004  5.127e-004  2.795e-004
1.548e-004  5.137e-005  1.193e-005  2.860e-007  1.838e-008
       0.2  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.584e-
003  1.578e-003  1.552e-003  1.285e-003  9.210e-004  6.212e-004
4.108e-004  1.805e-004  5.694e-005  2.481e-006  2.246e-007
       0.3  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.584e-
003  1.579e-003  1.556e-003  1.317e-003  9.766e-004  6.822e-004
4.666e-004  2.180e-004  7.441e-005  3.925e-006  4.063e-007
       0.4  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.584e-
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003  1.578e-003  1.551e-003  1.290e-003  9.344e-004  6.381e-004
4.275e-004  1.927e-004  6.299e-005  3.011e-006  2.919e-007
       0.5  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
003  1.575e-003  1.543e-003  1.258e-003  8.971e-004  6.073e-004
4.053e-004  1.828e-004  6.037e-005  3.047e-006  3.118e-007
      0.75  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.576e-
003  1.551e-003  1.476e-003  1.052e-003  6.674e-004  4.138e-004
2.584e-004  1.063e-004  3.239e-005  1.493e-006  1.517e-007
         1  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.559e-
003  1.501e-003  1.360e-003  8.017e-004  4.326e-004  2.354e-004
1.320e-004  4.587e-005  1.161e-005  3.694e-007  3.017e-008
         2  1.585e-003  1.585e-003  1.582e-003  1.546e-003  1.190e-
003  9.211e-004  6.077e-004  1.616e-004  5.206e-005  1.963e-005
8.329e-006  1.927e-006  3.253e-007  5.173e-009  3.002e-010
         3  1.585e-003  1.585e-003  1.558e-003  1.386e-003  7.006e-
004  4.242e-004  2.074e-004  2.845e-005  6.036e-006  1.677e-006
5.594e-007  8.961e-008  1.019e-008  7.442e-011  2.726e-012
         4  1.585e-003  1.585e-003  1.494e-003  1.156e-003  4.009e-
004  2.036e-004  8.171e-005  7.504e-006  1.254e-006  2.939e-007
8.590e-008  1.128e-008  1.040e-009  5.060e-012  1.463e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.585e-003  1.585e-003  1.585e-003  1.583e-003  1.483e-
003  1.318e-003  1.020e-003  3.429e-004  1.146e-004  4.180e-005
1.664e-005  3.279e-006  4.271e-007  3.142e-009  9.825e-011
      0.05  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.522e-
003  1.400e-003  1.150e-003  4.593e-004  1.737e-004  6.957e-005
2.985e-005  6.604e-006  9.751e-007  9.187e-009  3.326e-010
       0.1  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.570e-
003  1.528e-003  1.404e-003  8.240e-004  4.214e-004  2.135e-004
1.109e-004  3.306e-005  6.757e-006  1.218e-007  6.480e-009
       0.2  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
003  1.569e-003  1.520e-003  1.143e-003  7.367e-004  4.521e-004
2.756e-004  1.060e-004  2.878e-005  9.214e-007  6.923e-008
       0.3  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
003  1.572e-003  1.529e-003  1.179e-003  7.801e-004  4.900e-004
3.047e-004  1.211e-004  3.412e-005  1.180e-006  9.300e-008
       0.4  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
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003  1.573e-003  1.530e-003  1.162e-003  7.458e-004  4.516e-004
2.704e-004  9.984e-005  2.544e-005  6.769e-007  4.391e-008
       0.5  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
003  1.573e-003  1.528e-003  1.142e-003  7.104e-004  4.154e-004
2.400e-004  8.280e-005  1.924e-005  4.030e-007  2.187e-008
      0.75  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.574e-
003  1.541e-003  1.438e-003  9.017e-004  4.896e-004  2.607e-004
1.412e-004  4.505e-005  9.943e-006  2.101e-007  1.233e-008
         1  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.551e-
003  1.475e-003  1.296e-003  6.632e-004  3.105e-004  1.486e-004
7.431e-005  2.118e-005  4.207e-006  7.630e-008  4.239e-009
         2  1.585e-003  1.585e-003  1.582e-003  1.543e-003  1.135e-
003  8.377e-004  5.129e-004  1.092e-004  2.946e-005  9.591e-006
3.587e-006  6.731e-007  8.864e-008  8.058e-010  3.211e-011
         3  1.585e-003  1.585e-003  1.559e-003  1.375e-003  6.440e-
004  3.676e-004  1.654e-004  1.817e-005  3.258e-006  7.899e-007
2.346e-007  3.102e-008  2.813e-009  1.234e-011  3.204e-013
         4  1.585e-003  1.585e-003  1.514e-003  1.189e-003  3.980e-
004  1.938e-004  7.284e-005  5.530e-006  7.943e-007  1.643e-007
4.310e-008  4.726e-009  3.511e-010  1.044e-012  2.160e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.505e-
003  1.365e-003  1.097e-003  4.167e-004  1.537e-004  6.075e-005
2.589e-005  5.705e-006  8.459e-007  8.239e-009  3.086e-010
      0.05  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.540e-
003  1.447e-003  1.236e-003  5.669e-004  2.404e-004  1.057e-004
4.908e-005  1.235e-005  2.117e-006  2.748e-008  1.221e-009
       0.1  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.575e-
003  1.546e-003  1.451e-003  9.409e-004  5.291e-004  2.909e-004
1.621e-004  5.431e-005  1.272e-005  3.089e-007  1.992e-008
       0.2  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
003  1.572e-003  1.530e-003  1.190e-003  7.992e-004  5.101e-004
3.224e-004  1.321e-004  3.876e-005  1.486e-006  1.262e-007
       0.3  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
003  1.570e-003  1.524e-003  1.166e-003  7.699e-004  4.843e-004
3.024e-004  1.216e-004  3.493e-005  1.286e-006  1.066e-007
       0.4  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
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003  1.569e-003  1.519e-003  1.125e-003  7.082e-004  4.237e-004
2.519e-004  9.249e-005  2.362e-005  6.485e-007  4.357e-008
       0.5  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.581e-
003  1.566e-003  1.504e-003  1.054e-003  6.181e-004  3.449e-004
1.921e-004  6.279e-005  1.384e-005  2.667e-007  1.397e-008
      0.75  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.568e-
003  1.520e-003  1.386e-003  7.894e-004  3.926e-004  1.938e-004
9.820e-005  2.795e-005  5.366e-006  8.122e-008  3.758e-009
         1  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.533e-
003  1.435e-003  1.226e-003  5.758e-004  2.534e-004  1.157e-004
5.564e-005  1.490e-005  2.754e-006  4.241e-008  2.104e-009
         2  1.585e-003  1.585e-003  1.578e-003  1.505e-003  9.930e-
004  6.907e-004  3.960e-004  7.472e-005  1.899e-005  5.959e-006
2.174e-006  3.950e-007  5.064e-008  4.463e-010  1.769e-011
         3  1.585e-003  1.585e-003  1.510e-003  1.210e-003  4.660e-
004  2.502e-004  1.074e-004  1.150e-005  2.129e-006  5.399e-007
1.681e-007  2.441e-008  2.516e-009  1.543e-011  5.153e-013
         4  1.585e-003  1.585e-003  1.340e-003  8.547e-004  2.106e-
004  9.460e-005  3.368e-005  2.560e-006  3.954e-007  8.902e-008
2.545e-008  3.281e-009  3.027e-010  1.567e-012  4.877e-014
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.509e-
003  1.376e-003  1.114e-003  4.351e-004  1.641e-004  6.600e-005
2.854e-005  6.433e-006  9.779e-007  9.995e-009  3.846e-010
      0.05  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.537e-
003  1.439e-003  1.221e-003  5.458e-004  2.263e-004  9.766e-005
4.463e-005  1.094e-005  1.817e-006  2.206e-008  9.394e-010
       0.1  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.573e-
003  1.538e-003  1.433e-003  8.957e-004  4.877e-004  2.613e-004
1.426e-004  4.624e-005  1.047e-005  2.389e-007  1.493e-008
       0.2  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
003  1.573e-003  1.534e-003  1.206e-003  8.189e-004  5.278e-004
3.362e-004  1.395e-004  4.149e-005  1.630e-006  1.400e-007
       0.3  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
003  1.574e-003  1.536e-003  1.221e-003  8.422e-004  5.522e-004
3.579e-004  1.536e-004  4.782e-005  2.130e-006  2.020e-007
       0.4  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.583e-
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003  1.573e-003  1.533e-003  1.193e-003  7.961e-004  5.044e-004
3.166e-004  1.284e-004  3.735e-005  1.446e-006  1.265e-007
       0.5  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.582e-
003  1.571e-003  1.525e-003  1.151e-003  7.419e-004  4.559e-004
2.792e-004  1.095e-004  3.115e-005  1.239e-006  1.159e-007
      0.75  1.585e-003  1.585e-003  1.585e-003  1.585e-003  1.573e-
003  1.537e-003  1.433e-003  9.143e-004  5.165e-004  2.894e-004
1.659e-004  5.977e-005  1.590e-005  5.948e-007  5.593e-008
         1  1.585e-003  1.585e-003  1.585e-003  1.584e-003  1.547e-
003  1.470e-003  1.294e-003  6.803e-004  3.322e-004  1.666e-004
8.733e-005  2.731e-005  6.189e-006  1.627e-007  1.217e-008
         2  1.585e-003  1.585e-003  1.581e-003  1.531e-003  1.106e-
003  8.165e-004  5.055e-004  1.152e-004  3.350e-005  1.173e-005
4.697e-006  9.985e-007  1.548e-007  2.142e-009  1.167e-010
         3  1.585e-003  1.585e-003  1.543e-003  1.324e-003  6.035e-
004  3.473e-004  1.601e-004  1.937e-005  3.808e-006  1.002e-006
3.207e-007  4.835e-008  5.172e-009  3.406e-011  1.187e-012
         4  1.585e-003  1.585e-003  1.449e-003  1.067e-003  3.365e-
004  1.640e-004  6.274e-005  5.198e-006  8.144e-007  1.824e-007
5.148e-008  6.430e-009  5.645e-010  2.557e-012  7.223e-014


Source: Oak Ridge (Offshore)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.132e-
004  7.031e-004  6.692e-004  4.626e-004  2.761e-004  1.593e-004
9.234e-005  3.288e-005  8.215e-006  2.241e-007  1.535e-008
      0.05  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.144e-
004  7.080e-004  6.838e-004  5.105e-004  3.287e-004  2.023e-004
1.239e-004  4.815e-005  1.327e-005  4.425e-007  3.420e-008
       0.1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.158e-
004  7.143e-004  7.071e-004  6.234e-004  4.897e-004  3.625e-004
2.617e-004  1.343e-004  5.127e-005  3.456e-006  4.174e-007
       0.2  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.160e-004  7.148e-004  6.899e-004  6.245e-004  5.361e-004
4.447e-004  2.902e-004  1.471e-004  1.796e-005  3.095e-006
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       0.3  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.160e-004  7.149e-004  6.918e-004  6.313e-004  5.484e-004
4.613e-004  3.103e-004  1.646e-004  2.281e-005  4.334e-006
       0.4  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.159e-004  7.147e-004  6.903e-004  6.276e-004  5.430e-004
4.549e-004  3.037e-004  1.595e-004  2.148e-005  3.989e-006
       0.5  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.142e-004  6.852e-004  6.169e-004  5.291e-004
4.404e-004  2.918e-004  1.529e-004  2.107e-005  4.045e-006
      0.75  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.158e-
004  7.146e-004  7.091e-004  6.488e-004  5.469e-004  4.405e-004
3.470e-004  2.110e-004  1.014e-004  1.229e-005  2.273e-006
         1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.150e-
004  7.113e-004  6.980e-004  5.922e-004  4.551e-004  3.358e-004
2.446e-004  1.302e-004  5.358e-005  4.686e-006  7.090e-007
         2  7.161e-004  7.161e-004  7.161e-004  7.142e-004  6.730e-
004  6.191e-004  5.246e-004  2.684e-004  1.371e-004  7.352e-005
4.143e-005  1.492e-005  4.086e-006  1.716e-007  1.779e-008
         3  7.161e-004  7.161e-004  7.150e-004  7.006e-004  5.631e-
004  4.536e-004  3.180e-004  1.000e-004  3.648e-005  1.516e-005
6.963e-006  1.828e-006  3.548e-007  7.512e-009  5.187e-010
         4  7.161e-004  7.161e-004  7.103e-004  6.668e-004  4.351e-
004  3.087e-004  1.848e-004  4.088e-005  1.194e-005  4.224e-006
1.709e-006  3.700e-007  5.850e-008  8.308e-010  4.542e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.123e-
004  7.009e-004  6.659e-004  4.656e-004  2.845e-004  1.683e-004
9.986e-005  3.700e-005  9.686e-006  2.913e-007  2.115e-008
      0.05  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.142e-
004  7.078e-004  6.849e-004  5.238e-004  3.494e-004  2.227e-004
1.408e-004  5.782e-005  1.699e-005  6.480e-007  5.434e-008
       0.1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.146e-004  7.084e-004  6.328e-004  5.055e-004  3.798e-004
2.774e-004  1.447e-004  5.593e-005  3.776e-006  4.486e-007
       0.2  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.137e-004  6.771e-004  5.937e-004  4.914e-004
3.931e-004  2.402e-004  1.122e-004  1.139e-005  1.744e-006
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       0.3  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.157e-004  7.137e-004  6.775e-004  5.954e-004  4.944e-004
3.971e-004  2.446e-004  1.155e-004  1.205e-005  1.879e-006
       0.4  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.141e-004  6.806e-004  6.006e-004  4.997e-004
4.007e-004  2.446e-004  1.129e-004  1.069e-005  1.518e-006
       0.5  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.159e-004  7.142e-004  6.815e-004  6.013e-004  4.988e-004
3.979e-004  2.389e-004  1.069e-004  9.019e-006  1.153e-006
      0.75  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.147e-004  7.091e-004  6.429e-004  5.272e-004  4.069e-004
3.042e-004  1.643e-004  6.544e-005  4.483e-006  5.182e-007
         1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.151e-
004  7.117e-004  6.989e-004  5.942e-004  4.535e-004  3.292e-004
2.344e-004  1.180e-004  4.420e-005  2.858e-006  3.347e-007
         2  7.161e-004  7.161e-004  7.161e-004  7.155e-004  6.950e-
004  6.625e-004  5.960e-004  3.639e-004  2.103e-004  1.230e-004
7.387e-005  2.902e-005  8.566e-006  3.907e-007  4.070e-008
         3  7.161e-004  7.161e-004  7.159e-004  7.118e-004  6.463e-
004  5.741e-004  4.609e-004  2.004e-004  8.951e-005  4.278e-005
2.179e-005  6.614e-006  1.472e-006  3.820e-008  2.849e-009
         4  7.161e-004  7.161e-004  7.153e-004  7.037e-004  5.834e-
004  4.808e-004  3.465e-004  1.138e-004  4.178e-005  1.722e-005
7.789e-006  1.967e-006  3.588e-007  6.287e-009  3.719e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.136e-
004  7.060e-004  6.818e-004  5.256e-004  3.584e-004  2.342e-004
1.517e-004  6.502e-005  2.015e-005  8.657e-007  7.839e-008
      0.05  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.150e-
004  7.110e-004  6.965e-004  5.802e-004  4.306e-004  3.037e-004
2.103e-004  1.008e-004  3.551e-005  1.994e-006  2.127e-007
       0.1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.150e-004  7.106e-004  6.543e-004  5.507e-004  4.383e-004
3.387e-004  1.956e-004  8.578e-005  7.678e-006  1.092e-006
       0.2  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.143e-004  6.866e-004  6.202e-004  5.335e-004
4.445e-004  2.940e-004  1.523e-004  1.973e-005  3.546e-006
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       0.3  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.142e-004  6.861e-004  6.203e-004  5.347e-004
4.469e-004  2.976e-004  1.558e-004  2.074e-005  3.799e-006
       0.4  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.143e-004  6.864e-004  6.201e-004  5.330e-004
4.433e-004  2.909e-004  1.480e-004  1.769e-005  2.932e-006
       0.5  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.141e-004  6.840e-004  6.135e-004  5.219e-004
4.286e-004  2.732e-004  1.325e-004  1.360e-005  1.981e-006
      0.75  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.150e-004  7.105e-004  6.586e-004  5.630e-004  4.557e-004
3.571e-004  2.098e-004  9.245e-005  7.819e-006  1.022e-006
         1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.153e-
004  7.126e-004  7.031e-004  6.238e-004  5.062e-004  3.901e-004
2.927e-004  1.602e-004  6.530e-005  4.782e-006  5.805e-007
         2  7.161e-004  7.161e-004  7.161e-004  7.149e-004  6.893e-
004  6.539e-004  5.857e-004  3.578e-004  2.082e-004  1.227e-004
7.423e-005  2.953e-005  8.847e-006  4.166e-007  4.424e-008
         3  7.161e-004  7.161e-004  7.152e-004  7.057e-004  6.148e-
004  5.337e-004  4.186e-004  1.786e-004  8.107e-005  3.985e-005
2.097e-005  6.805e-006  1.667e-006  5.630e-008  5.143e-009
         4  7.161e-004  7.161e-004  7.112e-004  6.808e-004  5.115e-
004  4.030e-004  2.788e-004  8.930e-005  3.398e-005  1.477e-005
7.085e-006  2.014e-006  4.340e-007  1.192e-008  9.923e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.130e-
004  7.033e-004  6.723e-004  4.846e-004  3.063e-004  1.872e-004
1.146e-004  4.497e-005  1.268e-005  4.603e-007  3.830e-008
      0.05  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.146e-
004  7.089e-004  6.884e-004  5.382e-004  3.696e-004  2.429e-004
1.583e-004  6.893e-005  2.193e-005  1.028e-006  1.004e-007
       0.1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.147e-004  7.087e-004  6.369e-004  5.153e-004  3.935e-004
2.926e-004  1.582e-004  6.433e-005  4.970e-006  6.527e-007
       0.2  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.143e-004  6.845e-004  6.128e-004  5.203e-004
4.274e-004  2.748e-004  1.372e-004  1.636e-005  2.795e-006
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       0.3  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.143e-004  6.851e-004  6.156e-004  5.259e-004
4.351e-004  2.842e-004  1.453e-004  1.853e-005  3.337e-006
       0.4  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.159e-004  7.144e-004  6.858e-004  6.161e-004  5.252e-004
4.330e-004  2.797e-004  1.401e-004  1.662e-005  2.813e-006
       0.5  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.161e-
004  7.158e-004  7.142e-004  6.836e-004  6.105e-004  5.166e-004
4.223e-004  2.680e-004  1.308e-004  1.456e-005  2.393e-006
      0.75  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.159e-
004  7.147e-004  7.096e-004  6.501e-004  5.457e-004  4.344e-004
3.361e-004  1.950e-004  8.642e-005  8.199e-006  1.271e-006
         1  7.161e-004  7.161e-004  7.161e-004  7.161e-004  7.152e-
004  7.119e-004  7.000e-004  6.034e-004  4.716e-004  3.517e-004
2.572e-004  1.361e-004  5.436e-005  4.108e-006  5.414e-007
         2  7.161e-004  7.161e-004  7.161e-004  7.149e-004  6.858e-
004  6.452e-004  5.688e-004  3.300e-004  1.852e-004  1.064e-004
6.318e-005  2.449e-005  7.166e-006  3.263e-007  3.424e-008
         3  7.161e-004  7.161e-004  7.154e-004  7.060e-004  6.080e-
004  5.205e-004  3.991e-004  1.597e-004  6.902e-005  3.260e-005
1.658e-005  5.082e-006  1.164e-006  3.400e-008  2.837e-009
         4  7.161e-004  7.161e-004  7.122e-004  6.838e-004  5.100e-
004  3.975e-004  2.700e-004  8.134e-005  2.923e-005  1.207e-005
5.527e-006  1.451e-006  2.837e-007  6.344e-009  4.699e-010


Source: Oak Ridge (Onshore)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.425e-
003  2.407e-003  2.346e-003  1.907e-003  1.394e-003  9.775e-004
6.773e-004  3.274e-004  1.175e-004  6.943e-006  7.661e-007
      0.05  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.427e-
003  2.416e-003  2.374e-003  2.035e-003  1.590e-003  1.193e-003
8.799e-004  4.748e-004  1.945e-004  1.535e-005  2.027e-006
       0.1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.427e-003  2.414e-003  2.261e-003  1.985e-003  1.674e-003
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1.382e-003  9.138e-004  4.846e-004  6.994e-005  1.381e-005
       0.2  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.385e-003  2.266e-003  2.092e-003
1.891e-003  1.485e-003  9.863e-004  2.419e-004  6.735e-005
       0.3  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.428e-003  2.388e-003  2.280e-003  2.121e-003
1.935e-003  1.555e-003  1.072e-003  2.960e-004  9.082e-005
       0.4  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.386e-003  2.277e-003  2.118e-003
1.936e-003  1.564e-003  1.089e-003  3.073e-004  9.514e-005
       0.5  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.426e-003  2.377e-003  2.257e-003  2.090e-003
1.902e-003  1.527e-003  1.057e-003  2.990e-004  9.404e-005
      0.75  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.427e-003  2.418e-003  2.314e-003  2.127e-003  1.907e-003
1.685e-003  1.286e-003  8.398e-004  2.145e-004  6.493e-005
         1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.422e-003  2.399e-003  2.213e-003  1.941e-003  1.660e-003
1.401e-003  9.813e-004  5.726e-004  1.111e-004  2.799e-005
         2  2.430e-003  2.430e-003  2.430e-003  2.426e-003  2.356e-
003  2.263e-003  2.088e-003  1.489e-003  1.034e-003  7.206e-004
5.079e-004  2.634e-004  1.089e-004  1.066e-005  1.840e-006
         3  2.430e-003  2.430e-003  2.428e-003  2.403e-003  2.166e-
003  1.960e-003  1.661e-003  9.321e-004  5.320e-004  3.143e-004
1.923e-004  7.911e-005  2.509e-005  1.409e-006  1.730e-007
         4  2.430e-003  2.430e-003  2.420e-003  2.347e-003  1.927e-
003  1.646e-003  1.289e-003  5.787e-004  2.776e-004  1.427e-004
7.784e-005  2.670e-005  6.932e-006  2.609e-007  2.529e-008
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.426e-
003  2.415e-003  2.375e-003  2.068e-003  1.658e-003  1.277e-003
9.647e-004  5.417e-004  2.322e-004  2.007e-005  2.801e-006
      0.05  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.421e-003  2.393e-003  2.133e-003  1.742e-003  1.358e-003
1.036e-003  5.888e-004  2.556e-004  2.269e-005  3.220e-006
       0.1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.428e-003  2.420e-003  2.295e-003  2.024e-003  1.693e-003
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1.373e-003  8.648e-004  4.220e-004  4.793e-005  7.931e-006
       0.2  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.373e-003  2.215e-003  1.980e-003
1.716e-003  1.220e-003  6.929e-004  1.106e-004  2.272e-005
       0.3  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.428e-003  2.382e-003  2.250e-003  2.047e-003
1.813e-003  1.351e-003  8.209e-004  1.560e-004  3.614e-005
       0.4  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.430e-003  2.428e-003  2.392e-003  2.282e-003  2.110e-003
1.903e-003  1.475e-003  9.457e-004  2.005e-004  4.879e-005
       0.5  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.430e-003  2.428e-003  2.396e-003  2.297e-003  2.144e-003
1.958e-003  1.566e-003  1.053e-003  2.481e-004  6.335e-005
      0.75  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.424e-003  2.356e-003  2.211e-003  2.027e-003
1.830e-003  1.446e-003  9.704e-004  2.342e-004  6.145e-005
         1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.426e-003  2.414e-003  2.292e-003  2.097e-003  1.884e-003
1.675e-003  1.293e-003  8.479e-004  1.992e-004  5.270e-005
         2  2.430e-003  2.430e-003  2.430e-003  2.429e-003  2.396e-
003  2.344e-003  2.239e-003  1.851e-003  1.508e-003  1.219e-003
9.814e-004  6.343e-004  3.354e-004  5.243e-005  1.159e-005
         3  2.430e-003  2.430e-003  2.429e-003  2.419e-003  2.287e-
003  2.153e-003  1.939e-003  1.310e-003  8.636e-004  5.693e-004
3.794e-004  1.767e-004  6.318e-005  4.246e-006  5.563e-007
         4  2.430e-003  2.430e-003  2.427e-003  2.400e-003  2.157e-
003  1.950e-003  1.645e-003  8.795e-004  4.682e-004  2.575e-004
1.472e-004  5.342e-005  1.443e-005  5.464e-007  5.069e-008
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.426e-
003  2.413e-003  2.371e-003  2.086e-003  1.720e-003  1.371e-003
1.074e-003  6.450e-004  3.009e-004  3.144e-005  4.946e-006
      0.05  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.421e-003  2.397e-003  2.189e-003  1.881e-003  1.563e-003
1.273e-003  8.225e-004  4.209e-004  5.444e-005  9.829e-006
       0.1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.428e-003  2.421e-003  2.319e-003  2.110e-003  1.850e-003
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1.583e-003  1.116e-003  6.371e-004  1.062e-004  2.266e-005
       0.2  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.376e-003  2.245e-003  2.054e-003
1.836e-003  1.404e-003  8.919e-004  1.918e-004  4.849e-005
       0.3  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.426e-003  2.375e-003  2.246e-003  2.062e-003
1.852e-003  1.434e-003  9.288e-004  2.108e-004  5.532e-005
       0.4  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.376e-003  2.249e-003  2.069e-003
1.864e-003  1.451e-003  9.442e-004  2.101e-004  5.289e-005
       0.5  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.426e-003  2.371e-003  2.238e-003  2.054e-003
1.848e-003  1.436e-003  9.283e-004  1.963e-004  4.634e-005
      0.75  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.428e-003  2.419e-003  2.321e-003  2.142e-003  1.926e-003
1.703e-003  1.284e-003  7.997e-004  1.558e-004  3.506e-005
         1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.423e-003  2.404e-003  2.255e-003  2.035e-003  1.795e-003
1.558e-003  1.132e-003  6.705e-004  1.159e-004  2.425e-005
         2  2.430e-003  2.430e-003  2.430e-003  2.427e-003  2.374e-
003  2.304e-003  2.174e-003  1.700e-003  1.280e-003  9.492e-004
7.016e-004  3.880e-004  1.691e-004  1.716e-005  2.883e-006
         3  2.430e-003  2.430e-003  2.428e-003  2.405e-003  2.219e-
003  2.057e-003  1.810e-003  1.123e-003  6.879e-004  4.290e-004
2.744e-004  1.210e-004  4.146e-005  2.731e-006  3.698e-007
         4  2.430e-003  2.430e-003  2.417e-003  2.350e-003  2.001e-
003  1.757e-003  1.426e-003  7.023e-004  3.623e-004  1.983e-004
1.144e-004  4.327e-005  1.268e-005  6.360e-007  7.535e-008
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.426e-
003  2.412e-003  2.364e-003  2.021e-003  1.591e-003  1.209e-003
9.053e-004  5.047e-004  2.169e-004  1.949e-005  2.838e-006
      0.05  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.419e-003  2.388e-003  2.119e-003  1.738e-003  1.371e-003
1.063e-003  6.287e-004  2.904e-004  3.083e-005  5.025e-006
       0.1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.428e-003  2.418e-003  2.292e-003  2.039e-003  1.739e-003
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1.446e-003  9.649e-004  5.146e-004  7.470e-005  1.480e-005
       0.2  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.378e-003  2.242e-003  2.042e-003
1.814e-003  1.370e-003  8.570e-004  1.815e-004  4.619e-005
       0.3  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.382e-003  2.259e-003  2.077e-003
1.867e-003  1.446e-003  9.406e-004  2.210e-004  6.076e-005
       0.4  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.384e-003  2.269e-003  2.099e-003
1.901e-003  1.497e-003  9.928e-004  2.393e-004  6.561e-005
       0.5  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.430e-
003  2.429e-003  2.427e-003  2.381e-003  2.264e-003  2.096e-003
1.903e-003  1.510e-003  1.013e-003  2.478e-004  6.791e-005
      0.75  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.429e-
003  2.428e-003  2.421e-003  2.331e-003  2.160e-003  1.953e-003
1.739e-003  1.339e-003  8.700e-004  2.015e-004  5.381e-005
         1  2.430e-003  2.430e-003  2.430e-003  2.430e-003  2.428e-
003  2.424e-003  2.406e-003  2.253e-003  2.024e-003  1.780e-003
1.544e-003  1.136e-003  6.970e-004  1.421e-004  3.498e-005
         2  2.430e-003  2.430e-003  2.430e-003  2.427e-003  2.375e-
003  2.303e-003  2.167e-003  1.680e-003  1.274e-003  9.630e-004
7.303e-004  4.286e-004  2.045e-004  2.675e-005  5.437e-006
         3  2.430e-003  2.430e-003  2.428e-003  2.409e-003  2.224e-
003  2.057e-003  1.803e-003  1.122e-003  6.945e-004  4.375e-004
2.821e-004  1.256e-004  4.324e-005  2.795e-006  3.664e-007
         4  2.430e-003  2.430e-003  2.422e-003  2.366e-003  2.029e-
003  1.784e-003  1.453e-003  7.202e-004  3.694e-004  1.995e-004
1.131e-004  4.113e-005  1.134e-005  4.811e-007  5.044e-008


Source: Oak Ridge Connected
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.133e-
004  6.106e-004  6.007e-004  5.156e-004  3.970e-004  2.897e-004
2.066e-004  1.038e-004  3.847e-005  2.371e-006  2.657e-007
      0.05  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.136e-
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004  6.120e-004  6.057e-004  5.453e-004  4.494e-004  3.516e-004
2.677e-004  1.507e-004  6.402e-005  5.286e-006  7.096e-007
       0.1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.136e-004  6.118e-004  5.870e-004  5.348e-004  4.679e-004
3.985e-004  2.763e-004  1.531e-004  2.351e-005  4.756e-006
       0.2  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.137e-004  6.072e-004  5.878e-004  5.559e-004
5.152e-004  4.232e-004  2.950e-004  7.799e-005  2.233e-005
       0.3  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.137e-004  6.078e-004  5.905e-004  5.622e-004
5.259e-004  4.424e-004  3.212e-004  9.672e-005  3.079e-005
       0.4  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.137e-004  6.075e-004  5.902e-004  5.626e-004
5.274e-004  4.460e-004  3.264e-004  9.961e-005  3.177e-005
       0.5  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.061e-004  5.868e-004  5.570e-004
5.200e-004  4.365e-004  3.172e-004  9.672e-005  3.130e-005
      0.75  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.137e-004  6.123e-004  5.965e-004  5.648e-004  5.228e-004
4.758e-004  3.810e-004  2.615e-004  7.217e-005  2.261e-005
         1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.138e-
004  6.128e-004  6.095e-004  5.800e-004  5.300e-004  4.706e-004
4.099e-004  3.008e-004  1.834e-004  3.800e-005  9.846e-006
         2  6.141e-004  6.141e-004  6.140e-004  6.136e-004  6.032e-
004  5.887e-004  5.593e-004  4.363e-004  3.220e-004  2.340e-004
1.702e-004  9.226e-005  3.988e-005  4.235e-006  7.666e-007
         3  6.141e-004  6.141e-004  6.138e-004  6.101e-004  5.742e-
004  5.393e-004  4.817e-004  3.062e-004  1.891e-004  1.183e-004
7.585e-005  3.354e-005  1.153e-005  7.667e-007  1.046e-007
         4  6.141e-004  6.141e-004  6.125e-004  6.017e-004  5.332e-
004  4.787e-004  3.990e-004  2.056e-004  1.077e-004  5.913e-005
3.405e-005  1.272e-005  3.631e-006  1.666e-007  1.825e-008
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.134e-
004  6.113e-004  6.041e-004  5.455e-004  4.549e-004  3.608e-004
2.784e-004  1.603e-004  6.986e-005  6.087e-006  8.444e-007
      0.05  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.137e-
```

```
004  6.124e-004  6.073e-004  5.569e-004  4.708e-004  3.778e-004
2.944e-004  1.723e-004  7.664e-005  6.980e-006  9.959e-007
       0.1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.137e-004  6.121e-004  5.855e-004  5.235e-004  4.440e-004
3.642e-004  2.331e-004  1.153e-004  1.325e-005  2.188e-006
       0.2  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.135e-004  6.018e-004  5.661e-004  5.108e-004
4.465e-004  3.222e-004  1.857e-004  3.017e-005  6.216e-006
       0.3  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.045e-004  5.767e-004  5.320e-004
4.775e-004  3.643e-004  2.271e-004  4.478e-005  1.049e-005
       0.4  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.137e-004  6.069e-004  5.860e-004  5.511e-004
5.063e-004  4.054e-004  2.692e-004  6.000e-005  1.482e-005
       0.5  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.138e-004  6.077e-004  5.904e-004  5.622e-004
5.255e-004  4.384e-004  3.089e-004  7.801e-005  2.040e-005
      0.75  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.138e-004  6.129e-004  6.010e-004  5.773e-004  5.455e-004
5.079e-004  4.234e-004  3.005e-004  7.909e-005  2.157e-005
         1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.139e-
004  6.133e-004  6.109e-004  5.912e-004  5.604e-004  5.235e-004
4.823e-004  3.949e-004  2.752e-004  7.190e-005  2.016e-005
         2  6.141e-004  6.141e-004  6.141e-004  6.139e-004  6.088e-
004  6.013e-004  5.864e-004  5.273e-004  4.626e-004  3.975e-004
3.364e-004  2.356e-004  1.365e-004  2.599e-005  6.521e-006
         3  6.141e-004  6.141e-004  6.140e-004  6.126e-004  5.947e-
004  5.758e-004  5.432e-004  4.215e-004  3.092e-004  2.222e-004
1.593e-004  8.351e-005  3.419e-005  3.068e-006  4.818e-007
         4  6.141e-004  6.141e-004  6.137e-004  6.100e-004  5.756e-
004  5.425e-004  4.868e-004  3.081e-004  1.861e-004  1.131e-004
7.028e-005  2.918e-005  9.173e-006  4.768e-007  5.375e-008
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.133e-
004  6.113e-004  6.053e-004  5.663e-004  5.095e-004  4.440e-004
3.777e-004  2.612e-004  1.436e-004  2.110e-005  4.077e-006
      0.05  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.137e-
```

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004  6.126e-004  6.090e-004  5.805e-004  5.354e-004  4.808e-004
4.225e-004  3.119e-004  1.874e-004  3.397e-005  7.528e-006
       0.1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.138e-004  6.126e-004  5.979e-004  5.667e-004  5.234e-004
4.732e-004  3.698e-004  2.402e-004  5.298e-005  1.339e-005
       0.2  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.135e-004  6.061e-004  5.867e-004  5.562e-004
5.178e-004  4.303e-004  3.055e-004  8.474e-005  2.508e-005
       0.3  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.135e-004  6.060e-004  5.875e-004  5.591e-004
5.236e-004  4.416e-004  3.213e-004  9.540e-005  2.963e-005
       0.4  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.135e-004  6.061e-004  5.885e-004  5.623e-004
5.295e-004  4.523e-004  3.343e-004  1.003e-004  3.056e-005
       0.5  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.134e-004  6.054e-004  5.874e-004  5.618e-004
5.303e-004  4.557e-004  3.385e-004  9.976e-005  2.914e-005
      0.75  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.137e-004  6.123e-004  5.988e-004  5.751e-004  5.451e-004
5.102e-004  4.312e-004  3.129e-004  8.723e-005  2.474e-005
         1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.138e-
004  6.129e-004  6.101e-004  5.901e-004  5.612e-004  5.266e-004
4.872e-004  4.009e-004  2.790e-004  7.010e-005  1.867e-005
         2  6.141e-004  6.141e-004  6.140e-004  6.136e-004  6.061e-
004  5.968e-004  5.794e-004  5.068e-004  4.240e-004  3.443e-004
2.752e-004  1.730e-004  8.726e-005  1.201e-005  2.433e-006
         3  6.141e-004  6.141e-004  6.137e-004  6.106e-004  5.848e-
004  5.604e-004  5.184e-004  3.692e-004  2.501e-004  1.685e-004
1.148e-004  5.592e-005  2.138e-005  1.761e-006  2.730e-007
         4  6.141e-004  6.141e-004  6.124e-004  6.031e-004  5.493e-
004  5.042e-004  4.339e-004  2.452e-004  1.385e-004  8.119e-005
4.948e-005  2.037e-005  6.549e-006  3.965e-007  5.261e-008
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.133e-
004  6.111e-004  6.034e-004  5.425e-004  4.538e-004  3.649e-004
2.876e-004  1.751e-004  8.399e-005  9.854e-006  1.729e-006
      0.05  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.137e-
```

```
004  6.124e-004  6.073e-004  5.609e-004  4.852e-004  4.034e-004
3.282e-004  2.117e-004  1.093e-004  1.541e-005  3.078e-006
       0.1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.137e-004  6.122e-004  5.901e-004  5.417e-004  4.785e-004
4.120e-004  2.930e-004  1.696e-004  2.992e-005  6.779e-006
       0.2  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.050e-004  5.802e-004  5.410e-004
4.932e-004  3.919e-004  2.620e-004  6.430e-005  1.788e-005
       0.3  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.061e-004  5.849e-004  5.511e-004
5.090e-004  4.161e-004  2.899e-004  7.897e-005  2.364e-005
       0.4  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.068e-004  5.882e-004  5.587e-004
5.211e-004  4.346e-004  3.100e-004  8.665e-005  2.572e-005
       0.5  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.141e-
004  6.140e-004  6.136e-004  6.064e-004  5.882e-004  5.603e-004
5.253e-004  4.435e-004  3.215e-004  9.150e-005  2.695e-005
      0.75  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.140e-
004  6.137e-004  6.125e-004  5.987e-004  5.724e-004  5.378e-004
4.980e-004  4.119e-004  2.916e-004  7.950e-005  2.297e-005
         1  6.141e-004  6.141e-004  6.141e-004  6.141e-004  6.138e-
004  6.130e-004  6.102e-004  5.871e-004  5.505e-004  5.069e-004
4.598e-004  3.655e-004  2.459e-004  6.000e-005  1.623e-005
         2  6.141e-004  6.141e-004  6.141e-004  6.137e-004  6.060e-
004  5.956e-004  5.750e-004  4.901e-004  4.029e-004  3.253e-004
2.606e-004  1.670e-004  8.789e-005  1.408e-005  3.240e-006
         3  6.141e-004  6.141e-004  6.138e-004  6.111e-004  5.846e-
004  5.585e-004  5.145e-004  3.656e-004  2.495e-004  1.697e-004
1.167e-004  5.766e-005  2.237e-005  1.865e-006  2.865e-007
         4  6.141e-004  6.141e-004  6.129e-004  6.050e-004  5.527e-
004  5.085e-004  4.399e-004  2.529e-004  1.441e-004  8.448e-005
5.127e-005  2.076e-005  6.451e-006  3.466e-007  4.154e-008


Source: Palos Verdes
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.372e-003  1.372e-003  1.371e-003  1.354e-003  1.153e-
003  9.677e-004  7.118e-004  2.346e-004  8.180e-005  3.134e-005
1.308e-005  2.803e-006  4.037e-007  3.693e-009  1.323e-010
      0.05  1.372e-003  1.372e-003  1.371e-003  1.357e-003  1.172e-
003  9.972e-004  7.495e-004  2.639e-004  9.688e-005  3.868e-005
1.671e-005  3.777e-006  5.777e-007  5.971e-009  2.304e-010
       0.1  1.372e-003  1.372e-003  1.372e-003  1.366e-003  1.259e-
003  1.134e-003  9.298e-004  4.228e-004  1.899e-004  8.927e-005
4.422e-005  1.248e-005  2.461e-006  4.362e-008  2.368e-009
       0.2  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.342e-
003  1.288e-003  1.166e-003  7.027e-004  3.873e-004  2.127e-004
1.193e-004  4.071e-005  9.798e-006  2.524e-007  1.682e-008
       0.3  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.350e-
003  1.305e-003  1.197e-003  7.533e-004  4.313e-004  2.453e-004
1.420e-004  5.123e-005  1.324e-005  4.059e-007  3.060e-008
       0.4  1.372e-003  1.372e-003  1.372e-003  1.372e-003  1.351e-
003  1.308e-003  1.203e-003  7.622e-004  4.378e-004  2.491e-004
1.441e-004  5.180e-005  1.328e-005  3.958e-007  2.910e-008
       0.5  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.349e-
003  1.302e-003  1.193e-003  7.506e-004  4.321e-004  2.477e-004
1.447e-004  5.321e-005  1.414e-005  4.684e-007  3.749e-008
      0.75  1.372e-003  1.372e-003  1.372e-003  1.370e-003  1.318e-
003  1.238e-003  1.082e-003  5.967e-004  3.159e-004  1.716e-004
9.678e-005  3.421e-005  8.905e-006  3.049e-007  2.612e-008
         1  1.372e-003  1.372e-003  1.372e-003  1.368e-003  1.277e-
003  1.161e-003  9.631e-004  4.556e-004  2.152e-004  1.070e-004
5.613e-005  1.773e-005  4.080e-006  1.093e-007  8.109e-009
         2  1.372e-003  1.372e-003  1.364e-003  1.304e-003  9.421e-
004  7.175e-004  4.728e-004  1.327e-004  4.560e-005  1.821e-005
8.119e-006  2.040e-006  3.782e-007  7.319e-009  4.785e-010
         3  1.372e-003  1.372e-003  1.330e-003  1.156e-003  6.136e-
004  3.982e-004  2.168e-004  3.996e-005  1.047e-005  3.421e-006
1.300e-006  2.548e-007  3.607e-008  4.067e-010  1.923e-011
         4  1.372e-003  1.372e-003  1.276e-003  1.006e-003  4.207e-
004  2.430e-004  1.152e-004  1.565e-005  3.379e-006  9.569e-007
3.248e-007  5.360e-008  6.310e-009  4.958e-011  1.898e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.372e-003  1.372e-003  1.368e-003  1.319e-003  8.980e-
004  6.275e-004  3.554e-004  5.965e-005  1.303e-005  3.506e-006
1.103e-006  1.525e-007  1.366e-008  4.866e-011  9.960e-013
      0.05  1.372e-003  1.372e-003  1.370e-003  1.337e-003  9.937e-
004  7.374e-004  4.518e-004  9.142e-005  2.261e-005  6.676e-006
2.261e-006  3.503e-007  3.549e-008  1.612e-010  3.812e-012
       0.1  1.372e-003  1.372e-003  1.371e-003  1.361e-003  1.173e-
003  9.777e-004  7.034e-004  2.130e-004  6.944e-005  2.527e-005
1.012e-005  2.032e-006  2.729e-007  2.174e-009  7.175e-011
       0.2  1.372e-003  1.372e-003  1.372e-003  1.370e-003  1.297e-
003  1.186e-003  9.816e-004  4.358e-004  1.877e-004  8.477e-005
4.048e-005  1.072e-005  1.955e-006  2.887e-008  1.381e-009
       0.3  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.317e-
003  1.225e-003  1.042e-003  5.011e-004  2.292e-004  1.085e-004
5.390e-005  1.520e-005  2.974e-006  5.083e-008  2.659e-009
       0.4  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.316e-
003  1.220e-003  1.029e-003  4.729e-004  2.056e-004  9.267e-005
4.391e-005  1.136e-005  1.983e-006  2.542e-008  1.078e-009
       0.5  1.372e-003  1.372e-003  1.372e-003  1.371e-003  1.311e-
003  1.212e-003  1.019e-003  4.680e-004  2.036e-004  9.166e-005
4.330e-005  1.109e-005  1.903e-006  2.297e-008  9.234e-010
      0.75  1.372e-003  1.372e-003  1.372e-003  1.367e-003  1.247e-
003  1.102e-003  8.701e-004  3.512e-004  1.443e-004  6.339e-005
2.971e-005  7.685e-006  1.373e-006  1.975e-008  9.369e-010
         1  1.372e-003  1.372e-003  1.371e-003  1.357e-003  1.159e-
003  9.737e-004  7.211e-004  2.537e-004  9.644e-005  4.026e-005
1.821e-005  4.500e-006  7.750e-007  1.082e-008  5.194e-010
         2  1.372e-003  1.372e-003  1.348e-003  1.218e-003  7.266e-
004  5.024e-004  2.951e-004  6.301e-005  1.768e-005  5.978e-006
2.310e-006  4.565e-007  6.359e-008  6.427e-010  2.714e-011
         3  1.372e-003  1.372e-003  1.285e-003  1.024e-003  4.494e-
004  2.668e-004  1.301e-004  1.805e-005  3.816e-006  1.045e-006
3.417e-007  5.227e-008  5.528e-009  3.251e-011  9.989e-013
         4  1.372e-003  1.372e-003  1.204e-003  8.584e-004  2.977e-
004  1.576e-004  6.686e-005  6.820e-006  1.185e-006  2.814e-007
8.219e-008  1.059e-008  9.321e-010  3.832e-012  9.547e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.372e-003  1.372e-003  1.357e-003  1.253e-003  7.805e-
004  5.409e-004  3.110e-004  5.689e-005  1.335e-005  3.802e-006
1.253e-006  1.862e-007  1.807e-008  7.587e-011  1.720e-012
      0.05  1.372e-003  1.372e-003  1.362e-003  1.284e-003  8.754e-
004  6.441e-004  4.016e-004  9.022e-005  2.440e-005  7.733e-006
2.775e-006  4.710e-007  5.278e-008  2.948e-010  7.913e-012
       0.1  1.372e-003  1.372e-003  1.370e-003  1.342e-003  1.098e-
003  9.097e-004  6.680e-004  2.322e-004  8.635e-005  3.503e-005
1.536e-005  3.565e-006  5.631e-007  6.251e-009  2.528e-010
       0.2  1.372e-003  1.372e-003  1.372e-003  1.365e-003  1.246e-
003  1.114e-003  9.082e-004  4.200e-004  1.948e-004  9.448e-005
4.806e-005  1.415e-005  2.913e-006  5.558e-008  3.116e-009
       0.3  1.372e-003  1.372e-003  1.372e-003  1.366e-003  1.256e-
003  1.127e-003  9.209e-004  4.243e-004  1.959e-004  9.468e-005
4.805e-005  1.410e-005  2.896e-006  5.508e-008  3.086e-009
       0.4  1.372e-003  1.372e-003  1.372e-003  1.367e-003  1.255e-
003  1.122e-003  9.075e-004  3.974e-004  1.732e-004  7.912e-005
3.807e-005  1.014e-005  1.836e-006  2.559e-008  1.147e-009
       0.5  1.372e-003  1.372e-003  1.372e-003  1.365e-003  1.237e-
003  1.094e-003  8.695e-004  3.563e-004  1.442e-004  6.123e-005
2.750e-005  6.467e-006  1.000e-006  9.524e-009  3.268e-010
      0.75  1.372e-003  1.372e-003  1.371e-003  1.355e-003  1.151e-
003  9.669e-004  7.157e-004  2.456e-004  8.884e-005  3.497e-005
1.488e-005  3.264e-006  4.771e-007  4.318e-009  1.495e-010
         1  1.372e-003  1.372e-003  1.369e-003  1.338e-003  1.060e-
003  8.504e-004  5.939e-004  1.803e-004  6.131e-005  2.337e-005
9.789e-006  2.132e-006  3.174e-007  3.232e-009  1.265e-010
         2  1.372e-003  1.372e-003  1.330e-003  1.154e-003  6.114e-
004  3.961e-004  2.143e-004  3.799e-005  9.493e-006  2.957e-006
1.074e-006  1.938e-007  2.465e-008  2.126e-010  8.288e-012
         3  1.372e-003  1.372e-003  1.221e-003  8.986e-004  3.343e-
004  1.848e-004  8.364e-005  1.039e-005  2.130e-006  5.819e-007
1.922e-007  3.046e-008  3.441e-009  2.508e-011  9.224e-013
         4  1.372e-003  1.372e-003  1.063e-003  6.632e-004  1.838e-
004  8.994e-005  3.570e-005  3.463e-006  6.226e-007  1.564e-007
4.865e-008  7.124e-009  7.510e-010  5.013e-012  1.804e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.372e-003  1.372e-003  1.365e-003  1.309e-003  9.438e-
004  7.121e-004  4.594e-004  1.171e-004  3.606e-005  1.288e-005
5.147e-006  1.047e-006  1.451e-007  1.272e-009  4.501e-011
      0.05  1.372e-003  1.372e-003  1.368e-003  1.326e-003  1.014e-
003  7.929e-004  5.343e-004  1.485e-004  4.796e-005  1.770e-005
7.248e-006  1.533e-006  2.220e-007  2.142e-009  8.070e-011
       0.1  1.372e-003  1.372e-003  1.371e-003  1.356e-003  1.177e-
003  1.007e-003  7.671e-004  2.893e-004  1.152e-004  4.985e-005
2.323e-005  6.027e-006  1.099e-006  1.735e-008  8.975e-010
       0.2  1.372e-003  1.372e-003  1.372e-003  1.369e-003  1.295e-
003  1.196e-003  1.019e-003  5.195e-004  2.566e-004  1.307e-004
6.929e-005  2.186e-005  4.888e-006  1.123e-007  7.106e-009
       0.3  1.372e-003  1.372e-003  1.372e-003  1.370e-003  1.308e-
003  1.219e-003  1.053e-003  5.595e-004  2.855e-004  1.495e-004
8.131e-005  2.685e-005  6.370e-006  1.706e-007  1.211e-008
       0.4  1.372e-003  1.372e-003  1.372e-003  1.370e-003  1.307e-
003  1.217e-003  1.047e-003  5.442e-004  2.722e-004  1.403e-004
7.535e-005  2.443e-005  5.700e-006  1.489e-007  1.044e-008
       0.5  1.372e-003  1.372e-003  1.372e-003  1.369e-003  1.299e-
003  1.203e-003  1.027e-003  5.250e-004  2.600e-004  1.335e-004
7.182e-005  2.359e-005  5.681e-006  1.670e-007  1.291e-008
      0.75  1.372e-003  1.372e-003  1.371e-003  1.364e-003  1.239e-
003  1.102e-003  8.893e-004  3.978e-004  1.830e-004  9.000e-005
4.712e-005  1.505e-005  3.585e-006  1.097e-007  9.069e-009
         1  1.372e-003  1.372e-003  1.371e-003  1.354e-003  1.165e-
003  9.951e-004  7.594e-004  2.965e-004  1.243e-004  5.688e-005
2.805e-005  8.120e-006  1.724e-006  4.113e-008  2.918e-009
         2  1.372e-003  1.372e-003  1.348e-003  1.225e-003  7.600e-
004  5.386e-004  3.274e-004  7.790e-005  2.426e-005  9.049e-006
3.834e-006  8.966e-007  1.555e-007  2.725e-009  1.713e-010
         3  1.372e-003  1.372e-003  1.279e-003  1.026e-003  4.658e-
004  2.833e-004  1.435e-004  2.280e-005  5.474e-006  1.683e-006
6.112e-007  1.125e-007  1.501e-008  1.548e-010  7.052e-012
         4  1.372e-003  1.372e-003  1.181e-003  8.425e-004  3.007e-
004  1.635e-004  7.259e-005  8.645e-006  1.729e-006  4.649e-007
1.519e-007  2.377e-008  2.664e-009  1.947e-011  7.247e-013


Source: Palos Verdes Connected
Region: USGS 2008 California
```

```
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.138e-004  8.137e-004  7.281e-004  6.391e-004  4.826e-
004  4.095e-004  3.183e-004  1.291e-004  5.244e-005  2.251e-005
1.027e-005  2.513e-006  4.163e-007  4.965e-009  2.070e-010
      0.05  8.138e-004  8.137e-004  7.298e-004  6.424e-004  4.906e-
004  4.213e-004  3.352e-004  1.479e-004  6.451e-005  2.931e-005
1.401e-005  3.694e-006  6.642e-007  9.345e-009  4.303e-010
       0.1  8.138e-004  8.138e-004  7.519e-004  6.737e-004  5.326e-
004  4.692e-004  3.908e-004  2.054e-004  1.051e-004  5.473e-005
2.941e-005  9.397e-006  2.110e-006  4.791e-008  2.993e-009
       0.2  8.138e-004  8.138e-004  7.990e-004  7.519e-004  6.234e-
004  5.601e-004  4.814e-004  2.835e-004  1.601e-004  9.015e-005
5.161e-005  1.815e-005  4.499e-006  1.215e-007  8.274e-009
       0.3  8.138e-004  8.138e-004  8.090e-004  7.816e-004  6.668e-
004  6.008e-004  5.170e-004  3.093e-004  1.798e-004  1.045e-004
6.173e-005  2.302e-005  6.157e-006  2.005e-007  1.558e-008
       0.4  8.138e-004  8.138e-004  8.112e-004  7.916e-004  6.869e-
004  6.205e-004  5.344e-004  3.209e-004  1.876e-004  1.096e-004
6.496e-005  2.431e-005  6.512e-006  2.101e-007  1.611e-008
       0.5  8.138e-004  8.138e-004  8.120e-004  7.961e-004  6.983e-
004  6.317e-004  5.435e-004  3.265e-004  1.930e-004  1.146e-004
6.922e-005  2.691e-005  7.605e-006  2.836e-007  2.425e-008
      0.75  8.138e-004  8.138e-004  8.113e-004  7.918e-004  6.795e-
004  6.047e-004  5.078e-004  2.864e-004  1.637e-004  9.583e-005
5.767e-005  2.267e-005  6.636e-006  2.866e-007  2.809e-008
         1  8.138e-004  8.138e-004  8.100e-004  7.842e-004  6.504e-
004  5.662e-004  4.607e-004  2.360e-004  1.245e-004  6.820e-005
3.883e-005  1.397e-005  3.706e-006  1.314e-007  1.146e-008
         2  8.138e-004  8.138e-004  7.860e-004  7.035e-004  4.791e-
004  3.769e-004  2.685e-004  9.753e-005  4.063e-005  1.878e-005
9.411e-006  2.828e-006  6.351e-007  1.785e-008  1.450e-009
         3  8.138e-004  8.138e-004  7.352e-004  5.997e-004  3.543e-
004  2.624e-004  1.727e-004  5.059e-005  1.794e-005  7.304e-006
3.299e-006  8.411e-007  1.575e-007  3.060e-009  1.988e-010
         4  8.138e-004  8.137e-004  6.857e-004  5.240e-004  2.718e-
004  1.856e-004  1.091e-004  2.403e-005  7.015e-006  2.471e-006
9.941e-007  2.123e-007  3.285e-008  4.390e-010  2.291e-011
```

```
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.138e-004  8.138e-004  7.916e-004  6.975e-004  4.271e-
004  3.092e-004  1.916e-004  4.241e-005  1.120e-005  3.463e-006
1.213e-006  1.973e-007  2.097e-008  1.034e-010  2.554e-012
      0.05  8.138e-004  8.138e-004  7.964e-004  7.156e-004  4.650e-
004  3.500e-004  2.295e-004  5.926e-005  1.746e-005  5.864e-006
2.197e-006  3.959e-007  4.703e-008  2.894e-010  8.148e-012
       0.1  8.138e-004  8.138e-004  8.054e-004  7.530e-004  5.476e-
004  4.424e-004  3.232e-004  1.146e-004  4.284e-005  1.731e-005
7.531e-006  1.714e-006  2.626e-007  2.685e-009  1.022e-010
       0.2  8.138e-004  8.138e-004  8.124e-004  7.948e-004  6.610e-
004  5.688e-004  4.539e-004  2.162e-004  1.045e-004  5.219e-005
2.710e-005  8.185e-006  1.718e-006  3.325e-008  1.857e-009
       0.3  8.138e-004  8.138e-004  8.133e-004  8.036e-004  6.993e-
004  6.141e-004  5.006e-004  2.537e-004  1.304e-004  6.883e-005
3.752e-005  1.227e-005  2.822e-006  6.611e-008  4.149e-009
       0.4  8.138e-004  8.138e-004  8.134e-004  8.041e-004  6.974e-
004  6.099e-004  4.947e-004  2.472e-004  1.244e-004  6.389e-005
3.380e-005  1.041e-005  2.195e-006  4.059e-008  2.126e-009
       0.5  8.138e-004  8.138e-004  8.133e-004  8.031e-004  6.950e-
004  6.092e-004  4.979e-004  2.591e-004  1.352e-004  7.132e-005
3.845e-005  1.210e-005  2.587e-006  4.740e-008  2.410e-009
      0.75  8.138e-004  8.138e-004  8.119e-004  7.911e-004  6.480e-
004  5.553e-004  4.451e-004  2.268e-004  1.189e-004  6.386e-005
3.530e-005  1.180e-005  2.778e-006  6.822e-008  4.409e-009
         1  8.138e-004  8.138e-004  8.086e-004  7.705e-004  5.922e-
004  4.969e-004  3.911e-004  1.918e-004  9.772e-005  5.143e-005
2.806e-005  9.261e-006  2.178e-006  5.587e-008  3.820e-009
         2  8.138e-004  8.138e-004  7.593e-004  6.378e-004  4.075e-
004  3.230e-004  2.357e-004  8.946e-005  3.710e-005  1.675e-005
8.134e-006  2.281e-006  4.621e-007  9.735e-009  6.328e-010
         3  8.138e-004  8.137e-004  6.899e-004  5.316e-004  3.081e-
004  2.294e-004  1.506e-004  4.139e-005  1.350e-005  5.067e-006
2.122e-006  4.730e-007  7.478e-008  9.651e-010  4.700e-011
         4  8.138e-004  8.135e-004  6.300e-004  4.624e-004  2.474e-
004  1.725e-004  1.026e-004  2.177e-005  5.952e-006  1.961e-006
7.400e-007  1.407e-007  1.875e-008  1.730e-010  6.921e-012
```

```
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.138e-004  8.134e-004  6.831e-004  5.662e-004  3.770e-
004  2.974e-004  2.078e-004  6.168e-005  1.979e-005  7.070e-006
2.780e-006  5.400e-007  6.959e-008  5.060e-010  1.579e-011
      0.05  8.138e-004  8.131e-004  6.835e-004  5.764e-004  4.029e-
004  3.296e-004  2.443e-004  8.666e-005  3.176e-005  1.257e-005
5.369e-006  1.186e-006  1.758e-007  1.688e-009  6.212e-011
       0.1  8.138e-004  8.136e-004  7.224e-004  6.319e-004  4.767e-
004  4.112e-004  3.348e-004  1.670e-004  8.162e-005  4.071e-005
2.104e-005  6.276e-006  1.295e-006  2.416e-008  1.322e-009
       0.2  8.138e-004  8.138e-004  7.824e-004  7.159e-004  5.656e-
004  4.977e-004  4.201e-004  2.498e-004  1.473e-004  8.673e-005
5.172e-005  1.948e-005  5.235e-006  1.680e-007  1.275e-008
       0.3  8.138e-004  8.138e-004  7.980e-004  7.455e-004  5.931e-
004  5.193e-004  4.350e-004  2.554e-004  1.503e-004  8.859e-005
5.293e-005  2.004e-005  5.419e-006  1.766e-007  1.355e-008
       0.4  8.138e-004  8.138e-004  8.037e-004  7.597e-004  6.070e-
004  5.286e-004  4.386e-004  2.502e-004  1.426e-004  8.118e-005
4.679e-005  1.651e-005  4.054e-006  1.024e-007  6.493e-009
       0.5  8.138e-004  8.138e-004  8.054e-004  7.636e-004  6.067e-
004  5.251e-004  4.321e-004  2.378e-004  1.291e-004  6.971e-005
3.815e-005  1.222e-005  2.641e-006  4.850e-008  2.443e-009
      0.75  8.138e-004  8.138e-004  8.037e-004  7.543e-004  5.751e-
004  4.861e-004  3.871e-004  1.898e-004  9.240e-005  4.563e-005
2.321e-005  6.642e-006  1.277e-006  1.898e-008  8.558e-010
         1  8.138e-004  8.138e-004  7.997e-004  7.390e-004  5.407e-
004  4.477e-004  3.462e-004  1.550e-004  7.117e-005  3.399e-005
1.700e-005  4.832e-006  9.487e-007  1.614e-008  8.380e-010
         2  8.138e-004  8.138e-004  7.485e-004  6.156e-004  3.654e-
004  2.724e-004  1.805e-004  5.250e-005  1.806e-005  7.094e-006
3.086e-006  7.318e-007  1.241e-007  1.862e-009  9.983e-011
         3  8.138e-004  8.136e-004  6.674e-004  4.951e-004  2.464e-
004  1.653e-004  9.508e-005  1.989e-005  5.616e-006  1.931e-006
7.622e-007  1.582e-007  2.378e-008  3.011e-010  1.526e-011
         4  8.138e-004  8.127e-004  5.799e-004  3.961e-004  1.652e-
004  1.003e-004  5.107e-005  8.312e-006  2.040e-006  6.401e-007
2.367e-007  4.498e-008  6.246e-009  7.104e-011  3.485e-012
```

```
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.138e-004  8.136e-004  7.343e-004  6.343e-004  4.289e-
004  3.387e-004  2.392e-004  7.771e-005  2.781e-005  1.101e-005
4.754e-006  1.084e-006  1.690e-007  1.858e-009  7.510e-011
      0.05  8.138e-004  8.135e-004  7.366e-004  6.448e-004  4.529e-
004  3.670e-004  2.697e-004  9.794e-005  3.791e-005  1.592e-005
7.193e-006  1.759e-006  2.957e-007  3.774e-009  1.668e-010
       0.1  8.138e-004  8.137e-004  7.599e-004  6.862e-004  5.190e-
004  4.409e-004  3.496e-004  1.623e-004  7.653e-005  3.758e-005
1.933e-005  5.796e-006  1.223e-006  2.492e-008  1.472e-009
       0.2  8.138e-004  8.138e-004  7.979e-004  7.542e-004  6.166e-
004  5.422e-004  4.518e-004  2.498e-004  1.373e-004  7.636e-005
4.348e-005  1.527e-005  3.817e-006  1.076e-007  7.627e-009
       0.3  8.138e-004  8.138e-004  8.068e-004  7.769e-004  6.531e-
004  5.781e-004  4.842e-004  2.728e-004  1.535e-004  8.730e-005
5.073e-005  1.844e-005  4.799e-006  1.477e-007  1.109e-008
       0.4  8.138e-004  8.138e-004  8.094e-004  7.851e-004  6.638e-
004  5.863e-004  4.893e-004  2.728e-004  1.515e-004  8.488e-005
4.852e-005  1.708e-005  4.253e-006  1.177e-007  8.243e-009
       0.5  8.138e-004  8.138e-004  8.102e-004  7.876e-004  6.667e-
004  5.887e-004  4.912e-004  2.745e-004  1.524e-004  8.522e-005
4.860e-005  1.708e-005  4.278e-006  1.265e-007  9.702e-009
      0.75  8.138e-004  8.138e-004  8.090e-004  7.791e-004  6.342e-
004  5.487e-004  4.467e-004  2.343e-004  1.250e-004  6.844e-005
3.873e-005  1.370e-005  3.564e-006  1.246e-007  1.112e-008
         1  8.138e-004  8.138e-004  8.061e-004  7.646e-004  5.944e-
004  5.036e-004  3.993e-004  1.943e-004  9.780e-005  5.121e-005
2.796e-005  9.354e-006  2.278e-006  6.780e-008  5.373e-009
         2  8.138e-004  8.138e-004  7.646e-004  6.523e-004  4.174e-
004  3.241e-004  2.282e-004  7.983e-005  3.193e-005  1.421e-005
6.877e-006  1.947e-006  4.071e-007  9.814e-009  7.274e-010
         3  8.138e-004  8.137e-004  6.975e-004  5.422e-004  3.029e-
004  2.190e-004  1.395e-004  3.729e-005  1.235e-005  4.768e-006
2.061e-006  4.908e-007  8.536e-008  1.442e-009  8.703e-011
         4  8.138e-004  8.133e-004  6.319e-004  4.608e-004  2.281e-
004  1.528e-004  8.758e-005  1.804e-005  5.003e-006  1.690e-006
6.569e-007  1.326e-007  1.928e-008  2.277e-010  1.111e-011
```

Source: Pitas Point (Lower)-Montalvo
Region: USGS 2008 California
Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC

Period	Amp=0.0001	Amp=0.001	Amp=0.01	Amp=0.02	Amp=0.05	Amp=0.07	Amp=0.1	Amp=0.2	Amp=0.3	Amp=0.4	Amp=0.5	Amp=0.7	Amp=1	Amp=2	Amp=3
PGA	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.125e-003	1.078e-003	9.586e-004	5.028e-004	2.362e-004	1.124e-004	5.556e-005	1.538e-005	2.915e-006	4.573e-008	2.255e-009
0.05	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.130e-003	1.092e-003	9.902e-004	5.577e-004	2.779e-004	1.386e-004	7.126e-005	2.100e-005	4.267e-006	7.720e-008	4.154e-009
0.1	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.140e-003	1.126e-003	1.078e-003	7.702e-004	4.779e-004	2.863e-004	1.719e-004	6.519e-005	1.764e-005	5.847e-007	4.600e-008
0.2	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.141e-003	1.129e-003	9.827e-004	7.515e-004	5.389e-004	3.764e-004	1.813e-004	6.364e-005	3.477e-006	3.618e-007
0.3	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.142e-003	1.131e-003	1.002e-003	7.880e-004	5.830e-004	4.200e-004	2.143e-004	8.107e-005	5.327e-006	6.319e-007
0.4	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.141e-003	1.130e-003	9.912e-004	7.697e-004	5.617e-004	3.995e-004	1.991e-004	7.314e-005	4.474e-006	5.046e-007
0.5	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.140e-003	1.126e-003	9.748e-004	7.488e-004	5.436e-004	3.861e-004	1.934e-004	7.210e-005	4.704e-006	5.635e-007
0.75	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.141e-003	1.131e-003	1.096e-003	8.623e-004	6.058e-004	4.109e-004	2.774e-004	1.299e-004	4.592e-005	2.896e-006	3.572e-007
1	1.144e-003	1.144e-003	1.144e-003	1.144e-003	1.134e-003	1.109e-003	1.041e-003	7.075e-004	4.342e-004	2.632e-004	1.617e-004	6.517e-005	1.951e-005	8.806e-007	8.902e-008
2	1.144e-003	1.144e-003	1.143e-003	1.130e-003	9.587e-004	8.022e-004	5.910e-004	2.089e-004	8.230e-005	3.622e-005	1.742e-005	4.906e-006	1.028e-006	2.531e-008	1.910e-009
3	1.144e-003	1.144e-003	1.135e-003	1.065e-003	6.886e-004	4.858e-004	2.891e-004	6.330e-005	1.839e-005	6.474e-006					

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2.609e-006  5.607e-007  8.772e-008  1.210e-009  6.460e-011
         4  1.144e-003  1.144e-003  1.111e-003  9.596e-004  4.755e-
004  2.928e-004  1.484e-004  2.295e-005  5.357e-006  1.607e-006
5.706e-007  1.010e-007  1.284e-008  1.177e-010  4.948e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.107e-
003  1.032e-003  8.700e-004  3.823e-004  1.567e-004  6.700e-005
3.039e-005  7.352e-006  1.202e-006  1.403e-008  5.797e-010
      0.05  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.122e-
003  1.071e-003  9.443e-004  4.808e-004  2.206e-004  1.030e-004
5.012e-005  1.354e-005  2.496e-006  3.698e-008  1.761e-009
       0.1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.140e-
003  1.125e-003  1.073e-003  7.484e-004  4.499e-004  2.611e-004
1.521e-004  5.455e-005  1.374e-005  3.818e-007  2.647e-008
       0.2  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.139e-003  1.121e-003  9.345e-004  6.785e-004  4.642e-004
3.113e-004  1.404e-004  4.577e-005  2.159e-006  2.063e-007
       0.3  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.140e-003  1.124e-003  9.508e-004  7.032e-004  4.894e-004
3.333e-004  1.542e-004  5.183e-005  2.609e-006  2.596e-007
       0.4  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.144e-
003  1.141e-003  1.125e-003  9.488e-004  6.914e-004  4.711e-004
3.132e-004  1.378e-004  4.305e-005  1.766e-006  1.499e-007
       0.5  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.144e-
003  1.141e-003  1.126e-003  9.506e-004  6.880e-004  4.630e-004
3.031e-004  1.288e-004  3.816e-005  1.335e-006  9.951e-008
      0.75  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.141e-
003  1.131e-003  1.094e-003  8.279e-004  5.443e-004  3.422e-004
2.138e-004  8.603e-005  2.469e-005  8.914e-007  7.186e-008
         1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.135e-
003  1.110e-003  1.040e-003  6.928e-004  4.122e-004  2.413e-004
1.430e-004  5.367e-005  1.452e-005  4.934e-007  3.983e-008
         2  1.144e-003  1.144e-003  1.144e-003  1.134e-003  9.862e-
004  8.421e-004  6.389e-004  2.430e-004  9.981e-005  4.495e-005
2.187e-005  6.185e-006  1.274e-006  2.820e-008  1.901e-009
         3  1.144e-003  1.144e-003  1.138e-003  1.084e-003  7.500e-
004  5.523e-004  3.472e-004  8.513e-005  2.614e-005  9.465e-006
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3.867e-006  8.353e-007  1.285e-007  1.595e-009  7.648e-011
         4  1.144e-003  1.144e-003  1.127e-003  1.020e-003  5.861e-
004  3.905e-004  2.171e-004  4.027e-005  1.029e-005  3.251e-006
1.191e-006  2.177e-007  2.795e-008  2.430e-010  9.444e-012
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.103e-
003  1.027e-003  8.680e-004  3.945e-004  1.690e-004  7.540e-005
3.554e-005  9.191e-006  1.628e-006  2.263e-008  1.046e-009
      0.05  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.122e-
003  1.073e-003  9.545e-004  5.133e-004  2.506e-004  1.239e-004
6.355e-005  1.877e-005  3.846e-006  7.183e-008  3.962e-009
       0.1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.140e-
003  1.125e-003  1.076e-003  7.724e-004  4.842e-004  2.934e-004
1.781e-004  6.877e-005  1.900e-005  6.516e-007  5.188e-008
       0.2  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.138e-003  1.117e-003  9.269e-004  6.763e-004  4.680e-004
3.185e-004  1.483e-004  5.070e-005  2.708e-006  2.827e-007
       0.3  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.137e-003  1.115e-003  9.159e-004  6.621e-004  4.548e-004
3.077e-004  1.421e-004  4.815e-005  2.536e-006  2.629e-007
       0.4  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.137e-003  1.113e-003  8.984e-004  6.308e-004  4.194e-004
2.746e-004  1.190e-004  3.700e-005  1.551e-006  1.352e-007
       0.5  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.136e-003  1.107e-003  8.649e-004  5.805e-004  3.684e-004
2.306e-004  9.190e-005  2.559e-005  8.089e-007  5.732e-008
      0.75  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.137e-
003  1.117e-003  1.056e-003  7.193e-004  4.270e-004  2.452e-004
1.413e-004  4.948e-005  1.196e-005  2.864e-007  1.733e-008
         1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.124e-
003  1.082e-003  9.826e-004  5.859e-004  3.172e-004  1.714e-004
9.476e-005  3.156e-005  7.384e-006  1.784e-007  1.137e-008
         2  1.144e-003  1.144e-003  1.142e-003  1.118e-003  8.918e-
004  7.161e-004  5.006e-004  1.558e-004  5.585e-005  2.270e-005
1.018e-005  2.540e-006  4.581e-007  7.860e-009  4.590e-010
         3  1.144e-003  1.144e-003  1.123e-003  1.015e-003  5.982e-
004  4.080e-004  2.352e-004  4.907e-005  1.394e-005  4.836e-006
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1.929e-006  4.086e-007  6.307e-008  8.514e-010  4.508e-011
         4  1.144e-003  1.144e-003  1.070e-003  8.608e-004  3.850e-
004  2.319e-004  1.165e-004  1.857e-005  4.545e-006  1.429e-006
5.309e-007  1.019e-007  1.437e-008  1.703e-010  8.604e-012
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.112e-
003  1.045e-003  8.988e-004  4.265e-004  1.873e-004  8.492e-005
4.049e-005  1.064e-005  1.915e-006  2.746e-008  1.294e-009
      0.05  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.125e-
003  1.079e-003  9.630e-004  5.172e-004  2.497e-004  1.218e-004
6.165e-005  1.777e-005  3.536e-006  6.200e-008  3.293e-009
       0.1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.140e-
003  1.125e-003  1.076e-003  7.636e-004  4.707e-004  2.802e-004
1.674e-004  6.284e-005  1.679e-005  5.394e-007  4.145e-008
       0.2  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.140e-003  1.122e-003  9.480e-004  7.021e-004  4.904e-004
3.354e-004  1.567e-004  5.337e-005  2.781e-006  2.836e-007
       0.3  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.140e-003  1.123e-003  9.561e-004  7.178e-004  5.090e-004
3.537e-004  1.702e-004  6.035e-005  3.491e-006  3.848e-007
       0.4  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.140e-003  1.122e-003  9.461e-004  6.973e-004  4.841e-004
3.291e-004  1.520e-004  5.106e-005  2.597e-006  2.632e-007
       0.5  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.143e-
003  1.139e-003  1.120e-003  9.301e-004  6.724e-004  4.583e-004
3.066e-004  1.380e-004  4.528e-005  2.283e-006  2.401e-007
      0.75  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.140e-
003  1.126e-003  1.082e-003  8.032e-004  5.257e-004  3.328e-004
2.108e-004  8.846e-005  2.752e-005  1.358e-006  1.488e-007
         1  1.144e-003  1.144e-003  1.144e-003  1.144e-003  1.131e-
003  1.100e-003  1.021e-003  6.620e-004  3.879e-004  2.253e-004
1.332e-004  5.013e-005  1.380e-005  5.175e-007  4.674e-008
         2  1.144e-003  1.144e-003  1.143e-003  1.127e-003  9.456e-
004  7.868e-004  5.769e-004  2.026e-004  7.932e-005  3.462e-005
1.649e-005  4.544e-006  9.200e-007  2.046e-008  1.423e-009
         3  1.144e-003  1.144e-003  1.132e-003  1.055e-003  6.789e-
004  4.820e-004  2.905e-004  6.583e-005  1.949e-005  6.925e-006
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2.802e-006  6.015e-007  9.309e-008  1.219e-009  6.205e-011
         4  1.144e-003  1.144e-003  1.103e-003  9.467e-004  4.822e-
004  3.050e-004  1.607e-004  2.727e-005  6.732e-006  2.096e-006
7.643e-007  1.402e-007  1.839e-008  1.770e-010  7.665e-012


Source: Pitas Point (Lower, West)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.096e-003  1.096e-003  1.096e-003  1.095e-003  1.044e-
003  9.544e-004  7.797e-004  3.157e-004  1.229e-004  5.072e-005
2.238e-005  5.204e-006  8.167e-007  8.821e-009  3.487e-010
      0.05  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.053e-
003  9.738e-004  8.122e-004  3.506e-004  1.434e-004  6.148e-005
2.801e-005  6.849e-006  1.137e-006  1.379e-008  5.850e-010
       0.1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.080e-
003  1.041e-003  9.410e-004  5.361e-004  2.744e-004  1.410e-004
7.467e-005  2.325e-005  5.071e-006  1.092e-007  6.643e-009
       0.2  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.094e-
003  1.085e-003  1.051e-003  7.981e-004  5.235e-004  3.276e-004
2.035e-004  8.107e-005  2.298e-005  8.123e-007  6.508e-008
       0.3  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.095e-
003  1.088e-003  1.060e-003  8.399e-004  5.801e-004  3.813e-004
2.479e-004  1.069e-004  3.340e-005  1.483e-006  1.389e-007
       0.4  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.094e-
003  1.087e-003  1.057e-003  8.265e-004  5.620e-004  3.641e-004
2.335e-004  9.829e-005  2.982e-005  1.232e-006  1.095e-007
       0.5  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.094e-
003  1.084e-003  1.051e-003  8.107e-004  5.485e-004  3.557e-004
2.293e-004  9.797e-005  3.054e-005  1.379e-006  1.323e-007
      0.75  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.087e-
003  1.063e-003  9.985e-004  6.817e-004  4.200e-004  2.553e-004
1.572e-004  6.351e-005  1.904e-005  8.575e-007  8.627e-008
         1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.071e-
003  1.022e-003  9.121e-004  5.191e-004  2.756e-004  1.488e-004
8.312e-005  2.882e-005  7.310e-006  2.361e-007  1.951e-008
         2  1.096e-003  1.096e-003  1.094e-003  1.063e-003  8.080e-
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004  6.256e-004  4.161e-004  1.155e-004  3.879e-005  1.516e-005
6.632e-006  1.615e-006  2.889e-007  5.199e-009  3.258e-010
         3  1.096e-003  1.096e-003  1.074e-003  9.517e-004  5.028e-
004  3.181e-004  1.661e-004  2.725e-005  6.592e-006  2.029e-006
7.353e-007  1.344e-007  1.767e-008  1.736e-010  7.603e-012
         4  1.096e-003  1.096e-003  1.029e-003  8.077e-004  3.105e-
004  1.689e-004  7.410e-005  8.412e-006  1.619e-006  4.219e-007
1.342e-007  2.009e-008  2.136e-009  1.382e-011  4.740e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.096e-003  1.096e-003  1.096e-003  1.093e-003  9.865e-
004  8.441e-004  6.193e-004  1.855e-004  5.827e-005  2.043e-005
7.912e-006  1.503e-006  1.895e-007  1.327e-009  4.060e-011
      0.05  1.096e-003  1.096e-003  1.096e-003  1.095e-003  1.022e-
003  9.091e-004  7.085e-004  2.495e-004  8.766e-005  3.343e-005
1.385e-005  2.917e-006  4.113e-007  3.592e-009  1.252e-010
       0.1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.074e-
003  1.023e-003  9.006e-004  4.603e-004  2.132e-004  1.006e-004
4.945e-005  1.360e-005  2.563e-006  3.988e-008  1.959e-009
       0.2  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.091e-
003  1.074e-003  1.019e-003  6.976e-004  4.147e-004  2.392e-004
1.390e-004  4.978e-005  1.257e-005  3.546e-007  2.492e-008
       0.3  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.093e-
003  1.079e-003  1.033e-003  7.405e-004  4.602e-004  2.757e-004
1.654e-004  6.245e-005  1.675e-005  5.358e-007  4.072e-008
       0.4  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.093e-
003  1.080e-003  1.034e-003  7.288e-004  4.398e-004  2.548e-004
1.477e-004  5.223e-005  1.281e-005  3.234e-007  2.058e-008
       0.5  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.093e-
003  1.080e-003  1.033e-003  7.236e-004  4.315e-004  2.464e-004
1.405e-004  4.799e-005  1.118e-005  2.425e-007  1.363e-008
      0.75  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.083e-
003  1.050e-003  9.638e-004  5.858e-004  3.188e-004  1.726e-004
9.557e-005  3.195e-005  7.533e-006  1.878e-007  1.234e-008
         1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.061e-
003  9.975e-004  8.655e-004  4.458e-004  2.174e-004  1.092e-004
5.727e-005  1.781e-005  3.945e-006  9.168e-008  5.978e-009
         2  1.096e-003  1.096e-003  1.093e-003  1.057e-003  7.773e-
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004  5.893e-004  3.819e-004  9.941e-005  3.168e-005  1.181e-005
4.941e-006  1.110e-006  1.786e-007  2.446e-009  1.250e-010
         3  1.096e-003  1.096e-003  1.072e-003  9.404e-004  4.806e-
004  2.990e-004  1.526e-004  2.331e-005  5.272e-006  1.524e-006
5.217e-007  8.601e-008  9.922e-009  7.045e-011  2.442e-012
         4  1.096e-003  1.096e-003  1.038e-003  8.260e-004  3.277e-
004  1.805e-004  7.995e-005  9.000e-006  1.680e-006  4.225e-007
1.296e-007  1.806e-008  1.741e-009  8.700e-012  2.453e-013
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.096e-003  1.096e-003  1.096e-003  1.088e-003  9.294e-
004  7.619e-004  5.311e-004  1.455e-004  4.406e-005  1.517e-005
5.823e-006  1.098e-006  1.385e-007  9.914e-010  3.108e-011
      0.05  1.096e-003  1.096e-003  1.096e-003  1.092e-003  9.845e-
004  8.496e-004  6.388e-004  2.134e-004  7.426e-005  2.842e-005
1.187e-005  2.553e-006  3.717e-007  3.542e-009  1.316e-010
       0.1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.062e-
003  9.988e-004  8.640e-004  4.324e-004  2.025e-004  9.754e-005
4.910e-005  1.415e-005  2.840e-006  5.158e-008  2.820e-009
       0.2  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.086e-
003  1.058e-003  9.833e-004  6.312e-004  3.621e-004  2.051e-004
1.182e-004  4.219e-005  1.075e-005  3.183e-007  2.340e-008
       0.3  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.085e-
003  1.057e-003  9.791e-004  6.219e-004  3.535e-004  1.989e-004
1.139e-004  4.034e-005  1.019e-005  2.973e-007  2.170e-008
       0.4  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.085e-
003  1.054e-003  9.703e-004  5.911e-004  3.196e-004  1.711e-004
9.353e-005  3.040e-005  6.874e-006  1.517e-007  9.039e-009
       0.5  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.081e-
003  1.044e-003  9.474e-004  5.428e-004  2.748e-004  1.381e-004
7.107e-005  2.073e-005  4.078e-006  6.401e-008  2.994e-009
      0.75  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.054e-
003  9.815e-004  8.351e-004  3.941e-004  1.740e-004  7.914e-005
3.771e-005  9.813e-006  1.718e-006  2.190e-008  9.174e-010
         1  1.096e-003  1.096e-003  1.096e-003  1.093e-003  1.010e-
003  9.005e-004  7.175e-004  2.890e-004  1.169e-004  5.050e-005
2.335e-005  5.913e-006  1.035e-006  1.444e-008  6.781e-010
         2  1.096e-003  1.096e-003  1.085e-003  1.005e-003  6.165e-
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004  4.212e-004  2.400e-004  4.661e-005  1.230e-005  3.988e-006
1.496e-006  2.847e-007  3.845e-008  3.769e-010  1.592e-011
         3  1.096e-003  1.096e-003  1.026e-003  8.083e-004  3.256e-
004  1.832e-004  8.416e-005  1.071e-005  2.231e-006  6.181e-007
2.066e-007  3.346e-008  3.880e-009  3.007e-011  1.153e-012
         4  1.096e-003  1.096e-003  9.158e-004  6.034e-004  1.738e-
004  8.540e-005  3.397e-005  3.310e-006  5.986e-007  1.513e-007
4.740e-008  7.028e-009  7.530e-010  5.236e-012  1.939e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.096e-003  1.096e-003  1.096e-003  1.092e-003  9.866e-
004  8.534e-004  6.433e-004  2.156e-004  7.508e-005  2.877e-005
1.204e-005  2.602e-006  3.816e-007  3.713e-009  1.401e-010
      0.05  1.096e-003  1.096e-003  1.096e-003  1.094e-003  1.020e-
003  9.108e-004  7.198e-004  2.712e-004  1.018e-004  4.111e-005
1.791e-005  4.107e-006  6.400e-007  6.973e-009  2.806e-010
       0.1  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.072e-
003  1.021e-003  9.019e-004  4.763e-004  2.301e-004  1.130e-004
5.774e-005  1.700e-005  3.491e-006  6.689e-008  3.808e-009
       0.2  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.090e-
003  1.073e-003  1.018e-003  7.090e-004  4.334e-004  2.573e-004
1.536e-004  5.768e-005  1.544e-005  4.951e-007  3.780e-008
       0.3  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.091e-
003  1.075e-003  1.024e-003  7.341e-004  4.646e-004  2.853e-004
1.757e-004  6.989e-005  2.012e-005  7.721e-007  6.710e-008
       0.4  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.091e-
003  1.074e-003  1.020e-003  7.155e-004  4.404e-004  2.633e-004
1.582e-004  6.031e-005  1.650e-005  5.689e-007  4.639e-008
       0.5  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.089e-
003  1.069e-003  1.010e-003  6.924e-004  4.183e-004  2.467e-004
1.469e-004  5.556e-005  1.527e-005  5.619e-007  4.963e-008
      0.75  1.096e-003  1.096e-003  1.096e-003  1.096e-003  1.075e-
003  1.032e-003  9.325e-004  5.539e-004  3.043e-004  1.690e-004
9.684e-005  3.509e-005  9.430e-006  3.558e-007  3.317e-008
         1  1.096e-003  1.096e-003  1.096e-003  1.095e-003  1.047e-
003  9.732e-004  8.317e-004  4.180e-004  2.033e-004  1.028e-004
5.458e-005  1.751e-005  4.097e-006  1.141e-007  8.724e-009
         2  1.096e-003  1.096e-003  1.091e-003  1.042e-003  7.339e-
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004  5.453e-004  3.460e-004  8.717e-005  2.759e-005  1.032e-005
4.357e-006  1.003e-006  1.686e-007  2.674e-009  1.556e-010
         3  1.096e-003  1.096e-003  1.057e-003  9.001e-004  4.363e-
004  2.668e-004  1.343e-004  2.043e-005  4.698e-006  1.390e-006
4.879e-007  8.461e-008  1.049e-008  9.136e-011  3.733e-012
         4  1.096e-003  1.096e-003  9.944e-004  7.457e-004  2.706e-
004  1.449e-004  6.267e-005  6.907e-006  1.299e-006  3.319e-007
1.037e-007  1.506e-008  1.543e-009  9.252e-012  3.044e-013


Source: Pitas Point (Upper)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.408e-
004  2.239e-004  1.874e-004  7.970e-005  3.164e-005  1.317e-005
5.831e-006  1.356e-006  2.119e-007  2.244e-009  8.731e-011
      0.05  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.428e-
004  2.288e-004  1.965e-004  9.042e-005  3.806e-005  1.655e-005
7.595e-006  1.865e-006  3.087e-007  3.659e-009  1.520e-010
       0.1  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.472e-
004  2.415e-004  2.244e-004  1.395e-004  7.571e-005  4.049e-005
2.207e-005  7.150e-006  1.617e-006  3.683e-008  2.297e-009
       0.2  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.489e-
004  2.478e-004  2.430e-004  1.971e-004  1.381e-004  9.127e-005
5.932e-005  2.535e-005  7.753e-006  3.179e-007  2.779e-008
       0.3  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.490e-
004  2.480e-004  2.438e-004  2.026e-004  1.470e-004  1.007e-004
6.775e-005  3.082e-005  1.021e-005  5.077e-007  5.080e-008
       0.4  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.489e-
004  2.477e-004  2.427e-004  1.969e-004  1.387e-004  9.246e-005
6.070e-005  2.649e-005  8.357e-006  3.734e-007  3.486e-008
       0.5  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.488e-
004  2.472e-004  2.410e-004  1.913e-004  1.325e-004  8.755e-005
5.724e-005  2.499e-005  7.969e-006  3.764e-007  3.713e-008
      0.75  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.474e-
004  2.426e-004  2.287e-004  1.571e-004  9.652e-005  5.833e-005
3.568e-005  1.422e-005  4.191e-006  1.817e-007  1.785e-008
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         1  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.439e-
004  2.331e-004  2.082e-004  1.169e-004  6.085e-005  3.222e-005
1.769e-005  5.950e-006  1.457e-006  4.371e-008  3.461e-009
         2  2.492e-004  2.492e-004  2.486e-004  2.414e-004  1.792e-
004  1.354e-004  8.681e-005  2.170e-005  6.747e-006  2.483e-006
1.034e-006  2.333e-007  3.838e-008  5.850e-010  3.324e-011
         3  2.492e-004  2.492e-004  2.438e-004  2.123e-004  1.007e-
004  5.916e-005  2.800e-005  3.612e-006  7.422e-007  2.021e-007
6.641e-008  1.043e-008  1.165e-009  8.291e-012  3.003e-013
         4  2.492e-004  2.492e-004  2.310e-004  1.716e-004  5.461e-
005  2.682e-005  1.040e-005  9.016e-007  1.466e-007  3.382e-008
9.776e-009  1.266e-009  1.153e-010  5.520e-013  1.586e-014
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.492e-004  2.492e-004  2.492e-004  2.489e-004  2.330e-
004  2.070e-004  1.601e-004  5.386e-005  1.803e-005  6.584e-006
2.625e-006  5.185e-007  6.779e-008  5.027e-010  1.581e-011
      0.05  2.492e-004  2.492e-004  2.492e-004  2.490e-004  2.392e-
004  2.202e-004  1.810e-004  7.261e-005  2.758e-005  1.108e-005
4.770e-006  1.061e-006  1.576e-007  1.505e-009  5.496e-011
       0.1  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.469e-
004  2.404e-004  2.213e-004  1.310e-004  6.754e-005  3.446e-005
1.801e-005  5.420e-006  1.120e-006  2.067e-008  1.116e-009
       0.2  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.487e-
004  2.467e-004  2.391e-004  1.803e-004  1.166e-004  7.176e-005
4.387e-005  1.697e-005  4.636e-006  1.506e-007  1.142e-008
       0.3  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.488e-
004  2.471e-004  2.402e-004  1.849e-004  1.222e-004  7.673e-005
4.771e-005  1.897e-005  5.347e-006  1.855e-007  1.466e-008
       0.4  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.488e-
004  2.472e-004  2.403e-004  1.819e-004  1.164e-004  7.034e-005
4.206e-005  1.551e-005  3.947e-006  1.051e-007  6.828e-009
       0.5  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.488e-
004  2.472e-004  2.398e-004  1.778e-004  1.099e-004  6.395e-005
3.681e-005  1.263e-005  2.921e-006  6.080e-008  3.294e-009
      0.75  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.473e-
004  2.416e-004  2.245e-004  1.385e-004  7.423e-005  3.916e-005
2.106e-005  6.651e-006  1.454e-006  3.035e-008  1.773e-009
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         1  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.431e-
004  2.303e-004  2.008e-004  1.004e-004  4.623e-005  2.189e-005
1.086e-005  3.063e-006  6.032e-007  1.084e-008  6.022e-010
         2  2.492e-004  2.492e-004  2.487e-004  2.417e-004  1.739e-
004  1.267e-004  7.642e-005  1.586e-005  4.239e-006  1.375e-006
5.141e-007  9.675e-008  1.284e-008  1.198e-010  4.876e-012
         3  2.492e-004  2.492e-004  2.446e-004  2.136e-004  9.727e-
005  5.497e-005  2.455e-005  2.688e-006  4.860e-007  1.190e-007
3.571e-008  4.814e-009  4.474e-010  2.076e-012  5.593e-014
         4  2.492e-004  2.492e-004  2.368e-004  1.836e-004  6.010e-
005  2.913e-005  1.095e-005  8.450e-007  1.239e-007  2.611e-008
6.967e-009  7.863e-010  6.046e-011  1.934e-013  4.184e-015
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.492e-004  2.492e-004  2.491e-004  2.482e-004  2.180e-
004  1.809e-004  1.264e-004  3.312e-005  9.484e-006  3.106e-006
1.141e-006  2.003e-007  2.329e-008  1.415e-010  4.024e-012
      0.05  2.492e-004  2.492e-004  2.492e-004  2.487e-004  2.302e-
004  2.020e-004  1.538e-004  5.049e-005  1.686e-005  6.193e-006
2.492e-006  5.036e-007  6.819e-008  5.593e-010  1.901e-011
       0.1  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.444e-
004  2.332e-004  2.057e-004  1.051e-004  4.859e-005  2.288e-005
1.124e-005  3.094e-006  5.858e-007  9.351e-009  4.719e-010
       0.2  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.478e-
004  2.432e-004  2.289e-004  1.502e-004  8.558e-005  4.763e-005
2.684e-005  9.174e-006  2.204e-006  5.682e-008  3.821e-009
       0.3  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.476e-
004  2.425e-004  2.271e-004  1.458e-004  8.151e-005  4.468e-005
2.488e-005  8.342e-006  1.964e-006  4.874e-008  3.209e-009
       0.4  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.475e-
004  2.420e-004  2.248e-004  1.368e-004  7.173e-005  3.693e-005
1.940e-005  5.862e-006  1.210e-006  2.188e-008  1.152e-009
       0.5  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.468e-
004  2.398e-004  2.191e-004  1.236e-004  5.996e-005  2.878e-005
1.418e-005  3.827e-006  6.851e-007  8.737e-009  3.584e-010
      0.75  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.412e-
004  2.253e-004  1.910e-004  8.565e-005  3.568e-005  1.543e-005
7.052e-006  1.719e-006  2.812e-007  3.178e-009  1.256e-010
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         1  2.492e-004  2.492e-004  2.492e-004  2.487e-004  2.311e-
004  2.054e-004  1.611e-004  5.977e-005  2.237e-005  9.068e-006
3.976e-006  9.269e-007  1.484e-007  1.750e-009  7.496e-011
         2  2.492e-004  2.492e-004  2.471e-004  2.290e-004  1.332e-
004  8.649e-005  4.573e-005  7.305e-006  1.684e-006  4.939e-007
1.711e-007  2.881e-008  3.417e-009  2.604e-011  9.514e-013
         3  2.492e-004  2.492e-004  2.337e-004  1.798e-004  6.327e-
005  3.273e-005  1.352e-005  1.353e-006  2.420e-007  6.005e-008
1.842e-008  2.619e-009  2.646e-010  1.572e-012  5.162e-014
         4  2.492e-004  2.492e-004  2.062e-004  1.278e-004  3.018e-
005  1.339e-005  4.719e-006  3.558e-007  5.505e-008  1.245e-008
3.575e-009  4.654e-010  4.346e-011  2.316e-013  7.347e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.492e-004  2.492e-004  2.492e-004  2.487e-004  2.306e-
004  2.039e-004  1.580e-004  5.556e-005  1.972e-005  7.618e-006
3.199e-006  6.917e-007  1.010e-007  9.626e-010  3.572e-011
      0.05  2.492e-004  2.492e-004  2.492e-004  2.490e-004  2.374e-
004  2.170e-004  1.771e-004  7.117e-005  2.750e-005  1.128e-005
4.953e-006  1.143e-006  1.782e-007  1.908e-009  7.533e-011
       0.1  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.462e-
004  2.383e-004  2.171e-004  1.252e-004  6.395e-005  3.261e-005
1.711e-005  5.221e-006  1.108e-006  2.228e-008  1.295e-009
       0.2  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.485e-
004  2.459e-004  2.370e-004  1.759e-004  1.134e-004  7.022e-005
4.335e-005  1.716e-005  4.864e-006  1.751e-007  1.434e-008
       0.3  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.484e-
004  2.459e-004  2.370e-004  1.778e-004  1.169e-004  7.404e-005
4.678e-005  1.937e-005  5.839e-006  2.473e-007  2.289e-008
       0.4  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.484e-
004  2.456e-004  2.359e-004  1.719e-004  1.089e-004  6.658e-005
4.072e-005  1.595e-005  4.505e-006  1.668e-007  1.428e-008
       0.5  2.492e-004  2.492e-004  2.492e-004  2.492e-004  2.481e-
004  2.447e-004  2.333e-004  1.642e-004  1.008e-004  6.009e-005
3.608e-005  1.382e-005  3.859e-006  1.487e-007  1.360e-008
      0.75  2.492e-004  2.492e-004  2.492e-004  2.491e-004  2.453e-
004  2.365e-004  2.147e-004  1.271e-004  6.881e-005  3.764e-005
2.126e-005  7.531e-006  1.976e-006  7.173e-008  6.585e-009
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         1  2.492e-004  2.492e-004  2.492e-004  2.490e-004  2.394e-
004  2.229e-004  1.900e-004  9.236e-005  4.315e-005  2.106e-005
1.084e-005  3.313e-006  7.361e-007  1.877e-008  1.379e-009
         2  2.492e-004  2.492e-004  2.481e-004  2.373e-004  1.621e-
004  1.162e-004  6.965e-005  1.495e-005  4.223e-006  1.451e-006
5.732e-007  1.196e-007  1.821e-008  2.436e-010  1.302e-011
         3  2.492e-004  2.492e-004  2.407e-004  2.019e-004  8.707e-
005  4.895e-005  2.202e-005  2.551e-006  4.901e-007  1.270e-007
4.018e-008  5.955e-009  6.258e-010  3.980e-012  1.360e-013
         4  2.492e-004  2.492e-004  2.247e-004  1.610e-004  4.830e-
005  2.311e-005  8.690e-006  7.008e-007  1.085e-007  2.412e-008
6.773e-009  8.393e-010  7.308e-011  3.257e-013  9.130e-015


Source: Pitas Point Connected
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.809e-
004  1.775e-004  1.674e-004  1.128e-004  6.640e-005  3.804e-005
2.197e-005  7.788e-006  1.940e-006  5.273e-008  3.605e-009
      0.05  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.813e-
004  1.789e-004  1.710e-004  1.235e-004  7.793e-005  4.738e-005
2.879e-005  1.108e-005  3.032e-006  9.990e-008  7.676e-009
       0.1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.819e-
004  1.812e-004  1.782e-004  1.521e-004  1.160e-004  8.390e-005
5.951e-005  2.976e-005  1.107e-005  7.099e-007  8.331e-008
       0.2  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.814e-004  1.720e-004  1.517e-004  1.269e-004
1.028e-004  6.445e-005  3.120e-005  3.449e-006  5.582e-007
       0.3  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.815e-004  1.732e-004  1.548e-004  1.317e-004
1.088e-004  7.098e-005  3.636e-005  4.677e-006  8.475e-007
       0.4  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.814e-004  1.726e-004  1.537e-004  1.304e-004
1.073e-004  6.952e-005  3.523e-005  4.384e-006  7.723e-007
       0.5  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.819e-004  1.812e-004  1.712e-004  1.511e-004  1.273e-004
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1.043e-004  6.732e-005  3.422e-005  4.406e-006  8.081e-007
      0.75  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.814e-004  1.793e-004  1.613e-004  1.342e-004  1.072e-004
8.398e-005  5.070e-005  2.420e-005  2.893e-006  5.288e-007
         1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.816e-
004  1.801e-004  1.756e-004  1.461e-004  1.110e-004  8.147e-005
5.913e-005  3.136e-005  1.286e-005  1.112e-006  1.668e-007
         2  1.821e-004  1.821e-004  1.821e-004  1.813e-004  1.691e-
004  1.551e-004  1.318e-004  6.936e-005  3.650e-005  2.006e-005
1.154e-005  4.292e-006  1.216e-006  5.451e-008  5.859e-009
         3  1.821e-004  1.821e-004  1.816e-004  1.770e-004  1.437e-
004  1.187e-004  8.706e-005  3.130e-005  1.259e-005  5.635e-006
2.746e-006  7.892e-007  1.688e-007  4.307e-009  3.311e-010
         4  1.821e-004  1.821e-004  1.800e-004  1.688e-004  1.170e-
004  8.753e-005  5.644e-005  1.491e-005  4.886e-006  1.876e-006
8.096e-007  1.930e-007  3.375e-008  5.804e-010  3.541e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.807e-
004  1.775e-004  1.691e-004  1.244e-004  8.155e-005  5.149e-005
3.235e-005  1.317e-005  3.835e-006  1.432e-007  1.183e-008
      0.05  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.813e-
004  1.792e-004  1.730e-004  1.352e-004  9.418e-005  6.275e-005
4.131e-005  1.816e-005  5.776e-006  2.589e-007  2.391e-008
       0.1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.814e-004  1.792e-004  1.596e-004  1.293e-004  9.931e-005
7.431e-005  4.056e-005  1.661e-005  1.271e-006  1.631e-007
       0.2  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.819e-004  1.812e-004  1.714e-004  1.514e-004  1.273e-004
1.039e-004  6.615e-005  3.268e-005  3.781e-006  6.292e-007
       0.3  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.813e-004  1.722e-004  1.534e-004  1.303e-004
1.074e-004  6.979e-005  3.539e-005  4.350e-006  7.530e-007
       0.4  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.814e-004  1.729e-004  1.551e-004  1.327e-004
1.101e-004  7.186e-005  3.629e-005  4.225e-006  6.838e-007
       0.5  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.820e-004  1.814e-004  1.733e-004  1.565e-004  1.350e-004
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1.127e-004  7.436e-005  3.768e-005  4.234e-006  6.486e-007
      0.75  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.816e-004  1.800e-004  1.663e-004  1.443e-004  1.198e-004
9.657e-005  5.995e-005  2.838e-005  2.820e-006  4.083e-007
         1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.817e-
004  1.806e-004  1.773e-004  1.566e-004  1.294e-004  1.027e-004
7.976e-005  4.683e-005  2.110e-005  2.021e-006  3.006e-007
         2  1.821e-004  1.821e-004  1.821e-004  1.816e-004  1.740e-
004  1.656e-004  1.511e-004  1.029e-004  6.678e-005  4.316e-005
2.823e-005  1.272e-005  4.373e-006  2.715e-007  3.395e-008
         3  1.821e-004  1.821e-004  1.818e-004  1.790e-004  1.591e-
004  1.429e-004  1.191e-004  6.004e-005  3.024e-005  1.587e-005
8.726e-006  2.979e-006  7.522e-007  2.499e-008  2.150e-009
         4  1.821e-004  1.821e-004  1.812e-004  1.755e-004  1.457e-
004  1.246e-004  9.621e-005  3.886e-005  1.655e-005  7.627e-006
3.772e-006  1.092e-006  2.302e-007  5.347e-009  3.724e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.796e-
004  1.755e-004  1.666e-004  1.259e-004  8.644e-005  5.712e-005
3.740e-005  1.632e-005  5.156e-006  2.292e-007  2.114e-008
      0.05  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.807e-
004  1.780e-004  1.716e-004  1.387e-004  1.026e-004  7.267e-005
5.062e-005  2.452e-005  8.739e-006  5.006e-007  5.391e-008
       0.1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.818e-
004  1.809e-004  1.781e-004  1.588e-004  1.315e-004  1.041e-004
8.041e-005  4.658e-005  2.056e-005  1.865e-006  2.669e-007
       0.2  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.817e-004  1.804e-004  1.691e-004  1.499e-004  1.278e-004
1.061e-004  7.025e-005  3.665e-005  4.842e-006  8.802e-007
       0.3  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.816e-004  1.803e-004  1.688e-004  1.500e-004  1.284e-004
1.072e-004  7.183e-005  3.810e-005  5.239e-006  9.780e-007
       0.4  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.816e-004  1.802e-004  1.683e-004  1.495e-004  1.280e-004
1.068e-004  7.096e-005  3.686e-005  4.620e-006  7.873e-007
       0.5  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.820e-
004  1.815e-004  1.798e-004  1.670e-004  1.475e-004  1.255e-004
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1.038e-004  6.755e-005  3.373e-005  3.684e-006  5.561e-007
      0.75  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.816e-
004  1.804e-004  1.772e-004  1.592e-004  1.357e-004  1.112e-004
8.863e-005  5.385e-005  2.475e-005  2.281e-006  3.131e-007
         1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.808e-
004  1.786e-004  1.736e-004  1.507e-004  1.238e-004  9.751e-005
7.481e-005  4.251e-005  1.806e-005  1.421e-006  1.785e-007
         2  1.821e-004  1.821e-004  1.820e-004  1.806e-004  1.691e-
004  1.590e-004  1.429e-004  9.249e-005  5.713e-005  3.533e-005
2.222e-005  9.384e-006  2.993e-006  1.584e-007  1.794e-008
         3  1.821e-004  1.821e-004  1.810e-004  1.755e-004  1.503e-
004  1.326e-004  1.079e-004  5.171e-005  2.554e-005  1.337e-005
7.389e-006  2.582e-006  6.833e-007  2.669e-008  2.645e-009
         4  1.821e-004  1.821e-004  1.784e-004  1.673e-004  1.286e-
004  1.053e-004  7.722e-005  2.858e-005  1.194e-005  5.554e-006
2.808e-006  8.635e-007  2.018e-007  6.456e-009  5.858e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.804e-
004  1.769e-004  1.677e-004  1.210e-004  7.813e-005  4.888e-005
3.057e-005  1.243e-005  3.644e-006  1.417e-007  1.219e-008
      0.05  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.811e-
004  1.787e-004  1.719e-004  1.325e-004  9.157e-005  6.093e-005
4.024e-005  1.792e-005  5.849e-006  2.865e-007  2.850e-008
       0.1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.819e-
004  1.812e-004  1.785e-004  1.568e-004  1.256e-004  9.578e-005
7.141e-005  3.897e-005  1.608e-005  1.282e-006  1.711e-007
       0.2  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.819e-004  1.810e-004  1.708e-004  1.510e-004  1.273e-004
1.043e-004  6.695e-005  3.351e-005  4.024e-006  6.892e-007
       0.3  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.819e-004  1.810e-004  1.714e-004  1.527e-004  1.301e-004
1.078e-004  7.087e-005  3.661e-005  4.755e-006  8.595e-007
       0.4  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.819e-004  1.810e-004  1.713e-004  1.528e-004  1.304e-004
1.080e-004  7.078e-005  3.613e-005  4.410e-006  7.478e-007
       0.5  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.821e-
004  1.818e-004  1.808e-004  1.705e-004  1.517e-004  1.293e-004
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1.069e-004  6.974e-005  3.521e-005  4.108e-006  6.710e-007
      0.75  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.818e-
004  1.811e-004  1.788e-004  1.623e-004  1.381e-004  1.127e-004
8.972e-005  5.483e-005  2.577e-005  2.664e-006  4.167e-007
         1  1.821e-004  1.821e-004  1.821e-004  1.821e-004  1.814e-
004  1.797e-004  1.755e-004  1.511e-004  1.214e-004  9.390e-005
7.123e-005  4.023e-005  1.734e-005  1.518e-006  2.153e-007
         2  1.821e-004  1.821e-004  1.821e-004  1.811e-004  1.707e-
004  1.599e-004  1.419e-004  8.825e-005  5.347e-005  3.285e-005
2.066e-005  8.798e-006  2.861e-006  1.615e-007  1.925e-008
         3  1.821e-004  1.821e-004  1.815e-004  1.772e-004  1.510e-
004  1.314e-004  1.047e-004  4.768e-005  2.279e-005  1.163e-005
6.287e-006  2.117e-006  5.347e-007  1.866e-008  1.709e-009
         4  1.821e-004  1.821e-004  1.799e-004  1.706e-004  1.304e-
004  1.058e-004  7.662e-005  2.745e-005  1.113e-005  5.019e-006
2.463e-006  7.161e-007  1.553e-007  4.128e-009  3.312e-010


Source: Pleito
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.654e-003  1.654e-003  1.654e-003  1.650e-003  1.506e-
003  1.299e-003  9.617e-004  2.896e-004  9.030e-005  3.134e-005
1.202e-005  2.240e-006  2.758e-007  1.827e-009  5.390e-011
      0.05  1.654e-003  1.654e-003  1.654e-003  1.651e-003  1.525e-
003  1.334e-003  1.009e-003  3.219e-004  1.045e-004  3.739e-005
1.469e-005  2.846e-006  3.653e-007  2.636e-009  8.196e-011
       0.1  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.598e-
003  1.489e-003  1.255e-003  5.557e-004  2.306e-004  1.000e-004
4.599e-005  1.143e-005  1.940e-006  2.499e-008  1.114e-009
       0.2  1.654e-003  1.654e-003  1.654e-003  1.654e-003  1.645e-
003  1.616e-003  1.522e-003  9.941e-004  5.592e-004  3.063e-004
1.697e-004  5.605e-005  1.284e-005  2.910e-007  1.776e-008
       0.3  1.654e-003  1.654e-003  1.654e-003  1.654e-003  1.648e-
003  1.626e-003  1.553e-003  1.095e-003  6.671e-004  3.926e-004
2.318e-004  8.531e-005  2.224e-005  6.746e-007  4.996e-008
       0.4  1.654e-003  1.654e-003  1.654e-003  1.654e-003  1.647e-
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003  1.625e-003  1.549e-003  1.078e-003  6.474e-004  3.759e-004
2.193e-004  7.895e-005  2.002e-005  5.683e-007  4.014e-008
       0.5  1.654e-003  1.654e-003  1.654e-003  1.654e-003  1.646e-
003  1.620e-003  1.537e-003  1.060e-003  6.387e-004  3.741e-004
2.207e-004  8.157e-005  2.153e-005  6.857e-007  5.305e-008
      0.75  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.628e-
003  1.571e-003  1.430e-003  8.575e-004  4.695e-004  2.583e-004
1.462e-004  5.146e-005  1.319e-005  4.286e-007  3.527e-008
         1  1.654e-003  1.654e-003  1.654e-003  1.652e-003  1.590e-
003  1.481e-003  1.263e-003  6.131e-004  2.854e-004  1.385e-004
7.078e-005  2.127e-005  4.595e-006  1.065e-007  7.193e-009
         2  1.654e-003  1.654e-003  1.647e-003  1.576e-003  1.085e-
003  7.843e-004  4.758e-004  1.053e-004  3.027e-005  1.051e-005
4.179e-006  8.761e-007  1.330e-007  1.717e-009  8.802e-011
         3  1.654e-003  1.654e-003  1.600e-003  1.346e-003  5.877e-
004  3.337e-004  1.522e-004  1.827e-005  3.593e-006  9.469e-007
3.031e-007  4.565e-008  4.861e-009  3.120e-011  1.058e-012
         4  1.654e-003  1.654e-003  1.505e-003  1.083e-003  3.251e-
004  1.558e-004  5.868e-005  4.751e-006  7.354e-007  1.631e-007
4.562e-008  5.600e-009  4.796e-010  2.013e-012  5.323e-014
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.654e-003  1.654e-003  1.653e-003  1.620e-003  1.160e-
003  8.072e-004  4.419e-004  6.328e-005  1.201e-005  2.883e-006
8.240e-007  9.772e-008  7.376e-009  1.852e-011  3.073e-013
      0.05  1.654e-003  1.654e-003  1.653e-003  1.635e-003  1.283e-
003  9.577e-004  5.745e-004  1.015e-004  2.205e-005  5.836e-006
1.802e-006  2.403e-007  2.057e-008  6.610e-011  1.268e-012
       0.1  1.654e-003  1.654e-003  1.654e-003  1.650e-003  1.494e-
003  1.274e-003  9.240e-004  2.602e-004  7.685e-005  2.552e-005
9.428e-006  1.655e-006  1.901e-007  1.088e-009  2.930e-011
       0.2  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.605e-
003  1.501e-003  1.271e-003  5.586e-004  2.270e-004  9.604e-005
4.308e-005  1.021e-005  1.626e-006  1.781e-008  7.055e-010
       0.3  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.617e-
003  1.533e-003  1.332e-003  6.390e-004  2.779e-004  1.240e-004
5.812e-005  1.476e-005  2.535e-006  3.240e-008  1.409e-009
       0.4  1.654e-003  1.654e-003  1.654e-003  1.654e-003  1.618e-
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003  1.531e-003  1.318e-003  5.971e-004  2.427e-004  1.015e-004
4.476e-005  1.020e-005  1.527e-006  1.398e-008  4.803e-010
       0.5  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.615e-
003  1.523e-003  1.304e-003  5.775e-004  2.305e-004  9.492e-005
4.132e-005  9.208e-006  1.342e-006  1.155e-008  3.795e-010
      0.75  1.654e-003  1.654e-003  1.654e-003  1.652e-003  1.555e-
003  1.395e-003  1.103e-003  4.044e-004  1.465e-004  5.731e-005
2.427e-005  5.310e-006  7.840e-007  7.646e-009  2.881e-010
         1  1.654e-003  1.654e-003  1.654e-003  1.647e-003  1.460e-
003  1.234e-003  8.944e-004  2.682e-004  8.657e-005  3.142e-005
1.262e-005  2.578e-006  3.590e-007  3.275e-009  1.222e-010
         2  1.654e-003  1.654e-003  1.641e-003  1.521e-003  8.793e-
004  5.659e-004  2.948e-004  4.473e-005  9.830e-006  2.761e-006
9.198e-007  1.447e-007  1.575e-008  9.800e-011  3.109e-012
         3  1.654e-003  1.654e-003  1.587e-003  1.282e-003  4.817e-
004  2.505e-004  1.020e-004  9.233e-006  1.478e-006  3.300e-007
9.187e-008  1.100e-008  8.943e-010  3.144e-012  7.134e-014
         4  1.654e-003  1.654e-003  1.502e-003  1.052e-003  2.824e-
004  1.264e-004  4.347e-005  2.781e-006  3.606e-007  6.922e-008
1.712e-008  1.712e-009  1.150e-010  2.785e-013  5.081e-015
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.654e-003  1.654e-003  1.652e-003  1.607e-003  1.106e-
003  7.581e-004  4.116e-004  6.013e-005  1.183e-005  2.942e-006
8.694e-007  1.093e-007  8.870e-009  2.630e-011  4.872e-013
      0.05  1.654e-003  1.654e-003  1.653e-003  1.628e-003  1.242e-
003  9.175e-004  5.485e-004  9.996e-005  2.268e-005  6.265e-006
2.012e-006  2.873e-007  2.674e-008  1.040e-010  2.264e-012
       0.1  1.654e-003  1.654e-003  1.654e-003  1.649e-003  1.497e-
003  1.289e-003  9.555e-004  2.958e-004  9.557e-005  3.433e-005
1.358e-005  2.676e-006  3.526e-007  2.734e-009  8.961e-011
       0.2  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.600e-
003  1.495e-003  1.268e-003  5.770e-004  2.458e-004  1.090e-004
5.112e-005  1.311e-005  2.303e-006  3.171e-008  1.465e-009
       0.3  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.600e-
003  1.495e-003  1.270e-003  5.791e-004  2.473e-004  1.099e-004
5.164e-005  1.329e-005  2.344e-006  3.257e-008  1.514e-009
       0.4  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.598e-
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003  1.487e-003  1.247e-003  5.336e-004  2.126e-004  8.852e-005
3.914e-005  9.046e-006  1.393e-006  1.393e-008  5.126e-010
       0.5  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.583e-
003  1.454e-003  1.191e-003  4.685e-004  1.725e-004  6.683e-005
2.766e-005  5.684e-006  7.536e-007  5.225e-009  1.481e-010
      0.75  1.654e-003  1.654e-003  1.654e-003  1.649e-003  1.496e-
003  1.293e-003  9.661e-004  3.059e-004  9.984e-005  3.596e-005
1.420e-005  2.770e-006  3.569e-007  2.545e-009  7.732e-011
         1  1.654e-003  1.654e-003  1.653e-003  1.639e-003  1.382e-
003  1.123e-003  7.737e-004  2.076e-004  6.251e-005  2.156e-005
8.312e-006  1.591e-006  2.059e-007  1.604e-009  5.399e-011
         2  1.654e-003  1.654e-003  1.616e-003  1.403e-003  6.602e-
004  3.853e-004  1.800e-004  2.204e-005  4.293e-006  1.111e-006
3.482e-007  5.021e-008  5.022e-009  2.714e-011  8.057e-013
         3  1.654e-003  1.654e-003  1.470e-003  1.018e-003  2.882e-
004  1.357e-004  5.038e-005  4.015e-006  6.210e-007  1.381e-007
3.881e-008  4.810e-009  4.178e-010  1.823e-012  4.965e-014
         4  1.654e-003  1.654e-003  1.244e-003  6.876e-004  1.334e-
004  5.452e-005  1.751e-005  1.080e-006  1.468e-007  3.012e-008
7.998e-009  9.208e-010  7.510e-011  3.036e-013  8.143e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.654e-003  1.654e-003  1.653e-003  1.626e-003  1.257e-
003  9.549e-004  6.051e-004  1.377e-004  3.805e-005  1.239e-005
4.570e-006  8.158e-007  9.734e-008  6.238e-010  1.823e-011
      0.05  1.654e-003  1.654e-003  1.653e-003  1.638e-003  1.350e-
003  1.070e-003  7.107e-004  1.745e-004  4.974e-005  1.650e-005
6.169e-006  1.125e-006  1.375e-007  9.355e-010  2.850e-011
       0.1  1.654e-003  1.654e-003  1.654e-003  1.651e-003  1.530e-
003  1.351e-003  1.045e-003  3.706e-004  1.343e-004  5.328e-005
2.300e-005  5.254e-006  8.275e-007  9.605e-009  4.111e-010
       0.2  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.617e-
003  1.537e-003  1.354e-003  7.099e-004  3.440e-004  1.704e-004
8.797e-005  2.646e-005  5.589e-006  1.135e-007  6.644e-009
       0.3  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.622e-
003  1.552e-003  1.385e-003  7.709e-004  3.974e-004  2.088e-004
1.139e-004  3.779e-005  9.038e-006  2.465e-007  1.763e-008
       0.4  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.621e-
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003  1.547e-003  1.371e-003  7.361e-004  3.676e-004  1.886e-004
1.011e-004  3.273e-005  7.648e-006  1.987e-007  1.371e-008
       0.5  1.654e-003  1.654e-003  1.654e-003  1.653e-003  1.615e-
003  1.532e-003  1.344e-003  7.021e-004  3.472e-004  1.786e-004
9.657e-005  3.215e-005  7.875e-006  2.342e-007  1.786e-008
      0.75  1.654e-003  1.654e-003  1.654e-003  1.651e-003  1.560e-
003  1.420e-003  1.166e-003  5.226e-004  2.386e-004  1.172e-004
6.155e-005  1.985e-005  4.778e-006  1.462e-007  1.188e-008
         1  1.654e-003  1.654e-003  1.654e-003  1.646e-003  1.477e-
003  1.279e-003  9.770e-004  3.630e-004  1.448e-004  6.382e-005
3.057e-005  8.480e-006  1.720e-006  3.713e-008  2.456e-009
         2  1.654e-003  1.654e-003  1.635e-003  1.500e-003  8.750e-
004  5.785e-004  3.169e-004  5.736e-005  1.480e-005  4.795e-006
1.816e-006  3.570e-007  5.125e-008  6.139e-010  3.064e-011
         3  1.654e-003  1.654e-003  1.553e-003  1.215e-003  4.525e-
004  2.399e-004  1.015e-004  1.051e-005  1.897e-006  4.717e-007
1.446e-007  2.048e-008  2.058e-009  1.206e-011  3.930e-013
         4  1.654e-003  1.654e-003  1.417e-003  9.407e-004  2.470e-
004  1.122e-004  3.989e-005  2.871e-006  4.143e-007  8.748e-008
2.358e-008  2.744e-009  2.232e-010  8.650e-013  2.215e-014


Source: Puente Hills
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.169e-004  3.169e-004  3.168e-004  3.140e-004  2.601e-
004  2.060e-004  1.358e-004  3.138e-005  8.316e-006  2.572e-006
9.024e-007  1.473e-007  1.576e-008  7.981e-011  2.015e-012
      0.05  3.169e-004  3.169e-004  3.169e-004  3.145e-004  2.650e-
004  2.131e-004  1.434e-004  3.490e-005  9.591e-006  3.050e-006
1.094e-006  1.850e-007  2.060e-008  1.131e-010  3.002e-012
       0.1  3.169e-004  3.169e-004  3.169e-004  3.161e-004  2.900e-
004  2.539e-004  1.940e-004  6.632e-005  2.321e-005  8.901e-006
3.721e-006  8.017e-007  1.171e-007  1.133e-009  4.280e-011
       0.2  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.116e-
004  2.990e-004  2.672e-004  1.438e-004  6.939e-005  3.376e-005
1.702e-005  4.863e-006  9.542e-007  1.604e-008  8.235e-010
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       0.3  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.135e-
004  3.047e-004  2.803e-004  1.696e-004  9.095e-005  4.840e-005
2.635e-005  8.555e-006  1.950e-006  4.559e-008  2.905e-009
       0.4  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.134e-
004  3.044e-004  2.796e-004  1.680e-004  8.936e-005  4.719e-005
2.550e-005  8.161e-006  1.825e-006  4.057e-008  2.487e-009
       0.5  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.130e-
004  3.032e-004  2.777e-004  1.672e-004  9.016e-005  4.845e-005
2.668e-005  8.867e-006  2.089e-006  5.344e-008  3.641e-009
      0.75  3.169e-004  3.169e-004  3.169e-004  3.167e-004  3.069e-
004  2.892e-004  2.522e-004  1.323e-004  6.573e-005  3.362e-005
1.796e-005  5.790e-006  1.353e-006  3.676e-008  2.730e-009
         1  3.169e-004  3.169e-004  3.169e-004  3.162e-004  2.952e-
004  2.659e-004  2.149e-004  9.046e-005  3.827e-005  1.732e-005
8.384e-006  2.322e-006  4.603e-007  9.049e-009  5.557e-010
         2  3.169e-004  3.169e-004  3.141e-004  2.927e-004  1.812e-
004  1.237e-004  7.029e-005  1.360e-005  3.613e-006  1.186e-006
4.519e-007  8.883e-008  1.261e-008  1.430e-010  6.803e-012
         3  3.169e-004  3.169e-004  2.995e-004  2.362e-004  8.886e-
005  4.736e-005  2.018e-005  2.121e-006  3.864e-007  9.645e-008
2.961e-008  4.188e-009  4.174e-010  2.356e-012  7.414e-014
         4  3.169e-004  3.169e-004  2.743e-004  1.809e-004  4.631e-
005  2.083e-005  7.336e-006  5.209e-007  7.469e-008  1.569e-008
4.209e-009  4.851e-010  3.886e-011  1.433e-013  3.513e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.169e-004  3.169e-004  3.167e-004  3.117e-004  2.340e-
004  1.698e-004  9.859e-005  1.647e-005  3.487e-006  9.103e-007
2.787e-007  3.682e-008  3.133e-009  1.004e-011  1.932e-013
      0.05  3.169e-004  3.169e-004  3.168e-004  3.138e-004  2.529e-
004  1.941e-004  1.215e-004  2.415e-005  5.724e-006  1.623e-006
5.303e-007  7.741e-008  7.329e-009  2.899e-011  6.311e-013
       0.1  3.169e-004  3.169e-004  3.169e-004  3.162e-004  2.880e-
004  2.483e-004  1.836e-004  5.538e-005  1.733e-005  6.039e-006
2.324e-006  4.359e-007  5.406e-008  3.640e-010  1.085e-011
       0.2  3.169e-004  3.169e-004  3.169e-004  3.168e-004  3.087e-
004  2.909e-004  2.505e-004  1.179e-004  5.092e-005  2.269e-005
1.064e-005  2.716e-006  4.710e-007  6.193e-009  2.751e-010
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```
       0.3  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.113e-
004  2.979e-004  2.645e-004  1.382e-004  6.489e-005  3.089e-005
1.529e-005  4.249e-006  8.094e-007  1.289e-008  6.431e-010
       0.4  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.116e-
004  2.980e-004  2.632e-004  1.319e-004  5.869e-005  2.648e-005
1.246e-005  3.156e-006  5.334e-007  6.310e-009  2.541e-010
       0.5  3.169e-004  3.169e-004  3.169e-004  3.169e-004  3.112e-
004  2.970e-004  2.612e-004  1.289e-004  5.658e-005  2.521e-005
1.172e-005  2.906e-006  4.774e-007  5.232e-009  1.986e-010
      0.75  3.169e-004  3.169e-004  3.169e-004  3.166e-004  3.018e-
004  2.762e-004  2.266e-004  9.413e-005  3.777e-005  1.605e-005
7.283e-006  1.779e-006  2.970e-007  3.715e-009  1.624e-010
         1  3.169e-004  3.169e-004  3.169e-004  3.157e-004  2.842e-
004  2.449e-004  1.837e-004  6.146e-005  2.164e-005  8.423e-006
3.586e-006  8.027e-007  1.238e-007  1.389e-009  5.861e-011
         2  3.169e-004  3.169e-004  3.128e-004  2.830e-004  1.520e-
004  9.497e-005  4.804e-005  6.947e-006  1.491e-006  4.127e-007
1.360e-007  2.105e-008  2.255e-009  1.361e-011  4.248e-013
         3  3.169e-004  3.169e-004  2.939e-004  2.179e-004  6.823e-
005  3.294e-005  1.239e-005  9.593e-007  1.400e-007  2.928e-008
7.742e-009  8.573e-010  6.420e-011  1.921e-013  3.966e-015
         4  3.169e-004  3.169e-004  2.706e-004  1.702e-004  3.788e-
005  1.576e-005  5.018e-006  2.757e-007  3.267e-008  5.881e-009
1.384e-009  1.283e-010  7.954e-012  1.647e-014  2.742e-016
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.169e-004  3.169e-004  3.164e-004  3.065e-004  2.097e-
004  1.452e-004  8.068e-005  1.277e-005  2.680e-006  7.014e-007
2.161e-007  2.903e-008  2.532e-009  8.676e-012  1.752e-013
      0.05  3.169e-004  3.169e-004  3.166e-004  3.102e-004  2.316e-
004  1.705e-004  1.026e-004  1.962e-005  4.660e-006  1.337e-006
4.434e-007  6.666e-008  6.568e-009  2.866e-011  6.683e-013
       0.1  3.169e-004  3.169e-004  3.169e-004  3.155e-004  2.802e-
004  2.379e-004  1.742e-004  5.404e-005  1.780e-005  6.532e-006
2.636e-006  5.370e-007  7.362e-008  6.202e-010  2.138e-011
       0.2  3.169e-004  3.169e-004  3.169e-004  3.167e-004  3.042e-
004  2.818e-004  2.369e-004  1.075e-004  4.645e-005  2.098e-005
1.001e-005  2.654e-006  4.851e-007  7.295e-009  3.560e-010
```

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       0.3  3.169e-004  3.169e-004  3.169e-004  3.167e-004  3.051e-
004  2.837e-004  2.398e-004  1.104e-004  4.817e-005  2.191e-005
1.052e-005  2.813e-006  5.195e-007  7.981e-009  3.948e-010
       0.4  3.169e-004  3.169e-004  3.169e-004  3.167e-004  3.050e-
004  2.828e-004  2.370e-004  1.035e-004  4.253e-005  1.824e-005
8.290e-006  2.007e-006  3.264e-007  3.669e-009  1.451e-010
       0.5  3.169e-004  3.169e-004  3.169e-004  3.166e-004  3.021e-
004  2.768e-004  2.271e-004  9.189e-005  3.502e-005  1.400e-005
5.955e-006  1.280e-006  1.789e-007  1.385e-009  4.206e-011
      0.75  3.169e-004  3.169e-004  3.169e-004  3.158e-004  2.850e-
004  2.460e-004  1.845e-004  6.014e-005  2.023e-005  7.474e-006
3.017e-006  6.092e-007  8.155e-008  6.267e-010  1.987e-011
         1  3.169e-004  3.169e-004  3.168e-004  3.135e-004  2.621e-
004  2.125e-004  1.468e-004  4.031e-005  1.243e-005  4.376e-006
1.717e-006  3.380e-007  4.516e-008  3.748e-010  1.310e-011
         2  3.169e-004  3.169e-004  3.075e-004  2.610e-004  1.171e-
004  6.724e-005  3.096e-005  3.719e-006  7.192e-007  1.855e-007
5.802e-008  8.347e-009  8.338e-010  4.503e-012  1.338e-013
         3  3.169e-004  3.169e-004  2.713e-004  1.773e-004  4.566e-
005  2.077e-005  7.439e-006  5.552e-007  8.276e-008  1.795e-008
4.944e-009  5.952e-010  5.015e-011  2.065e-013  5.439e-015
         4  3.169e-004  3.168e-004  2.190e-004  1.113e-004  1.905e-
005  7.433e-006  2.273e-006  1.277e-007  1.645e-008  3.247e-009
8.372e-010  9.219e-011  7.174e-012  2.649e-014  6.740e-016
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.169e-004  3.169e-004  3.167e-004  3.107e-004  2.346e-
004  1.737e-004  1.050e-004  2.021e-005  4.828e-006  1.395e-006
4.657e-007  7.104e-008  7.142e-009  3.284e-011  7.944e-013
      0.05  3.169e-004  3.169e-004  3.168e-004  3.128e-004  2.499e-
004  1.926e-004  1.225e-004  2.622e-005  6.658e-006  2.003e-006
6.893e-007  1.097e-007  1.150e-008  5.693e-011  1.434e-012
       0.1  3.169e-004  3.169e-004  3.169e-004  3.159e-004  2.861e-
004  2.467e-004  1.839e-004  5.858e-005  1.945e-005  7.157e-006
2.893e-006  5.915e-007  8.158e-008  7.056e-010  2.501e-011
       0.2  3.169e-004  3.169e-004  3.169e-004  3.168e-004  3.081e-
004  2.906e-004  2.516e-004  1.231e-004  5.559e-005  2.581e-005
1.256e-005  3.411e-006  6.368e-007  9.844e-009  4.849e-010
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       0.3  3.169e-004  3.169e-004  3.169e-004  3.168e-004  3.100e-
004  2.954e-004  2.615e-004  1.394e-004  6.800e-005  3.373e-005
1.739e-005  5.205e-006  1.093e-006  2.215e-008  1.314e-009
       0.4  3.169e-004  3.169e-004  3.169e-004  3.168e-004  3.100e-
004  2.951e-004  2.599e-004  1.345e-004  6.353e-005  3.064e-005
1.542e-005  4.441e-006  8.949e-007  1.685e-008  9.622e-010
       0.5  3.169e-004  3.169e-004  3.169e-004  3.168e-004  3.087e-
004  2.923e-004  2.553e-004  1.293e-004  6.059e-005  2.922e-005
1.479e-005  4.351e-006  9.152e-007  2.002e-008  1.294e-009
      0.75  3.169e-004  3.169e-004  3.169e-004  3.164e-004  2.979e-
004  2.705e-004  2.211e-004  9.554e-005  4.124e-005  1.905e-005
9.418e-006  2.726e-006  5.770e-007  1.370e-008  9.706e-010
         1  3.169e-004  3.169e-004  3.169e-004  3.152e-004  2.805e-
004  2.411e-004  1.818e-004  6.408e-005  2.411e-005  1.004e-005
4.562e-006  1.154e-006  2.098e-007  3.604e-009  2.092e-010
         2  3.169e-004  3.169e-004  3.115e-004  2.789e-004  1.501e-
004  9.531e-005  4.976e-005  8.089e-006  1.941e-006  5.948e-007
2.153e-007  3.941e-008  5.232e-009  5.370e-011  2.454e-012
         3  3.169e-004  3.169e-004  2.882e-004  2.104e-004  6.758e-
005  3.369e-005  1.334e-005  1.212e-006  2.030e-007  4.789e-008
1.410e-008  1.880e-009  1.772e-010  9.183e-013  2.785e-014
         4  3.169e-004  3.169e-004  2.546e-004  1.541e-004  3.441e-
005  1.468e-005  4.876e-006  3.081e-007  4.127e-008  8.274e-009
2.143e-009  2.352e-010  1.799e-011  6.207e-014  1.487e-015


Source: Puente Hills (LA)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.070e-004  3.070e-004  3.070e-004  3.055e-004  2.633e-
004  2.141e-004  1.450e-004  3.472e-005  9.269e-006  2.867e-006
1.003e-006  1.625e-007  1.720e-008  8.476e-011  2.103e-012
      0.05  3.070e-004  3.070e-004  3.070e-004  3.058e-004  2.678e-
004  2.210e-004  1.529e-004  3.857e-005  1.066e-005  3.383e-006
1.208e-006  2.021e-007  2.215e-008  1.172e-010  3.036e-012
       0.1  3.070e-004  3.070e-004  3.070e-004  3.067e-004  2.885e-
004  2.587e-004  2.040e-004  7.403e-005  2.657e-005  1.031e-005
```

```
4.339e-006  9.396e-007  1.373e-007  1.315e-009  4.923e-011
       0.2  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.039e-
004  2.950e-004  2.699e-004  1.561e-004  7.900e-005  3.973e-005
2.052e-005  6.070e-006  1.231e-006  2.191e-008  1.158e-009
       0.3  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.049e-
004  2.986e-004  2.793e-004  1.788e-004  9.982e-005  5.466e-005
3.040e-005  1.017e-005  2.386e-006  5.860e-008  3.827e-009
       0.4  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.048e-
004  2.982e-004  2.782e-004  1.757e-004  9.668e-005  5.224e-005
2.870e-005  9.402e-006  2.148e-006  4.948e-008  3.087e-009
       0.5  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.044e-
004  2.970e-004  2.758e-004  1.732e-004  9.591e-005  5.245e-005
2.924e-005  9.877e-006  2.361e-006  6.163e-008  4.237e-009
      0.75  3.070e-004  3.070e-004  3.070e-004  3.069e-004  2.994e-
004  2.844e-004  2.510e-004  1.352e-004  6.787e-005  3.488e-005
1.866e-005  6.014e-006  1.399e-006  3.746e-008  2.748e-009
         1  3.070e-004  3.070e-004  3.070e-004  3.065e-004  2.892e-
004  2.628e-004  2.147e-004  9.171e-005  3.883e-005  1.752e-005
8.441e-006  2.315e-006  4.526e-007  8.609e-009  5.173e-010
         2  3.070e-004  3.070e-004  3.048e-004  2.859e-004  1.788e-
004  1.219e-004  6.875e-005  1.291e-005  3.343e-006  1.075e-006
4.021e-007  7.684e-008  1.056e-008  1.124e-010  5.145e-012
         3  3.070e-004  3.070e-004  2.918e-004  2.309e-004  8.456e-
005  4.400e-005  1.813e-005  1.754e-006  3.020e-007  7.231e-008
2.148e-008  2.889e-009  2.729e-010  1.391e-012  4.130e-014
         4  3.070e-004  3.070e-004  2.680e-004  1.758e-004  4.281e-
005  1.867e-005  6.322e-006  4.112e-007  5.579e-008  1.126e-008
2.929e-009  3.220e-010  2.455e-011  8.241e-014  1.916e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.070e-004  3.070e-004  3.069e-004  3.032e-004  2.351e-
004  1.739e-004  1.030e-004  1.769e-005  3.773e-006  9.860e-007
3.014e-007  3.963e-008  3.342e-009  1.045e-011  1.975e-013
      0.05  3.070e-004  3.070e-004  3.070e-004  3.049e-004  2.531e-
004  1.983e-004  1.270e-004  2.622e-005  6.303e-006  1.798e-006
5.890e-007  8.603e-008  8.120e-009  3.165e-011  6.808e-013
       0.1  3.070e-004  3.070e-004  3.070e-004  3.066e-004  2.848e-
004  2.504e-004  1.903e-004  6.087e-005  1.964e-005  6.967e-006
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2.713e-006  5.167e-007  6.484e-008  4.425e-010  1.323e-011
       0.2  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.010e-
004  2.867e-004  2.514e-004  1.242e-004  5.521e-005  2.505e-005
1.189e-005  3.080e-006  5.400e-007  7.177e-009  3.190e-010
       0.3  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.029e-
004  2.919e-004  2.627e-004  1.424e-004  6.828e-005  3.289e-005
1.640e-005  4.591e-006  8.773e-007  1.388e-008  6.861e-010
       0.4  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.031e-
004  2.920e-004  2.614e-004  1.358e-004  6.151e-005  2.799e-005
1.322e-005  3.354e-006  5.646e-007  6.540e-009  2.585e-010
       0.5  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.028e-
004  2.911e-004  2.592e-004  1.313e-004  5.802e-005  2.583e-005
1.197e-005  2.934e-006  4.736e-007  4.960e-009  1.825e-010
      0.75  3.070e-004  3.070e-004  3.070e-004  3.068e-004  2.947e-
004  2.717e-004  2.248e-004  9.352e-005  3.700e-005  1.545e-005
6.890e-006  1.631e-006  2.621e-007  3.014e-009  1.251e-010
         1  3.070e-004  3.070e-004  3.070e-004  3.062e-004  2.788e-
004  2.416e-004  1.816e-004  5.945e-005  2.028e-005  7.664e-006
3.177e-006  6.802e-007  9.970e-008  1.006e-009  3.991e-011
         2  3.070e-004  3.070e-004  3.039e-004  2.771e-004  1.472e-
004  8.996e-005  4.389e-005  5.735e-006  1.146e-006  3.004e-007
9.485e-008  1.376e-008  1.378e-009  7.322e-012  2.126e-013
         3  3.070e-004  3.070e-004  2.872e-004  2.129e-004  6.267e-
005  2.892e-005  1.026e-005  6.949e-007  9.335e-008  1.840e-008
4.651e-009  4.816e-010  3.363e-011  8.831e-014  1.693e-015
         4  3.070e-004  3.070e-004  2.650e-004  1.644e-004  3.324e-
005  1.307e-005  3.888e-006  1.850e-007  2.013e-008  3.414e-009
7.672e-010  6.650e-011  3.844e-012  6.977e-015  1.077e-016
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.070e-004  3.070e-004  3.066e-004  2.971e-004  1.952e-
004  1.287e-004  6.607e-005  8.361e-006  1.489e-006  3.433e-007
9.548e-008  1.094e-008  8.036e-010  1.966e-012  3.265e-014
      0.05  3.070e-004  3.070e-004  3.068e-004  3.012e-004  2.201e-
004  1.562e-004  8.817e-005  1.381e-005  2.814e-006  7.165e-007
2.155e-007  2.782e-008  2.323e-009  7.318e-012  1.411e-013
       0.1  3.070e-004  3.070e-004  3.070e-004  3.060e-004  2.719e-
004  2.281e-004  1.618e-004  4.390e-005  1.282e-005  4.255e-006
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1.578e-006  2.808e-007  3.311e-008  2.059e-010  5.937e-012
       0.2  3.070e-004  3.070e-004  3.070e-004  3.069e-004  2.951e-
004  2.724e-004  2.255e-004  9.358e-005  3.684e-005  1.530e-005
6.792e-006  1.595e-006  2.536e-007  2.856e-009  1.171e-010
       0.3  3.070e-004  3.070e-004  3.070e-004  3.069e-004  2.955e-
004  2.732e-004  2.270e-004  9.522e-005  3.779e-005  1.580e-005
7.049e-006  1.669e-006  2.679e-007  3.076e-009  1.276e-010
       0.4  3.070e-004  3.070e-004  3.070e-004  3.069e-004  2.953e-
004  2.718e-004  2.228e-004  8.722e-005  3.213e-005  1.253e-005
5.246e-006  1.110e-006  1.547e-007  1.267e-009  4.148e-011
       0.5  3.070e-004  3.070e-004  3.070e-004  3.068e-004  2.919e-
004  2.645e-004  2.110e-004  7.591e-005  2.609e-005  9.584e-006
3.804e-006  7.334e-007  9.099e-008  5.583e-010  1.482e-011
      0.75  3.070e-004  3.070e-004  3.070e-004  3.059e-004  2.732e-
004  2.312e-004  1.667e-004  4.755e-005  1.440e-005  4.902e-006
1.853e-006  3.381e-007  4.067e-008  2.562e-010  7.295e-012
         1  3.070e-004  3.070e-004  3.069e-004  3.037e-004  2.488e-
004  1.962e-004  1.294e-004  3.083e-005  8.550e-006  2.773e-006
1.019e-006  1.812e-007  2.173e-008  1.467e-010  4.564e-012
         2  3.070e-004  3.070e-004  2.979e-004  2.498e-004  1.036e-
004  5.644e-005  2.427e-005  2.482e-006  4.323e-007  1.032e-007
3.040e-008  3.991e-009  3.619e-010  1.624e-012  4.339e-014
         3  3.070e-004  3.070e-004  2.622e-004  1.666e-004  3.876e-
005  1.669e-005  5.601e-006  3.630e-007  4.963e-008  1.011e-008
2.656e-009  2.975e-010  2.324e-011  8.292e-014  2.012e-015
         4  3.070e-004  3.070e-004  2.105e-004  1.027e-004  1.579e-
005  5.853e-006  1.688e-006  8.405e-008  1.007e-008  1.890e-009
4.686e-010  4.868e-011  3.565e-012  1.174e-014  2.799e-016
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  3.070e-004  3.070e-004  3.068e-004  3.019e-004  2.312e-
004  1.722e-004  1.047e-004  2.026e-005  4.844e-006  1.399e-006
4.666e-007  7.101e-008  7.115e-009  3.239e-011  7.778e-013
      0.05  3.070e-004  3.070e-004  3.069e-004  3.039e-004  2.470e-
004  1.918e-004  1.227e-004  2.620e-005  6.593e-006  1.966e-006
6.709e-007  1.053e-007  1.086e-008  5.205e-011  1.286e-012
       0.1  3.070e-004  3.070e-004  3.070e-004  3.064e-004  2.817e-
004  2.457e-004  1.854e-004  5.960e-005  1.968e-005  7.178e-006
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2.877e-006  5.790e-007  7.841e-008  6.545e-010  2.280e-011
       0.2  3.070e-004  3.070e-004  3.070e-004  3.069e-004  3.000e-
004  2.847e-004  2.489e-004  1.246e-004  5.701e-005  2.669e-005
1.307e-005  3.581e-006  6.751e-007  1.065e-008  5.315e-010
       0.3  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.011e-
004  2.879e-004  2.563e-004  1.388e-004  6.863e-005  3.445e-005
1.795e-005  5.476e-006  1.177e-006  2.519e-008  1.547e-009
       0.4  3.070e-004  3.070e-004  3.070e-004  3.070e-004  3.011e-
004  2.873e-004  2.541e-004  1.329e-004  6.344e-005  3.092e-005
1.572e-005  4.622e-006  9.559e-007  1.909e-008  1.129e-009
       0.5  3.070e-004  3.070e-004  3.070e-004  3.069e-004  2.997e-
004  2.842e-004  2.487e-004  1.268e-004  6.000e-005  2.929e-005
1.500e-005  4.515e-006  9.751e-007  2.238e-008  1.478e-009
      0.75  3.070e-004  3.070e-004  3.070e-004  3.066e-004  2.891e-
004  2.624e-004  2.141e-004  9.208e-005  3.976e-005  1.841e-005
9.134e-006  2.661e-006  5.674e-007  1.358e-008  9.601e-010
         1  3.070e-004  3.070e-004  3.070e-004  3.055e-004  2.722e-
004  2.336e-004  1.752e-004  6.066e-005  2.255e-005  9.318e-006
4.212e-006  1.059e-006  1.913e-007  3.254e-009  1.873e-010
         2  3.070e-004  3.070e-004  3.022e-004  2.709e-004  1.432e-
004  8.942e-005  4.563e-005  7.043e-006  1.640e-006  4.928e-007
1.758e-007  3.153e-008  4.101e-009  4.044e-011  1.800e-012
         3  3.070e-004  3.070e-004  2.804e-004  2.035e-004  6.200e-
005  2.987e-005  1.133e-005  9.374e-007  1.483e-007  3.361e-008
9.594e-009  1.223e-009  1.099e-010  5.208e-013  1.500e-014
         4  3.070e-004  3.070e-004  2.478e-004  1.476e-004  3.061e-
005  1.253e-005  3.966e-006  2.268e-007  2.867e-008  5.522e-009
1.388e-009  1.457e-010  1.065e-011  3.371e-014  7.678e-016


Source: Puente Hills (Santa Fe Springs)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.082e-004  4.082e-004  4.077e-004  3.963e-004  2.660e-
004  1.780e-004  9.314e-005  1.232e-005  2.260e-006  5.329e-007
1.510e-007  1.780e-008  1.349e-009  3.516e-012  6.060e-014
      0.05  4.082e-004  4.082e-004  4.079e-004  3.992e-004  2.821e-
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004  1.951e-004  1.062e-004  1.520e-005  2.912e-006  7.067e-007
2.044e-007  2.480e-008  1.932e-009  5.270e-012  9.295e-014
       0.1  4.082e-004  4.082e-004  4.082e-004  4.054e-004  3.398e-
004  2.699e-004  1.775e-004  4.009e-005  1.042e-005  3.179e-006
1.105e-006  1.785e-007  1.904e-008  9.845e-011  2.569e-012
       0.2  4.082e-004  4.082e-004  4.082e-004  4.080e-004  3.906e-
004  3.581e-004  2.926e-004  1.165e-004  4.432e-005  1.792e-005
7.771e-006  1.757e-006  2.677e-007  2.744e-009  1.059e-010
       0.3  4.082e-004  4.082e-004  4.082e-004  4.081e-004  3.964e-
004  3.721e-004  3.185e-004  1.486e-004  6.443e-005  2.899e-005
1.376e-005  3.606e-006  6.514e-007  9.664e-009  4.733e-010
       0.4  4.082e-004  4.082e-004  4.082e-004  4.080e-004  3.935e-
004  3.653e-004  3.064e-004  1.342e-004  5.567e-005  2.423e-005
1.121e-005  2.824e-006  4.897e-007  6.718e-009  3.141e-010
       0.5  4.082e-004  4.082e-004  4.082e-004  4.079e-004  3.910e-
004  3.607e-004  3.001e-004  1.309e-004  5.493e-005  2.432e-005
1.147e-005  3.003e-006  5.493e-007  8.698e-009  4.531e-010
      0.75  4.082e-004  4.082e-004  4.082e-004  4.068e-004  3.700e-
004  3.231e-004  2.484e-004  9.056e-005  3.458e-005  1.450e-005
6.610e-006  1.674e-006  3.027e-007  5.051e-009  2.848e-010
         1  4.082e-004  4.082e-004  4.080e-004  4.037e-004  3.346e-
004  2.692e-004  1.844e-004  5.068e-005  1.608e-005  5.887e-006
2.413e-006  5.197e-007  7.911e-008  9.450e-010  4.384e-011
         2  4.082e-004  4.082e-004  3.935e-004  3.262e-004  1.371e-
004  7.660e-005  3.443e-005  4.068e-006  8.018e-007  2.129e-007
6.883e-008  1.059e-008  1.163e-009  8.104e-012  2.920e-013
         3  4.082e-004  4.082e-004  3.426e-004  2.088e-004  4.393e-
005  1.803e-005  5.723e-006  3.295e-007  4.180e-008  8.062e-009
2.026e-009  2.120e-010  1.537e-011  4.690e-014  1.032e-015
         4  4.082e-004  4.082e-004  2.688e-004  1.210e-004  1.544e-
005  5.233e-006  1.356e-006  5.293e-008  5.365e-009  8.835e-010
1.965e-010  1.710e-011  1.020e-012  2.128e-015  3.747e-017
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.082e-004  4.082e-004  4.075e-004  3.930e-004  2.467e-
004  1.570e-004  7.686e-005  8.590e-006  1.397e-006  2.996e-007
7.844e-008  8.147e-009  5.343e-010  1.023e-012  1.451e-014
      0.05  4.082e-004  4.082e-004  4.079e-004  3.988e-004  2.785e-
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004  1.904e-004  1.019e-004  1.388e-005  2.554e-006  5.992e-007
1.683e-007  1.945e-008  1.430e-009  3.418e-012  5.521e-014
       0.1  4.082e-004  4.082e-004  4.082e-004  4.059e-004  3.436e-
004  2.740e-004  1.799e-004  3.950e-005  9.886e-006  2.906e-006
9.747e-007  1.477e-007  1.450e-008  6.111e-011  1.377e-012
       0.2  4.082e-004  4.082e-004  4.082e-004  4.079e-004  3.860e-
004  3.479e-004  2.758e-004  9.957e-005  3.510e-005  1.334e-005
5.494e-006  1.142e-006  1.580e-007  1.316e-009  4.445e-011
       0.3  4.082e-004  4.082e-004  4.082e-004  4.080e-004  3.912e-
004  3.593e-004  2.944e-004  1.178e-004  4.484e-005  1.810e-005
7.829e-006  1.759e-006  2.652e-007  2.637e-009  9.922e-011
       0.4  4.082e-004  4.082e-004  4.082e-004  4.080e-004  3.902e-
004  3.556e-004  2.859e-004  1.049e-004  3.662e-005  1.367e-005
5.511e-006  1.095e-006  1.420e-007  9.866e-010  2.895e-011
       0.5  4.082e-004  4.082e-004  4.082e-004  4.079e-004  3.869e-
004  3.484e-004  2.745e-004  9.498e-005  3.182e-005  1.151e-005
4.523e-006  8.641e-007  1.072e-007  6.796e-010  1.882e-011
      0.75  4.082e-004  4.082e-004  4.082e-004  4.065e-004  3.566e-
004  2.961e-004  2.077e-004  5.556e-005  1.624e-005  5.416e-006
2.023e-006  3.654e-007  4.402e-008  2.901e-010  8.731e-012
         1  4.082e-004  4.082e-004  4.080e-004  4.016e-004  3.086e-
004  2.306e-004  1.409e-004  2.787e-005  6.834e-006  2.026e-006
6.935e-007  1.110e-007  1.193e-008  6.586e-011  1.838e-012
         2  4.082e-004  4.082e-004  3.860e-004  2.934e-004  9.032e-
005  4.230e-005  1.521e-005  1.054e-006  1.433e-007  2.848e-008
7.243e-009  7.571e-010  5.341e-011  1.430e-013  2.770e-015
         3  4.082e-004  4.082e-004  3.134e-004  1.601e-004  2.253e-
005  7.634e-006  1.929e-006  6.626e-008  5.933e-009  8.747e-010
1.762e-010  1.292e-011  6.245e-013  7.940e-016  9.905e-018
         4  4.082e-004  4.082e-004  2.462e-004  9.536e-005  8.615e-
006  2.459e-006  5.165e-007  1.231e-008  8.860e-010  1.117e-010
1.991e-011  1.213e-012  4.803e-014  4.135e-017  4.100e-019
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.082e-004  4.082e-004  4.031e-004  3.540e-004  1.443e-
004  7.285e-005  2.734e-005  1.797e-006  2.157e-007  3.756e-008
8.402e-009  6.933e-010  3.596e-011  4.470e-014  4.985e-016
      0.05  4.082e-004  4.082e-004  4.052e-004  3.696e-004  1.757e-
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004  9.614e-005  3.964e-005  3.179e-006  4.314e-007  8.212e-008
1.970e-008  1.809e-009  1.053e-010  1.644e-013  2.100e-015
       0.1  4.082e-004  4.082e-004  4.078e-004  3.973e-004  2.744e-
004  1.879e-004  1.017e-004  1.470e-005  2.878e-006  7.148e-007
2.114e-007  2.670e-008  2.188e-009  6.719e-012  1.282e-013
       0.2  4.082e-004  4.082e-004  4.082e-004  4.059e-004  3.482e-
004  2.827e-004  1.918e-004  4.701e-005  1.293e-005  4.123e-006
1.485e-006  2.535e-007  2.872e-008  1.672e-010  4.665e-012
       0.3  4.082e-004  4.082e-004  4.082e-004  4.062e-004  3.520e-
004  2.887e-004  1.987e-004  5.048e-005  1.422e-005  4.615e-006
1.685e-006  2.939e-007  3.406e-008  2.074e-010  5.941e-012
       0.4  4.082e-004  4.082e-004  4.082e-004  4.059e-004  3.481e-
004  2.827e-004  1.915e-004  4.620e-005  1.237e-005  3.825e-006
1.334e-006  2.139e-007  2.217e-008  1.013e-010  2.344e-012
       0.5  4.082e-004  4.082e-004  4.081e-004  4.048e-004  3.363e-
004  2.661e-004  1.745e-004  3.932e-005  1.016e-005  3.071e-006
1.055e-006  1.657e-007  1.690e-008  7.562e-011  1.742e-012
      0.75  4.082e-004  4.082e-004  4.077e-004  3.982e-004  2.884e-
004  2.072e-004  1.206e-004  2.136e-005  4.859e-006  1.357e-006
4.420e-007  6.504e-008  6.315e-009  2.744e-011  6.474e-013
         1  4.082e-004  4.082e-004  4.065e-004  3.857e-004  2.387e-
004  1.568e-004  8.253e-005  1.214e-005  2.524e-006  6.698e-007
2.112e-007  3.004e-008  2.868e-009  1.282e-011  3.196e-013
         2  4.082e-004  4.082e-004  3.610e-004  2.391e-004  5.751e-
005  2.468e-005  8.156e-006  4.943e-007  6.337e-008  1.219e-008
3.039e-009  3.110e-010  2.171e-011  5.899e-014  1.180e-015
         3  4.082e-004  4.081e-004  2.624e-004  1.156e-004  1.425e-
005  4.764e-006  1.217e-006  4.617e-008  4.616e-009  7.542e-010
1.669e-010  1.446e-011  8.613e-013  1.816e-015  3.243e-017
         4  4.082e-004  4.072e-004  1.708e-004  5.442e-005  4.326e-
006  1.244e-006  2.736e-007  8.033e-009  7.075e-010  1.068e-010
2.237e-011  1.803e-012  1.010e-013  1.975e-016  3.468e-018
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.082e-004  4.082e-004  4.061e-004  3.811e-004  2.190e-
004  1.359e-004  6.578e-005  7.569e-006  1.291e-006  2.900e-007
7.927e-008  8.880e-009  6.398e-010  1.528e-012  2.520e-014
      0.05  4.082e-004  4.082e-004  4.070e-004  3.892e-004  2.454e-
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004  1.606e-004  8.258e-005  1.075e-005  1.966e-006  4.627e-007
1.308e-007  1.535e-008  1.156e-009  2.951e-012  5.009e-014
       0.1  4.082e-004  4.082e-004  4.080e-004  4.028e-004  3.193e-
004  2.439e-004  1.530e-004  3.143e-005  7.728e-006  2.267e-006
7.637e-007  1.176e-007  1.191e-008  5.543e-011  1.358e-012
       0.2  4.082e-004  4.082e-004  4.082e-004  4.073e-004  3.749e-
004  3.296e-004  2.534e-004  8.768e-005  3.079e-005  1.179e-005
4.916e-006  1.051e-006  1.515e-007  1.409e-009  5.166e-011
       0.3  4.082e-004  4.082e-004  4.082e-004  4.074e-004  3.799e-
004  3.400e-004  2.706e-004  1.056e-004  4.116e-005  1.723e-005
7.758e-006  1.886e-006  3.169e-007  4.169e-009  1.928e-010
       0.4  4.082e-004  4.082e-004  4.082e-004  4.073e-004  3.772e-
004  3.345e-004  2.613e-004  9.510e-005  3.489e-005  1.391e-005
6.017e-006  1.378e-006  2.180e-007  2.602e-009  1.151e-010
       0.5  4.082e-004  4.082e-004  4.082e-004  4.069e-004  3.714e-
004  3.251e-004  2.497e-004  8.840e-005  3.230e-005  1.297e-005
5.681e-006  1.344e-006  2.245e-007  3.151e-009  1.579e-010
      0.75  4.082e-004  4.082e-004  4.080e-004  4.038e-004  3.383e-
004  2.755e-004  1.922e-004  5.583e-005  1.856e-005  7.090e-006
3.025e-006  7.014e-007  1.177e-007  1.790e-009  9.805e-011
         1  4.082e-004  4.082e-004  4.075e-004  3.970e-004  2.940e-
004  2.189e-004  1.359e-004  3.023e-005  8.480e-006  2.861e-006
1.106e-006  2.203e-007  3.130e-008  3.412e-010  1.533e-011
         2  4.082e-004  4.082e-004  3.801e-004  2.863e-004  9.497e-
005  4.786e-005  1.927e-005  1.872e-006  3.362e-007  8.454e-008
2.637e-008  3.886e-009  4.126e-010  2.769e-012  9.866e-014
         3  4.082e-004  4.082e-004  3.061e-004  1.615e-004  2.690e-
005  1.014e-005  2.956e-006  1.473e-007  1.745e-008  3.230e-009
7.897e-010  7.980e-011  5.618e-012  1.650e-014  3.581e-016
         4  4.082e-004  4.078e-004  2.286e-004  9.025e-005  9.460e-
006  2.978e-006  7.155e-007  2.442e-008  2.320e-009  3.673e-010
7.958e-011  6.705e-012  3.895e-013  7.890e-016  1.378e-017


Source: Raymond
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

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       PGA  1.601e-003  1.601e-003  1.600e-003  1.576e-003  1.184e-
003  8.560e-004  4.940e-004  8.087e-005  1.689e-005  4.366e-006
1.327e-006  1.739e-007  1.471e-008  4.722e-011  9.166e-013
      0.05  1.601e-003  1.601e-003  1.600e-003  1.581e-003  1.230e-
003  9.134e-004  5.446e-004  9.561e-005  2.079e-005  5.525e-006
1.715e-006  2.315e-007  2.017e-008  6.822e-011  1.363e-012
       0.1  1.601e-003  1.601e-003  1.601e-003  1.595e-003  1.411e-
003  1.180e-003  8.339e-004  2.249e-004  6.562e-005  2.179e-005
8.093e-006  1.446e-006  1.716e-007  1.091e-009  3.206e-011
       0.2  1.601e-003  1.601e-003  1.601e-003  1.600e-003  1.560e-
003  1.470e-003  1.263e-003  5.848e-004  2.483e-004  1.089e-004
5.040e-005  1.257e-005  2.123e-006  2.644e-008  1.138e-009
       0.3  1.601e-003  1.601e-003  1.601e-003  1.600e-003  1.573e-
003  1.508e-003  1.343e-003  7.132e-004  3.410e-004  1.651e-004
8.313e-005  2.382e-005  4.727e-006  8.379e-008  4.535e-009
       0.4  1.601e-003  1.601e-003  1.601e-003  1.600e-003  1.568e-
003  1.494e-003  1.314e-003  6.676e-004  3.081e-004  1.451e-004
7.143e-005  1.976e-005  3.771e-006  6.175e-008  3.182e-009
       0.5  1.601e-003  1.601e-003  1.601e-003  1.600e-003  1.562e-
003  1.480e-003  1.293e-003  6.527e-004  3.038e-004  1.452e-004
7.266e-005  2.080e-005  4.170e-006  7.812e-008  4.463e-009
      0.75  1.601e-003  1.601e-003  1.601e-003  1.598e-003  1.505e-
003  1.365e-003  1.111e-003  4.696e-004  1.977e-004  8.894e-005
4.282e-005  1.175e-005  2.309e-006  4.487e-008  2.752e-009
         1  1.601e-003  1.601e-003  1.600e-003  1.592e-003  1.403e-
003  1.188e-003  8.720e-004  2.814e-004  9.857e-005  3.869e-005
1.672e-005  3.895e-006  6.419e-007  8.874e-009  4.464e-010
         2  1.601e-003  1.601e-003  1.568e-003  1.375e-003  6.736e-
004  4.038e-004  1.960e-004  2.691e-005  5.775e-006  1.626e-006
5.495e-007  9.024e-008  1.060e-008  8.394e-011  3.254e-012
         3  1.601e-003  1.601e-003  1.426e-003  9.636e-004  2.452e-
004  1.085e-004  3.732e-005  2.505e-006  3.471e-007  7.124e-008
1.879e-008  2.115e-009  1.657e-010  5.903e-013  1.425e-014
         4  1.601e-003  1.601e-003  1.198e-003  6.193e-004  9.750e-
005  3.567e-005  1.001e-005  4.529e-007  4.997e-008  8.735e-009
2.034e-009  1.899e-010  1.221e-011  2.954e-014  5.680e-016
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.601e-003  1.601e-003  1.595e-003  1.502e-003  8.101e-
004  4.693e-004  2.045e-004  1.767e-005  2.440e-006  4.642e-007
1.105e-007  9.922e-009  5.559e-010  7.781e-013  9.158e-015
      0.05  1.601e-003  1.601e-003  1.598e-003  1.539e-003  9.539e-
004  6.014e-004  2.904e-004  3.132e-005  4.962e-006  1.043e-006
2.684e-007  2.712e-008  1.724e-009  3.086e-012  4.194e-014
       0.1  1.601e-003  1.601e-003  1.600e-003  1.584e-003  1.255e-
003  9.431e-004  5.702e-004  1.023e-004  2.236e-005  5.942e-006
1.839e-006  2.460e-007  2.110e-008  6.783e-011  1.299e-012
       0.2  1.601e-003  1.601e-003  1.601e-003  1.598e-003  1.468e-
003  1.273e-003  9.474e-004  2.858e-004  8.847e-005  3.044e-005
1.157e-005  2.120e-006  2.554e-007  1.608e-009  4.585e-011
       0.3  1.601e-003  1.601e-003  1.601e-003  1.599e-003  1.497e-
003  1.329e-003  1.028e-003  3.451e-004  1.153e-004  4.206e-005
1.675e-005  3.304e-006  4.311e-007  3.190e-009  1.003e-010
       0.4  1.601e-003  1.601e-003  1.601e-003  1.599e-003  1.491e-
003  1.311e-003  9.899e-004  3.002e-004  9.095e-005  3.038e-005
1.118e-005  1.925e-006  2.127e-007  1.065e-009  2.559e-011
       0.5  1.601e-003  1.601e-003  1.601e-003  1.598e-003  1.473e-
003  1.277e-003  9.430e-004  2.704e-004  7.901e-005  2.573e-005
9.288e-006  1.554e-006  1.668e-007  7.926e-010  1.851e-011
      0.75  1.601e-003  1.601e-003  1.600e-003  1.589e-003  1.324e-
003  1.046e-003  6.822e-004  1.512e-004  3.882e-005  1.174e-005
4.049e-006  6.470e-007  6.818e-008  3.446e-010  8.867e-012
         1  1.601e-003  1.601e-003  1.599e-003  1.564e-003  1.130e-
003  8.054e-004  4.620e-004  7.832e-005  1.731e-005  4.747e-006
1.527e-006  2.220e-007  2.149e-008  9.666e-011  2.394e-012
         2  1.601e-003  1.601e-003  1.534e-003  1.215e-003  4.091e-
004  1.986e-004  7.412e-005  5.499e-006  7.766e-007  1.586e-007
4.120e-008  4.452e-009  3.259e-010  9.430e-013  1.920e-014
         3  1.601e-003  1.601e-003  1.360e-003  8.086e-004  1.464e-
004  5.455e-005  1.524e-005  6.365e-007  6.409e-008  1.029e-008
2.220e-009  1.810e-010  9.820e-012  1.582e-014  2.279e-016
         4  1.601e-003  1.601e-003  1.155e-003  5.375e-004  6.307e-
005  1.977e-005  4.586e-006  1.329e-007  1.080e-008  1.488e-009
2.848e-010  1.939e-011  8.678e-013  9.582e-016  1.105e-017
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.601e-003  1.601e-003  1.583e-003  1.401e-003  5.816e-
004  2.949e-004  1.108e-004  7.242e-006  8.631e-007  1.494e-007
3.328e-008  2.731e-009  1.411e-010  1.757e-013  1.972e-015
      0.05  1.601e-003  1.601e-003  1.591e-003  1.463e-003  7.155e-
004  3.958e-004  1.647e-004  1.334e-005  1.813e-006  3.453e-007
8.289e-008  7.622e-009  4.450e-010  7.048e-013  9.130e-015
       0.1  1.601e-003  1.601e-003  1.599e-003  1.565e-003  1.111e-
003  7.723e-004  4.247e-004  6.304e-005  1.249e-005  3.122e-006
9.278e-007  1.181e-007  9.764e-009  3.068e-011  5.962e-013
       0.2  1.601e-003  1.601e-003  1.600e-003  1.593e-003  1.385e-
003  1.136e-003  7.807e-004  1.955e-004  5.429e-005  1.739e-005
6.279e-006  1.076e-006  1.224e-007  7.197e-010  2.027e-011
       0.3  1.601e-003  1.601e-003  1.601e-003  1.594e-003  1.397e-
003  1.155e-003  8.031e-004  2.072e-004  5.869e-005  1.908e-005
6.970e-006  1.216e-006  1.410e-007  8.616e-010  2.483e-011
       0.4  1.601e-003  1.601e-003  1.600e-003  1.593e-003  1.383e-
003  1.132e-003  7.728e-004  1.872e-004  4.991e-005  1.534e-005
5.320e-006  8.444e-007  8.656e-008  3.870e-010  8.853e-012
       0.5  1.601e-003  1.601e-003  1.600e-003  1.590e-003  1.339e-
003  1.069e-003  7.065e-004  1.600e-004  4.110e-005  1.232e-005
4.197e-006  6.488e-007  6.471e-008  2.740e-010  6.065e-012
      0.75  1.601e-003  1.601e-003  1.599e-003  1.568e-003  1.164e-
003  8.468e-004  4.992e-004  8.985e-005  2.050e-005  5.722e-006
1.859e-006  2.720e-007  2.617e-008  1.108e-010  2.559e-012
         1  1.601e-003  1.601e-003  1.596e-003  1.527e-003  9.815e-
004  6.568e-004  3.521e-004  5.332e-005  1.123e-005  2.998e-006
9.491e-007  1.355e-007  1.297e-008  5.792e-011  1.438e-012
         2  1.601e-003  1.601e-003  1.459e-003  1.025e-003  2.747e-
004  1.229e-004  4.242e-005  2.789e-006  3.743e-007  7.439e-008
1.902e-008  2.021e-009  1.469e-010  4.324e-013  9.071e-015
         3  1.601e-003  1.600e-003  1.142e-003  5.595e-004  8.111e-
005  2.879e-005  7.834e-006  3.360e-007  3.610e-008  6.210e-009
1.431e-009  1.318e-010  8.388e-012  2.017e-014  3.893e-016
         4  1.601e-003  1.599e-003  8.097e-004  2.948e-004  2.826e-
005  8.709e-006  2.060e-006  6.980e-008  6.690e-009  1.073e-009
2.358e-010  2.044e-011  1.238e-012  2.826e-015  5.443e-017
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  1.601e-003  1.601e-003  1.593e-003  1.493e-003  8.584e-
004  5.401e-004  2.698e-004  3.526e-005  6.730e-006  1.660e-006
4.904e-007  6.219e-008  5.137e-009  1.606e-011  3.092e-013
      0.05  1.601e-003  1.601e-003  1.596e-003  1.528e-003  9.666e-
004  6.369e-004  3.332e-004  4.676e-005  9.188e-006  2.304e-006
6.888e-007  8.874e-008  7.446e-009  2.400e-011  4.712e-013
       0.1  1.601e-003  1.601e-003  1.600e-003  1.581e-003  1.259e-
003  9.651e-004  6.096e-004  1.301e-004  3.349e-005  1.029e-005
3.620e-006  6.033e-007  6.748e-008  3.963e-010  1.132e-011
       0.2  1.601e-003  1.601e-003  1.601e-003  1.597e-003  1.471e-
003  1.293e-003  9.969e-004  3.554e-004  1.304e-004  5.226e-005
2.275e-005  5.255e-006  8.334e-007  9.591e-009  4.015e-010
       0.3  1.601e-003  1.601e-003  1.601e-003  1.598e-003  1.489e-
003  1.331e-003  1.058e-003  4.218e-004  1.717e-004  7.543e-005
3.562e-005  9.446e-006  1.766e-006  2.928e-008  1.553e-009
       0.4  1.601e-003  1.601e-003  1.601e-003  1.597e-003  1.481e-
003  1.312e-003  1.026e-003  3.850e-004  1.496e-004  6.362e-005
2.931e-005  7.509e-006  1.357e-006  2.107e-008  1.072e-009
       0.5  1.601e-003  1.601e-003  1.601e-003  1.596e-003  1.458e-
003  1.276e-003  9.809e-004  3.610e-004  1.413e-004  6.109e-005
2.871e-005  7.666e-006  1.467e-006  2.640e-008  1.496e-009
      0.75  1.601e-003  1.601e-003  1.600e-003  1.585e-003  1.331e-
003  1.086e-003  7.641e-004  2.369e-004  8.568e-005  3.547e-005
1.624e-005  4.224e-006  8.011e-007  1.511e-008  9.210e-010
         1  1.601e-003  1.601e-003  1.598e-003  1.561e-003  1.172e-
003  8.834e-004  5.620e-004  1.377e-004  4.237e-005  1.548e-005
6.400e-006  1.417e-006  2.255e-007  3.009e-009  1.501e-010
         2  1.601e-003  1.601e-003  1.520e-003  1.205e-003  4.525e-
004  2.417e-004  1.042e-004  1.173e-005  2.309e-006  6.197e-007
2.032e-007  3.224e-008  3.691e-009  2.844e-011  1.094e-012
         3  1.601e-003  1.601e-003  1.309e-003  7.772e-004  1.576e-
004  6.396e-005  2.013e-005  1.159e-006  1.491e-007  2.925e-008
7.480e-009  8.092e-010  6.130e-011  2.087e-013  4.954e-015
         4  1.601e-003  1.600e-003  1.054e-003  4.839e-004  6.294e-
005  2.138e-005  5.551e-006  2.185e-007  2.249e-008  3.765e-009
8.517e-010  7.659e-011  4.770e-012  1.111e-014  2.112e-016


Source: Red Mountain
Region: USGS 2008 California
```

```
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.462e-003  1.462e-003  1.462e-003  1.460e-003  1.408e-
003  1.327e-003  1.166e-003  6.387e-004  3.259e-004  1.683e-004
8.964e-005  2.818e-005  6.194e-006  1.329e-007  7.942e-009
      0.05  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.416e-
003  1.346e-003  1.202e-003  7.051e-004  3.835e-004  2.092e-004
1.168e-004  3.962e-005  9.500e-006  2.441e-007  1.627e-008
       0.1  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.443e-
003  1.406e-003  1.320e-003  9.404e-004  6.151e-004  3.942e-004
2.534e-004  1.089e-004  3.441e-005  1.610e-006  1.573e-007
       0.2  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.459e-
003  1.449e-003  1.418e-003  1.197e-003  9.195e-004  6.766e-004
4.895e-004  2.546e-004  9.956e-005  7.107e-006  8.850e-007
       0.3  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.460e-
003  1.452e-003  1.427e-003  1.233e-003  9.729e-004  7.358e-004
5.468e-004  2.991e-004  1.252e-004  1.063e-005  1.502e-006
       0.4  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.459e-
003  1.452e-003  1.425e-003  1.221e-003  9.552e-004  7.161e-004
5.277e-004  2.842e-004  1.165e-004  9.353e-006  1.267e-006
       0.5  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.459e-
003  1.450e-003  1.419e-003  1.205e-003  9.359e-004  6.996e-004
5.156e-004  2.792e-004  1.161e-004  9.919e-006  1.424e-006
      0.75  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.452e-
003  1.430e-003  1.374e-003  1.078e-003  7.851e-004  5.597e-004
3.984e-004  2.065e-004  8.334e-005  7.150e-006  1.076e-006
         1  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.437e-
003  1.394e-003  1.297e-003  9.042e-004  5.916e-004  3.850e-004
2.535e-004  1.155e-004  4.023e-005  2.535e-006  3.159e-007
         2  1.462e-003  1.462e-003  1.459e-003  1.431e-003  1.202e-
003  1.023e-003  7.876e-004  3.322e-004  1.527e-004  7.626e-005
4.076e-005  1.359e-005  3.433e-006  1.233e-007  1.164e-008
         3  1.462e-003  1.462e-003  1.440e-003  1.332e-003  9.075e-
004  6.894e-004  4.621e-004  1.411e-004  5.197e-005  2.188e-005
1.017e-005  2.719e-006  5.377e-007  1.170e-008  8.146e-010
         4  1.462e-003  1.462e-003  1.400e-003  1.204e-003  6.812e-
004  4.699e-004  2.787e-004  6.333e-005  1.905e-005  6.884e-006
2.832e-006  6.268e-007  1.010e-007  1.469e-009  8.072e-011
```

```
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.462e-003  1.462e-003  1.461e-003  1.451e-003  1.302e-
003  1.153e-003  9.314e-004  4.187e-004  1.873e-004  8.747e-005
4.292e-005  1.184e-005  2.249e-006  3.567e-008  1.769e-009
      0.05  1.462e-003  1.462e-003  1.462e-003  1.456e-003  1.348e-
003  1.227e-003  1.032e-003  5.261e-004  2.609e-004  1.325e-004
6.978e-005  2.154e-005  4.638e-006  9.489e-008  5.489e-009
       0.1  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.417e-
003  1.351e-003  1.226e-003  8.013e-004  4.960e-004  3.043e-004
1.883e-004  7.569e-005  2.197e-005  8.333e-007  7.009e-008
       0.2  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.447e-
003  1.417e-003  1.345e-003  1.018e-003  7.207e-004  4.993e-004
3.444e-004  1.663e-004  5.997e-005  3.614e-006  4.052e-007
       0.3  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.450e-
003  1.425e-003  1.359e-003  1.041e-003  7.429e-004  5.179e-004
3.594e-004  1.755e-004  6.421e-005  4.008e-006  4.600e-007
       0.4  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.450e-
003  1.424e-003  1.355e-003  1.029e-003  7.265e-004  5.006e-004
3.426e-004  1.622e-004  5.642e-005  3.002e-006  3.013e-007
       0.5  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.449e-
003  1.420e-003  1.349e-003  1.025e-003  7.288e-004  5.047e-004
3.461e-004  1.633e-004  5.584e-005  2.724e-006  2.501e-007
      0.75  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.428e-
003  1.374e-003  1.267e-003  8.906e-004  6.018e-004  4.025e-004
2.694e-004  1.236e-004  4.167e-005  2.114e-006  2.083e-007
         1  1.462e-003  1.462e-003  1.462e-003  1.459e-003  1.395e-
003  1.314e-003  1.176e-003  7.718e-004  4.992e-004  3.237e-004
2.119e-004  9.446e-005  3.129e-005  1.613e-006  1.666e-007
         2  1.462e-003  1.462e-003  1.457e-003  1.414e-003  1.165e-
003  1.007e-003  8.132e-004  4.177e-004  2.245e-004  1.257e-004
7.314e-005  2.740e-005  7.665e-006  3.104e-007  2.983e-008
         3  1.462e-003  1.462e-003  1.437e-003  1.328e-003  9.600e-
004  7.797e-004  5.803e-004  2.329e-004  1.018e-004  4.811e-005
2.429e-005  7.253e-006  1.577e-006  3.840e-008  2.724e-009
         4  1.462e-003  1.462e-003  1.407e-003  1.239e-003  8.118e-
004  6.269e-004  4.338e-004  1.405e-004  5.212e-005  2.165e-005
9.842e-006  2.494e-006  4.536e-007  7.737e-009  4.448e-010
```

```
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.462e-003  1.462e-003  1.461e-003  1.445e-003  1.288e-
003  1.158e-003  9.777e-004  5.393e-004  2.930e-004  1.612e-004
9.085e-005  3.134e-005  7.644e-006  2.021e-007  1.365e-008
      0.05  1.462e-003  1.462e-003  1.461e-003  1.452e-003  1.333e-
003  1.225e-003  1.066e-003  6.504e-004  3.882e-004  2.319e-004
1.404e-004  5.445e-005  1.519e-005  5.307e-007  4.249e-008
       0.1  1.462e-003  1.462e-003  1.462e-003  1.460e-003  1.410e-
003  1.347e-003  1.237e-003  8.854e-004  6.157e-004  4.231e-004
2.905e-004  1.395e-004  4.999e-005  2.977e-006  3.314e-007
       0.2  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.443e-
003  1.409e-003  1.337e-003  1.053e-003  8.007e-004  6.008e-004
4.482e-004  2.497e-004  1.074e-004  9.586e-006  1.378e-006
       0.3  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.443e-
003  1.409e-003  1.336e-003  1.047e-003  7.949e-004  5.968e-004
4.461e-004  2.497e-004  1.082e-004  9.842e-006  1.432e-006
       0.4  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.442e-
003  1.406e-003  1.328e-003  1.028e-003  7.728e-004  5.748e-004
4.250e-004  2.319e-004  9.622e-005  7.565e-006  9.701e-007
       0.5  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.437e-
003  1.395e-003  1.309e-003  9.954e-004  7.370e-004  5.390e-004
3.911e-004  2.048e-004  7.968e-005  5.155e-006  5.640e-007
      0.75  1.462e-003  1.462e-003  1.462e-003  1.460e-003  1.408e-
003  1.342e-003  1.226e-003  8.736e-004  6.137e-004  4.264e-004
2.948e-004  1.416e-004  4.967e-005  2.594e-006  2.509e-007
         1  1.462e-003  1.462e-003  1.462e-003  1.456e-003  1.370e-
003  1.280e-003  1.141e-003  7.681e-004  5.144e-004  3.420e-004
2.274e-004  1.025e-004  3.360e-005  1.568e-006  1.449e-007
         2  1.462e-003  1.462e-003  1.448e-003  1.374e-003  1.070e-
003  9.045e-004  7.112e-004  3.356e-004  1.670e-004  8.759e-005
4.823e-005  1.653e-005  4.194e-006  1.398e-007  1.199e-008
         3  1.462e-003  1.462e-003  1.397e-003  1.226e-003  8.140e-
004  6.353e-004  4.475e-004  1.563e-004  6.287e-005  2.823e-005
1.380e-005  3.986e-006  8.564e-007  2.197e-008  1.689e-009
         4  1.462e-003  1.462e-003  1.312e-003  1.069e-003  6.174e-
004  4.461e-004  2.835e-004  7.746e-005  2.671e-005  1.078e-005
4.866e-006  1.256e-006  2.426e-007  5.286e-009  3.805e-010
```

```
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.462e-003  1.462e-003  1.461e-003  1.452e-003  1.332e-
003  1.213e-003  1.025e-003  5.322e-004  2.688e-004  1.390e-004
7.447e-005  2.379e-005  5.362e-006  1.236e-007  7.789e-009
      0.05  1.462e-003  1.462e-003  1.462e-003  1.456e-003  1.366e-
003  1.266e-003  1.100e-003  6.272e-004  3.442e-004  1.912e-004
1.090e-004  3.854e-005  9.776e-006  2.899e-007  2.142e-008
       0.1  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.423e-
003  1.368e-003  1.261e-003  8.757e-004  5.756e-004  3.739e-004
2.441e-004  1.080e-004  3.546e-005  1.807e-006  1.863e-007
       0.2  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.450e-
003  1.425e-003  1.367e-003  1.089e-003  8.136e-004  5.922e-004
4.274e-004  2.235e-004  8.897e-005  6.769e-006  8.894e-007
       0.3  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.451e-
003  1.429e-003  1.374e-003  1.107e-003  8.369e-004  6.169e-004
4.508e-004  2.415e-004  9.920e-005  8.159e-006  1.131e-006
       0.4  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.451e-
003  1.427e-003  1.369e-003  1.092e-003  8.181e-004  5.972e-004
4.318e-004  2.261e-004  8.970e-005  6.640e-006  8.461e-007
       0.5  1.462e-003  1.462e-003  1.462e-003  1.462e-003  1.448e-
003  1.422e-003  1.359e-003  1.075e-003  8.006e-004  5.811e-004
4.176e-004  2.158e-004  8.389e-005  5.933e-006  7.459e-007
      0.75  1.462e-003  1.462e-003  1.462e-003  1.461e-003  1.429e-
003  1.382e-003  1.289e-003  9.475e-004  6.669e-004  4.629e-004
3.209e-004  1.572e-004  5.823e-005  3.953e-006  5.118e-007
         1  1.462e-003  1.462e-003  1.462e-003  1.459e-003  1.400e-
003  1.329e-003  1.205e-003  8.147e-004  5.350e-004  3.502e-004
2.309e-004  1.042e-004  3.504e-005  1.906e-006  2.092e-007
         2  1.462e-003  1.462e-003  1.454e-003  1.406e-003  1.146e-
003  9.781e-004  7.707e-004  3.618e-004  1.814e-004  9.652e-005
5.404e-005  1.917e-005  5.097e-006  1.912e-007  1.782e-008
         3  1.462e-003  1.462e-003  1.425e-003  1.295e-003  8.938e-
004  7.015e-004  4.966e-004  1.768e-004  7.222e-005  3.274e-005
1.609e-005  4.653e-006  9.905e-007  2.402e-008  1.743e-009
         4  1.462e-003  1.462e-003  1.373e-003  1.171e-003  7.035e-
004  5.143e-004  3.320e-004  9.377e-005  3.263e-005  1.310e-005
5.846e-006  1.459e-006  2.657e-007  4.831e-009  3.020e-010
```

```
Source: Southern San Andreas
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.081e-002  1.081e-002  1.073e-002  1.062e-002  9.985e-
003  9.126e-003  7.483e-003  3.072e-003  1.206e-003  5.000e-004
2.215e-004  5.173e-005  8.153e-006  8.871e-008  3.521e-009
      0.05  1.081e-002  1.081e-002  1.073e-002  1.062e-002  1.009e-
002  9.359e-003  7.894e-003  3.558e-003  1.504e-003  6.618e-004
3.078e-004  7.770e-005  1.335e-005  1.734e-007  7.664e-009
       0.1  1.081e-002  1.081e-002  1.075e-002  1.066e-002  1.032e-
002  9.847e-003  8.792e-003  4.835e-003  2.407e-003  1.209e-003
6.283e-004  1.897e-004  3.999e-005  8.026e-007  4.679e-008
       0.2  1.081e-002  1.081e-002  1.080e-002  1.075e-002  1.054e-
002  1.028e-002  9.600e-003  6.176e-003  3.450e-003  1.882e-003
1.040e-003  3.422e-004  7.814e-005  1.764e-006  1.075e-007
       0.3  1.081e-002  1.081e-002  1.081e-002  1.078e-002  1.060e-
002  1.037e-002  9.766e-003  6.592e-003  3.884e-003  2.226e-003
1.286e-003  4.573e-004  1.148e-004  3.230e-006  2.287e-007
       0.4  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.064e-
002  1.043e-002  9.875e-003  6.821e-003  4.094e-003  2.377e-003
1.387e-003  4.992e-004  1.265e-004  3.583e-006  2.525e-007
       0.5  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.065e-
002  1.044e-002  9.891e-003  6.930e-003  4.262e-003  2.542e-003
1.524e-003  5.771e-004  1.565e-004  5.265e-006  4.207e-007
      0.75  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.058e-
002  1.027e-002  9.539e-003  6.312e-003  3.784e-003  2.245e-003
1.353e-003  5.273e-004  1.515e-004  6.216e-006  5.896e-007
         1  1.081e-002  1.081e-002  1.081e-002  1.078e-002  1.047e-
002  1.002e-002  9.043e-003  5.395e-003  2.973e-003  1.651e-003
9.436e-004  3.384e-004  8.894e-005  3.074e-006  2.643e-007
         2  1.081e-002  1.081e-002  1.078e-002  1.062e-002  9.246e-
003  7.978e-003  6.159e-003  2.460e-003  1.054e-003  4.942e-004
2.499e-004  7.604e-005  1.733e-005  5.045e-007  4.210e-008
         3  1.081e-002  1.081e-002  1.070e-002  1.030e-002  7.996e-
003  6.383e-003  4.453e-003  1.409e-003  5.202e-004  2.187e-004
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1.015e-004  2.714e-005  5.383e-006  1.196e-007  8.518e-009
         4  1.081e-002  1.081e-002  1.060e-002  9.848e-003  6.524e-
003  4.709e-003  2.887e-003  6.764e-004  2.051e-004  7.453e-005
3.082e-005  6.894e-006  1.129e-006  1.720e-008  9.809e-010
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.081e-002  1.081e-002  1.079e-002  1.060e-002  8.554e-
003  6.674e-003  4.301e-003  9.326e-004  2.355e-004  7.014e-005
2.385e-005  3.708e-006  3.763e-007  1.714e-009  4.065e-011
      0.05  1.081e-002  1.081e-002  1.079e-002  1.066e-002  9.059e-
003  7.400e-003  5.088e-003  1.293e-003  3.624e-004  1.166e-004
4.216e-005  7.198e-006  8.079e-007  4.486e-009  1.196e-010
       0.1  1.081e-002  1.081e-002  1.080e-002  1.074e-002  9.899e-
003  8.802e-003  6.889e-003  2.464e-003  8.736e-004  3.350e-004
1.393e-004  2.947e-005  4.168e-006  3.652e-008  1.274e-009
       0.2  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.048e-
002  9.987e-003  8.867e-003  4.737e-003  2.281e-003  1.110e-003
5.595e-004  1.601e-004  3.153e-005  5.366e-007  2.785e-008
       0.3  1.081e-002  1.081e-002  1.081e-002  1.080e-002  1.059e-
002  1.022e-002  9.329e-003  5.552e-003  2.935e-003  1.540e-003
8.274e-004  2.620e-004  5.775e-005  1.239e-006  7.407e-008
       0.4  1.081e-002  1.081e-002  1.081e-002  1.080e-002  1.060e-
002  1.024e-002  9.365e-003  5.516e-003  2.844e-003  1.448e-003
7.540e-004  2.245e-004  4.546e-005  7.779e-007  3.916e-008
       0.5  1.081e-002  1.081e-002  1.081e-002  1.080e-002  1.061e-
002  1.030e-002  9.527e-003  5.910e-003  3.188e-003  1.681e-003
8.991e-004  2.782e-004  5.832e-005  1.040e-006  5.262e-008
      0.75  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.048e-
002  1.005e-002  9.105e-003  5.443e-003  2.956e-003  1.603e-003
8.894e-004  2.991e-004  7.117e-005  1.827e-006  1.230e-007
         1  1.081e-002  1.081e-002  1.081e-002  1.076e-002  1.030e-
002  9.711e-003  8.566e-003  4.786e-003  2.511e-003  1.339e-003
7.378e-004  2.484e-004  6.018e-005  1.688e-006  1.239e-007
         2  1.081e-002  1.081e-002  1.075e-002  1.051e-002  9.016e-
003  7.761e-003  6.002e-003  2.429e-003  1.046e-003  4.896e-004
2.461e-004  7.346e-005  1.615e-005  4.156e-007  3.110e-008
         3  1.081e-002  1.081e-002  1.064e-002  1.011e-002  7.574e-
003  5.929e-003  4.033e-003  1.189e-003  4.126e-004  1.641e-004
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7.244e-005  1.770e-005  3.134e-006  5.269e-008  3.075e-009
         4  1.081e-002  1.081e-002  1.050e-002  9.669e-003  6.365e-
003  4.603e-003  2.829e-003  6.577e-004  1.953e-004  6.918e-005
2.785e-005  5.909e-006  8.992e-007  1.124e-008  5.518e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.081e-002  1.081e-002  1.068e-002  1.046e-002  8.838e-
003  7.289e-003  5.147e-003  1.462e-003  4.532e-004  1.586e-004
6.158e-005  1.181e-005  1.516e-006  1.118e-008  3.564e-010
      0.05  1.081e-002  1.081e-002  1.068e-002  1.050e-002  9.304e-
003  8.021e-003  6.050e-003  2.049e-003  7.186e-004  2.763e-004
1.158e-004  2.498e-005  3.644e-006  3.472e-008  1.288e-009
       0.1  1.081e-002  1.081e-002  1.072e-002  1.061e-002  1.009e-
002  9.429e-003  8.130e-003  4.077e-003  1.915e-003  9.235e-004
4.651e-004  1.339e-004  2.681e-005  4.823e-007  2.617e-008
       0.2  1.081e-002  1.081e-002  1.078e-002  1.071e-002  1.044e-
002  1.012e-002  9.394e-003  6.162e-003  3.625e-003  2.098e-003
1.229e-003  4.508e-004  1.181e-004  3.682e-006  2.785e-007
       0.3  1.081e-002  1.081e-002  1.080e-002  1.074e-002  1.048e-
002  1.017e-002  9.457e-003  6.273e-003  3.732e-003  2.181e-003
1.289e-003  4.795e-004  1.277e-004  4.128e-006  3.195e-007
       0.4  1.081e-002  1.081e-002  1.080e-002  1.076e-002  1.050e-
002  1.019e-002  9.461e-003  6.165e-003  3.564e-003  2.017e-003
1.154e-003  4.027e-004  9.834e-005  2.523e-006  1.641e-007
       0.5  1.081e-002  1.081e-002  1.080e-002  1.076e-002  1.049e-
002  1.015e-002  9.366e-003  5.867e-003  3.229e-003  1.738e-003
9.471e-004  3.025e-004  6.575e-005  1.260e-006  6.632e-008
      0.75  1.081e-002  1.081e-002  1.080e-002  1.075e-002  1.032e-
002  9.777e-003  8.663e-003  4.735e-003  2.344e-003  1.163e-003
5.939e-004  1.717e-004  3.362e-005  5.296e-007  2.504e-008
         1  1.081e-002  1.081e-002  1.080e-002  1.072e-002  1.008e-
002  9.327e-003  7.943e-003  3.910e-003  1.828e-003  8.803e-004
4.434e-004  1.279e-004  2.565e-005  4.632e-007  2.513e-008
         2  1.081e-002  1.081e-002  1.072e-002  1.036e-002  8.140e-
003  6.519e-003  4.539e-003  1.386e-003  4.876e-004  1.952e-004
8.641e-005  2.115e-005  3.740e-006  6.205e-008  3.569e-009
         3  1.081e-002  1.081e-002  1.052e-002  9.586e-003  5.980e-
003  4.190e-003  2.483e-003  5.422e-004  1.577e-004  5.561e-005
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```
2.247e-005  4.857e-006  7.674e-007  1.091e-008  5.987e-010
         4  1.081e-002  1.081e-002  1.014e-002  8.489e-003  4.184e-
003  2.616e-003  1.365e-003  2.325e-004  5.908e-005  1.908e-005
7.241e-006  1.438e-006  2.104e-007  2.699e-009  1.435e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.081e-002  1.081e-002  1.073e-002  1.056e-002  9.126e-
003  7.696e-003  5.644e-003  1.822e-003  6.314e-004  2.429e-004
1.023e-004  2.242e-005  3.348e-006  3.387e-008  1.306e-009
      0.05  1.081e-002  1.081e-002  1.073e-002  1.059e-002  9.484e-
003  8.260e-003  6.344e-003  2.300e-003  8.617e-004  3.516e-004
1.552e-004  3.663e-005  5.934e-006  7.086e-008  3.024e-009
       0.1  1.081e-002  1.081e-002  1.076e-002  1.067e-002  1.010e-
002  9.359e-003  7.937e-003  3.792e-003  1.732e-003  8.225e-004
4.109e-004  1.177e-004  2.366e-005  4.405e-007  2.474e-008
       0.2  1.081e-002  1.081e-002  1.080e-002  1.075e-002  1.049e-
002  1.013e-002  9.287e-003  5.692e-003  3.119e-003  1.696e-003
9.429e-004  3.177e-004  7.592e-005  1.994e-006  1.380e-007
       0.3  1.081e-002  1.081e-002  1.080e-002  1.077e-002  1.056e-
002  1.025e-002  9.518e-003  6.139e-003  3.517e-003  1.982e-003
1.134e-003  3.996e-004  1.001e-004  2.866e-006  2.074e-007
       0.4  1.081e-002  1.081e-002  1.081e-002  1.078e-002  1.058e-
002  1.029e-002  9.567e-003  6.167e-003  3.501e-003  1.948e-003
1.098e-003  3.755e-004  9.011e-005  2.294e-006  1.519e-007
       0.5  1.081e-002  1.081e-002  1.081e-002  1.079e-002  1.058e-
002  1.030e-002  9.595e-003  6.236e-003  3.559e-003  1.987e-003
1.123e-003  3.859e-004  9.353e-005  2.522e-006  1.799e-007
      0.75  1.081e-002  1.081e-002  1.081e-002  1.077e-002  1.046e-
002  1.003e-002  9.102e-003  5.496e-003  3.028e-003  1.670e-003
9.455e-004  3.327e-004  8.542e-005  2.857e-006  2.459e-007
         1  1.081e-002  1.081e-002  1.080e-002  1.075e-002  1.028e-
002  9.685e-003  8.518e-003  4.697e-003  2.437e-003  1.290e-003
7.083e-004  2.382e-004  5.826e-005  1.741e-006  1.378e-007
         2  1.081e-002  1.081e-002  1.075e-002  1.049e-002  8.801e-
003  7.420e-003  5.566e-003  2.092e-003  8.628e-004  3.930e-004
1.941e-004  5.689e-005  1.241e-005  3.274e-007  2.559e-008
         3  1.081e-002  1.081e-002  1.062e-002  1.000e-002  7.183e-
003  5.500e-003  3.656e-003  1.047e-003  3.635e-004  1.462e-004
```

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6.548e-005  1.656e-005  3.095e-006  6.106e-008  4.064e-009
         4  1.081e-002  1.081e-002  1.041e-002  9.335e-003  5.691e-
003  3.976e-003  2.360e-003  5.222e-004  1.532e-004  5.426e-005
2.197e-005  4.747e-006  7.463e-007  1.038e-008  5.587e-010


Source: San Cayetano
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.682e-
003  4.537e-003  4.135e-003  2.356e-003  1.178e-003  5.866e-004
3.007e-004  8.786e-005  1.760e-005  3.056e-007  1.593e-008
      0.05  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.697e-
003  4.588e-003  4.257e-003  2.608e-003  1.387e-003  7.265e-004
3.880e-004  1.210e-004  2.606e-005  5.238e-007  2.983e-008
       0.1  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.725e-
003  4.689e-003  4.550e-003  3.485e-003  2.309e-003  1.459e-003
9.149e-004  3.710e-004  1.078e-004  4.090e-006  3.469e-007
       0.2  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.733e-
003  4.728e-003  4.697e-003  4.251e-003  3.428e-003  2.586e-003
1.890e-003  9.809e-004  3.749e-004  2.435e-005  2.808e-006
       0.3  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.733e-
003  4.728e-003  4.701e-003  4.302e-003  3.544e-003  2.742e-003
2.056e-003  1.122e-003  4.582e-004  3.521e-005  4.584e-006
       0.4  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.733e-
003  4.728e-003  4.698e-003  4.273e-003  3.483e-003  2.663e-003
1.974e-003  1.054e-003  4.187e-004  3.002e-005  3.720e-006
       0.5  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.725e-003  4.688e-003  4.213e-003  3.394e-003  2.576e-003
1.903e-003  1.016e-003  4.073e-004  3.074e-005  4.013e-006
      0.75  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.726e-
003  4.700e-003  4.601e-003  3.804e-003  2.808e-003  1.986e-003
1.388e-003  6.865e-004  2.575e-004  1.819e-005  2.392e-006
         1  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.709e-
003  4.639e-003  4.426e-003  3.214e-003  2.085e-003  1.319e-003
8.391e-004  3.563e-004  1.127e-004  5.639e-006  6.036e-007
         2  4.734e-003  4.734e-003  4.732e-003  4.696e-003  4.141e-
```

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003  3.564e-003  2.723e-003  1.041e-003  4.294e-004  1.949e-004
9.587e-005  2.789e-005  6.034e-006  1.571e-007  1.221e-008
         3  4.734e-003  4.734e-003  4.712e-003  4.504e-003  3.116e-
003  2.269e-003  1.394e-003  3.214e-004  9.543e-005  3.400e-005
1.381e-005  2.994e-006  4.718e-007  6.563e-009  3.515e-010
         4  4.734e-003  4.734e-003  4.646e-003  4.146e-003  2.220e-
003  1.407e-003  7.333e-004  1.183e-004  2.808e-005  8.504e-006
3.039e-006  5.422e-007  6.935e-008  6.413e-010  2.704e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.734e-003  4.734e-003  4.734e-003  4.732e-003  4.609e-
003  4.336e-003  3.709e-003  1.683e-003  6.997e-004  3.010e-004
1.368e-004  3.306e-005  5.369e-006  6.092e-008  2.458e-009
      0.05  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.667e-
003  4.492e-003  4.028e-003  2.151e-003  1.016e-003  4.828e-004
2.379e-004  6.522e-005  1.216e-005  1.815e-007  8.618e-009
       0.1  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.723e-
003  4.679e-003  4.512e-003  3.308e-003  2.074e-003  1.243e-003
7.423e-004  2.761e-004  7.207e-005  2.124e-006  1.516e-007
       0.2  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.731e-
003  4.720e-003  4.660e-003  3.985e-003  2.972e-003  2.077e-003
1.417e-003  6.553e-004  2.189e-004  1.071e-005  1.039e-006
       0.3  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.720e-003  4.664e-003  4.008e-003  3.009e-003  2.117e-003
1.452e-003  6.780e-004  2.291e-004  1.148e-005  1.131e-006
       0.4  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.722e-003  4.669e-003  3.999e-003  2.954e-003  2.030e-003
1.356e-003  5.985e-004  1.864e-004  7.456e-006  6.168e-007
       0.5  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.724e-003  4.676e-003  4.008e-003  2.930e-003  1.977e-003
1.292e-003  5.435e-004  1.575e-004  5.135e-006  3.617e-007
      0.75  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.726e-
003  4.694e-003  4.562e-003  3.492e-003  2.286e-003  1.420e-003
8.731e-004  3.398e-004  9.306e-005  2.991e-006  2.230e-007
         1  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.708e-
003  4.628e-003  4.376e-003  2.962e-003  1.752e-003  1.010e-003
5.881e-004  2.127e-004  5.481e-005  1.662e-006  1.248e-007
         2  4.734e-003  4.734e-003  4.733e-003  4.714e-003  4.294e-
```

```
003  3.785e-003  2.975e-003  1.192e-003  4.969e-004  2.247e-004
1.093e-004  3.085e-005  6.321e-006  1.380e-007  9.230e-009
         3  4.734e-003  4.734e-003  4.725e-003  4.612e-003  3.543e-
003  2.744e-003  1.814e-003  4.813e-004  1.529e-004  5.648e-005
2.340e-005  5.151e-006  8.068e-007  1.033e-008  5.036e-010
         4  4.734e-003  4.734e-003  4.705e-003  4.443e-003  2.883e-
003  2.013e-003  1.168e-003  2.303e-004  6.039e-005  1.936e-005
7.171e-006  1.329e-006  1.729e-007  1.538e-009  6.050e-011
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.634e-
003  4.410e-003  3.876e-003  1.965e-003  9.046e-004  4.247e-004
2.082e-004  5.702e-005  1.072e-005  1.668e-007  8.230e-009
      0.05  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.685e-
003  4.553e-003  4.184e-003  2.497e-003  1.313e-003  6.849e-004
3.659e-004  1.148e-004  2.504e-005  5.259e-007  3.103e-008
       0.1  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.725e-
003  4.691e-003  4.559e-003  3.528e-003  2.364e-003  1.508e-003
9.538e-004  3.917e-004  1.153e-004  4.444e-006  3.778e-007
       0.2  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.721e-003  4.670e-003  4.074e-003  3.140e-003  2.277e-003
1.610e-003  7.949e-004  2.889e-004  1.728e-005  1.921e-006
       0.3  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.731e-
003  4.720e-003  4.664e-003  4.039e-003  3.089e-003  2.224e-003
1.564e-003  7.655e-004  2.758e-004  1.626e-005  1.794e-006
       0.4  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.731e-
003  4.720e-003  4.662e-003  3.994e-003  2.985e-003  2.089e-003
1.425e-003  6.576e-004  2.181e-004  1.029e-005  9.586e-007
       0.5  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.731e-
003  4.718e-003  4.651e-003  3.896e-003  2.803e-003  1.880e-003
1.230e-003  5.236e-004  1.560e-004  5.595e-006  4.259e-007
      0.75  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.723e-
003  4.681e-003  4.525e-003  3.380e-003  2.161e-003  1.313e-003
7.902e-004  2.953e-004  7.637e-005  2.083e-006  1.359e-007
         1  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.696e-
003  4.597e-003  4.311e-003  2.853e-003  1.662e-003  9.464e-004
5.443e-004  1.921e-004  4.762e-005  1.278e-006  8.619e-008
         2  4.734e-003  4.734e-003  4.731e-003  4.685e-003  4.038e-
```

```
003  3.407e-003  2.527e-003  8.840e-004  3.379e-004  1.435e-004
6.646e-005  1.740e-005  3.297e-006  6.208e-008  3.823e-009
         3  4.734e-003  4.734e-003  4.698e-003  4.433e-003  2.968e-
003  2.140e-003  1.309e-003  3.035e-004  9.125e-005  3.292e-005
1.352e-005  2.990e-006  4.828e-007  7.104e-009  3.953e-010
         4  4.734e-003  4.734e-003  4.583e-003  3.963e-003  2.042e-
003  1.297e-003  6.870e-004  1.203e-004  3.098e-005  1.009e-005
3.847e-006  7.683e-007  1.129e-007  1.447e-009  7.652e-011
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.642e-
003  4.428e-003  3.907e-003  2.001e-003  9.273e-004  4.374e-004
2.152e-004  5.931e-005  1.123e-005  1.778e-007  8.874e-009
      0.05  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.683e-
003  4.544e-003  4.156e-003  2.419e-003  1.239e-003  6.314e-004
3.306e-004  1.003e-004  2.108e-005  4.104e-007  2.316e-008
       0.1  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.724e-
003  4.686e-003  4.540e-003  3.440e-003  2.249e-003  1.403e-003
8.704e-004  3.463e-004  9.839e-005  3.553e-006  2.921e-007
       0.2  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.723e-003  4.676e-003  4.103e-003  3.180e-003  2.313e-003
1.639e-003  8.104e-004  2.942e-004  1.745e-005  1.922e-006
       0.3  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.723e-003  4.676e-003  4.117e-003  3.214e-003  2.361e-003
1.691e-003  8.551e-004  3.210e-004  2.098e-005  2.503e-006
       0.4  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.723e-003  4.676e-003  4.089e-003  3.141e-003  2.261e-003
1.585e-003  7.701e-004  2.744e-004  1.592e-005  1.765e-006
       0.5  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.732e-
003  4.722e-003  4.672e-003  4.039e-003  3.042e-003  2.145e-003
1.475e-003  6.944e-004  2.403e-004  1.382e-005  1.600e-006
      0.75  4.734e-003  4.734e-003  4.734e-003  4.734e-003  4.725e-
003  4.692e-003  4.562e-003  3.558e-003  2.419e-003  1.573e-003
1.017e-003  4.405e-004  1.423e-004  7.755e-006  9.170e-007
         1  4.734e-003  4.734e-003  4.734e-003  4.733e-003  4.704e-
003  4.621e-003  4.371e-003  3.010e-003  1.833e-003  1.092e-003
6.572e-004  2.537e-004  7.171e-005  2.860e-006  2.715e-007
         2  4.734e-003  4.734e-003  4.732e-003  4.699e-003  4.158e-
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003  3.585e-003  2.742e-003  1.039e-003  4.214e-004  1.877e-004
9.056e-005  2.538e-005  5.217e-006  1.191e-007  8.422e-009
         3  4.734e-003  4.734e-003  4.712e-003  4.516e-003  3.209e-
003  2.384e-003  1.506e-003  3.687e-004  1.132e-004  4.113e-005
1.691e-005  3.712e-006  5.871e-007  8.000e-009  4.168e-010
         4  4.734e-003  4.734e-003  4.645e-003  4.184e-003  2.382e-
003  1.572e-003  8.628e-004  1.563e-004  3.982e-005  1.265e-005
4.686e-006  8.797e-007  1.184e-007  1.209e-009  5.469e-011


Source: San Gabriel
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.383e-004  7.383e-004  7.383e-004  7.377e-004  7.039e-
004  6.424e-004  5.211e-004  2.028e-004  7.586e-005  3.022e-005
1.294e-005  2.861e-006  4.238e-007  4.057e-009  1.489e-010
      0.05  7.383e-004  7.383e-004  7.383e-004  7.379e-004  7.104e-
004  6.569e-004  5.453e-004  2.278e-004  8.982e-005  3.728e-005
1.650e-005  3.847e-006  6.040e-007  6.514e-009  2.572e-010
       0.1  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.276e-
004  7.010e-004  6.316e-004  3.496e-004  1.727e-004  8.585e-005
4.412e-005  1.305e-005  2.676e-006  5.045e-008  2.823e-009
       0.2  7.383e-004  7.383e-004  7.383e-004  7.383e-004  7.365e-
004  7.294e-004  7.027e-004  5.128e-004  3.203e-004  1.914e-004
1.140e-004  4.226e-005  1.100e-005  3.222e-007  2.291e-008
       0.3  7.383e-004  7.383e-004  7.383e-004  7.383e-004  7.365e-
004  7.297e-004  7.045e-004  5.242e-004  3.367e-004  2.071e-004
1.269e-004  4.954e-005  1.378e-005  4.764e-007  3.813e-008
       0.4  7.383e-004  7.383e-004  7.383e-004  7.383e-004  7.365e-
004  7.298e-004  7.048e-004  5.240e-004  3.356e-004  2.056e-004
1.254e-004  4.850e-005  1.331e-005  4.427e-007  3.436e-008
       0.5  7.383e-004  7.383e-004  7.383e-004  7.383e-004  7.359e-
004  7.277e-004  6.990e-004  5.110e-004  3.250e-004  1.992e-004
1.221e-004  4.792e-005  1.352e-005  4.925e-007  4.128e-008
      0.75  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.295e-
004  7.087e-004  6.545e-004  4.147e-004  2.378e-004  1.359e-004
7.930e-005  2.933e-005  7.946e-006  2.889e-007  2.545e-008
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         1  7.383e-004  7.383e-004  7.383e-004  7.379e-004  7.189e-
004  6.822e-004  6.015e-004  3.253e-004  1.646e-004  8.535e-005
4.605e-005  1.508e-005  3.579e-006  1.005e-007  7.620e-009
         2  7.383e-004  7.383e-004  7.373e-004  7.239e-004  5.835e-
004  4.688e-004  3.265e-004  1.000e-004  3.567e-005  1.455e-005
6.578e-006  1.683e-006  3.172e-007  6.313e-009  4.192e-010
         3  7.383e-004  7.383e-004  7.307e-004  6.762e-004  4.108e-
004  2.787e-004  1.577e-004  3.057e-005  8.178e-006  2.705e-006
1.037e-006  2.060e-007  2.961e-008  3.443e-010  1.661e-011
         4  7.383e-004  7.383e-004  7.160e-004  6.129e-004  2.914e-
004  1.747e-004  8.545e-005  1.213e-005  2.670e-006  7.662e-007
2.626e-007  4.401e-008  5.268e-009  4.284e-011  1.676e-012
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.383e-004  7.383e-004  7.381e-004  7.315e-004  5.921e-
004  4.545e-004  2.838e-004  5.558e-005  1.297e-005  3.629e-006
1.172e-006  1.679e-007  1.555e-008  5.878e-011  1.244e-012
      0.05  7.383e-004  7.383e-004  7.382e-004  7.348e-004  6.363e-
004  5.190e-004  3.526e-004  8.472e-005  2.260e-005  6.976e-006
2.435e-006  3.926e-007  4.129e-008  2.001e-010  4.905e-012
       0.1  7.383e-004  7.383e-004  7.383e-004  7.377e-004  7.019e-
004  6.372e-004  5.112e-004  1.911e-004  6.899e-005  2.669e-005
1.115e-005  2.366e-006  3.344e-007  2.898e-009  1.000e-010
       0.2  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.283e-
004  7.020e-004  6.320e-004  3.439e-004  1.656e-004  8.010e-005
4.009e-005  1.129e-005  2.174e-006  3.496e-008  1.745e-009
       0.3  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.305e-
004  7.089e-004  6.480e-004  3.747e-004  1.901e-004  9.599e-005
4.980e-005  1.486e-005  3.051e-006  5.615e-008  3.045e-009
       0.4  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.309e-
004  7.088e-004  6.452e-004  3.590e-004  1.730e-004  8.289e-005
4.090e-005  1.114e-005  2.033e-006  2.789e-008  1.224e-009
       0.5  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.305e-
004  7.078e-004  6.426e-004  3.536e-004  1.684e-004  7.980e-005
3.895e-005  1.039e-005  1.844e-006  2.341e-008  9.658e-010
      0.75  7.383e-004  7.383e-004  7.383e-004  7.379e-004  7.152e-
004  6.699e-004  5.724e-004  2.683e-004  1.176e-004  5.348e-005
2.562e-005  6.811e-006  1.247e-006  1.871e-008  9.109e-010
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         1  7.383e-004  7.383e-004  7.382e-004  7.370e-004  6.895e-
004  6.192e-004  4.953e-004  1.974e-004  7.878e-005  3.375e-005
1.553e-005  3.923e-006  6.910e-007  1.010e-008  4.988e-010
         2  7.383e-004  7.383e-004  7.358e-004  7.071e-004  4.958e-
004  3.623e-004  2.229e-004  5.046e-005  1.453e-005  5.000e-006
1.960e-006  3.964e-007  5.671e-008  6.075e-010  2.662e-011
         3  7.383e-004  7.383e-004  7.242e-004  6.399e-004  3.273e-
004  2.018e-004  1.013e-004  1.469e-005  3.186e-006  8.904e-007
2.960e-007  4.650e-008  5.071e-009  3.181e-011  1.017e-012
         4  7.383e-004  7.383e-004  7.032e-004  5.647e-004  2.230e-
004  1.214e-004  5.275e-005  5.614e-006  1.003e-006  2.434e-007
7.239e-008  9.599e-009  8.728e-010  3.836e-012  9.952e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.383e-004  7.383e-004  7.379e-004  7.271e-004  5.641e-
004  4.245e-004  2.616e-004  5.216e-005  1.267e-005  3.693e-006
1.239e-006  1.896e-007  1.902e-008  8.597e-011  2.044e-012
      0.05  7.383e-004  7.383e-004  7.381e-004  7.326e-004  6.167e-
004  4.959e-004  3.345e-004  8.294e-005  2.329e-005  7.560e-006
2.764e-006  4.829e-007  5.596e-008  3.367e-010  9.488e-012
       0.1  7.383e-004  7.383e-004  7.383e-004  7.374e-004  6.981e-
004  6.333e-004  5.121e-004  2.046e-004  8.001e-005  3.336e-005
1.491e-005  3.556e-006  5.786e-007  6.859e-009  2.898e-010
       0.2  7.383e-004  7.383e-004  7.383e-004  7.381e-004  7.249e-
004  6.944e-004  6.202e-004  3.388e-004  1.681e-004  8.439e-005
4.388e-005  1.329e-005  2.811e-006  5.666e-008  3.295e-009
       0.3  7.383e-004  7.383e-004  7.383e-004  7.381e-004  7.242e-
004  6.927e-004  6.168e-004  3.340e-004  1.648e-004  8.245e-005
4.276e-005  1.290e-005  2.721e-006  5.460e-008  3.168e-009
       0.4  7.383e-004  7.383e-004  7.383e-004  7.381e-004  7.234e-
004  6.894e-004  6.075e-004  3.114e-004  1.446e-004  6.830e-005
3.357e-005  9.195e-006  1.713e-006  2.533e-008  1.180e-009
       0.5  7.383e-004  7.383e-004  7.383e-004  7.380e-004  7.188e-
004  6.784e-004  5.865e-004  2.791e-004  1.202e-004  5.286e-005
2.431e-005  5.909e-006  9.456e-007  9.646e-009  3.459e-010
      0.75  7.383e-004  7.383e-004  7.382e-004  7.370e-004  6.911e-
004  6.219e-004  4.978e-004  1.935e-004  7.358e-005  2.978e-005
1.292e-005  2.907e-006  4.358e-007  4.132e-009  1.469e-010
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         1  7.383e-004  7.383e-004  7.381e-004  7.345e-004  6.546e-
004  5.618e-004  4.211e-004  1.422e-004  5.044e-005  1.971e-005
8.395e-006  1.873e-006  2.856e-007  3.047e-009  1.226e-010
         2  7.383e-004  7.383e-004  7.318e-004  6.814e-004  4.208e-
004  2.867e-004  1.621e-004  3.056e-005  7.855e-006  2.494e-006
9.186e-007  1.696e-007  2.211e-008  2.007e-010  8.075e-012
         3  7.383e-004  7.383e-004  7.015e-004  5.700e-004  2.422e-
004  1.388e-004  6.479e-005  8.446e-006  1.776e-006  4.941e-007
1.656e-007  2.685e-008  3.110e-009  2.388e-011  9.071e-013
         4  7.383e-004  7.382e-004  6.410e-004  4.428e-004  1.367e-
004  6.877e-005  2.798e-005  2.833e-006  5.220e-007  1.335e-007
4.212e-008  6.309e-009  6.817e-010  4.787e-012  1.777e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.383e-004  7.383e-004  7.381e-004  7.321e-004  6.201e-
004  5.071e-004  3.555e-004  1.035e-004  3.383e-005  1.251e-005
5.116e-006  1.073e-006  1.528e-007  1.401e-009  5.074e-011
      0.05  7.383e-004  7.383e-004  7.382e-004  7.351e-004  6.545e-
004  5.573e-004  4.108e-004  1.318e-004  4.524e-005  1.727e-005
7.234e-006  1.574e-006  2.338e-007  2.350e-009  9.054e-011
       0.1  7.383e-004  7.383e-004  7.383e-004  7.378e-004  7.092e-
004  6.572e-004  5.516e-004  2.484e-004  1.072e-004  4.863e-005
2.339e-005  6.323e-006  1.197e-006  2.007e-008  1.071e-009
       0.2  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.299e-
004  7.086e-004  6.516e-004  3.985e-004  2.180e-004  1.186e-004
6.600e-005  2.228e-005  5.327e-006  1.379e-007  9.318e-009
       0.3  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.304e-
004  7.104e-004  6.564e-004  4.110e-004  2.306e-004  1.285e-004
7.316e-005  2.576e-005  6.518e-006  1.957e-007  1.478e-008
       0.4  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.303e-
004  7.094e-004  6.525e-004  3.981e-004  2.178e-004  1.189e-004
6.663e-005  2.294e-005  5.685e-006  1.653e-007  1.226e-008
       0.5  7.383e-004  7.383e-004  7.383e-004  7.382e-004  7.284e-
004  7.046e-004  6.427e-004  3.812e-004  2.046e-004  1.106e-004
6.178e-005  2.141e-005  5.437e-006  1.752e-007  1.420e-008
      0.75  7.383e-004  7.383e-004  7.383e-004  7.377e-004  7.119e-
004  6.669e-004  5.749e-004  2.922e-004  1.430e-004  7.304e-005
3.928e-005  1.302e-005  3.209e-006  1.039e-007  8.835e-009
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         1  7.383e-004  7.383e-004  7.382e-004  7.365e-004  6.877e-
004  6.211e-004  5.059e-004  2.216e-004  9.795e-005  4.627e-005
2.332e-005  6.957e-006  1.519e-006  3.789e-008  2.747e-009
         2  7.383e-004  7.383e-004  7.350e-004  7.041e-004  5.000e-
004  3.726e-004  2.371e-004  6.034e-005  1.935e-005  7.347e-006
3.152e-006  7.496e-007  1.320e-007  2.374e-009  1.513e-010
         3  7.383e-004  7.383e-004  7.188e-004  6.287e-004  3.268e-
004  2.064e-004  1.079e-004  1.790e-005  4.380e-006  1.363e-006
4.994e-007  9.313e-008  1.260e-008  1.333e-010  6.177e-012
         4  7.383e-004  7.383e-004  6.868e-004  5.401e-004  2.170e-
004  1.216e-004  5.540e-005  6.859e-006  1.398e-006  3.810e-007
1.257e-007  1.997e-008  2.274e-009  1.715e-011  6.510e-013


Source: Santa Cruz Island
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.209e-
004  7.874e-004  7.033e-004  3.769e-004  1.809e-004  8.758e-005
4.395e-005  1.246e-005  2.424e-006  4.001e-008  2.031e-009
      0.05  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.246e-
004  7.981e-004  7.270e-004  4.194e-004  2.141e-004  1.090e-004
5.699e-005  1.726e-005  3.611e-006  6.919e-008  3.846e-009
       0.1  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.319e-
004  8.220e-004  7.886e-004  5.742e-004  3.646e-004  2.232e-004
1.366e-004  5.347e-005  1.501e-005  5.368e-007  4.417e-008
       0.2  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.345e-
004  8.326e-004  8.233e-004  7.173e-004  5.519e-004  3.991e-004
2.813e-004  1.380e-004  4.957e-005  2.863e-006  3.090e-007
       0.3  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.345e-
004  8.324e-004  8.225e-004  7.152e-004  5.515e-004  4.011e-004
2.850e-004  1.424e-004  5.267e-005  3.322e-006  3.852e-007
       0.4  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.345e-
004  8.323e-004  8.221e-004  7.131e-004  5.479e-004  3.968e-004
2.807e-004  1.390e-004  5.077e-005  3.087e-006  3.475e-007
       0.5  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.342e-
004  8.312e-004  8.184e-004  6.969e-004  5.269e-004  3.777e-004
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2.656e-004 1.310e-004 4.812e-005 3.053e-006 3.600e-007
      0.75 8.349e-004 8.349e-004 8.349e-004 8.349e-004 8.314e-
004 8.213e-004 7.900e-004 6.001e-004 4.085e-004 2.700e-004
1.784e-004 8.074e-005 2.748e-005 1.602e-006 1.882e-007
         1 8.349e-004 8.349e-004 8.349e-004 8.348e-004 8.261e-
004 8.058e-004 7.524e-004 5.042e-004 3.065e-004 1.845e-004
1.128e-004 4.506e-005 1.336e-005 5.906e-007 5.886e-008
         2 8.349e-004 8.349e-004 8.345e-004 8.278e-004 7.313e-
004 6.329e-004 4.892e-004 1.952e-004 8.347e-005 3.904e-005
1.970e-005 5.976e-006 1.355e-006 3.897e-008 3.220e-009
         3 8.349e-004 8.349e-004 8.313e-004 7.976e-004 5.711e-
004 4.275e-004 2.732e-004 6.970e-005 2.224e-005 8.378e-006
3.560e-006 8.290e-007 1.414e-007 2.312e-009 1.368e-010
         4 8.349e-004 8.349e-004 8.227e-004 7.501e-004 4.412e-
004 2.961e-004 1.659e-004 3.168e-005 8.414e-006 2.771e-006
1.059e-006 2.097e-007 3.008e-008 3.503e-010 1.699e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period Amp=0.0001 Amp=0.001   Amp=0.01   Amp=0.02   Amp=
0.05   Amp=0.07   Amp=0.1   Amp=0.2   Amp=0.3   Amp=0.4
Amp=0.5   Amp=0.7   Amp=1   Amp=2   Amp=3
       PGA 8.349e-004 8.349e-004 8.349e-004 8.336e-004 7.834e-
004 7.057e-004 5.643e-004 2.168e-004 8.152e-005 3.276e-005
1.415e-005 3.182e-006 4.807e-007 4.794e-009 1.803e-010
      0.05 8.349e-004 8.349e-004 8.349e-004 8.343e-004 8.042e-
004 7.489e-004 6.345e-004 2.902e-004 1.242e-004 5.520e-005
2.587e-005 6.600e-006 1.145e-006 1.506e-008 6.676e-010
       0.1 8.349e-004 8.349e-004 8.349e-004 8.348e-004 8.276e-
004 8.085e-004 7.544e-004 4.878e-004 2.777e-004 1.550e-004
8.768e-005 3.012e-005 7.256e-006 1.851e-007 1.221e-008
       0.2 8.349e-004 8.349e-004 8.349e-004 8.349e-004 8.331e-
004 8.266e-004 8.030e-004 6.282e-004 4.301e-004 2.808e-004
1.815e-004 7.735e-005 2.378e-005 1.002e-006 8.961e-008
       0.3 8.349e-004 8.349e-004 8.349e-004 8.349e-004 8.333e-
004 8.273e-004 8.050e-004 6.350e-004 4.383e-004 2.883e-004
1.875e-004 8.077e-005 2.515e-005 1.090e-006 9.925e-008
       0.4 8.349e-004 8.349e-004 8.349e-004 8.349e-004 8.334e-
004 8.275e-004 8.047e-004 6.268e-004 4.223e-004 2.698e-004
1.702e-004 6.904e-005 1.975e-005 6.810e-007 5.209e-008
       0.5 8.349e-004 8.349e-004 8.349e-004 8.349e-004 8.333e-
004 8.272e-004 8.038e-004 6.214e-004 4.126e-004 2.587e-004

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1.598e-004  6.201e-005  1.662e-005  4.748e-007  3.129e-008
      0.75  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.282e-
004  8.108e-004  7.622e-004  5.150e-004  3.081e-004  1.799e-004
1.059e-004  3.882e-005  1.007e-005  2.981e-007  2.141e-008
         1  8.349e-004  8.349e-004  8.349e-004  8.346e-004  8.178e-
004  7.847e-004  7.090e-004  4.211e-004  2.298e-004  1.258e-004
7.067e-005  2.437e-005  6.011e-006  1.701e-007  1.234e-008
         2  8.349e-004  8.349e-004  8.342e-004  8.235e-004  7.002e-
004  5.897e-004  4.396e-004  1.594e-004  6.306e-005  2.753e-005
1.305e-005  3.540e-006  6.965e-007  1.408e-008  9.012e-010
         3  8.349e-004  8.349e-004  8.301e-004  7.905e-004  5.528e-
004  4.093e-004  2.577e-004  6.232e-005  1.877e-005  6.682e-006
2.691e-006  5.678e-007  8.515e-008  1.007e-009  4.701e-011
         4  8.349e-004  8.349e-004  8.214e-004  7.447e-004  4.333e-
004  2.889e-004  1.598e-004  2.875e-005  7.152e-006  2.210e-006
7.960e-007  1.415e-007  1.766e-008  1.457e-010  5.502e-012
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.349e-004  8.349e-004  8.348e-004  8.327e-004  7.747e-
004  6.969e-004  5.627e-004  2.318e-004  9.378e-005  4.017e-005
1.834e-005  4.515e-006  7.574e-007  9.439e-009  4.082e-010
      0.05  8.349e-004  8.349e-004  8.349e-004  8.339e-004  7.988e-
004  7.436e-004  6.359e-004  3.127e-004  1.450e-004  6.914e-005
3.447e-005  9.744e-006  1.904e-006  3.225e-008  1.676e-009
       0.1  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.255e-
004  8.045e-004  7.504e-004  5.000e-004  2.989e-004  1.753e-004
1.038e-004  3.866e-005  1.027e-005  3.255e-007  2.468e-008
       0.2  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.320e-
004  8.234e-004  7.960e-004  6.208e-004  4.320e-004  2.889e-004
1.916e-004  8.592e-005  2.822e-005  1.393e-006  1.385e-007
       0.3  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.316e-
004  8.222e-004  7.929e-004  6.112e-004  4.209e-004  2.791e-004
1.839e-004  8.157e-005  2.650e-005  1.281e-006  1.259e-007
       0.4  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.314e-
004  8.212e-004  7.893e-004  5.943e-004  3.963e-004  2.539e-004
1.615e-004  6.702e-005  1.987e-005  7.537e-007  6.174e-008
       0.5  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.302e-
004  8.176e-004  7.804e-004  5.665e-004  3.608e-004  2.204e-004
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1.338e-004  5.082e-005  1.340e-005  3.778e-007  2.491e-008
      0.75  8.349e-004  8.349e-004  8.349e-004  8.347e-004  8.211e-
004  7.943e-004  7.309e-004  4.627e-004  2.615e-004  1.448e-004
8.095e-005  2.699e-005  6.171e-006  1.315e-007  7.407e-009
         1  8.349e-004  8.349e-004  8.349e-004  8.340e-004  8.060e-
004  7.622e-004  6.742e-004  3.788e-004  1.977e-004  1.040e-004
5.627e-005  1.812e-005  4.082e-006  9.154e-008  5.587e-009
         2  8.349e-004  8.349e-004  8.331e-004  8.140e-004  6.586e-
004  5.388e-004  3.877e-004  1.300e-004  4.892e-005  2.060e-005
9.492e-006  2.469e-006  4.653e-007  8.698e-009  5.344e-010
         3  8.349e-004  8.349e-004  8.214e-004  7.539e-004  4.789e-
004  3.410e-004  2.071e-004  4.825e-005  1.466e-005  5.338e-006
2.211e-006  4.961e-007  8.144e-008  1.243e-009  7.083e-011
         4  8.349e-004  8.349e-004  7.913e-004  6.615e-004  3.283e-
004  2.075e-004  1.101e-004  1.957e-005  5.112e-006  1.684e-006
6.489e-007  1.318e-007  1.973e-008  2.637e-010  1.432e-011
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.349e-004  8.349e-004  8.349e-004  8.337e-004  7.930e-
004  7.300e-004  6.101e-004  2.752e-004  1.187e-004  5.351e-005
2.548e-005  6.720e-006  1.221e-006  1.808e-008  8.733e-010
      0.05  8.349e-004  8.349e-004  8.349e-004  8.344e-004  8.092e-
004  7.635e-004  6.658e-004  3.408e-004  1.611e-004  7.777e-005
3.911e-005  1.120e-005  2.220e-006  3.883e-008  2.063e-009
       0.1  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.284e-
004  8.117e-004  7.645e-004  5.207e-004  3.137e-004  1.845e-004
1.094e-004  4.075e-005  1.085e-005  3.491e-007  2.702e-008
       0.2  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.332e-
004  8.275e-004  8.075e-004  6.554e-004  4.713e-004  3.229e-004
2.181e-004  1.004e-004  3.386e-005  1.753e-006  1.790e-007
       0.3  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.331e-
004  8.273e-004  8.068e-004  6.538e-004  4.702e-004  3.228e-004
2.188e-004  1.016e-004  3.477e-005  1.898e-006  2.034e-007
       0.4  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.331e-
004  8.270e-004  8.054e-004  6.447e-004  4.555e-004  3.068e-004
2.041e-004  9.168e-005  3.013e-005  1.507e-006  1.538e-007
       0.5  8.349e-004  8.349e-004  8.349e-004  8.349e-004  8.326e-
004  8.253e-004  8.009e-004  6.283e-004  4.334e-004  2.856e-004
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1.864e-004  8.128e-005  2.605e-005  1.302e-006  1.387e-007
      0.75  8.349e-004  8.349e-004  8.349e-004  8.348e-004  8.269e-
004  8.088e-004  7.610e-004  5.259e-004  3.261e-004  1.982e-004
1.218e-004  4.885e-005  1.457e-005  6.773e-007  7.233e-008
         1  8.349e-004  8.349e-004  8.349e-004  8.345e-004  8.166e-
004  7.842e-004  7.119e-004  4.347e-004  2.447e-004  1.381e-004
7.991e-005  2.918e-005  7.819e-006  2.841e-007  2.559e-008
         2  8.349e-004  8.349e-004  8.339e-004  8.218e-004  6.967e-
004  5.872e-004  4.388e-004  1.615e-004  6.515e-005  2.906e-005
1.408e-005  3.995e-006  8.390e-007  2.058e-008  1.552e-009
         3  8.349e-004  8.349e-004  8.276e-004  7.807e-004  5.343e-
004  3.926e-004  2.460e-004  6.009e-005  1.856e-005  6.800e-006
2.821e-006  6.310e-007  1.027e-007  1.521e-009  8.486e-011
         4  8.349e-004  8.349e-004  8.118e-004  7.187e-004  4.009e-
004  2.642e-004  1.453e-004  2.667e-005  6.892e-006  2.222e-006
8.346e-007  1.610e-007  2.249e-008  2.532e-010  1.227e-011


Source: Santa Monica
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.323e-
003  1.240e-003  1.077e-003  5.842e-004  3.053e-004  1.630e-004
8.988e-005  3.007e-005  7.126e-006  1.795e-007  1.182e-008
      0.05  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.336e-
003  1.266e-003  1.122e-003  6.511e-004  3.620e-004  2.041e-004
1.180e-004  4.274e-005  1.110e-005  3.381e-007  2.500e-008
       0.1  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.361e-
003  1.329e-003  1.246e-003  8.810e-004  5.838e-004  3.846e-004
2.556e-004  1.174e-004  4.057e-005  2.324e-006  2.579e-007
       0.2  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.372e-
003  1.363e-003  1.332e-003  1.114e-003  8.594e-004  6.455e-004
4.812e-004  2.685e-004  1.165e-004  1.078e-005  1.593e-006
       0.3  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.372e-
003  1.363e-003  1.333e-003  1.126e-003  8.838e-004  6.777e-004
5.165e-004  3.011e-004  1.390e-004  1.511e-005  2.515e-006
       0.4  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.371e-
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003  1.361e-003  1.327e-003  1.106e-003  8.605e-004  6.562e-004
4.979e-004  2.881e-004  1.314e-004  1.376e-005  2.217e-006
       0.5  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.370e-
003  1.357e-003  1.316e-003  1.081e-003  8.338e-004  6.334e-004
4.802e-004  2.785e-004  1.282e-004  1.405e-005  2.371e-006
      0.75  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.357e-
003  1.325e-003  1.249e-003  9.391e-004  6.839e-004  4.990e-004
3.669e-004  2.038e-004  9.036e-005  9.621e-006  1.659e-006
         1  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.337e-
003  1.280e-003  1.167e-003  7.909e-004  5.279e-004  3.567e-004
2.447e-004  1.207e-004  4.635e-005  3.617e-006  5.142e-007
         2  1.374e-003  1.374e-003  1.371e-003  1.341e-003  1.103e-
003  9.298e-004  7.138e-004  3.133e-004  1.522e-004  8.004e-005
4.475e-005  1.607e-005  4.417e-006  1.888e-007  1.981e-008
         3  1.374e-003  1.374e-003  1.353e-003  1.241e-003  8.149e-
004  6.140e-004  4.139e-004  1.347e-004  5.284e-005  2.345e-005
1.139e-005  3.268e-006  6.989e-007  1.783e-008  1.367e-009
         4  1.374e-003  1.374e-003  1.311e-003  1.107e-003  6.054e-
004  4.197e-004  2.548e-004  6.354e-005  2.060e-005  7.892e-006
3.405e-006  8.122e-007  1.422e-007  2.440e-009  1.482e-010
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.374e-003  1.374e-003  1.374e-003  1.365e-003  1.212e-
003  1.064e-003  8.625e-004  4.326e-004  2.214e-004  1.163e-004
6.304e-005  2.041e-005  4.637e-006  1.062e-007  6.595e-009
      0.05  1.374e-003  1.374e-003  1.374e-003  1.370e-003  1.261e-
003  1.137e-003  9.508e-004  5.154e-004  2.830e-004  1.582e-004
9.047e-005  3.198e-005  8.019e-006  2.244e-007  1.572e-008
       0.1  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.335e-
003  1.269e-003  1.141e-003  7.483e-004  4.884e-004  3.204e-004
2.116e-004  9.536e-005  3.168e-005  1.597e-006  1.599e-007
       0.2  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.362e-
003  1.333e-003  1.260e-003  9.425e-004  6.823e-004  4.935e-004
3.579e-004  1.907e-004  7.794e-005  6.200e-006  8.265e-007
       0.3  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.364e-
003  1.338e-003  1.269e-003  9.616e-004  7.023e-004  5.122e-004
3.745e-004  2.028e-004  8.469e-005  7.102e-006  9.811e-007
       0.4  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.363e-
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003  1.335e-003  1.261e-003  9.431e-004  6.863e-004  4.999e-004
3.645e-004  1.950e-004  7.912e-005  5.918e-006  7.357e-007
       0.5  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.361e-
003  1.329e-003  1.249e-003  9.268e-004  6.787e-004  4.986e-004
3.657e-004  1.963e-004  7.901e-005  5.539e-006  6.408e-007
      0.75  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.334e-
003  1.269e-003  1.148e-003  7.950e-004  5.633e-004  4.023e-004
2.877e-004  1.484e-004  5.754e-005  3.920e-006  4.621e-007
         1  1.374e-003  1.374e-003  1.374e-003  1.371e-003  1.290e-
003  1.193e-003  1.043e-003  6.825e-004  4.672e-004  3.236e-004
2.255e-004  1.120e-004  4.210e-005  2.846e-006  3.480e-007
         2  1.374e-003  1.374e-003  1.367e-003  1.305e-003  9.992e-
004  8.387e-004  6.668e-004  3.518e-004  1.970e-004  1.143e-004
6.859e-005  2.702e-005  8.020e-006  3.694e-007  3.856e-008
         3  1.374e-003  1.374e-003  1.335e-003  1.178e-003  7.668e-
004  6.054e-004  4.418e-004  1.730e-004  7.458e-005  3.489e-005
1.749e-005  5.172e-006  1.116e-006  2.690e-008  1.905e-009
         4  1.374e-003  1.374e-003  1.284e-003  1.055e-003  6.190e-
004  4.632e-004  3.104e-004  9.369e-005  3.320e-005  1.334e-005
5.916e-006  1.446e-006  2.535e-007  4.058e-009  2.259e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.374e-003  1.374e-003  1.373e-003  1.353e-003  1.140e-
003  9.906e-004  8.202e-004  4.897e-004  2.975e-004  1.802e-004
1.101e-004  4.318e-005  1.215e-005  4.291e-007  3.455e-008
      0.05  1.374e-003  1.374e-003  1.374e-003  1.363e-003  1.203e-
003  1.068e-003  9.022e-004  5.751e-004  3.801e-004  2.497e-004
1.641e-004  7.274e-005  2.357e-005  1.119e-006  1.079e-007
       0.1  1.374e-003  1.374e-003  1.374e-003  1.372e-003  1.309e-
003  1.225e-003  1.087e-003  7.517e-004  5.479e-004  4.022e-004
2.945e-004  1.582e-004  6.458e-005  5.045e-006  6.622e-007
       0.2  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.350e-
003  1.303e-003  1.207e-003  8.948e-004  6.841e-004  5.325e-004
4.158e-004  2.533e-004  1.218e-004  1.383e-005  2.305e-006
       0.3  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.348e-
003  1.299e-003  1.200e-003  8.845e-004  6.755e-004  5.261e-004
4.113e-004  2.512e-004  1.213e-004  1.392e-005  2.338e-006
       0.4  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.344e-
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003  1.290e-003  1.183e-003  8.596e-004  6.545e-004  5.083e-004
3.951e-004  2.368e-004  1.102e-004  1.107e-005  1.653e-006
       0.5  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.333e-
003  1.269e-003  1.151e-003  8.267e-004  6.267e-004  4.823e-004
3.698e-004  2.142e-004  9.406e-005  7.898e-006  1.017e-006
      0.75  1.374e-003  1.374e-003  1.374e-003  1.370e-003  1.286e-
003  1.190e-003  1.046e-003  7.229e-004  5.322e-004  3.930e-004
2.881e-004  1.531e-004  6.050e-005  4.075e-006  4.621e-007
         1  1.374e-003  1.374e-003  1.374e-003  1.364e-003  1.230e-
003  1.111e-003  9.556e-004  6.405e-004  4.541e-004  3.210e-004
2.254e-004  1.113e-004  4.042e-005  2.321e-006  2.424e-007
         2  1.374e-003  1.374e-003  1.356e-003  1.259e-003  9.101e-
004  7.526e-004  5.886e-004  2.897e-004  1.508e-004  8.201e-005
4.654e-005  1.674e-005  4.481e-006  1.670e-007  1.535e-008
         3  1.374e-003  1.374e-003  1.289e-003  1.078e-003  6.579e-
004  5.038e-004  3.508e-004  1.213e-004  4.866e-005  2.183e-005
1.067e-005  3.085e-006  6.649e-007  1.726e-008  1.341e-009
         4  1.374e-003  1.374e-003  1.179e-003  8.986e-004  4.767e-
004  3.366e-004  2.094e-004  5.486e-005  1.847e-005  7.327e-006
3.267e-006  8.287e-007  1.573e-007  3.335e-009  2.371e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.374e-003  1.374e-003  1.374e-003  1.364e-003  1.225e-
003  1.098e-003  9.200e-004  5.021e-004  2.748e-004  1.532e-004
8.768e-005  3.122e-005  7.970e-006  2.383e-007  1.766e-008
      0.05  1.374e-003  1.374e-003  1.374e-003  1.369e-003  1.266e-
003  1.157e-003  9.918e-004  5.806e-004  3.417e-004  2.040e-004
1.242e-004  4.915e-005  1.423e-005  5.604e-007  4.953e-008
       0.1  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.335e-
003  1.274e-003  1.158e-003  7.936e-004  5.400e-004  3.691e-004
2.539e-004  1.237e-004  4.561e-005  2.989e-006  3.600e-007
       0.2  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.361e-
003  1.333e-003  1.266e-003  9.839e-004  7.419e-004  5.572e-004
4.183e-004  2.375e-004  1.054e-004  1.027e-005  1.575e-006
       0.3  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.361e-
003  1.333e-003  1.267e-003  9.907e-004  7.539e-004  5.720e-004
4.341e-004  2.517e-004  1.150e-004  1.205e-005  1.945e-006
       0.4  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.359e-
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003  1.329e-003  1.257e-003  9.696e-004  7.338e-004  5.548e-004
4.192e-004  2.400e-004  1.069e-004  1.025e-005  1.535e-006
       0.5  1.374e-003  1.374e-003  1.374e-003  1.374e-003  1.355e-
003  1.318e-003  1.239e-003  9.447e-004  7.131e-004  5.381e-004
4.052e-004  2.297e-004  1.004e-004  9.162e-006  1.343e-006
      0.75  1.374e-003  1.374e-003  1.374e-003  1.373e-003  1.326e-
003  1.261e-003  1.148e-003  8.190e-004  5.931e-004  4.315e-004
3.142e-004  1.684e-004  6.947e-005  5.872e-006  8.611e-007
         1  1.374e-003  1.374e-003  1.374e-003  1.369e-003  1.286e-
003  1.195e-003  1.055e-003  7.046e-004  4.831e-004  3.338e-004
2.319e-004  1.146e-004  4.296e-005  2.928e-006  3.682e-007
         2  1.374e-003  1.374e-003  1.365e-003  1.302e-003  1.004e-
003  8.404e-004  6.564e-004  3.183e-004  1.667e-004  9.212e-005
5.329e-005  1.994e-005  5.639e-006  2.417e-007  2.457e-008
         3  1.374e-003  1.374e-003  1.326e-003  1.166e-003  7.466e-
004  5.744e-004  4.022e-004  1.430e-004  5.869e-005  2.672e-005
1.318e-005  3.842e-006  8.264e-007  2.066e-008  1.538e-009
         4  1.374e-003  1.374e-003  1.258e-003  1.020e-003  5.670e-
004  4.065e-004  2.582e-004  7.070e-005  2.409e-005  9.521e-006
4.196e-006  1.029e-006  1.843e-007  3.278e-009  2.037e-010


Source: Santa Rosa Island
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.678e-004  9.678e-004  9.677e-004  9.625e-004  8.277e-
004  6.738e-004  4.586e-004  1.125e-004  3.074e-005  9.695e-006
3.449e-006  5.744e-007  6.276e-008  3.307e-010  8.550e-012
      0.05  9.678e-004  9.678e-004  9.677e-004  9.637e-004  8.451e-
004  7.007e-004  4.893e-004  1.277e-004  3.633e-005  1.180e-005
4.296e-006  7.410e-007  8.409e-008  4.775e-010  1.291e-011
       0.1  9.678e-004  9.678e-004  9.678e-004  9.666e-004  9.107e-
004  8.197e-004  6.522e-004  2.450e-004  9.070e-005  3.612e-005
1.554e-005  3.487e-006  5.305e-007  5.532e-009  2.181e-010
       0.2  9.678e-004  9.678e-004  9.678e-004  9.678e-004  9.565e-
004  9.264e-004  8.442e-004  4.851e-004  2.459e-004  1.243e-004
6.457e-005  1.933e-005  3.990e-006  7.419e-008  4.045e-009
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       0.3  9.678e-004  9.678e-004  9.678e-004  9.678e-004  9.582e-
004  9.320e-004  8.587e-004  5.202e-004  2.782e-004  1.475e-004
8.000e-005  2.580e-005  5.830e-006  1.339e-007  8.437e-009
       0.4  9.678e-004  9.678e-004  9.678e-004  9.678e-004  9.580e-
004  9.313e-004  8.568e-004  5.151e-004  2.731e-004  1.437e-004
7.738e-005  2.463e-005  5.472e-006  1.203e-007  7.343e-009
       0.5  9.678e-004  9.678e-004  9.678e-004  9.677e-004  9.555e-
004  9.247e-004  8.438e-004  4.979e-004  2.630e-004  1.388e-004
7.529e-005  2.442e-005  5.600e-006  1.358e-007  8.982e-009
      0.75  9.678e-004  9.678e-004  9.678e-004  9.671e-004  9.313e-
004  8.688e-004  7.425e-004  3.629e-004  1.699e-004  8.283e-005
4.252e-005  1.287e-005  2.804e-006  6.622e-008  4.524e-009
         1  9.678e-004  9.678e-004  9.678e-004  9.656e-004  8.969e-
004  8.012e-004  6.375e-004  2.544e-004  1.030e-004  4.504e-005
2.118e-005  5.605e-006  1.057e-006  1.882e-008  1.091e-009
         2  9.678e-004  9.678e-004  9.626e-004  9.133e-004  6.027e-
004  4.243e-004  2.492e-004  5.143e-005  1.417e-005  4.774e-006
1.855e-006  3.759e-007  5.512e-008  6.679e-010  3.309e-011
         3  9.678e-004  9.678e-004  9.340e-004  7.747e-004  3.210e-
004  1.770e-004  7.793e-005  8.658e-006  1.623e-006  4.132e-007
1.288e-007  1.865e-008  1.907e-009  1.136e-011  3.698e-013
         4  9.678e-004  9.678e-004  8.829e-004  6.336e-004  1.872e-
004  8.895e-005  3.320e-005  2.646e-006  4.070e-007  9.002e-008
2.515e-008  3.088e-009  2.650e-010  1.123e-012  2.997e-014
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.678e-004  9.678e-004  9.663e-004  9.344e-004  6.006e-
004  3.890e-004  1.948e-004  2.299e-005  3.873e-006  8.530e-007
2.280e-007  2.444e-008  1.658e-009  3.384e-012  4.975e-014
      0.05  9.678e-004  9.678e-004  9.671e-004  9.482e-004  6.820e-
004  4.773e-004  2.635e-004  3.872e-005  7.493e-006  1.826e-006
5.285e-007  6.395e-008  4.938e-009  1.300e-011  2.219e-013
       0.1  9.678e-004  9.678e-004  9.677e-004  9.632e-004  8.330e-
004  6.788e-004  4.607e-004  1.104e-004  2.937e-005  9.043e-006
3.149e-006  5.055e-007  5.286e-008  2.525e-010  6.125e-012
       0.2  9.678e-004  9.678e-004  9.678e-004  9.671e-004  9.218e-
004  8.393e-004  6.775e-004  2.589e-004  9.520e-005  3.739e-005
1.581e-005  3.426e-006  4.957e-007  4.511e-009  1.604e-010
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       0.3  9.678e-004  9.678e-004  9.678e-004  9.674e-004  9.325e-
004  8.633e-004  7.178e-004  2.998e-004  1.177e-004  4.863e-005
2.142e-005  4.948e-006  7.676e-007  8.040e-009  3.113e-010
       0.4  9.678e-004  9.678e-004  9.678e-004  9.674e-004  9.318e-
004  8.584e-004  7.033e-004  2.722e-004  9.858e-005  3.777e-005
1.553e-005  3.180e-006  4.244e-007  3.103e-009  9.343e-011
       0.5  9.678e-004  9.678e-004  9.678e-004  9.673e-004  9.269e-
004  8.472e-004  6.844e-004  2.539e-004  8.913e-005  3.333e-005
1.344e-005  2.666e-006  3.433e-007  2.325e-009  6.661e-011
      0.75  9.678e-004  9.678e-004  9.678e-004  9.650e-004  8.692e-
004  7.414e-004  5.409e-004  1.595e-004  4.967e-005  1.734e-005
6.709e-006  1.277e-006  1.624e-007  1.181e-009  3.750e-011
         1  9.678e-004  9.678e-004  9.675e-004  9.583e-004  7.865e-
004  6.190e-004  4.055e-004  9.428e-005  2.562e-005  8.181e-006
2.968e-006  5.181e-007  6.096e-008  3.996e-010  1.229e-011
         2  9.678e-004  9.678e-004  9.507e-004  8.325e-004  3.821e-
004  2.162e-004  9.634e-005  1.037e-005  1.835e-006  4.403e-007
1.297e-007  1.691e-008  1.509e-009  6.387e-012  1.620e-013
         3  9.678e-004  9.678e-004  8.943e-004  6.408e-004  1.735e-
004  7.700e-005  2.613e-005  1.613e-006  2.045e-007  3.867e-008
9.456e-009  9.311e-010  6.162e-011  1.456e-013  2.623e-015
         4  9.678e-004  9.678e-004  8.153e-004  4.822e-004  8.826e-
005  3.323e-005  9.410e-006  4.045e-007  4.136e-008  6.703e-009
1.454e-009  1.195e-010  6.520e-012  1.058e-014  1.529e-016
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.678e-004  9.678e-004  9.623e-004  8.919e-004  4.619e-
004  2.660e-004  1.167e-004  1.068e-005  1.568e-006  3.153e-007
7.889e-008  7.706e-009  4.777e-010  8.393e-013  1.146e-014
      0.05  9.678e-004  9.678e-004  9.650e-004  9.193e-004  5.513e-
004  3.463e-004  1.688e-004  1.944e-005  3.300e-006  7.377e-007
2.006e-007  2.225e-008  1.581e-009  3.637e-012  5.825e-014
       0.1  9.678e-004  9.678e-004  9.675e-004  9.568e-004  7.655e-
004  5.871e-004  3.693e-004  7.602e-005  1.871e-005  5.495e-006
1.854e-006  2.861e-007  2.901e-008  1.346e-010  3.268e-012
       0.2  9.678e-004  9.678e-004  9.678e-004  9.657e-004  8.845e-
004  7.694e-004  5.792e-004  1.867e-004  6.201e-005  2.276e-005
9.169e-006  1.859e-006  2.533e-007  2.113e-009  7.272e-011
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       0.3  9.678e-004  9.678e-004  9.678e-004  9.658e-004  8.868e-
004  7.730e-004  5.836e-004  1.892e-004  6.307e-005  2.321e-005
9.365e-006  1.905e-006  2.603e-007  2.187e-009  7.562e-011
       0.4  9.678e-004  9.678e-004  9.678e-004  9.657e-004  8.816e-
004  7.610e-004  5.629e-004  1.678e-004  5.151e-005  1.757e-005
6.615e-006  1.191e-006  1.398e-007  8.144e-010  2.178e-011
       0.5  9.678e-004  9.678e-004  9.678e-004  9.645e-004  8.606e-
004  7.263e-004  5.201e-004  1.432e-004  4.158e-005  1.358e-005
4.930e-006  8.350e-007  9.098e-008  4.442e-010  1.047e-011
      0.75  9.678e-004  9.678e-004  9.675e-004  9.568e-004  7.734e-
004  6.012e-004  3.865e-004  8.484e-005  2.188e-005  6.657e-006
2.310e-006  3.718e-007  3.936e-008  1.969e-010  4.957e-012
         1  9.678e-004  9.678e-004  9.665e-004  9.423e-004  6.833e-
004  4.948e-004  2.927e-004  5.507e-005  1.324e-005  3.885e-006
1.322e-006  2.098e-007  2.238e-008  1.216e-010  3.356e-012
         2  9.678e-004  9.678e-004  9.322e-004  7.633e-004  2.979e-
004  1.581e-004  6.608e-005  6.408e-006  1.083e-006  2.535e-007
7.353e-008  9.437e-009  8.358e-010  3.586e-012  9.336e-014
         3  9.678e-004  9.678e-004  8.253e-004  5.233e-004  1.216e-
004  5.241e-005  1.762e-005  1.149e-006  1.580e-007  3.234e-008
8.524e-009  9.607e-010  7.559e-011  2.736e-013  6.698e-015
         4  9.678e-004  9.676e-004  6.704e-004  3.306e-004  5.174e-
005  1.933e-005  5.625e-006  2.859e-007  3.473e-008  6.584e-009
1.646e-009  1.732e-010  1.287e-011  4.364e-014  1.059e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.678e-004  9.678e-004  9.655e-004  9.296e-004  6.301e-
004  4.430e-004  2.567e-004  4.873e-005  1.206e-005  3.621e-006
1.252e-006  2.022e-007  2.163e-008  1.116e-010  2.870e-012
      0.05  9.678e-004  9.678e-004  9.666e-004  9.437e-004  6.928e-
004  5.081e-004  3.072e-004  6.197e-005  1.571e-005  4.787e-006
1.675e-006  2.757e-007  3.020e-008  1.647e-010  4.397e-012
       0.1  9.678e-004  9.678e-004  9.677e-004  9.622e-004  8.364e-
004  6.952e-004  4.940e-004  1.438e-004  4.626e-005  1.689e-005
6.846e-006  1.426e-006  2.041e-007  1.973e-009  7.582e-011
       0.2  9.678e-004  9.678e-004  9.678e-004  9.668e-004  9.210e-
004  8.451e-004  7.003e-004  3.102e-004  1.344e-004  6.148e-005
2.985e-005  8.206e-006  1.580e-006  2.694e-008  1.426e-009
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       0.3  9.678e-004  9.678e-004  9.678e-004  9.670e-004  9.258e-
004  8.561e-004  7.200e-004  3.364e-004  1.530e-004  7.311e-005
3.693e-005  1.088e-005  2.286e-006  4.803e-008  2.941e-009
       0.4  9.678e-004  9.678e-004  9.678e-004  9.670e-004  9.238e-
004  8.503e-004  7.077e-004  3.184e-004  1.411e-004  6.634e-005
3.318e-005  9.666e-006  2.012e-006  4.142e-008  2.486e-009
       0.5  9.678e-004  9.678e-004  9.678e-004  9.665e-004  9.143e-
004  8.327e-004  6.828e-004  2.983e-004  1.312e-004  6.191e-005
3.122e-005  9.306e-006  2.011e-006  4.620e-008  3.020e-009
      0.75  9.678e-004  9.678e-004  9.677e-004  9.630e-004  8.580e-
004  7.371e-004  5.566e-004  2.024e-004  8.048e-005  3.561e-005
1.718e-005  4.840e-006  1.002e-006  2.253e-008  1.522e-009
         1  9.678e-004  9.678e-004  9.673e-004  9.554e-004  7.889e-
004  6.383e-004  4.452e-004  1.346e-004  4.730e-005  1.903e-005
8.490e-006  2.111e-006  3.800e-007  6.446e-009  3.688e-010
         2  9.678e-004  9.678e-004  9.485e-004  8.364e-004  4.276e-
004  2.662e-004  1.372e-004  2.273e-005  5.696e-006  1.823e-006
6.860e-007  1.341e-007  1.915e-008  2.260e-010  1.111e-011
         3  9.678e-004  9.678e-004  8.845e-004  6.462e-004  2.054e-
004  1.021e-004  4.056e-005  3.807e-006  6.617e-007  1.614e-007
4.892e-008  6.847e-009  6.813e-010  3.926e-012  1.264e-013
         4  9.678e-004  9.678e-004  7.896e-004  4.821e-004  1.091e-
004  4.717e-005  1.608e-005  1.112e-006  1.610e-007  3.443e-008
9.418e-009  1.127e-009  9.479e-011  3.925e-013  1.039e-014


Source: Santa Susana, alt 1
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.731e-003  2.731e-003  2.731e-003  2.730e-003  2.652e-
003  2.483e-003  2.107e-003  9.324e-004  3.810e-004  1.619e-004
7.291e-005  1.739e-005  2.788e-006  3.100e-008  1.239e-009
      0.05  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.671e-
003  2.530e-003  2.196e-003  1.046e-003  4.516e-004  2.002e-004
9.327e-005  2.344e-005  3.978e-006  4.941e-008  2.108e-009
       0.1  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.713e-
003  2.657e-003  2.483e-003  1.583e-003  8.779e-004  4.776e-004
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2.640e-004  8.742e-005  2.025e-005  4.829e-007  3.094e-008
       0.2  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.729e-
003  2.719e-003  2.673e-003  2.209e-003  1.580e-003  1.064e-003
7.026e-004  3.080e-004  9.690e-005  4.203e-006  3.795e-007
       0.3  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.730e-
003  2.721e-003  2.681e-003  2.266e-003  1.676e-003  1.168e-003
7.980e-004  3.719e-004  1.266e-004  6.642e-006  6.855e-007
       0.4  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.729e-
003  2.719e-003  2.672e-003  2.217e-003  1.601e-003  1.090e-003
7.288e-004  3.274e-004  1.066e-004  5.058e-006  4.884e-007
       0.5  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.728e-
003  2.714e-003  2.657e-003  2.160e-003  1.535e-003  1.037e-003
6.901e-004  3.101e-004  1.020e-004  5.106e-006  5.202e-007
      0.75  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.716e-
003  2.672e-003  2.539e-003  1.801e-003  1.138e-003  7.032e-004
4.379e-004  1.794e-004  5.438e-005  2.483e-006  2.509e-007
         1  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.685e-
003  2.583e-003  2.336e-003  1.368e-003  7.347e-004  3.982e-004
2.226e-004  7.694e-005  1.936e-005  6.101e-007  4.953e-008
         2  2.731e-003  2.731e-003  2.727e-003  2.662e-003  2.040e-
003  1.573e-003  1.033e-003  2.718e-004  8.699e-005  3.264e-005
1.379e-005  3.173e-006  5.322e-007  8.367e-009  4.824e-010
         3  2.731e-003  2.731e-003  2.684e-003  2.380e-003  1.191e-
003  7.168e-004  3.481e-004  4.706e-005  9.894e-006  2.731e-006
9.062e-007  1.440e-007  1.624e-008  1.169e-010  4.245e-012
         4  2.731e-003  2.731e-003  2.570e-003  1.976e-003  6.747e-
004  3.403e-004  1.354e-004  1.223e-005  2.023e-006  4.711e-007
1.370e-007  1.785e-008  1.633e-009  7.836e-012  2.250e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.731e-003  2.731e-003  2.731e-003  2.724e-003  2.443e-
003  2.062e-003  1.472e-003  3.980e-004  1.144e-004  3.727e-005
1.356e-005  2.325e-006  2.608e-007  1.427e-009  3.748e-011
      0.05  2.731e-003  2.731e-003  2.731e-003  2.728e-003  2.553e-
003  2.266e-003  1.749e-003  5.837e-004  1.940e-004  7.042e-005
2.792e-005  5.468e-006  7.075e-007  5.130e-009  1.590e-010
       0.1  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.687e-
003  2.576e-003  2.291e-003  1.187e-003  5.479e-004  2.559e-004
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1.244e-004  3.340e-005  6.091e-006  8.743e-008  4.066e-009
       0.2  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.721e-
003  2.682e-003  2.551e-003  1.742e-003  1.020e-003  5.777e-004
3.291e-004  1.136e-004  2.732e-005  6.851e-007  4.449e-008
       0.3  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.687e-003  2.564e-003  1.783e-003  1.062e-003  6.104e-004
3.520e-004  1.240e-004  3.050e-005  8.013e-007  5.355e-008
       0.4  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.687e-003  2.559e-003  1.726e-003  9.820e-004  5.368e-004
2.948e-004  9.477e-005  2.068e-005  4.021e-007  2.161e-008
       0.5  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.684e-003  2.545e-003  1.664e-003  9.079e-004  4.760e-004
2.513e-004  7.517e-005  1.496e-005  2.311e-007  1.053e-008
      0.75  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.690e-
003  2.584e-003  2.309e-003  1.221e-003  5.745e-004  2.728e-004
1.344e-004  3.695e-005  6.923e-006  1.053e-007  5.080e-009
         1  2.731e-003  2.731e-003  2.731e-003  2.730e-003  2.623e-
003  2.423e-003  2.016e-003  8.635e-004  3.522e-004  1.514e-004
6.931e-005  1.719e-005  2.931e-006  3.901e-008  1.800e-009
         2  2.731e-003  2.731e-003  2.727e-003  2.650e-003  1.900e-
003  1.376e-003  8.211e-004  1.641e-004  4.239e-005  1.335e-005
4.864e-006  8.760e-007  1.103e-007  9.183e-010  3.476e-011
         3  2.731e-003  2.731e-003  2.694e-003  2.408e-003  1.180e-
003  6.892e-004  3.186e-004  3.700e-005  6.868e-006  1.707e-006
5.171e-007  7.049e-008  6.607e-009  3.097e-011  8.378e-013
         4  2.731e-003  2.731e-003  2.627e-003  2.113e-003  7.526e-
004  3.770e-004  1.463e-004  1.187e-005  1.775e-006  3.780e-007
1.015e-007  1.154e-008  8.911e-010  2.867e-012  6.221e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.731e-003  2.731e-003  2.731e-003  2.721e-003  2.400e-
003  1.996e-003  1.398e-003  3.657e-004  1.041e-004  3.382e-005
1.233e-005  2.134e-006  2.437e-007  1.414e-009  3.894e-011
      0.05  2.731e-003  2.731e-003  2.731e-003  2.727e-003  2.532e-
003  2.230e-003  1.704e-003  5.615e-004  1.871e-004  6.846e-005
2.742e-005  5.488e-006  7.329e-007  5.797e-009  1.919e-010
       0.1  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.683e-
003  2.565e-003  2.272e-003  1.172e-003  5.438e-004  2.563e-004
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1.259e-004  3.455e-005  6.503e-006  1.017e-007  5.045e-009
       0.2  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.717e-
003  2.671e-003  2.520e-003  1.668e-003  9.560e-004  5.336e-004
3.012e-004  1.029e-004  2.466e-005  6.265e-007  4.155e-008
       0.3  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.715e-
003  2.664e-003  2.501e-003  1.621e-003  9.118e-004  5.013e-004
2.795e-004  9.371e-005  2.199e-005  5.370e-007  3.483e-008
       0.4  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.714e-
003  2.658e-003  2.478e-003  1.526e-003  8.053e-004  4.159e-004
2.187e-004  6.600e-005  1.356e-005  2.397e-007  1.237e-008
       0.5  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.709e-
003  2.638e-003  2.422e-003  1.383e-003  6.743e-004  3.238e-004
1.593e-004  4.275e-005  7.578e-006  9.372e-008  3.753e-009
      0.75  2.731e-003  2.731e-003  2.731e-003  2.730e-003  2.654e-
003  2.491e-003  2.128e-003  9.703e-004  4.069e-004  1.764e-004
8.061e-005  1.962e-005  3.194e-006  3.561e-008  1.394e-009
         1  2.731e-003  2.731e-003  2.731e-003  2.727e-003  2.553e-
003  2.287e-003  1.813e-003  6.866e-004  2.592e-004  1.055e-004
4.631e-005  1.079e-005  1.723e-006  2.010e-008  8.530e-010
         2  2.731e-003  2.731e-003  2.713e-003  2.541e-003  1.538e-
003  1.018e-003  5.488e-004  9.055e-005  2.116e-005  6.246e-006
2.171e-006  3.668e-007  4.351e-008  3.295e-010  1.196e-011
         3  2.731e-003  2.731e-003  2.593e-003  2.056e-003  7.712e-
004  4.089e-004  1.731e-004  1.801e-005  3.277e-006  8.206e-007
2.531e-007  3.623e-008  3.678e-009  2.193e-011  7.203e-013
         4  2.731e-003  2.731e-003  2.332e-003  1.513e-003  3.850e-
004  1.753e-004  6.338e-005  4.976e-006  7.837e-007  1.790e-007
5.176e-008  6.795e-009  6.390e-010  3.441e-012  1.097e-013
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  2.731e-003  2.731e-003  2.731e-003  2.725e-003  2.498e-
003  2.180e-003  1.659e-003  5.654e-004  1.998e-004  7.767e-005
3.293e-005  7.283e-006  1.098e-006  1.128e-008  4.386e-010
      0.05  2.731e-003  2.731e-003  2.731e-003  2.729e-003  2.585e-
003  2.342e-003  1.883e-003  7.303e-004  2.776e-004  1.130e-004
4.954e-005  1.147e-005  1.806e-006  2.011e-008  8.195e-010
       0.1  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.694e-
003  2.599e-003  2.349e-003  1.314e-003  6.565e-004  3.299e-004
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1.714e-004  5.179e-005  1.095e-005  2.240e-007  1.335e-008
       0.2  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.691e-003  2.581e-003  1.873e-003  1.186e-003  7.251e-004
4.443e-004  1.748e-004  4.963e-005  1.838e-006  1.552e-007
       0.3  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.691e-003  2.582e-003  1.890e-003  1.217e-003  7.601e-004
4.765e-004  1.965e-004  5.969e-005  2.660e-006  2.580e-007
       0.4  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.722e-
003  2.688e-003  2.570e-003  1.823e-003  1.129e-003  6.810e-004
4.141e-004  1.627e-004  4.694e-005  1.900e-006  1.741e-007
       0.5  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.720e-
003  2.679e-003  2.542e-003  1.736e-003  1.039e-003  6.121e-004
3.669e-004  1.427e-004  4.150e-005  1.810e-006  1.782e-007
      0.75  2.731e-003  2.731e-003  2.731e-003  2.731e-003  2.687e-
003  2.582e-003  2.325e-003  1.331e-003  7.065e-004  3.841e-004
2.176e-004  7.864e-005  2.150e-005  8.746e-007  8.580e-008
         1  2.731e-003  2.731e-003  2.731e-003  2.729e-003  2.620e-
003  2.431e-003  2.055e-003  9.728e-004  4.487e-004  2.183e-004
1.127e-004  3.498e-005  8.006e-006  2.231e-007  1.739e-008
         2  2.731e-003  2.731e-003  2.722e-003  2.618e-003  1.826e-
003  1.322e-003  8.010e-004  1.755e-004  5.018e-005  1.741e-005
6.943e-006  1.472e-006  2.287e-007  3.205e-009  1.764e-010
         3  2.731e-003  2.731e-003  2.657e-003  2.281e-003  1.047e-
003  6.050e-004  2.799e-004  3.402e-005  6.680e-006  1.753e-006
5.588e-007  8.359e-008  8.843e-009  5.659e-011  1.935e-012
         4  2.731e-003  2.731e-003  2.510e-003  1.867e-003  6.041e-
004  2.975e-004  1.150e-004  9.691e-006  1.527e-006  3.427e-007
9.675e-008  1.206e-008  1.054e-009  4.715e-012  1.323e-013


Source: Santa Ynez (East)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.285e-004  8.285e-004  8.285e-004  8.284e-004  8.168e-
004  7.862e-004  7.051e-004  3.772e-004  1.787e-004  8.517e-005
4.209e-005  1.160e-005  2.178e-006  3.312e-008  1.593e-009
      0.05  8.285e-004  8.285e-004  8.285e-004  8.284e-004  8.202e-
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004  7.965e-004  7.289e-004  4.208e-004  2.123e-004  1.064e-004
5.479e-005  1.611e-005  3.247e-006  5.696e-008  2.986e-009
       0.1  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.263e-
004  8.180e-004  7.875e-004  5.766e-004  3.642e-004  2.206e-004
1.335e-004  5.099e-005  1.385e-005  4.553e-007  3.536e-008
       0.2  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.282e-
004  8.267e-004  8.186e-004  7.165e-004  5.506e-004  3.959e-004
2.769e-004  1.333e-004  4.666e-005  2.510e-006  2.575e-007
       0.3  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.282e-
004  8.264e-004  8.177e-004  7.136e-004  5.493e-004  3.972e-004
2.801e-004  1.375e-004  4.960e-005  2.925e-006  3.231e-007
       0.4  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.282e-
004  8.264e-004  8.176e-004  7.121e-004  5.457e-004  3.923e-004
2.749e-004  1.333e-004  4.727e-005  2.660e-006  2.835e-007
       0.5  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.280e-
004  8.256e-004  8.143e-004  6.963e-004  5.247e-004  3.732e-004
2.599e-004  1.256e-004  4.476e-005  2.632e-006  2.942e-007
      0.75  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.258e-
004  8.171e-004  7.882e-004  5.998e-004  4.052e-004  2.648e-004
1.728e-004  7.628e-005  2.512e-005  1.352e-006  1.505e-007
         1  8.285e-004  8.285e-004  8.285e-004  8.284e-004  8.214e-
004  8.032e-004  7.524e-004  5.031e-004  3.020e-004  1.790e-004
1.077e-004  4.178e-005  1.194e-005  4.843e-007  4.564e-008
         2  8.285e-004  8.285e-004  8.283e-004  8.230e-004  7.323e-
004  6.344e-004  4.885e-004  1.898e-004  7.891e-005  3.601e-005
1.779e-005  5.205e-006  1.133e-006  2.987e-008  2.340e-009
         3  8.285e-004  8.285e-004  8.259e-004  7.968e-004  5.738e-
004  4.268e-004  2.689e-004  6.524e-005  1.999e-005  7.288e-006
3.015e-006  6.731e-007  1.096e-007  1.631e-009  9.113e-011
         4  8.285e-004  8.285e-004  8.190e-004  7.522e-004  4.400e-
004  2.913e-004  1.595e-004  2.860e-005  7.261e-006  2.310e-006
8.585e-007  1.628e-007  2.226e-008  2.357e-010  1.079e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.285e-004  8.285e-004  8.285e-004  8.277e-004  7.818e-
004  7.022e-004  5.529e-004  1.951e-004  6.744e-005  2.521e-005
1.024e-005  2.079e-006  2.798e-007  2.191e-009  7.109e-011
      0.05  8.285e-004  8.285e-004  8.285e-004  8.282e-004  8.016e-
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004  7.463e-004  6.259e-004  2.665e-004  1.056e-004  4.381e-005
1.933e-005  4.465e-006  6.904e-007  7.119e-009  2.716e-010
       0.1  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.230e-
004  8.055e-004  7.511e-004  4.679e-004  2.517e-004  1.327e-004
7.119e-005  2.231e-005  4.817e-006  9.655e-008  5.465e-009
       0.2  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.273e-
004  8.220e-004  8.002e-004  6.193e-004  4.110e-004  2.586e-004
1.610e-004  6.405e-005  1.804e-005  6.208e-007  4.865e-008
       0.3  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.274e-
004  8.226e-004  8.022e-004  6.286e-004  4.231e-004  2.696e-004
1.698e-004  6.883e-005  1.982e-005  7.158e-007  5.785e-008
       0.4  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.276e-
004  8.230e-004  8.026e-004  6.206e-004  4.058e-004  2.497e-004
1.516e-004  5.725e-005  1.495e-005  4.183e-007  2.795e-008
       0.5  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.277e-
004  8.234e-004  8.033e-004  6.164e-004  3.950e-004  2.370e-004
1.401e-004  5.009e-005  1.212e-005  2.762e-007  1.577e-008
      0.75  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.242e-
004  8.099e-004  7.639e-004  5.050e-004  2.887e-004  1.607e-004
9.044e-005  3.071e-005  7.283e-006  1.790e-007  1.152e-008
         1  8.285e-004  8.285e-004  8.285e-004  8.284e-004  8.162e-
004  7.866e-004  7.112e-004  4.061e-004  2.091e-004  1.083e-004
5.790e-005  1.838e-005  4.126e-006  9.639e-008  6.248e-009
         2  8.285e-004  8.285e-004  8.282e-004  8.208e-004  7.016e-
004  5.835e-004  4.215e-004  1.359e-004  4.885e-005  1.976e-005
8.804e-006  2.168e-006  3.839e-007  6.293e-009  3.558e-010
         3  8.285e-004  8.285e-004  8.256e-004  7.909e-004  5.368e-
004  3.813e-004  2.251e-004  4.571e-005  1.220e-005  3.967e-006
1.487e-006  2.809e-007  3.739e-008  3.492e-010  1.416e-011
         4  8.285e-004  8.285e-004  8.184e-004  7.427e-004  4.017e-
004  2.516e-004  1.277e-004  1.872e-005  4.074e-006  1.141e-006
3.803e-007  6.005e-008  6.594e-009  4.220e-011  1.370e-012
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.285e-004  8.285e-004  8.285e-004  8.276e-004  7.822e-
004  7.052e-004  5.613e-004  2.088e-004  7.617e-005  2.991e-005
1.269e-005  2.778e-006  4.095e-007  3.942e-009  1.465e-010
      0.05  8.285e-004  8.285e-004  8.285e-004  8.282e-004  8.042e-
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004  7.541e-004  6.433e-004  2.947e-004  1.253e-004  5.529e-005
2.577e-005  6.530e-006  1.128e-006  1.490e-008  6.686e-010
       0.1  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.237e-
004  8.085e-004  7.606e-004  4.986e-004  2.839e-004  1.579e-004
8.890e-005  3.031e-005  7.251e-006  1.840e-007  1.218e-008
       0.2  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.272e-
004  8.219e-004  8.006e-004  6.269e-004  4.250e-004  2.740e-004
1.748e-004  7.288e-005  2.184e-005  8.783e-007  7.687e-008
       0.3  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.270e-
004  8.209e-004  7.973e-004  6.143e-004  4.099e-004  2.608e-004
1.646e-004  6.747e-005  1.986e-005  7.729e-007  6.643e-008
       0.4  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.270e-
004  8.205e-004  7.946e-004  5.947e-004  3.799e-004  2.308e-004
1.393e-004  5.255e-005  1.387e-005  4.101e-007  2.886e-008
       0.5  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.267e-
004  8.188e-004  7.879e-004  5.622e-004  3.376e-004  1.929e-004
1.098e-004  3.731e-005  8.614e-006  1.834e-007  1.022e-008
      0.75  8.285e-004  8.285e-004  8.285e-004  8.284e-004  8.209e-
004  7.995e-004  7.378e-004  4.430e-004  2.307e-004  1.181e-004
6.164e-005  1.833e-005  3.678e-006  6.002e-008  2.878e-009
         1  8.285e-004  8.285e-004  8.285e-004  8.282e-004  8.087e-
004  7.681e-004  6.753e-004  3.510e-004  1.673e-004  8.126e-005
4.107e-005  1.186e-005  2.373e-006  4.227e-008  2.266e-009
         2  8.285e-004  8.285e-004  8.276e-004  8.136e-004  6.535e-
004  5.202e-004  3.554e-004  1.012e-004  3.365e-005  1.288e-005
5.498e-006  1.270e-006  2.107e-007  3.066e-009  1.627e-010
         3  8.285e-004  8.285e-004  8.187e-004  7.525e-004  4.471e-
004  2.999e-004  1.676e-004  3.173e-005  8.389e-006  2.756e-006
1.052e-006  2.084e-007  2.993e-008  3.512e-010  1.715e-011
         4  8.285e-004  8.285e-004  7.898e-004  6.488e-004  2.853e-
004  1.670e-004  8.039e-005  1.148e-005  2.607e-006  7.758e-007
2.758e-007  4.956e-008  6.513e-009  6.733e-011  3.143e-012
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.285e-004  8.285e-004  8.285e-004  8.279e-004  7.936e-
004  7.312e-004  6.064e-004  2.604e-004  1.074e-004  4.676e-005
2.167e-005  5.487e-006  9.558e-007  1.308e-008  6.037e-010
      0.05  8.285e-004  8.285e-004  8.285e-004  8.283e-004  8.087e-
```

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004  7.656e-004  6.660e-004  3.274e-004  1.477e-004  6.850e-005
3.330e-005  9.036e-006  1.689e-006  2.633e-008  1.309e-009
       0.1  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.243e-
004  8.107e-004  7.664e-004  5.144e-004  2.999e-004  1.704e-004
9.785e-005  3.454e-005  8.638e-006  2.453e-007  1.767e-008
       0.2  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.276e-
004  8.236e-004  8.065e-004  6.542e-004  4.622e-004  3.095e-004
2.042e-004  9.009e-005  2.884e-005  1.336e-006  1.277e-007
       0.3  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.275e-
004  8.233e-004  8.057e-004  6.522e-004  4.607e-004  3.092e-004
2.048e-004  9.127e-005  2.976e-005  1.471e-006  1.491e-007
       0.4  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.276e-
004  8.233e-004  8.049e-004  6.425e-004  4.438e-004  2.910e-004
1.886e-004  8.104e-005  2.537e-005  1.163e-006  1.134e-007
       0.5  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.274e-
004  8.226e-004  8.018e-004  6.249e-004  4.191e-004  2.677e-004
1.699e-004  7.098e-005  2.183e-005  1.030e-006  1.067e-007
      0.75  8.285e-004  8.285e-004  8.285e-004  8.285e-004  8.236e-
004  8.089e-004  7.633e-004  5.160e-004  3.082e-004  1.812e-004
1.083e-004  4.177e-005  1.203e-005  5.304e-007  5.497e-008
         1  8.285e-004  8.285e-004  8.285e-004  8.283e-004  8.154e-
004  7.859e-004  7.130e-004  4.201e-004  2.261e-004  1.228e-004
6.888e-005  2.401e-005  6.146e-006  2.077e-007  1.805e-008
         2  8.285e-004  8.285e-004  8.280e-004  8.191e-004  6.958e-
004  5.794e-004  4.218e-004  1.423e-004  5.380e-005  2.289e-005
1.070e-005  2.881e-006  5.758e-007  1.308e-008  9.529e-010
         3  8.285e-004  8.285e-004  8.234e-004  7.801e-004  5.192e-
004  3.694e-004  2.205e-004  4.756e-005  1.353e-005  4.670e-006
1.851e-006  3.875e-007  5.896e-008  7.771e-010  4.081e-011
         4  8.285e-004  8.285e-004  8.091e-004  7.145e-004  3.757e-
004  2.366e-004  1.226e-004  1.960e-005  4.647e-006  1.409e-006
5.049e-007  9.080e-008  1.179e-008  1.151e-010  5.101e-012


Source: Santa Ynez (West)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  9.842e-004  9.842e-004  9.842e-004  9.826e-004  9.157e-
004  8.134e-004  6.334e-004  2.232e-004  7.851e-005  2.996e-005
1.242e-005  2.617e-006  3.688e-007  3.212e-009  1.117e-010
      0.05  9.842e-004  9.842e-004  9.842e-004  9.830e-004  9.268e-
004  8.350e-004  6.653e-004  2.499e-004  9.198e-005  3.634e-005
1.548e-005  3.408e-006  5.037e-007  4.830e-009  1.780e-010
       0.1  9.842e-004  9.842e-004  9.842e-004  9.839e-004  9.612e-
004  9.128e-004  8.011e-004  4.106e-004  1.928e-004  9.248e-005
4.626e-005  1.316e-005  2.597e-006  4.562e-008  2.454e-009
       0.2  9.842e-004  9.842e-004  9.842e-004  9.842e-004  9.803e-
004  9.673e-004  9.236e-004  6.527e-004  3.998e-004  2.363e-004
1.401e-004  5.175e-005  1.351e-005  4.048e-007  2.940e-008
       0.3  9.842e-004  9.842e-004  9.842e-004  9.842e-004  9.806e-
004  9.683e-004  9.273e-004  6.686e-004  4.202e-004  2.550e-004
1.549e-004  5.992e-005  1.660e-005  5.769e-007  4.666e-008
       0.4  9.842e-004  9.842e-004  9.842e-004  9.842e-004  9.804e-
004  9.677e-004  9.255e-004  6.624e-004  4.129e-004  2.486e-004
1.499e-004  5.717e-005  1.554e-005  5.150e-007  4.017e-008
       0.5  9.842e-004  9.842e-004  9.842e-004  9.842e-004  9.790e-
004  9.635e-004  9.151e-004  6.399e-004  3.939e-004  2.359e-004
1.422e-004  5.459e-005  1.511e-005  5.359e-007  4.449e-008
      0.75  9.842e-004  9.842e-004  9.842e-004  9.839e-004  9.657e-
004  9.278e-004  8.383e-004  4.943e-004  2.687e-004  1.475e-004
8.344e-005  2.944e-005  7.591e-006  2.515e-007  2.103e-008
         1  9.842e-004  9.842e-004  9.842e-004  9.833e-004  9.449e-
004  8.804e-004  7.521e-004  3.706e-004  1.756e-004  8.663e-005
4.495e-005  1.386e-005  3.089e-006  7.672e-008  5.415e-009
         2  9.842e-004  9.842e-004  9.818e-004  9.531e-004  7.138e-
004  5.452e-004  3.553e-004  9.312e-005  2.997e-005  1.133e-005
4.820e-006  1.123e-006  1.913e-007  3.115e-009  1.837e-010
         3  9.842e-004  9.842e-004  9.658e-004  8.564e-004  4.395e-
004  2.707e-004  1.358e-004  2.004e-005  4.489e-006  1.302e-006
4.499e-007  7.624e-008  9.230e-009  7.672e-011  3.040e-012
         4  9.842e-004  9.842e-004  9.336e-004  7.429e-004  2.846e-
004  1.527e-004  6.557e-005  7.010e-006  1.292e-006  3.256e-007
1.008e-007  1.447e-008  1.467e-009  8.633e-012  2.796e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  9.842e-004  9.842e-004  9.837e-004  9.694e-004  7.411e-
004  5.459e-004  3.237e-004  5.688e-005  1.245e-005  3.330e-006
1.039e-006  1.412e-007  1.239e-008  4.209e-011  8.372e-013
      0.05  9.842e-004  9.842e-004  9.840e-004  9.763e-004  8.092e-
004  6.370e-004  4.133e-004  9.003e-005  2.268e-005  6.729e-006
2.279e-006  3.515e-007  3.530e-008  1.567e-010  3.649e-012
       0.1  9.842e-004  9.842e-004  9.842e-004  9.827e-004  9.168e-
004  8.139e-004  6.320e-004  2.191e-004  7.583e-005  2.854e-005
1.168e-005  2.413e-006  3.323e-007  2.755e-009  9.286e-011
       0.2  9.842e-004  9.842e-004  9.842e-004  9.840e-004  9.637e-
004  9.173e-004  8.063e-004  4.081e-004  1.872e-004  8.750e-005
4.269e-005  1.159e-005  2.151e-006  3.241e-008  1.562e-009
       0.3  9.842e-004  9.842e-004  9.842e-004  9.841e-004  9.679e-
004  9.285e-004  8.289e-004  4.430e-004  2.121e-004  1.026e-004
5.144e-005  1.459e-005  2.843e-006  4.731e-008  2.421e-009
       0.4  9.842e-004  9.842e-004  9.842e-004  9.841e-004  9.679e-
004  9.266e-004  8.206e-004  4.162e-004  1.872e-004  8.519e-005
4.036e-005  1.033e-005  1.766e-006  2.132e-008  8.679e-010
       0.5  9.842e-004  9.842e-004  9.842e-004  9.841e-004  9.658e-
004  9.208e-004  8.083e-004  3.961e-004  1.727e-004  7.644e-005
3.533e-005  8.666e-006  1.405e-006  1.492e-008  5.546e-010
      0.75  9.842e-004  9.842e-004  9.842e-004  9.832e-004  9.321e-
004  8.468e-004  6.854e-004  2.724e-004  1.054e-004  4.347e-005
1.923e-005  4.512e-006  7.196e-007  8.193e-009  3.383e-010
         1  9.842e-004  9.842e-004  9.841e-004  9.803e-004  8.786e-
004  7.526e-004  5.587e-004  1.803e-004  6.163e-005  2.341e-005
9.764e-006  2.116e-006  3.148e-007  3.282e-009  1.328e-010
         2  9.842e-004  9.842e-004  9.767e-004  9.087e-004  5.366e-
004  3.507e-004  1.865e-004  2.984e-005  6.817e-006  1.975e-006
6.750e-007  1.107e-007  1.264e-008  8.722e-011  2.957e-012
         3  9.842e-004  9.842e-004  9.464e-004  7.706e-004  2.971e-
004  1.568e-004  6.511e-005  6.193e-006  1.028e-006  2.365e-007
6.749e-008  8.414e-009  7.174e-010  2.794e-012  6.770e-014
         4  9.842e-004  9.842e-004  8.972e-004  6.340e-004  1.747e-
004  7.929e-005  2.779e-005  1.867e-006  2.512e-007  4.968e-008
1.260e-008  1.313e-009  9.248e-011  2.481e-013  4.834e-015
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  9.842e-004  9.842e-004  9.826e-004  9.533e-004  6.576e-
004  4.567e-004  2.540e-004  3.999e-005  8.336e-006  2.169e-006
6.652e-007  8.871e-008  7.682e-009  2.602e-011  5.228e-013
      0.05  9.842e-004  9.842e-004  9.835e-004  9.667e-004  7.412e-
004  5.554e-004  3.413e-004  6.797e-005  1.652e-005  4.819e-006
1.618e-006  2.480e-007  2.496e-008  1.138e-010  2.728e-012
       0.1  9.842e-004  9.842e-004  9.842e-004  9.810e-004  8.893e-
004  7.704e-004  5.808e-004  1.930e-004  6.640e-005  2.513e-005
1.039e-005  2.198e-006  3.138e-007  2.868e-009  1.039e-010
       0.2  9.842e-004  9.842e-004  9.842e-004  9.836e-004  9.489e-
004  8.847e-004  7.516e-004  3.504e-004  1.540e-004  7.035e-005
3.387e-005  9.084e-006  1.682e-006  2.593e-008  1.286e-009
       0.3  9.842e-004  9.842e-004  9.842e-004  9.836e-004  9.480e-
004  8.822e-004  7.464e-004  3.429e-004  1.489e-004  6.739e-005
3.219e-005  8.533e-006  1.560e-006  2.348e-008  1.149e-009
       0.4  9.842e-004  9.842e-004  9.842e-004  9.836e-004  9.452e-
004  8.739e-004  7.278e-004  3.106e-004  1.249e-004  5.261e-005
2.354e-005  5.559e-006  8.796e-007  9.371e-009  3.598e-010
       0.5  9.842e-004  9.842e-004  9.842e-004  9.832e-004  9.335e-
004  8.499e-004  6.894e-004  2.697e-004  1.004e-004  3.944e-005
1.656e-005  3.493e-006  4.787e-007  3.581e-009  1.067e-010
      0.75  9.842e-004  9.842e-004  9.841e-004  9.800e-004  8.757e-
004  7.481e-004  5.521e-004  1.723e-004  5.634e-005  2.041e-005
8.116e-006  1.604e-006  2.104e-007  1.566e-009  4.898e-011
         1  9.842e-004  9.842e-004  9.838e-004  9.730e-004  8.069e-
004  6.493e-004  4.434e-004  1.182e-004  3.573e-005  1.241e-005
4.819e-006  9.348e-007  1.232e-007  9.993e-010  3.455e-011
         2  9.842e-004  9.842e-004  9.665e-004  8.577e-004  4.371e-
004  2.667e-004  1.317e-004  1.834e-005  3.892e-006  1.075e-006
3.549e-007  5.554e-008  6.078e-009  3.941e-011  1.306e-012
         3  9.842e-004  9.842e-004  8.983e-004  6.572e-004  2.118e-
004  1.061e-004  4.233e-005  3.957e-006  6.786e-007  1.631e-007
4.873e-008  6.651e-009  6.422e-010  3.472e-012  1.077e-013
         4  9.842e-004  9.842e-004  7.799e-004  4.622e-004  1.029e-
004  4.474e-005  1.543e-005  1.112e-006  1.671e-007  3.691e-008
1.040e-008  1.314e-009  1.186e-010  5.891e-013  1.790e-014
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
```

```
       PGA  9.842e-004  9.842e-004  9.835e-004  9.684e-004  7.715e-
004  6.053e-004  4.037e-004  1.067e-004  3.310e-005  1.182e-005
4.707e-006  9.489e-007  1.296e-007  1.093e-009  3.769e-011
      0.05  9.842e-004  9.842e-004  9.839e-004  9.754e-004  8.257e-
004  6.758e-004  4.733e-004  1.360e-004  4.373e-005  1.596e-005
6.460e-006  1.336e-006  1.880e-007  1.700e-009  6.147e-011
       0.1  9.842e-004  9.842e-004  9.842e-004  9.826e-004  9.225e-
004  8.324e-004  6.713e-004  2.742e-004  1.117e-004  4.872e-005
2.278e-005  5.924e-006  1.081e-006  1.708e-008  8.836e-010
       0.2  9.842e-004  9.842e-004  9.842e-004  9.839e-004  9.643e-
004  9.231e-004  8.271e-004  4.704e-004  2.470e-004  1.314e-004
7.220e-005  2.414e-005  5.780e-006  1.544e-007  1.075e-008
       0.3  9.842e-004  9.842e-004  9.842e-004  9.840e-004  9.655e-
004  9.263e-004  8.342e-004  4.848e-004  2.604e-004  1.416e-004
7.952e-005  2.768e-005  7.000e-006  2.159e-007  1.674e-008
       0.4  9.842e-004  9.842e-004  9.842e-004  9.840e-004  9.645e-
004  9.228e-004  8.247e-004  4.631e-004  2.417e-004  1.288e-004
7.126e-005  2.435e-005  6.063e-006  1.819e-007  1.380e-008
       0.5  9.842e-004  9.842e-004  9.842e-004  9.838e-004  9.595e-
004  9.114e-004  8.042e-004  4.353e-004  2.223e-004  1.173e-004
6.470e-005  2.225e-005  5.663e-006  1.848e-007  1.505e-008
      0.75  9.842e-004  9.842e-004  9.842e-004  9.824e-004  9.245e-
004  8.409e-004  6.919e-004  3.130e-004  1.435e-004  7.046e-005
3.693e-005  1.185e-005  2.841e-006  8.710e-008  7.138e-009
         1  9.842e-004  9.842e-004  9.840e-004  9.789e-004  8.768e-
004  7.607e-004  5.847e-004  2.230e-004  9.099e-005  4.082e-005
1.984e-005  5.638e-006  1.176e-006  2.700e-008  1.861e-009
         2  9.842e-004  9.842e-004  9.750e-004  9.065e-004  5.625e-
004  3.875e-004  2.245e-004  4.710e-005  1.356e-005  4.792e-006
1.950e-006  4.297e-007  7.001e-008  1.081e-009  6.264e-011
         3  9.842e-004  9.842e-004  9.368e-004  7.614e-004  3.161e-
004  1.778e-004  8.109e-005  1.006e-005  2.065e-006  5.673e-007
1.887e-007  3.043e-008  3.530e-009  2.766e-011  1.072e-012
         4  9.842e-004  9.842e-004  8.702e-004  6.130e-004  1.874e-
004  9.225e-005  3.626e-005  3.330e-006  5.700e-007  1.374e-007
4.127e-008  5.697e-009  5.594e-010  3.157e-012  1.008e-013


Source: Santa Ynez Connected
Region: USGS 2008 California
```

```
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.843e-004  6.843e-004  6.843e-004  6.840e-004  6.685e-
004  6.375e-004  5.652e-004  2.998e-004  1.435e-004  6.936e-005
3.476e-005  9.836e-006  1.907e-006  3.118e-008  1.572e-009
      0.05  6.843e-004  6.843e-004  6.843e-004  6.841e-004  6.720e-
004  6.467e-004  5.848e-004  3.345e-004  1.707e-004  8.699e-005
4.555e-005  1.382e-005  2.895e-006  5.549e-008  3.081e-009
       0.1  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.799e-
004  6.687e-004  6.362e-004  4.531e-004  2.838e-004  1.720e-004
1.044e-004  4.034e-005  1.115e-005  3.846e-007  3.089e-008
       0.2  6.843e-004  6.843e-004  6.843e-004  6.843e-004  6.835e-
004  6.808e-004  6.696e-004  5.665e-004  4.224e-004  2.970e-004
2.043e-004  9.610e-005  3.288e-005  1.705e-006  1.716e-007
       0.3  6.843e-004  6.843e-004  6.843e-004  6.843e-004  6.835e-
004  6.808e-004  6.697e-004  5.679e-004  4.264e-004  3.029e-004
2.107e-004  1.016e-004  3.607e-005  2.076e-006  2.269e-007
       0.4  6.843e-004  6.843e-004  6.843e-004  6.843e-004  6.835e-
004  6.807e-004  6.696e-004  5.672e-004  4.250e-004  3.008e-004
2.085e-004  9.972e-005  3.494e-005  1.935e-006  2.050e-007
       0.5  6.843e-004  6.843e-004  6.843e-004  6.843e-004  6.832e-
004  6.797e-004  6.664e-004  5.558e-004  4.115e-004  2.895e-004
2.003e-004  9.607e-005  3.412e-005  2.007e-006  2.252e-007
      0.75  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.803e-
004  6.705e-004  6.423e-004  4.826e-004  3.263e-004  2.146e-004
1.413e-004  6.348e-005  2.142e-005  1.223e-006  1.416e-007
         1  6.843e-004  6.843e-004  6.843e-004  6.841e-004  6.753e-
004  6.569e-004  6.112e-004  4.076e-004  2.476e-004  1.491e-004
9.115e-005  3.642e-005  1.079e-005  4.754e-007  4.722e-008
         2  6.843e-004  6.843e-004  6.838e-004  6.775e-004  5.987e-
004  5.211e-004  4.073e-004  1.688e-004  7.438e-005  3.562e-005
1.832e-005  5.724e-006  1.341e-006  4.110e-008  3.526e-009
         3  6.843e-004  6.843e-004  6.807e-004  6.532e-004  4.833e-
004  3.733e-004  2.499e-004  7.200e-005  2.499e-005  1.002e-005
4.476e-006  1.125e-006  2.081e-007  3.981e-009  2.575e-010
         4  6.843e-004  6.843e-004  6.734e-004  6.176e-004  3.853e-
004  2.698e-004  1.600e-004  3.490e-005  1.011e-005  3.547e-006
1.425e-006  3.043e-007  4.725e-008  6.408e-010  3.389e-011
```

```
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.843e-004  6.843e-004  6.842e-004  6.819e-004  6.271e-
004  5.545e-004  4.316e-004  1.537e-004  5.451e-005  2.090e-005
8.679e-006  1.831e-006  2.577e-007  2.221e-009  7.645e-011
      0.05  6.843e-004  6.843e-004  6.842e-004  6.830e-004  6.470e-
004  5.923e-004  4.887e-004  2.068e-004  8.318e-005  3.513e-005
1.577e-005  3.755e-006  6.023e-007  6.732e-009  2.703e-010
       0.1  6.843e-004  6.843e-004  6.843e-004  6.840e-004  6.725e-
004  6.494e-004  5.932e-004  3.561e-004  1.898e-004  1.002e-004
5.395e-005  1.710e-005  3.752e-006  7.846e-008  4.572e-009
       0.2  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.809e-
004  6.721e-004  6.453e-004  4.811e-004  3.146e-004  1.973e-004
1.230e-004  4.934e-005  1.411e-005  5.074e-007  4.104e-008
       0.3  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.816e-
004  6.739e-004  6.497e-004  4.939e-004  3.296e-004  2.105e-004
1.334e-004  5.500e-005  1.625e-005  6.271e-007  5.305e-008
       0.4  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.816e-
004  6.740e-004  6.493e-004  4.879e-004  3.182e-004  1.976e-004
1.215e-004  4.719e-005  1.281e-005  3.937e-007  2.799e-008
       0.5  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.814e-
004  6.736e-004  6.491e-004  4.888e-004  3.178e-004  1.957e-004
1.189e-004  4.483e-005  1.161e-005  3.073e-007  1.930e-008
      0.75  6.843e-004  6.843e-004  6.843e-004  6.841e-004  6.755e-
004  6.580e-004  6.146e-004  4.134e-004  2.485e-004  1.460e-004
8.640e-005  3.200e-005  8.407e-006  2.561e-007  1.876e-008
         1  6.843e-004  6.843e-004  6.843e-004  6.837e-004  6.651e-
004  6.354e-004  5.730e-004  3.459e-004  1.931e-004  1.079e-004
6.168e-005  2.189e-005  5.581e-006  1.690e-007  1.278e-008
         2  6.843e-004  6.843e-004  6.831e-004  6.711e-004  5.700e-
004  4.861e-004  3.717e-004  1.464e-004  6.169e-005  2.826e-005
1.392e-005  4.009e-006  8.401e-007  1.914e-008  1.311e-009
         3  6.843e-004  6.843e-004  6.779e-004  6.410e-004  4.579e-
004  3.487e-004  2.291e-004  6.182e-005  2.004e-005  7.529e-006
3.161e-006  7.103e-007  1.137e-007  1.517e-009  7.569e-011
         4  6.843e-004  6.843e-004  6.687e-004  6.033e-004  3.667e-
004  2.540e-004  1.480e-004  3.005e-005  8.066e-006  2.632e-006
9.884e-007  1.870e-007  2.487e-008  2.303e-010  9.267e-012
```

```
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.843e-004  6.843e-004  6.840e-004  6.796e-004  6.205e-
004  5.547e-004  4.457e-004  1.815e-004  7.252e-005  3.070e-005
1.387e-005  3.354e-006  5.512e-007  6.577e-009  2.769e-010
      0.05  6.843e-004  6.843e-004  6.841e-004  6.816e-004  6.417e-
004  5.930e-004  5.046e-004  2.460e-004  1.129e-004  5.327e-005
2.630e-005  7.310e-006  1.400e-006  2.272e-008  1.150e-009
       0.1  6.843e-004  6.843e-004  6.843e-004  6.838e-004  6.695e-
004  6.472e-004  5.989e-004  3.955e-004  2.352e-004  1.371e-004
8.069e-005  2.967e-005  7.758e-006  2.369e-007  1.754e-008
       0.2  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.789e-
004  6.682e-004  6.410e-004  4.944e-004  3.432e-004  2.291e-004
1.516e-004  6.760e-005  2.202e-005  1.062e-006  1.040e-007
       0.3  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.787e-
004  6.675e-004  6.389e-004  4.876e-004  3.352e-004  2.220e-004
1.460e-004  6.451e-005  2.081e-005  9.875e-007  9.580e-008
       0.4  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.783e-
004  6.663e-004  6.357e-004  4.746e-004  3.163e-004  2.025e-004
1.286e-004  5.315e-005  1.565e-005  5.829e-007  4.712e-008
       0.5  6.843e-004  6.843e-004  6.843e-004  6.841e-004  6.766e-
004  6.625e-004  6.281e-004  4.531e-004  2.885e-004  1.761e-004
1.067e-004  4.038e-005  1.058e-005  2.928e-007  1.906e-008
      0.75  6.843e-004  6.843e-004  6.842e-004  6.836e-004  6.669e-
004  6.415e-004  5.876e-004  3.717e-004  2.103e-004  1.163e-004
6.494e-005  2.157e-005  4.899e-006  1.027e-007  5.707e-009
         1  6.843e-004  6.843e-004  6.842e-004  6.826e-004  6.530e-
004  6.146e-004  5.424e-004  3.061e-004  1.605e-004  8.458e-005
4.579e-005  1.474e-005  3.316e-006  7.387e-008  4.483e-009
         2  6.843e-004  6.843e-004  6.815e-004  6.615e-004  5.317e-
004  4.364e-004  3.162e-004  1.080e-004  4.105e-005  1.740e-005
8.055e-006  2.108e-006  3.990e-007  7.491e-009  4.601e-010
         3  6.843e-004  6.843e-004  6.689e-004  6.090e-004  3.881e-
004  2.782e-004  1.705e-004  4.041e-005  1.238e-005  4.530e-006
1.882e-006  4.237e-007  6.966e-008  1.060e-009  6.014e-011
         4  6.843e-004  6.843e-004  6.415e-004  5.340e-004  2.688e-
004  1.715e-004  9.195e-005  1.666e-005  4.391e-006  1.454e-006
5.620e-007  1.145e-007  1.717e-008  2.288e-010  1.237e-011
```

```
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  6.843e-004  6.843e-004  6.842e-004  6.818e-004  6.387e-
004  5.822e-004  4.808e-004  2.117e-004  9.017e-005  4.032e-005
1.910e-005  5.007e-006  9.053e-007  1.333e-008  6.418e-010
      0.05  6.843e-004  6.843e-004  6.842e-004  6.829e-004  6.536e-
004  6.107e-004  5.260e-004  2.624e-004  1.223e-004  5.846e-005
2.920e-005  8.293e-006  1.632e-006  2.831e-008  1.500e-009
       0.1  6.843e-004  6.843e-004  6.843e-004  6.840e-004  6.740e-
004  6.551e-004  6.095e-004  4.016e-004  2.363e-004  1.364e-004
7.969e-005  2.904e-005  7.553e-006  2.333e-007  1.767e-008
       0.2  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.811e-
004  6.737e-004  6.520e-004  5.140e-004  3.601e-004  2.411e-004
1.596e-004  7.101e-005  2.300e-005  1.091e-006  1.056e-007
       0.3  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.813e-
004  6.740e-004  6.528e-004  5.165e-004  3.637e-004  2.451e-004
1.634e-004  7.371e-005  2.438e-005  1.230e-006  1.252e-007
       0.4  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.812e-
004  6.737e-004  6.515e-004  5.099e-004  3.532e-004  2.336e-004
1.529e-004  6.669e-005  2.114e-005  9.706e-007  9.337e-008
       0.5  6.843e-004  6.843e-004  6.843e-004  6.842e-004  6.804e-
004  6.719e-004  6.479e-004  4.992e-004  3.393e-004  2.204e-004
1.420e-004  6.043e-005  1.877e-005  8.690e-007  8.785e-008
      0.75  6.843e-004  6.843e-004  6.843e-004  6.840e-004  6.743e-
004  6.567e-004  6.148e-004  4.226e-004  2.617e-004  1.590e-004
9.753e-005  3.902e-005  1.158e-005  5.273e-007  5.536e-008
         1  6.843e-004  6.843e-004  6.842e-004  6.835e-004  6.645e-
004  6.356e-004  5.756e-004  3.532e-004  2.004e-004  1.139e-004
6.621e-005  2.435e-005  6.564e-006  2.394e-007  2.149e-008
         2  6.843e-004  6.843e-004  6.828e-004  6.700e-004  5.668e-
004  4.812e-004  3.651e-004  1.411e-004  5.904e-005  2.710e-005
1.343e-005  3.947e-006  8.600e-007  2.258e-008  1.765e-009
         3  6.843e-004  6.843e-004  6.758e-004  6.344e-004  4.431e-
004  3.334e-004  2.165e-004  5.808e-005  1.914e-005  7.360e-006
3.173e-006  7.530e-007  1.305e-007  2.186e-009  1.311e-010
         4  6.843e-004  6.843e-004  6.612e-004  5.850e-004  3.402e-
004  2.318e-004  1.333e-004  2.720e-005  7.522e-006  2.545e-006
9.918e-007  2.019e-007  2.976e-008  3.667e-010  1.851e-011
```

Source: Sierra Madre
Region: USGS 2008 California
Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC

Period	Amp=0.0001	Amp=0.001	Amp=0.01	Amp=0.02	Amp=0.05	Amp=0.07	Amp=0.1	Amp=0.2	Amp=0.3	Amp=0.4	Amp=0.5	Amp=0.7	Amp=1	Amp=2	Amp=3
PGA	8.666e-004	8.666e-004	8.663e-004	8.574e-004	7.080e-004	5.638e-004	3.765e-004	9.149e-005	2.528e-005	8.085e-006	2.915e-006	4.968e-007	5.579e-008	3.111e-010	8.320e-012
0.05	8.666e-004	8.666e-004	8.663e-004	8.588e-004	7.215e-004	5.830e-004	3.976e-004	1.022e-004	2.939e-005	9.696e-006	3.586e-006	6.364e-007	7.474e-008	4.570e-010	1.293e-011
0.1	8.666e-004	8.666e-004	8.665e-004	8.639e-004	7.889e-004	6.905e-004	5.303e-004	1.871e-004	6.763e-005	2.665e-005	1.141e-005	2.553e-006	3.891e-007	4.112e-009	1.639e-010
0.2	8.666e-004	8.666e-004	8.666e-004	8.664e-004	8.502e-004	8.137e-004	7.251e-004	3.902e-004	1.894e-004	9.284e-005	4.714e-005	1.364e-005	2.719e-006	4.733e-008	2.483e-009
0.3	8.666e-004	8.666e-004	8.666e-004	8.665e-004	8.563e-004	8.307e-004	7.625e-004	4.610e-004	2.482e-004	1.328e-004	7.272e-005	2.386e-005	5.511e-006	1.329e-007	8.631e-009
0.4	8.666e-004	8.666e-004	8.666e-004	8.665e-004	8.562e-004	8.303e-004	7.615e-004	4.582e-004	2.453e-004	1.304e-004	7.098e-005	2.301e-005	5.223e-006	1.201e-007	7.526e-009
0.5	8.666e-004	8.666e-004	8.666e-004	8.665e-004	8.549e-004	8.276e-004	7.574e-004	4.579e-004	2.490e-004	1.350e-004	7.495e-005	2.528e-005	6.063e-006	1.613e-007	1.127e-008
0.75	8.666e-004	8.666e-004	8.666e-004	8.660e-004	8.385e-004	7.905e-004	6.907e-004	3.679e-004	1.859e-004	9.656e-005	5.229e-005	1.726e-005	4.144e-006	1.195e-007	9.209e-009
1	8.666e-004	8.666e-004	8.665e-004	8.645e-004	8.071e-004	7.284e-004	5.921e-004	2.557e-004	1.108e-004	5.122e-005	2.525e-005	7.201e-006	1.476e-006	3.117e-008	2.000e-009
2	8.666e-004	8.666e-004	8.588e-004	8.015e-004	5.059e-004	3.509e-004	2.039e-004	4.186e-005	1.160e-005	3.936e-006	1.539e-006	3.155e-007	4.687e-008	5.833e-010	2.934e-011
3	8.666e-004	8.666e-004	8.202e-004	6.550e-004	2.613e-004	1.444e-004	6.442e-005	7.540e-006	1.473e-006	3.876e-007					

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1.240e-007  1.870e-008  1.996e-009  1.292e-011  4.405e-013
         4  8.666e-004  8.666e-004  7.544e-004  5.097e-004  1.411e-
004  6.620e-005  2.451e-005  1.943e-006  2.989e-007  6.611e-008
1.847e-008  2.264e-009  1.939e-010  8.154e-013  2.161e-014
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.666e-004  8.666e-004  8.645e-004  8.285e-004  5.141e-
004  3.292e-004  1.640e-004  1.961e-005  3.378e-006  7.596e-007
2.069e-007  2.290e-008  1.613e-009  3.570e-012  5.520e-014
      0.05  8.666e-004  8.666e-004  8.655e-004  8.426e-004  5.822e-
004  4.001e-004  2.176e-004  3.166e-005  6.176e-006  1.521e-006
4.452e-007  5.497e-008  4.353e-009  1.214e-011  2.150e-013
       0.1  8.666e-004  8.666e-004  8.664e-004  8.597e-004  7.160e-
004  5.672e-004  3.722e-004  8.398e-005  2.175e-005  6.601e-006
2.278e-006  3.621e-007  3.761e-008  1.789e-010  4.345e-012
       0.2  8.666e-004  8.666e-004  8.666e-004  8.654e-004  8.123e-
004  7.272e-004  5.730e-004  2.084e-004  7.500e-005  2.914e-005
1.226e-005  2.645e-006  3.831e-007  3.535e-009  1.274e-010
       0.3  8.666e-004  8.666e-004  8.666e-004  8.659e-004  8.270e-
004  7.575e-004  6.206e-004  2.530e-004  9.905e-005  4.107e-005
1.821e-005  4.271e-006  6.777e-007  7.526e-009  3.035e-010
       0.4  8.666e-004  8.666e-004  8.666e-004  8.660e-004  8.267e-
004  7.541e-004  6.101e-004  2.334e-004  8.529e-005  3.316e-005
1.385e-005  2.923e-006  4.058e-007  3.255e-009  1.041e-010
       0.5  8.666e-004  8.666e-004  8.666e-004  8.659e-004  8.233e-
004  7.480e-004  6.021e-004  2.285e-004  8.330e-005  3.234e-005
1.350e-005  2.840e-006  3.923e-007  3.089e-009  9.713e-011
      0.75  8.666e-004  8.666e-004  8.665e-004  8.633e-004  7.756e-
004  6.659e-004  4.958e-004  1.609e-004  5.485e-005  2.070e-005
8.554e-006  1.814e-006  2.606e-007  2.438e-009  9.003e-011
         1  8.666e-004  8.666e-004  8.662e-004  8.569e-004  7.098e-
004  5.712e-004  3.912e-004  1.064e-004  3.292e-005  1.168e-005
4.625e-006  9.278e-007  1.274e-007  1.138e-009  4.206e-011
         2  8.666e-004  8.666e-004  8.509e-004  7.558e-004  3.938e-
004  2.452e-004  1.245e-004  1.845e-005  4.049e-006  1.140e-006
3.808e-007  6.024e-008  6.608e-009  4.180e-011  1.340e-012
         3  8.666e-004  8.666e-004  8.056e-004  6.102e-004  2.110e-
004  1.081e-004  4.377e-005  3.999e-006  6.486e-007  1.465e-007
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4.117e-008  5.003e-009  4.139e-010  1.507e-012  3.493e-014
         4  8.666e-004  8.666e-004  7.456e-004  4.874e-004  1.237e-
004  5.522e-005  1.910e-005  1.255e-006  1.662e-007  3.243e-008
8.126e-009  8.298e-010  5.703e-011  1.446e-013  2.713e-015
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.666e-004  8.666e-004  8.612e-004  8.037e-004  4.651e-
004  2.947e-004  1.479e-004  1.897e-005  3.497e-006  8.330e-007
2.383e-007  2.855e-008  2.202e-009  5.910e-012  1.032e-013
      0.05  8.666e-004  8.666e-004  8.634e-004  8.232e-004  5.322e-
004  3.613e-004  1.979e-004  3.107e-005  6.540e-006  1.718e-006
5.311e-007  7.172e-008  6.292e-009  2.180e-011  4.429e-013
       0.1  8.666e-004  8.666e-004  8.661e-004  8.551e-004  6.981e-
004  5.568e-004  3.768e-004  9.840e-005  2.915e-005  9.894e-006
3.755e-006  6.962e-007  8.616e-008  5.917e-010  1.805e-011
       0.2  8.666e-004  8.666e-004  8.665e-004  8.644e-004  7.983e-
004  7.090e-004  5.596e-004  2.174e-004  8.513e-005  3.579e-005
1.615e-005  3.928e-006  6.544e-007  8.177e-009  3.571e-010
       0.3  8.666e-004  8.666e-004  8.665e-004  8.647e-004  8.039e-
004  7.183e-004  5.715e-004  2.261e-004  8.958e-005  3.800e-005
1.728e-005  4.250e-006  7.176e-007  9.223e-009  4.100e-010
       0.4  8.666e-004  8.666e-004  8.666e-004  8.648e-004  8.032e-
004  7.151e-004  5.632e-004  2.108e-004  7.845e-005  3.131e-005
1.345e-005  2.986e-006  4.424e-007  4.129e-009  1.462e-010
       0.5  8.666e-004  8.666e-004  8.665e-004  8.640e-004  7.917e-
004  6.955e-004  5.362e-004  1.863e-004  6.434e-005  2.393e-005
9.625e-006  1.899e-006  2.420e-007  1.561e-009  4.251e-011
      0.75  8.666e-004  8.666e-004  8.663e-004  8.589e-004  7.328e-
004  6.047e-004  4.277e-004  1.226e-004  3.819e-005  1.337e-005
5.182e-006  9.847e-007  1.239e-007  8.485e-010  2.526e-011
         1  8.666e-004  8.666e-004  8.656e-004  8.489e-004  6.645e-
004  5.164e-004  3.391e-004  8.402e-005  2.443e-005  8.258e-006
3.141e-006  5.906e-007  7.525e-008  5.713e-010  1.898e-011
         2  8.666e-004  8.666e-004  8.320e-004  6.884e-004  2.963e-
004  1.684e-004  7.700e-005  9.209e-006  1.783e-006  4.605e-007
1.443e-007  2.081e-008  2.084e-009  1.131e-011  3.371e-013
         3  8.666e-004  8.666e-004  7.347e-004  4.809e-004  1.285e-
004  5.986e-005  2.210e-005  1.766e-006  2.749e-007  6.152e-008
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1.737e-008  2.172e-009  1.905e-010  8.480e-013  2.338e-014
         4  8.666e-004  8.663e-004  6.058e-004  3.192e-004  5.998e-
005  2.446e-005  7.877e-006  4.931e-007  6.782e-008  1.404e-008
3.758e-009  4.379e-010  3.619e-011  1.503e-013  4.096e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.666e-004  8.666e-004  8.640e-004  8.299e-004  5.624e-
004  3.959e-004  2.295e-004  4.335e-005  1.072e-005  3.226e-006
1.120e-006  1.828e-007  1.987e-008  1.069e-010  2.826e-012
      0.05  8.666e-004  8.666e-004  8.651e-004  8.415e-004  6.119e-
004  4.481e-004  2.710e-004  5.497e-005  1.403e-005  4.312e-006
1.521e-006  2.544e-007  2.846e-008  1.636e-010  4.529e-012
       0.1  8.666e-004  8.666e-004  8.663e-004  8.596e-004  7.343e-
004  6.048e-004  4.264e-004  1.232e-004  3.951e-005  1.438e-005
5.813e-006  1.204e-006  1.710e-007  1.628e-009  6.211e-011
       0.2  8.666e-004  8.666e-004  8.666e-004  8.654e-004  8.203e-
004  7.500e-004  6.193e-004  2.720e-004  1.165e-004  5.259e-005
2.518e-005  6.739e-006  1.252e-006  1.968e-008  9.891e-010
       0.3  8.666e-004  8.666e-004  8.666e-004  8.657e-004  8.291e-
004  7.689e-004  6.516e-004  3.134e-004  1.456e-004  7.063e-005
3.607e-005  1.079e-005  2.302e-006  4.987e-008  3.115e-009
       0.4  8.666e-004  8.666e-004  8.666e-004  8.658e-004  8.287e-
004  7.665e-004  6.449e-004  3.008e-004  1.363e-004  6.497e-005
3.276e-005  9.638e-006  2.024e-006  4.251e-008  2.592e-009
       0.5  8.666e-004  8.666e-004  8.666e-004  8.655e-004  8.233e-
004  7.570e-004  6.319e-004  2.909e-004  1.322e-004  6.375e-005
3.269e-005  1.001e-005  2.232e-006  5.531e-008  3.802e-009
      0.75  8.666e-004  8.666e-004  8.665e-004  8.628e-004  7.823e-
004  6.870e-004  5.381e-004  2.171e-004  9.296e-005  4.354e-005
2.201e-005  6.686e-006  1.510e-006  4.093e-008  3.108e-009
         1  8.666e-004  8.666e-004  8.661e-004  8.568e-004  7.271e-
004  6.053e-004  4.408e-004  1.487e-004  5.607e-005  2.372e-005
1.100e-005  2.906e-006  5.597e-007  1.096e-008  6.872e-010
         2  8.666e-004  8.666e-004  8.472e-004  7.485e-004  3.987e-
004  2.548e-004  1.351e-004  2.317e-005  5.810e-006  1.845e-006
6.881e-007  1.322e-007  1.852e-008  2.121e-010  1.034e-011
         3  8.666e-004  8.666e-004  7.868e-004  5.820e-004  2.003e-
004  1.041e-004  4.343e-005  4.435e-006  7.990e-007  1.985e-007
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6.085e-008 8.625e-009 8.669e-010 5.090e-012 1.663e-013
         4 8.666e-004 8.665e-004 7.020e-004 4.388e-004 1.083e-
004 4.863e-005 1.716e-005 1.230e-006 1.776e-007 3.753e-008
1.012e-008 1.177e-009 9.570e-011 3.701e-013 9.474e-015

Source: Sierra Madre (San Fernando)
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period Amp=0.0001 Amp=0.001   Amp=0.01   Amp=0.02   Amp=
0.05   Amp=0.07   Amp=0.1   Amp=0.2   Amp=0.3   Amp=0.4
Amp=0.5   Amp=0.7   Amp=1   Amp=2   Amp=3
       PGA 1.103e-003 1.103e-003 1.103e-003 1.100e-003 9.858e-
004 8.319e-004 5.934e-004 1.606e-004 4.626e-005 1.510e-005
5.504e-006 9.480e-007 1.069e-007 5.947e-010 1.581e-011
      0.05 1.103e-003 1.103e-003 1.103e-003 1.101e-003 1.007e-
003 8.691e-004 6.413e-004 1.891e-004 5.764e-005 1.960e-005
7.378e-006 1.333e-006 1.581e-007 9.658e-010 2.706e-011
       0.1 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.065e-
003 9.902e-004 8.304e-004 3.588e-004 1.454e-004 6.176e-005
2.789e-005 6.721e-006 1.099e-006 1.304e-008 5.510e-010
       0.2 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.097e-
003 1.077e-003 1.011e-003 6.517e-004 3.621e-004 1.963e-004
1.079e-004 3.518e-005 7.950e-006 1.760e-007 1.062e-008
       0.3 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.098e-
003 1.082e-003 1.029e-003 7.078e-004 4.216e-004 2.434e-004
1.415e-004 5.078e-005 1.288e-005 3.712e-007 2.673e-008
       0.4 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.097e-
003 1.077e-003 1.014e-003 6.660e-004 3.792e-004 2.108e-004
1.186e-004 4.035e-005 9.634e-006 2.441e-007 1.621e-008
       0.5 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.095e-
003 1.071e-003 9.996e-004 6.406e-004 3.610e-004 2.002e-004
1.129e-004 3.889e-005 9.512e-006 2.620e-007 1.870e-008
      0.75 1.103e-003 1.103e-003 1.103e-003 1.103e-003 1.075e-
003 1.021e-003 8.986e-004 4.788e-004 2.380e-004 1.213e-004
6.444e-005 2.055e-005 4.730e-006 1.244e-007 9.064e-009
         1 1.103e-003 1.103e-003 1.103e-003 1.101e-003 1.034e-
003 9.340e-004 7.544e-004 3.109e-004 1.281e-004 5.653e-005
2.677e-005 7.149e-006 1.359e-006 2.457e-008 1.439e-009
         2 1.103e-003 1.103e-003 1.093e-003 1.014e-003 5.996e-

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004  3.949e-004  2.134e-004  3.629e-005  8.807e-006  2.700e-006
9.730e-007  1.756e-007  2.271e-008  2.149e-010  9.206e-012
         3  1.103e-003  1.103e-003  1.036e-003  7.885e-004  2.566e-
004  1.256e-004  4.801e-005  3.923e-006  6.044e-007  1.332e-007
3.700e-008  4.487e-009  3.787e-010  1.540e-012  3.995e-014
         4  1.103e-003  1.103e-003  9.194e-004  5.504e-004  1.098e-
004  4.375e-005  1.338e-005  7.060e-007  8.444e-008  1.558e-008
3.778e-009  3.742e-010  2.557e-011  6.967e-014  1.438e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.103e-003  1.103e-003  1.102e-003  1.079e-003  7.575e-
004  5.187e-004  2.775e-004  3.745e-005  6.812e-006  1.581e-006
4.395e-007  4.985e-008  3.579e-009  8.082e-012  1.254e-013
      0.05  1.103e-003  1.103e-003  1.103e-003  1.090e-003  8.491e-
004  6.289e-004  3.726e-004  6.359e-005  1.344e-005  3.479e-006
1.055e-006  1.365e-007  1.128e-008  3.361e-011  6.139e-013
       0.1  1.103e-003  1.103e-003  1.103e-003  1.101e-003  1.002e-
003  8.597e-004  6.280e-004  1.797e-004  5.353e-005  1.786e-005
6.618e-006  1.165e-006  1.341e-007  7.669e-010  2.057e-011
       0.2  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.071e-
003  1.002e-003  8.486e-004  3.719e-004  1.504e-004  6.333e-005
2.828e-005  6.645e-006  1.046e-006  1.114e-008  4.325e-010
       0.3  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.076e-
003  1.016e-003  8.751e-004  4.058e-004  1.715e-004  7.472e-005
3.431e-005  8.424e-006  1.392e-006  1.635e-008  6.734e-010
       0.4  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.075e-
003  1.010e-003  8.579e-004  3.685e-004  1.433e-004  5.776e-005
2.470e-005  5.351e-006  7.561e-007  6.116e-009  1.941e-010
       0.5  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.070e-
003  9.960e-004  8.300e-004  3.344e-004  1.235e-004  4.775e-005
1.972e-005  4.040e-006  5.355e-007  3.779e-009  1.099e-010
      0.75  1.103e-003  1.103e-003  1.103e-003  1.101e-003  1.009e-
003  8.743e-004  6.512e-004  1.994e-004  6.295e-005  2.207e-005
8.539e-006  1.617e-006  2.030e-007  1.413e-009  4.332e-011
         1  1.103e-003  1.103e-003  1.103e-003  1.095e-003  9.161e-
004  7.296e-004  4.832e-004  1.130e-004  3.037e-005  9.554e-006
3.413e-006  5.784e-007  6.545e-008  3.897e-010  1.122e-011
         2  1.103e-003  1.103e-003  1.086e-003  9.542e-004  4.318e-
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004  2.397e-004  1.035e-004  1.013e-005  1.662e-006  3.751e-007
1.049e-007  1.258e-008  1.020e-009  3.544e-012  7.974e-014
         3  1.103e-003  1.103e-003  1.020e-003  7.246e-004  1.846e-
004  7.849e-005  2.513e-005  1.336e-006  1.524e-007  2.653e-008
6.068e-009  5.379e-010  3.172e-011  5.952e-014  9.365e-016
         4  1.103e-003  1.103e-003  9.247e-004  5.330e-004  8.849e-
005  3.143e-005  8.259e-006  2.967e-007  2.685e-008  3.969e-009
7.995e-010  5.857e-011  2.824e-012  3.592e-015  4.508e-017
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.103e-003  1.103e-003  1.101e-003  1.059e-003  6.556e-
004  4.139e-004  2.007e-004  2.205e-005  3.559e-006  7.609e-007
1.990e-007  2.068e-008  1.362e-009  2.661e-012  3.852e-014
      0.05  1.103e-003  1.103e-003  1.102e-003  1.079e-003  7.621e-
004  5.258e-004  2.849e-004  4.011e-005  7.566e-006  1.812e-006
5.181e-007  6.167e-008  4.697e-009  1.221e-011  2.091e-013
       0.1  1.103e-003  1.103e-003  1.103e-003  1.099e-003  9.673e-
004  8.014e-004  5.567e-004  1.413e-004  3.912e-005  1.242e-005
4.435e-006  7.417e-007  8.135e-008  4.327e-010  1.130e-011
       0.2  1.103e-003  1.103e-003  1.103e-003  1.102e-003  1.053e-
003  9.607e-004  7.781e-004  2.997e-004  1.109e-004  4.376e-005
1.859e-005  4.062e-006  5.946e-007  5.595e-009  2.046e-010
       0.3  1.103e-003  1.103e-003  1.103e-003  1.102e-003  1.051e-
003  9.566e-004  7.715e-004  2.935e-004  1.077e-004  4.222e-005
1.785e-005  3.870e-006  5.620e-007  5.210e-009  1.890e-010
       0.4  1.103e-003  1.103e-003  1.103e-003  1.102e-003  1.045e-
003  9.421e-004  7.432e-004  2.586e-004  8.703e-005  3.160e-005
1.246e-005  2.395e-006  2.995e-007  1.943e-009  5.484e-011
       0.5  1.103e-003  1.103e-003  1.103e-003  1.102e-003  1.025e-
003  9.032e-004  6.880e-004  2.195e-004  7.005e-005  2.451e-005
9.399e-006  1.734e-006  2.077e-007  1.241e-009  3.335e-011
      0.75  1.103e-003  1.103e-003  1.103e-003  1.096e-003  9.372e-
004  7.602e-004  5.160e-004  1.271e-004  3.508e-005  1.120e-005
4.033e-006  6.872e-007  7.743e-008  4.410e-010  1.206e-011
         1  1.103e-003  1.103e-003  1.102e-003  1.084e-003  8.297e-
004  6.208e-004  3.813e-004  7.697e-005  1.921e-005  5.778e-006
2.002e-006  3.268e-007  3.589e-008  2.073e-010  5.953e-012
         2  1.103e-003  1.103e-003  1.054e-003  8.366e-004  2.936e-
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004  1.469e-004  5.714e-005  4.700e-006  7.132e-007  1.540e-007
4.188e-008  4.871e-009  3.879e-010  1.352e-012  3.122e-014
         3  1.103e-003  1.103e-003  8.958e-004  5.178e-004  9.796e-
005  3.836e-005  1.154e-005  5.928e-007  7.009e-008  1.285e-008
3.106e-009  3.067e-010  2.094e-011  5.749e-014  1.199e-015
         4  1.103e-003  1.103e-003  6.880e-004  2.979e-004  3.643e-
005  1.221e-005  3.144e-006  1.236e-007  1.280e-008  2.163e-009
4.939e-010  4.530e-011  2.907e-012  7.413e-015  1.524e-016
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.103e-003  1.103e-003  1.102e-003  1.079e-003  7.996e-
004  5.881e-004  3.572e-004  7.336e-005  1.888e-005  5.813e-006
2.048e-006  3.395e-007  3.730e-008  2.018e-010  5.325e-012
      0.05  1.103e-003  1.103e-003  1.103e-003  1.090e-003  8.728e-
004  6.746e-004  4.329e-004  9.760e-005  2.621e-005  8.297e-006
2.983e-006  5.104e-007  5.803e-008  3.372e-010  9.296e-012
       0.1  1.103e-003  1.103e-003  1.103e-003  1.101e-003  1.012e-
003  8.838e-004  6.717e-004  2.266e-004  7.936e-005  3.068e-005
1.298e-005  2.876e-006  4.382e-007  4.746e-009  1.943e-010
       0.2  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.074e-
003  1.013e-003  8.792e-004  4.411e-004  2.078e-004  1.011e-004
5.158e-005  1.530e-005  3.197e-006  6.424e-008  3.751e-009
       0.3  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.075e-
003  1.018e-003  8.918e-004  4.691e-004  2.336e-004  1.201e-004
6.454e-005  2.102e-005  4.946e-006  1.309e-007  9.198e-009
       0.4  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.073e-
003  1.010e-003  8.717e-004  4.310e-004  2.032e-004  1.000e-004
5.191e-005  1.603e-005  3.563e-006  8.404e-008  5.485e-009
       0.5  1.103e-003  1.103e-003  1.103e-003  1.103e-003  1.063e-
003  9.900e-004  8.392e-004  3.982e-004  1.848e-004  9.082e-005
4.735e-005  1.489e-005  3.419e-006  8.899e-008  6.280e-009
      0.75  1.103e-003  1.103e-003  1.103e-003  1.100e-003  1.007e-
003  8.850e-004  6.886e-004  2.684e-004  1.120e-004  5.152e-005
2.567e-005  7.617e-006  1.670e-006  4.208e-008  3.040e-009
         1  1.103e-003  1.103e-003  1.103e-003  1.093e-003  9.267e-
004  7.615e-004  5.396e-004  1.670e-004  5.921e-005  2.396e-005
1.073e-005  2.685e-006  4.868e-007  8.389e-009  4.853e-010
         2  1.103e-003  1.103e-003  1.078e-003  9.349e-004  4.417e-
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004  2.605e-004  1.247e-004  1.704e-005  3.728e-006  1.076e-006
3.733e-007  6.434e-008  8.040e-009  7.326e-011  3.106e-012
         3  1.103e-003  1.103e-003  9.842e-004  6.770e-004  1.797e-
004  8.080e-005  2.823e-005  1.951e-006  2.756e-007  5.752e-008
1.539e-008  1.777e-009  1.438e-010  5.523e-013  1.403e-014
         4  1.103e-003  1.103e-003  8.440e-004  4.605e-004  7.822e-
005  2.913e-005  8.263e-006  3.754e-007  4.136e-008  7.237e-009
1.690e-009  1.594e-010  1.043e-011  2.689e-014  5.451e-016


Source: Sierra Madre Connected
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.440e-004  7.440e-004  7.438e-004  7.398e-004  6.604e-
004  5.698e-004  4.308e-004  1.469e-004  5.155e-005  1.975e-005
8.223e-006  1.749e-006  2.494e-007  2.221e-009  7.813e-011
      0.05  7.440e-004  7.440e-004  7.439e-004  7.405e-004  6.691e-
004  5.847e-004  4.514e-004  1.640e-004  6.044e-005  2.407e-005
1.035e-005  2.315e-006  3.490e-007  3.483e-009  1.312e-010
       0.1  7.440e-004  7.440e-004  7.440e-004  7.428e-004  7.060e-
004  6.514e-004  5.492e-004  2.600e-004  1.179e-004  5.543e-005
2.739e-005  7.669e-006  1.493e-006  2.560e-008  1.358e-009
       0.2  7.440e-004  7.440e-004  7.440e-004  7.439e-004  7.363e-
004  7.177e-004  6.677e-004  4.309e-004  2.465e-004  1.385e-004
7.883e-005  2.740e-005  6.699e-006  1.764e-007  1.187e-008
       0.3  7.440e-004  7.440e-004  7.440e-004  7.439e-004  7.391e-
004  7.258e-004  6.870e-004  4.780e-004  2.942e-004  1.763e-004
1.063e-004  4.075e-005  1.121e-005  3.864e-007  3.113e-008
       0.4  7.440e-004  7.440e-004  7.440e-004  7.439e-004  7.389e-
004  7.253e-004  6.856e-004  4.738e-004  2.892e-004  1.718e-004
1.027e-004  3.874e-005  1.042e-005  3.392e-007  2.618e-008
       0.5  7.440e-004  7.440e-004  7.440e-004  7.439e-004  7.382e-
004  7.234e-004  6.820e-004  4.704e-004  2.893e-004  1.740e-004
1.055e-004  4.099e-005  1.153e-005  4.241e-007  3.601e-008
      0.75  7.440e-004  7.440e-004  7.440e-004  7.437e-004  7.291e-
004  7.011e-004  6.378e-004  3.939e-004  2.256e-004  1.298e-004
7.658e-005  2.896e-005  8.093e-006  3.170e-007  2.934e-008
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         1  7.440e-004  7.440e-004  7.440e-004  7.429e-004  7.108e-
004  6.621e-004  5.690e-004  2.931e-004  1.458e-004  7.512e-005
4.046e-005  1.327e-005  3.172e-006  9.096e-008  6.999e-009
         2  7.440e-004  7.440e-004  7.399e-004  7.068e-004  5.034e-
004  3.776e-004  2.428e-004  6.321e-005  2.046e-005  7.784e-006
3.333e-006  7.845e-007  1.352e-007  2.246e-009  1.338e-010
         3  7.440e-004  7.440e-004  7.183e-004  6.150e-004  3.077e-
004  1.918e-004  9.875e-005  1.575e-005  3.728e-006  1.125e-006
4.010e-007  7.112e-008  9.017e-009  8.132e-011  3.362e-012
         4  7.440e-004  7.440e-004  6.786e-004  5.120e-004  1.877e-
004  1.006e-004  4.341e-005  4.730e-006  8.817e-007  2.238e-007
6.958e-008  1.003e-008  1.018e-009  5.958e-012  1.913e-013
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.440e-004  7.440e-004  7.430e-004  7.245e-004  5.225e-
004  3.747e-004  2.172e-004  3.739e-005  8.188e-006  2.199e-006
6.891e-007  9.450e-008  8.371e-009  2.900e-011  5.828e-013
      0.05  7.440e-004  7.440e-004  7.435e-004  7.321e-004  5.729e-
004  4.365e-004  2.741e-004  5.704e-005  1.416e-005  4.171e-006
1.407e-006  2.161e-007  2.164e-008  9.546e-011  2.213e-012
       0.1  7.440e-004  7.440e-004  7.439e-004  7.408e-004  6.621e-
004  5.659e-004  4.183e-004  1.312e-004  4.308e-005  1.566e-005
6.248e-006  1.243e-006  1.648e-007  1.269e-009  4.096e-011
       0.2  7.440e-004  7.440e-004  7.440e-004  7.435e-004  7.161e-
004  6.669e-004  5.662e-004  2.640e-004  1.158e-004  5.266e-005
2.520e-005  6.667e-006  1.208e-006  1.744e-008  8.198e-010
       0.3  7.440e-004  7.440e-004  7.440e-004  7.437e-004  7.234e-
004  6.834e-004  5.953e-004  3.015e-004  1.411e-004  6.757e-005
3.374e-005  9.553e-006  1.866e-006  3.147e-008  1.626e-009
       0.4  7.440e-004  7.440e-004  7.440e-004  7.437e-004  7.234e-
004  6.820e-004  5.900e-004  2.865e-004  1.276e-004  5.811e-005
2.767e-005  7.173e-006  1.249e-006  1.575e-008  6.584e-010
       0.5  7.440e-004  7.440e-004  7.440e-004  7.437e-004  7.219e-
004  6.793e-004  5.867e-004  2.855e-004  1.274e-004  5.803e-005
2.758e-005  7.096e-006  1.217e-006  1.455e-008  5.797e-010
      0.75  7.440e-004  7.440e-004  7.440e-004  7.424e-004  6.947e-
004  6.279e-004  5.113e-004  2.189e-004  9.220e-005  4.098e-005
1.933e-005  5.028e-006  8.996e-007  1.287e-008  6.066e-010
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         1  7.440e-004  7.440e-004  7.438e-004  7.391e-004  6.557e-
004  5.662e-004  4.333e-004  1.613e-004  6.270e-005  2.645e-005
1.203e-005  2.984e-006  5.143e-007  7.140e-009  3.404e-010
         2  7.440e-004  7.440e-004  7.359e-004  6.830e-004  4.402e-
004  3.140e-004  1.899e-004  4.208e-005  1.194e-005  4.055e-006
1.569e-006  3.102e-007  4.312e-008  4.319e-010  1.809e-011
         3  7.440e-004  7.440e-004  7.114e-004  5.943e-004  2.843e-
004  1.733e-004  8.634e-005  1.227e-005  2.609e-006  7.155e-007
2.339e-007  3.570e-008  3.761e-009  2.186e-011  6.653e-013
         4  7.440e-004  7.440e-004  6.772e-004  5.118e-004  1.930e-
004  1.044e-004  4.505e-005  4.672e-006  8.143e-007  1.933e-007
5.640e-008  7.244e-009  6.345e-010  2.573e-012  6.344e-014
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.440e-004  7.440e-004  7.415e-004  7.132e-004  5.090e-
004  3.759e-004  2.315e-004  4.834e-005  1.224e-005  3.674e-006
1.261e-006  1.992e-007  2.062e-008  9.801e-011  2.388e-012
      0.05  7.440e-004  7.440e-004  7.425e-004  7.233e-004  5.581e-
004  4.360e-004  2.904e-004  7.407e-005  2.153e-005  7.180e-006
2.679e-006  4.820e-007  5.742e-008  3.609e-010  1.038e-011
       0.1  7.440e-004  7.440e-004  7.438e-004  7.387e-004  6.581e-
004  5.744e-004  4.485e-004  1.763e-004  7.033e-005  2.995e-005
1.363e-005  3.344e-006  5.595e-007  6.938e-009  2.991e-010
       0.2  7.440e-004  7.440e-004  7.440e-004  7.430e-004  7.100e-
004  6.614e-004  5.703e-004  2.993e-004  1.497e-004  7.644e-005
4.046e-005  1.263e-005  2.763e-006  5.915e-008  3.544e-009
       0.3  7.440e-004  7.440e-004  7.440e-004  7.431e-004  7.123e-
004  6.648e-004  5.743e-004  3.015e-004  1.507e-004  7.691e-005
4.070e-005  1.270e-005  2.781e-006  5.974e-008  3.589e-009
       0.4  7.440e-004  7.440e-004  7.440e-004  7.431e-004  7.117e-
004  6.625e-004  5.681e-004  2.860e-004  1.358e-004  6.584e-005
3.316e-005  9.452e-006  1.838e-006  2.929e-008  1.418e-009
       0.5  7.440e-004  7.440e-004  7.440e-004  7.428e-004  7.053e-
004  6.508e-004  5.498e-004  2.603e-004  1.152e-004  5.213e-005
2.458e-005  6.221e-006  1.039e-006  1.147e-008  4.289e-010
      0.75  7.440e-004  7.440e-004  7.439e-004  7.402e-004  6.711e-
004  5.923e-004  4.677e-004  1.848e-004  7.252e-005  3.017e-005
1.338e-005  3.113e-006  4.828e-007  4.849e-009  1.773e-010
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         1  7.440e-004  7.440e-004  7.435e-004  7.349e-004  6.281e-
004  5.295e-004  3.928e-004  1.348e-004  4.909e-005  1.959e-005
8.486e-006  1.940e-006  3.033e-007  3.370e-009  1.382e-010
         2  7.440e-004  7.440e-004  7.253e-004  6.400e-004  3.503e-
004  2.280e-004  1.230e-004  2.111e-005  5.109e-006  1.549e-006
5.496e-007  9.562e-008  1.167e-008  9.242e-011  3.420e-012
         3  7.440e-004  7.440e-004  6.677e-004  4.964e-004  1.829e-
004  9.926e-005  4.363e-005  4.995e-006  9.650e-007  2.519e-007
8.016e-008  1.199e-008  1.271e-009  8.151e-012  2.775e-013
         4  7.440e-004  7.438e-004  5.836e-004  3.659e-004  9.829e-
005  4.683e-005  1.791e-005  1.586e-006  2.680e-007  6.423e-008
1.925e-008  2.659e-009  2.629e-010  1.543e-012  5.140e-014
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.440e-004  7.440e-004  7.428e-004  7.258e-004  5.640e-
004  4.402e-004  2.932e-004  7.754e-005  2.399e-005  8.540e-006
3.391e-006  6.810e-007  9.278e-008  7.826e-010  2.703e-011
      0.05  7.440e-004  7.440e-004  7.433e-004  7.320e-004  6.000e-
004  4.857e-004  3.386e-004  9.837e-005  3.204e-005  1.181e-005
4.811e-006  1.004e-006  1.427e-007  1.313e-009  4.795e-011
       0.1  7.440e-004  7.440e-004  7.439e-004  7.408e-004  6.754e-
004  5.972e-004  4.720e-004  1.892e-004  7.709e-005  3.368e-005
1.575e-005  4.086e-006  7.390e-007  1.127e-008  5.661e-010
       0.2  7.440e-004  7.440e-004  7.440e-004  7.434e-004  7.208e-
004  6.820e-004  6.014e-004  3.314e-004  1.707e-004  8.919e-005
4.816e-005  1.557e-005  3.556e-006  8.434e-008  5.410e-009
       0.3  7.440e-004  7.440e-004  7.440e-004  7.436e-004  7.249e-
004  6.913e-004  6.189e-004  3.603e-004  1.953e-004  1.069e-004
6.025e-005  2.100e-005  5.285e-006  1.592e-007  1.212e-008
       0.4  7.440e-004  7.440e-004  7.440e-004  7.436e-004  7.247e-
004  6.899e-004  6.146e-004  3.488e-004  1.842e-004  9.860e-005
5.451e-005  1.845e-005  4.504e-006  1.281e-007  9.419e-009
       0.5  7.440e-004  7.440e-004  7.440e-004  7.435e-004  7.218e-
004  6.845e-004  6.062e-004  3.387e-004  1.773e-004  9.472e-005
5.255e-005  1.810e-005  4.594e-006  1.500e-007  1.234e-008
      0.75  7.440e-004  7.440e-004  7.439e-004  7.421e-004  6.983e-
004  6.405e-004  5.390e-004  2.658e-004  1.301e-004  6.700e-005
3.643e-005  1.237e-005  3.158e-006  1.116e-007  1.004e-008
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         1  7.440e-004  7.440e-004  7.438e-004  7.390e-004  6.649e-
004  5.859e-004  4.651e-004  1.964e-004  8.587e-005  4.038e-005
2.033e-005  6.066e-006  1.330e-006  3.382e-008  2.493e-009
         2  7.440e-004  7.440e-004  7.337e-004  6.766e-004  4.313e-
004  3.066e-004  1.852e-004  4.213e-005  1.250e-005  4.463e-006
1.817e-006  3.968e-007  6.332e-008  9.236e-010  5.177e-011
         3  7.440e-004  7.440e-004  6.991e-004  5.686e-004  2.583e-
004  1.548e-004  7.624e-005  1.101e-005  2.434e-006  6.976e-007
2.383e-007  3.960e-008  4.683e-009  3.711e-011  1.435e-012
         4  7.440e-004  7.439e-004  6.465e-004  4.632e-004  1.596e-
004  8.394e-005  3.546e-005  3.663e-006  6.547e-007  1.604e-007
4.841e-008  6.643e-009  6.386e-010  3.358e-012  1.020e-013


Source: Simi-Santa Rosa
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.681e-
004  9.599e-004  9.290e-004  7.006e-004  4.560e-004  2.833e-004
1.750e-004  6.899e-005  1.934e-005  6.684e-007  5.286e-008
      0.05  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.692e-
004  9.646e-004  9.450e-004  7.680e-004  5.425e-004  3.624e-004
2.382e-004  1.040e-004  3.272e-005  1.435e-006  1.311e-007
       0.1  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.701e-
004  9.692e-004  9.643e-004  8.919e-004  7.507e-004  5.958e-004
4.587e-004  2.629e-004  1.145e-004  1.025e-005  1.477e-006
       0.2  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.694e-004  9.492e-004  8.873e-004  7.932e-004
6.865e-004  4.860e-004  2.738e-004  4.271e-005  8.638e-006
       0.3  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.691e-004  9.464e-004  8.811e-004  7.853e-004
6.786e-004  4.811e-004  2.734e-004  4.458e-005  9.438e-006
       0.4  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.692e-004  9.476e-004  8.851e-004  7.926e-004
6.886e-004  4.933e-004  2.842e-004  4.770e-005  1.025e-005
       0.5  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.700e-004  9.687e-004  9.419e-004  8.716e-004  7.730e-004
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6.661e-004 4.718e-004 2.696e-004 4.556e-005 1.000e-005
      0.75 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.700e-
004 9.689e-004 9.638e-004 9.014e-004 7.856e-004 6.554e-004
5.341e-004 3.452e-004 1.789e-004 2.573e-005 5.308e-006
         1 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.695e-
004 9.668e-004 9.559e-004 8.536e-004 6.992e-004 5.486e-004
4.226e-004 2.478e-004 1.144e-004 1.283e-005 2.270e-006
         2 9.702e-004 9.702e-004 9.702e-004 9.696e-004 9.477e-
004 9.106e-004 8.315e-004 5.382e-004 3.307e-004 2.053e-004
1.306e-004 5.701e-005 1.933e-005 1.252e-006 1.685e-007
         3 9.702e-004 9.702e-004 9.700e-004 9.646e-004 8.771e-
004 7.800e-004 6.281e-004 2.805e-004 1.301e-004 6.481e-005
3.441e-005 1.129e-005 2.790e-006 9.507e-008 8.678e-009
         4 9.702e-004 9.702e-004 9.687e-004 9.501e-004 7.748e-
004 6.336e-004 4.549e-004 1.535e-004 5.908e-005 2.562e-005
1.219e-005 3.380e-006 6.975e-007 1.671e-008 1.242e-009
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period Amp=0.0001 Amp=0.001   Amp=0.01   Amp=0.02   Amp=
0.05   Amp=0.07   Amp=0.1   Amp=0.2   Amp=0.3   Amp=0.4
Amp=0.5   Amp=0.7   Amp=1   Amp=2   Amp=3
       PGA 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.686e-
004 9.626e-004 9.392e-004 7.516e-004 5.259e-004 3.496e-004
2.293e-004 1.000e-004 3.150e-005 1.390e-006 1.275e-007
      0.05 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.695e-
004 9.662e-004 9.516e-004 8.077e-004 6.037e-004 4.258e-004
2.939e-004 1.394e-004 4.833e-005 2.599e-006 2.690e-007
       0.1 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.701e-
004 9.695e-004 9.653e-004 8.969e-004 7.557e-004 5.974e-004
4.565e-004 2.565e-004 1.080e-004 8.666e-006 1.143e-006
       0.2 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.702e-
004 9.700e-004 9.688e-004 9.381e-004 8.527e-004 7.340e-004
6.094e-004 3.972e-004 2.001e-004 2.380e-005 4.009e-006
       0.3 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.702e-
004 9.701e-004 9.690e-004 9.422e-004 8.657e-004 7.560e-004
6.378e-004 4.290e-004 2.256e-004 2.972e-005 5.363e-006
       0.4 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.702e-
004 9.701e-004 9.694e-004 9.484e-004 8.822e-004 7.813e-004
6.674e-004 4.576e-004 2.443e-004 3.203e-005 5.595e-006
       0.5 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.702e-
004 9.702e-004 9.696e-004 9.510e-004 8.899e-004 7.932e-004

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6.815e-004  4.704e-004  2.513e-004  3.178e-005  5.265e-006
      0.75  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.698e-004  9.675e-004  9.270e-004  8.309e-004  7.060e-004
5.791e-004  3.688e-004  1.792e-004  1.872e-005  2.785e-006
         1  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.699e-
004  9.686e-004  9.624e-004  8.893e-004  7.574e-004  6.128e-004
4.821e-004  2.882e-004  1.322e-004  1.307e-005  1.975e-006
         2  9.702e-004  9.702e-004  9.702e-004  9.700e-004  9.604e-
004  9.408e-004  8.926e-004  6.637e-004  4.566e-004  3.089e-004
2.099e-004  1.006e-004  3.707e-005  2.650e-006  3.602e-007
         3  9.702e-004  9.702e-004  9.702e-004  9.687e-004  9.310e-
004  8.771e-004  7.743e-004  4.479e-004  2.486e-004  1.409e-004
8.242e-005  3.105e-005  8.735e-006  3.592e-007  3.500e-008
         4  9.702e-004  9.702e-004  9.700e-004  9.651e-004  8.852e-
004  7.951e-004  6.500e-004  2.988e-004  1.390e-004  6.852e-005
3.577e-005  1.125e-005  2.596e-006  7.167e-008  5.508e-009
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.692e-
004  9.651e-004  9.487e-004  8.023e-004  6.027e-004  4.291e-004
2.995e-004  1.452e-004  5.184e-005  2.991e-006  3.243e-007
      0.05  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.698e-
004  9.678e-004  9.586e-004  8.556e-004  6.874e-004  5.216e-004
3.854e-004  2.059e-004  8.225e-005  6.024e-006  7.566e-007
       0.1  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.697e-004  9.672e-004  9.211e-004  8.149e-004  6.825e-004
5.529e-004  3.464e-004  1.674e-004  1.845e-005  2.987e-006
       0.2  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.693e-004  9.487e-004  8.868e-004  7.933e-004
6.873e-004  4.877e-004  2.757e-004  4.331e-005  8.788e-006
       0.3  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.693e-004  9.496e-004  8.906e-004  8.010e-004
6.985e-004  5.028e-004  2.902e-004  4.802e-005  1.010e-005
       0.4  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.695e-004  9.516e-004  8.955e-004  8.077e-004
7.054e-004  5.070e-004  2.895e-004  4.497e-005  8.818e-006
       0.5  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.695e-004  9.513e-004  8.938e-004  8.035e-004
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6.982e-004  4.948e-004  2.748e-004  3.847e-005  6.836e-006
      0.75  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.699e-004  9.682e-004  9.353e-004  8.533e-004  7.420e-004
6.242e-004  4.177e-004  2.169e-004  2.652e-005  4.376e-006
         1  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.700e-
004  9.691e-004  9.649e-004  9.115e-004  8.054e-004  6.778e-004
5.531e-004  3.512e-004  1.716e-004  1.859e-005  2.870e-006
         2  9.702e-004  9.702e-004  9.702e-004  9.700e-004  9.614e-
004  9.443e-004  9.022e-004  6.950e-004  4.960e-004  3.469e-004
2.426e-004  1.221e-004  4.764e-005  3.854e-006  5.664e-007
         3  9.702e-004  9.702e-004  9.701e-004  9.676e-004  9.240e-
004  8.689e-004  7.692e-004  4.620e-004  2.708e-004  1.625e-004
1.007e-004  4.220e-005  1.369e-005  8.125e-007  1.037e-007
         4  9.702e-004  9.702e-004  9.691e-004  9.579e-004  8.493e-
004  7.502e-004  6.059e-004  2.855e-004  1.416e-004  7.519e-005
4.235e-005  1.544e-005  4.355e-006  2.039e-007  2.327e-008
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.687e-
004  9.625e-004  9.390e-004  7.515e-004  5.282e-004  3.540e-004
2.346e-004  1.047e-004  3.423e-005  1.683e-006  1.682e-007
      0.05  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.695e-
004  9.662e-004  9.517e-004  8.104e-004  6.112e-004  4.366e-004
3.058e-004  1.498e-004  5.443e-005  3.352e-006  3.855e-007
       0.1  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.701e-
004  9.695e-004  9.656e-004  9.033e-004  7.738e-004  6.252e-004
4.894e-004  2.886e-004  1.300e-004  1.245e-005  1.869e-006
       0.2  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.692e-004  9.453e-004  8.756e-004  7.735e-004
6.610e-004  4.570e-004  2.499e-004  3.661e-005  7.145e-006
       0.3  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.692e-004  9.461e-004  8.791e-004  7.808e-004
6.717e-004  4.710e-004  2.630e-004  4.077e-005  8.300e-006
       0.4  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.694e-004  9.492e-004  8.876e-004  7.938e-004
6.871e-004  4.860e-004  2.726e-004  4.157e-005  8.220e-006
       0.5  9.702e-004  9.702e-004  9.702e-004  9.702e-004  9.702e-
004  9.701e-004  9.693e-004  9.481e-004  8.851e-004  7.899e-004
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6.819e-004 4.790e-004 2.653e-004 3.860e-005 7.368e-006
      0.75 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.701e-
004 9.695e-004 9.665e-004 9.212e-004 8.233e-004 7.011e-004
5.792e-004 3.772e-004 1.917e-004 2.366e-005 4.156e-006
         1 9.702e-004 9.702e-004 9.702e-004 9.702e-004 9.698e-
004 9.682e-004 9.611e-004 8.848e-004 7.540e-004 6.131e-004
4.859e-004 2.957e-004 1.394e-004 1.483e-005 2.371e-006
         2 9.702e-004 9.702e-004 9.702e-004 9.699e-004 9.565e-
004 9.319e-004 8.754e-004 6.323e-004 4.278e-004 2.870e-004
1.944e-004 9.321e-005 3.468e-005 2.585e-006 3.650e-007
         3 9.702e-004 9.702e-004 9.701e-004 9.670e-004 9.107e-
004 8.420e-004 7.239e-004 3.968e-004 2.165e-004 1.227e-004
7.250e-005 2.818e-005 8.405e-006 4.223e-007 4.914e-008
         4 9.702e-004 9.702e-004 9.693e-004 9.577e-004 8.364e-
004 7.263e-004 5.703e-004 2.459e-004 1.132e-004 5.644e-005
3.010e-005 1.002e-005 2.549e-006 9.744e-008 1.001e-008

Source: Ventura-Pitas Point
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period Amp=0.0001 Amp=0.001   Amp=0.01   Amp=0.02   Amp=
0.05   Amp=0.07   Amp=0.1   Amp=0.2   Amp=0.3   Amp=0.4
Amp=0.5   Amp=0.7   Amp=1   Amp=2   Amp=3
       PGA 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.777e-
004 7.670e-004 7.301e-004 5.012e-004 2.952e-004 1.679e-004
9.603e-005 3.334e-005 8.070e-006 2.045e-007 1.334e-008
      0.05 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.790e-
004 7.721e-004 7.456e-004 5.517e-004 3.496e-004 2.115e-004
1.274e-004 4.806e-005 1.276e-005 3.896e-007 2.842e-008
       0.1 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.804e-
004 7.789e-004 7.711e-004 6.774e-004 5.265e-004 3.845e-004
2.736e-004 1.365e-004 5.023e-005 3.093e-006 3.514e-007
       0.2 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.807e-
004 7.806e-004 7.795e-004 7.529e-004 6.800e-004 5.804e-004
4.776e-004 3.058e-004 1.505e-004 1.693e-005 2.747e-006
       0.3 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.807e-
004 7.806e-004 7.795e-004 7.551e-004 6.880e-004 5.949e-004
4.969e-004 3.286e-004 1.696e-004 2.172e-005 3.894e-006
       0.4 7.807e-004 7.807e-004 7.807e-004 7.807e-004 7.807e-

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004  7.806e-004  7.795e-004  7.542e-004  6.854e-004  5.905e-004
4.912e-004  3.219e-004  1.640e-004  2.024e-005  3.522e-006
       0.5  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.805e-004  7.790e-004  7.489e-004  6.738e-004  5.752e-004
4.752e-004  3.091e-004  1.572e-004  1.987e-005  3.579e-006
      0.75  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.805e-
004  7.794e-004  7.741e-004  7.098e-004  5.963e-004  4.764e-004
3.715e-004  2.208e-004  1.025e-004  1.137e-005  1.971e-006
         1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.798e-
004  7.764e-004  7.629e-004  6.472e-004  4.929e-004  3.587e-004
2.573e-004  1.328e-004  5.243e-005  4.135e-006  5.830e-007
         2  7.807e-004  7.807e-004  7.807e-004  7.791e-004  7.371e-
004  6.785e-004  5.729e-004  2.853e-004  1.412e-004  7.353e-005
4.036e-005  1.390e-005  3.609e-006  1.348e-007  1.296e-008
         3  7.807e-004  7.807e-004  7.798e-004  7.663e-004  6.175e-
004  4.944e-004  3.414e-004  1.014e-004  3.515e-005  1.400e-005
6.201e-006  1.534e-006  2.780e-007  5.090e-009  3.209e-010
         4  7.807e-004  7.807e-004  7.758e-004  7.328e-004  4.780e-
004  3.352e-004  1.963e-004  4.040e-005  1.113e-005  3.753e-006
1.459e-006  2.960e-007  4.349e-008  5.296e-010  2.633e-011
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.796e-
004  7.746e-004  7.544e-004  5.882e-004  3.948e-004  2.512e-004
1.581e-004  6.403e-005  1.843e-005  6.643e-007  5.356e-008
      0.05  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.801e-
004  7.772e-004  7.639e-004  6.324e-004  4.540e-004  3.068e-004
2.033e-004  8.967e-005  2.841e-005  1.248e-006  1.134e-007
       0.1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.806e-
004  7.802e-004  7.770e-004  7.226e-004  6.084e-004  4.798e-004
3.655e-004  2.038e-004  8.477e-005  6.588e-006  8.482e-007
       0.2  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.797e-004  7.566e-004  6.900e-004  5.956e-004
4.955e-004  3.237e-004  1.631e-004  1.927e-005  3.221e-006
       0.3  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.798e-004  7.586e-004  6.959e-004  6.052e-004
5.075e-004  3.364e-004  1.728e-004  2.132e-005  3.665e-006
       0.4  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
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004  7.807e-004  7.801e-004  7.630e-004  7.062e-004  6.188e-004
5.212e-004  3.458e-004  1.755e-004  2.009e-005  3.185e-006
       0.5  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.807e-004  7.803e-004  7.655e-004  7.121e-004  6.261e-004
5.276e-004  3.477e-004  1.729e-004  1.799e-005  2.598e-006
      0.75  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.805e-004  7.791e-004  7.460e-004  6.592e-004  5.457e-004
4.336e-004  2.579e-004  1.140e-004  9.492e-006  1.220e-006
         1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.806e-
004  7.797e-004  7.750e-004  7.089e-004  5.848e-004  4.530e-004
3.401e-004  1.857e-004  7.564e-005  5.701e-006  7.254e-007
         2  7.807e-004  7.807e-004  7.807e-004  7.805e-004  7.686e-
004  7.437e-004  6.837e-004  4.346e-004  2.540e-004  1.486e-004
8.891e-005  3.451e-005  9.986e-006  4.314e-007  4.323e-008
         3  7.807e-004  7.807e-004  7.806e-004  7.781e-004  7.190e-
004  6.426e-004  5.150e-004  2.147e-004  9.119e-005  4.164e-005
2.038e-005  5.785e-006  1.190e-006  2.613e-008  1.755e-009
         4  7.807e-004  7.807e-004  7.803e-004  7.723e-004  6.556e-
004  5.425e-004  3.885e-004  1.214e-004  4.231e-005  1.667e-005
7.259e-006  1.721e-006  2.918e-007  4.382e-009  2.356e-010
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.794e-
004  7.740e-004  7.531e-004  5.872e-004  3.960e-004  2.537e-004
1.607e-004  6.601e-005  1.934e-005  7.296e-007  6.071e-008
      0.05  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.802e-
004  7.775e-004  7.657e-004  6.458e-004  4.763e-004  3.308e-004
2.248e-004  1.036e-004  3.459e-005  1.709e-006  1.674e-007
       0.1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.806e-
004  7.801e-004  7.768e-004  7.227e-004  6.104e-004  4.839e-004
3.708e-004  2.094e-004  8.864e-005  7.205e-006  9.576e-007
       0.2  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.795e-004  7.548e-004  6.864e-004  5.913e-004
4.914e-004  3.209e-004  1.622e-004  1.944e-005  3.292e-006
       0.3  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.796e-004  7.552e-004  6.879e-004  5.941e-004
4.952e-004  3.253e-004  1.658e-004  2.027e-005  3.482e-006
       0.4  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
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004  7.806e-004  7.798e-004  7.569e-004  6.900e-004  5.942e-004
4.922e-004  3.173e-004  1.560e-004  1.678e-005  2.575e-006
       0.5  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.798e-004  7.561e-004  6.852e-004  5.835e-004
4.762e-004  2.963e-004  1.375e-004  1.241e-005  1.647e-006
      0.75  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.803e-004  7.780e-004  7.343e-004  6.321e-004  5.084e-004
3.927e-004  2.221e-004  9.224e-005  6.674e-006  7.833e-007
         1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.805e-
004  7.793e-004  7.735e-004  6.998e-004  5.675e-004  4.310e-004
3.168e-004  1.656e-004  6.339e-005  3.993e-006  4.398e-007
         2  7.807e-004  7.807e-004  7.807e-004  7.803e-004  7.623e-
004  7.300e-004  6.590e-004  3.964e-004  2.227e-004  1.265e-004
7.400e-005  2.777e-005  7.757e-006  3.140e-007  3.034e-008
         3  7.807e-004  7.807e-004  7.804e-004  7.745e-004  6.909e-
004  6.034e-004  4.723e-004  1.939e-004  8.433e-005  3.991e-005
2.032e-005  6.242e-006  1.435e-006  4.241e-008  3.566e-009
         4  7.807e-004  7.807e-004  7.780e-004  7.543e-004  5.791e-
004  4.556e-004  3.116e-004  9.473e-005  3.441e-005  1.439e-005
6.682e-006  1.802e-006  3.657e-007  8.861e-009  6.833e-010
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.789e-
004  7.719e-004  7.459e-004  5.589e-004  3.620e-004  2.243e-004
1.383e-004  5.446e-005  1.528e-005  5.328e-007  4.254e-008
      0.05  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.798e-
004  7.756e-004  7.584e-004  6.099e-004  4.267e-004  2.830e-004
1.852e-004  8.043e-005  2.525e-005  1.115e-006  1.031e-007
       0.1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.806e-
004  7.797e-004  7.750e-004  7.075e-004  5.817e-004  4.494e-004
3.366e-004  1.832e-004  7.454e-005  5.629e-006  7.191e-007
       0.2  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.796e-004  7.548e-004  6.855e-004  5.891e-004
4.882e-004  3.168e-004  1.586e-004  1.854e-005  3.087e-006
       0.3  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.796e-004  7.563e-004  6.906e-004  5.981e-004
4.998e-004  3.301e-004  1.694e-004  2.111e-005  3.680e-006
       0.4  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
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004  7.806e-004  7.798e-004  7.580e-004  6.939e-004  6.012e-004
5.015e-004  3.284e-004  1.652e-004  1.904e-005  3.094e-006
       0.5  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.807e-
004  7.806e-004  7.797e-004  7.568e-004  6.904e-004  5.949e-004
4.930e-004  3.177e-004  1.558e-004  1.676e-005  2.608e-006
      0.75  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.806e-
004  7.801e-004  7.771e-004  7.300e-004  6.292e-004  5.102e-004
3.993e-004  2.336e-004  1.029e-004  9.178e-006  1.325e-006
         1  7.807e-004  7.807e-004  7.807e-004  7.807e-004  7.803e-
004  7.784e-004  7.705e-004  6.853e-004  5.484e-004  4.142e-004
3.047e-004  1.614e-004  6.382e-005  4.610e-006  5.827e-007
         2  7.807e-004  7.807e-004  7.807e-004  7.800e-004  7.560e-
004  7.174e-004  6.385e-004  3.721e-004  2.060e-004  1.162e-004
6.776e-005  2.539e-005  7.117e-006  2.934e-007  2.884e-008
         3  7.807e-004  7.807e-004  7.803e-004  7.730e-004  6.758e-
004  5.801e-004  4.429e-004  1.700e-004  7.022e-005  3.185e-005
1.563e-005  4.520e-006  9.678e-007  2.454e-008  1.881e-009
         4  7.807e-004  7.807e-004  7.780e-004  7.531e-004  5.709e-
004  4.444e-004  2.988e-004  8.550e-005  2.928e-005  1.160e-005
5.133e-006  1.273e-006  2.336e-007  4.591e-009  3.151e-010


Source: Verdugo
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.964e-004  4.964e-004  4.964e-004  4.950e-004  4.429e-
004  3.737e-004  2.670e-004  7.307e-005  2.132e-005  7.041e-006
2.594e-006  4.551e-007  5.249e-008  3.064e-010  8.405e-012
      0.05  4.964e-004  4.964e-004  4.964e-004  4.953e-004  4.500e-
004  3.859e-004  2.824e-004  8.212e-005  2.493e-005  8.474e-006
3.194e-006  5.800e-007  6.938e-008  4.350e-010  1.245e-011
       0.1  4.964e-004  4.964e-004  4.964e-004  4.962e-004  4.767e-
004  4.397e-004  3.640e-004  1.519e-004  6.022e-005  2.520e-005
1.126e-005  2.673e-006  4.313e-007  5.022e-009  2.108e-010
       0.2  4.964e-004  4.964e-004  4.964e-004  4.964e-004  4.934e-
004  4.836e-004  4.529e-004  2.887e-004  1.591e-004  8.576e-005
4.692e-005  1.521e-005  3.415e-006  7.479e-008  4.485e-009
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       0.3  4.964e-004  4.964e-004  4.964e-004  4.964e-004  4.943e-
004  4.870e-004  4.628e-004  3.184e-004  1.898e-004  1.098e-004
6.391e-005  2.301e-005  5.861e-006  1.704e-007  1.234e-008
       0.4  4.964e-004  4.964e-004  4.964e-004  4.964e-004  4.940e-
004  4.858e-004  4.595e-004  3.085e-004  1.795e-004  1.016e-004
5.804e-005  2.024e-005  4.967e-006  1.327e-007  9.079e-009
       0.5  4.964e-004  4.964e-004  4.964e-004  4.964e-004  4.933e-
004  4.838e-004  4.548e-004  3.007e-004  1.745e-004  9.914e-005
5.707e-005  2.031e-005  5.147e-006  1.521e-007  1.129e-008
      0.75  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.861e-
004  4.649e-004  4.154e-004  2.331e-004  1.209e-004  6.375e-005
3.484e-005  1.161e-005  2.808e-006  8.141e-008  6.277e-009
         1  4.964e-004  4.964e-004  4.964e-004  4.958e-004  4.711e-
004  4.316e-004  3.574e-004  1.585e-004  6.896e-005  3.177e-005
1.558e-005  4.390e-006  8.850e-007  1.795e-008  1.123e-009
         2  4.964e-004  4.964e-004  4.933e-004  4.646e-004  2.948e-
004  2.024e-004  1.151e-004  2.199e-005  5.753e-006  1.864e-006
7.020e-007  1.355e-007  1.883e-008  2.051e-010  9.528e-012
         3  4.964e-004  4.964e-004  4.732e-004  3.764e-004  1.383e-
004  7.188e-005  2.952e-005  2.823e-006  4.816e-007  1.145e-007
3.379e-008  4.502e-009  4.209e-010  2.101e-012  6.158e-014
         4  4.964e-004  4.964e-004  4.338e-004  2.837e-004  6.822e-
005  2.955e-005  9.929e-006  6.361e-007  8.558e-008  1.718e-008
4.448e-009  4.862e-010  3.685e-011  1.224e-013  2.827e-015
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.964e-004  4.964e-004  4.960e-004  4.843e-004  3.336e-
004  2.258e-004  1.192e-004  1.570e-005  2.823e-006  6.507e-007
1.802e-007  2.035e-008  1.457e-009  3.298e-012  5.147e-014
      0.05  4.964e-004  4.964e-004  4.963e-004  4.897e-004  3.740e-
004  2.730e-004  1.590e-004  2.617e-005  5.423e-006  1.387e-006
4.165e-007  5.326e-008  4.356e-009  1.279e-011  2.326e-013
       0.1  4.964e-004  4.964e-004  4.964e-004  4.951e-004  4.439e-
004  3.747e-004  2.672e-004  7.210e-005  2.068e-005  6.718e-006
2.439e-006  4.167e-007  4.652e-008  2.516e-010  6.554e-012
       0.2  4.964e-004  4.964e-004  4.964e-004  4.962e-004  4.796e-
004  4.455e-004  3.722e-004  1.567e-004  6.166e-005  2.544e-005
1.118e-005  2.568e-006  3.950e-007  4.038e-009  1.535e-010
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       0.3  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.833e-
004  4.546e-004  3.888e-004  1.767e-004  7.369e-005  3.181e-005
1.451e-005  3.530e-006  5.784e-007  6.721e-009  2.761e-010
       0.4  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.832e-
004  4.527e-004  3.825e-004  1.621e-004  6.252e-005  2.509e-005
1.070e-005  2.311e-006  3.263e-007  2.656e-009  8.498e-011
       0.5  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.813e-
004  4.480e-004  3.735e-004  1.514e-004  5.638e-005  2.199e-005
9.161e-006  1.906e-006  2.577e-007  1.909e-009  5.744e-011
      0.75  4.964e-004  4.964e-004  4.964e-004  4.955e-004  4.567e-
004  3.989e-004  3.013e-004  9.659e-005  3.168e-005  1.147e-005
4.563e-006  9.047e-007  1.199e-007  9.428e-010  3.127e-011
         1  4.964e-004  4.964e-004  4.964e-004  4.931e-004  4.196e-
004  3.399e-004  2.312e-004  5.836e-005  1.666e-005  5.503e-006
2.049e-006  3.715e-007  4.547e-008  3.210e-010  1.031e-011
         2  4.964e-004  4.964e-004  4.902e-004  4.401e-004  2.180e-
004  1.278e-004  5.914e-005  6.845e-006  1.263e-006  3.119e-007
9.393e-008  1.267e-008  1.172e-009  5.325e-012  1.410e-013
         3  4.964e-004  4.964e-004  4.672e-004  3.500e-004  1.036e-
004  4.763e-005  1.677e-005  1.109e-006  1.464e-007  2.847e-008
7.117e-009  7.247e-010  4.974e-011  1.264e-013  2.379e-015
         4  4.964e-004  4.964e-004  4.324e-004  2.702e-004  5.424e-
005  2.113e-005  6.198e-006  2.850e-007  3.030e-008  5.053e-009
1.121e-009  9.524e-011  5.393e-012  9.420e-015  1.424e-016
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.964e-004  4.964e-004  4.955e-004  4.771e-004  2.999e-
004  1.925e-004  9.577e-005  1.137e-005  1.950e-006  4.385e-007
1.196e-007  1.333e-008  9.503e-010  2.199e-012  3.533e-014
      0.05  4.964e-004  4.964e-004  4.960e-004  4.854e-004  3.451e-
004  2.406e-004  1.328e-004  1.989e-005  3.953e-006  9.895e-007
2.938e-007  3.725e-008  3.053e-009  9.288e-012  1.756e-013
       0.1  4.964e-004  4.964e-004  4.964e-004  4.945e-004  4.351e-
004  3.615e-004  2.532e-004  6.668e-005  1.915e-005  6.285e-006
2.312e-006  4.068e-007  4.743e-008  2.894e-010  8.256e-012
       0.2  4.964e-004  4.964e-004  4.964e-004  4.961e-004  4.742e-
004  4.340e-004  3.541e-004  1.411e-004  5.401e-005  2.199e-005
9.611e-006  2.206e-006  3.427e-007  3.696e-009  1.479e-010
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       0.3  4.964e-004  4.964e-004  4.964e-004  4.961e-004  4.741e-
004  4.338e-004  3.537e-004  1.407e-004  5.379e-005  2.189e-005
9.559e-006  2.192e-006  3.403e-007  3.669e-009  1.469e-010
       0.4  4.964e-004  4.964e-004  4.964e-004  4.961e-004  4.729e-
004  4.295e-004  3.441e-004  1.262e-004  4.446e-005  1.678e-005
6.846e-006  1.393e-006  1.864e-007  1.409e-009  4.400e-011
       0.5  4.964e-004  4.964e-004  4.964e-004  4.959e-004  4.656e-
004  4.150e-004  3.225e-004  1.087e-004  3.595e-005  1.288e-005
5.022e-006  9.452e-007  1.148e-007  6.840e-010  1.798e-011
      0.75  4.964e-004  4.964e-004  4.964e-004  4.940e-004  4.309e-
004  3.567e-004  2.494e-004  6.635e-005  1.928e-005  6.383e-006
2.364e-006  4.192e-007  4.907e-008  2.960e-010  8.264e-012
         1  4.964e-004  4.964e-004  4.962e-004  4.894e-004  3.880e-
004  2.986e-004  1.907e-004  4.234e-005  1.126e-005  3.548e-006
1.275e-006  2.199e-007  2.555e-008  1.633e-010  4.937e-012
         2  4.964e-004  4.964e-004  4.794e-004  3.950e-004  1.554e-
004  8.252e-005  3.445e-005  3.316e-006  5.568e-007  1.296e-007
3.739e-008  4.764e-009  4.185e-010  1.767e-012  4.557e-014
         3  4.964e-004  4.964e-004  4.206e-004  2.623e-004  5.848e-
005  2.469e-005  8.101e-006  5.014e-007  6.665e-008  1.332e-008
3.444e-009  3.770e-010  2.876e-011  9.794e-014  2.314e-015
         4  4.964e-004  4.963e-004  3.377e-004  1.622e-004  2.404e-
005  8.764e-006  2.481e-006  1.190e-007  1.394e-008  2.575e-009
6.308e-010  6.436e-011  4.627e-012  1.471e-014  3.435e-016
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  4.964e-004  4.964e-004  4.960e-004  4.854e-004  3.588e-
004  2.640e-004  1.606e-004  3.338e-005  8.698e-006  2.710e-006
9.648e-007  1.629e-007  1.830e-008  1.040e-010  2.831e-012
      0.05  4.964e-004  4.964e-004  4.962e-004  4.901e-004  3.897e-
004  2.998e-004  1.914e-004  4.272e-005  1.143e-005  3.617e-006
1.302e-006  2.235e-007  2.560e-008  1.524e-010  4.285e-012
       0.1  4.964e-004  4.964e-004  4.964e-004  4.952e-004  4.519e-
004  3.920e-004  2.948e-004  9.688e-005  3.335e-005  1.273e-005
5.336e-006  1.166e-006  1.751e-007  1.854e-009  7.520e-011
       0.2  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.824e-
004  4.544e-004  3.930e-004  1.955e-004  9.159e-005  4.440e-005
2.257e-005  6.660e-006  1.384e-006  2.751e-008  1.595e-009
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       0.3  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.839e-
004  4.584e-004  4.018e-004  2.119e-004  1.058e-004  5.449e-005
2.932e-005  9.577e-006  2.260e-006  6.028e-008  4.255e-009
       0.4  4.964e-004  4.964e-004  4.964e-004  4.963e-004  4.833e-
004  4.560e-004  3.953e-004  1.989e-004  9.549e-005  4.782e-005
2.519e-005  7.983e-006  1.826e-006  4.559e-008  3.069e-009
       0.5  4.964e-004  4.964e-004  4.964e-004  4.962e-004  4.801e-
004  4.489e-004  3.836e-004  1.869e-004  8.893e-005  4.467e-005
2.375e-005  7.719e-006  1.840e-006  5.156e-008  3.790e-009
      0.75  4.964e-004  4.964e-004  4.964e-004  4.953e-004  4.579e-
004  4.068e-004  3.221e-004  1.320e-004  5.729e-005  2.720e-005
1.392e-005  4.313e-006  9.923e-007  2.755e-008  2.106e-009
         1  4.964e-004  4.964e-004  4.963e-004  4.928e-004  4.263e-
004  3.567e-004  2.597e-004  8.640e-005  3.229e-005  1.361e-005
6.300e-006  1.660e-006  3.187e-007  6.145e-009  3.794e-010
         2  4.964e-004  4.964e-004  4.877e-004  4.333e-004  2.228e-
004  1.376e-004  6.957e-005  1.072e-005  2.524e-006  7.686e-007
2.778e-007  5.097e-008  6.808e-009  7.072e-011  3.238e-012
         3  4.964e-004  4.964e-004  4.537e-004  3.296e-004  1.001e-
004  4.807e-005  1.813e-005  1.478e-006  2.316e-007  5.208e-008
1.478e-008  1.868e-009  1.665e-010  7.750e-013  2.209e-014
         4  4.964e-004  4.964e-004  4.013e-004  2.387e-004  4.883e-
005  1.981e-005  6.203e-006  3.467e-007  4.327e-008  8.269e-009
2.066e-009  2.153e-010  1.562e-011  4.883e-014  1.104e-015


Source: White Wolf
Region: USGS 2008 California
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.740e-003  1.740e-003  1.738e-003  1.708e-003  1.312e-
003  9.869e-004  6.094e-004  1.222e-004  2.967e-005  8.616e-006
2.876e-006  4.355e-007  4.304e-008  1.867e-010  4.310e-012
      0.05  1.740e-003  1.740e-003  1.739e-003  1.712e-003  1.342e-
003  1.024e-003  6.458e-004  1.366e-004  3.443e-005  1.029e-005
3.519e-006  5.533e-007  5.704e-008  2.701e-010  6.579e-012
       0.1  1.740e-003  1.740e-003  1.740e-003  1.729e-003  1.511e-
003  1.265e-003  9.089e-004  2.685e-004  8.561e-005  3.067e-005
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1.216e-005  2.416e-006  3.235e-007  2.644e-009  9.052e-011
       0.2  1.740e-003  1.740e-003  1.740e-003  1.739e-003  1.687e-
003  1.583e-003  1.358e-003  6.419e-004  2.811e-004  1.270e-004
6.030e-005  1.571e-005  2.787e-006  3.834e-008  1.746e-009
       0.3  1.740e-003  1.740e-003  1.740e-003  1.740e-003  1.708e-
003  1.636e-003  1.461e-003  7.991e-004  3.957e-004  1.979e-004
1.025e-004  3.078e-005  6.446e-006  1.273e-007  7.332e-009
       0.4  1.740e-003  1.740e-003  1.740e-003  1.740e-003  1.708e-
003  1.637e-003  1.464e-003  8.019e-004  3.968e-004  1.980e-004
1.022e-004  3.046e-005  6.302e-006  1.199e-007  6.699e-009
       0.5  1.740e-003  1.740e-003  1.740e-003  1.739e-003  1.706e-
003  1.633e-003  1.460e-003  8.106e-004  4.105e-004  2.101e-004
1.113e-004  3.479e-005  7.670e-006  1.718e-007  1.082e-008
      0.75  1.740e-003  1.740e-003  1.740e-003  1.738e-003  1.665e-
003  1.546e-003  1.317e-003  6.462e-004  3.062e-004  1.513e-004
7.859e-005  2.429e-005  5.426e-006  1.351e-007  9.530e-009
         1  1.740e-003  1.740e-003  1.740e-003  1.734e-003  1.589e-
003  1.406e-003  1.107e-003  4.375e-004  1.777e-004  7.808e-005
3.694e-005  9.883e-006  1.889e-006  3.466e-008  2.046e-009
         2  1.740e-003  1.740e-003  1.719e-003  1.581e-003  9.388e-
004  6.287e-004  3.498e-004  6.510e-005  1.694e-005  5.486e-006
2.068e-006  4.009e-007  5.611e-008  6.220e-010  2.927e-011
         3  1.740e-003  1.740e-003  1.625e-003  1.253e-003  4.550e-
004  2.401e-004  1.015e-004  1.061e-005  1.935e-006  4.846e-007
1.493e-007  2.128e-008  2.144e-009  1.244e-011  3.993e-013
         4  1.740e-003  1.740e-003  1.475e-003  9.486e-004  2.354e-
004  1.050e-004  3.674e-005  2.593e-006  3.722e-007  7.840e-008
2.110e-008  2.447e-009  1.977e-010  7.464e-013  1.862e-014
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.740e-003  1.740e-003  1.733e-003  1.635e-003  9.214e-
004  5.556e-004  2.567e-004  2.593e-005  4.012e-006  8.339e-007
2.135e-007  2.149e-008  1.368e-009  2.483e-012  3.419e-014
      0.05  1.740e-003  1.740e-003  1.736e-003  1.671e-003  1.059e-
003  6.862e-004  3.462e-004  4.242e-005  7.405e-006  1.681e-006
4.611e-007  5.157e-008  3.672e-009  8.311e-012  1.303e-013
       0.1  1.740e-003  1.740e-003  1.739e-003  1.718e-003  1.348e-
003  1.015e-003  6.209e-004  1.178e-004  2.715e-005  7.554e-006
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2.433e-006  3.475e-007  3.216e-008  1.218e-010  2.584e-012
       0.2  1.740e-003  1.740e-003  1.740e-003  1.736e-003  1.590e-
003  1.382e-003  1.037e-003  3.290e-004  1.072e-004  3.861e-005
1.528e-005  2.997e-006  3.911e-007  2.932e-009  9.342e-011
       0.3  1.740e-003  1.740e-003  1.740e-003  1.738e-003  1.632e-
003  1.462e-003  1.152e-003  4.180e-004  1.501e-004  5.820e-005
2.445e-005  5.266e-006  7.615e-007  7.025e-009  2.537e-010
       0.4  1.740e-003  1.740e-003  1.740e-003  1.738e-003  1.631e-
003  1.453e-003  1.127e-003  3.806e-004  1.268e-004  4.589e-005
1.809e-005  3.486e-006  4.384e-007  2.888e-009  8.224e-011
       0.5  1.740e-003  1.740e-003  1.740e-003  1.738e-003  1.623e-
003  1.439e-003  1.111e-003  3.732e-004  1.244e-004  4.512e-005
1.783e-005  3.449e-006  4.355e-007  2.885e-009  8.223e-011
      0.75  1.740e-003  1.740e-003  1.740e-003  1.730e-003  1.509e-
003  1.258e-003  8.955e-004  2.574e-004  8.056e-005  2.849e-005
1.118e-005  2.191e-006  2.894e-007  2.305e-009  7.774e-011
         1  1.740e-003  1.740e-003  1.739e-003  1.713e-003  1.358e-
003  1.054e-003  6.863e-004  1.641e-004  4.650e-005  1.545e-005
5.809e-006  1.077e-006  1.361e-007  1.039e-009  3.515e-011
         2  1.740e-003  1.740e-003  1.698e-003  1.467e-003  6.925e-
004  4.082e-004  1.938e-004  2.479e-005  4.966e-006  1.310e-006
4.166e-007  6.123e-008  6.227e-009  3.423e-011  1.015e-012
         3  1.740e-003  1.740e-003  1.585e-003  1.139e-003  3.438e-
004  1.649e-004  6.184e-005  4.831e-006  7.149e-007  1.515e-007
4.058e-008  4.594e-009  3.535e-010  1.126e-012  2.423e-014
         4  1.740e-003  1.740e-003  1.442e-003  8.790e-004  1.904e-
004  7.908e-005  2.525e-005  1.416e-006  1.714e-007  3.143e-008
7.517e-009  7.167e-010  4.592e-011  1.023e-013  1.783e-015
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.740e-003  1.740e-003  1.721e-003  1.560e-003  7.914e-
004  4.641e-004  2.115e-004  2.185e-005  3.515e-006  7.582e-007
2.008e-007  2.142e-008  1.462e-009  3.109e-012  4.755e-014
      0.05  1.740e-003  1.740e-003  1.728e-003  1.609e-003  9.207e-
004  5.794e-004  2.881e-004  3.621e-005  6.603e-006  1.562e-006
4.450e-007  5.309e-008  4.087e-009  1.103e-011  1.943e-013
       0.1  1.740e-003  1.740e-003  1.738e-003  1.701e-003  1.288e-
003  9.697e-004  6.060e-004  1.295e-004  3.345e-005  1.025e-005
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3.585e-006  5.868e-007  6.358e-008  3.378e-010  8.897e-012
       0.2  1.740e-003  1.740e-003  1.740e-003  1.732e-003  1.548e-
003  1.329e-003  9.943e-004  3.323e-004  1.165e-004  4.497e-005
1.894e-005  4.138e-006  6.141e-007  6.123e-009  2.348e-010
       0.3  1.740e-003  1.740e-003  1.740e-003  1.734e-003  1.569e-
003  1.361e-003  1.033e-003  3.569e-004  1.279e-004  5.021e-005
2.144e-005  4.783e-006  7.268e-007  7.609e-009  3.007e-010
       0.4  1.740e-003  1.740e-003  1.740e-003  1.734e-003  1.570e-
003  1.358e-003  1.022e-003  3.341e-004  1.123e-004  4.144e-005
1.670e-005  3.360e-006  4.479e-007  3.409e-009  1.074e-010
       0.5  1.740e-003  1.740e-003  1.740e-003  1.732e-003  1.544e-
003  1.317e-003  9.687e-004  2.949e-004  9.277e-005  3.219e-005
1.225e-005  2.226e-006  2.602e-007  1.428e-009  3.551e-011
      0.75  1.740e-003  1.740e-003  1.739e-003  1.718e-003  1.411e-
003  1.126e-003  7.585e-004  1.916e-004  5.483e-005  1.804e-005
6.662e-006  1.178e-006  1.377e-007  8.259e-010  2.291e-011
         1  1.740e-003  1.740e-003  1.737e-003  1.693e-003  1.263e-
003  9.465e-004  5.914e-004  1.297e-004  3.482e-005  1.110e-005
4.037e-006  7.095e-007  8.432e-008  5.637e-010  1.749e-011
         2  1.740e-003  1.740e-003  1.654e-003  1.325e-003  5.183e-
004  2.803e-004  1.209e-004  1.277e-005  2.294e-006  5.619e-007
1.690e-007  2.296e-008  2.161e-009  1.047e-011  2.927e-013
         3  1.740e-003  1.740e-003  1.430e-003  8.869e-004  2.103e-
004  9.280e-005  3.224e-005  2.279e-006  3.302e-007  7.029e-008
1.911e-008  2.258e-009  1.869e-010  7.473e-013  1.941e-014
         4  1.740e-003  1.739e-003  1.150e-003  5.663e-004  9.354e-
005  3.614e-005  1.096e-005  6.106e-007  7.853e-008  1.552e-008
4.008e-009  4.432e-010  3.471e-011  1.305e-013  3.363e-015
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  1.740e-003  1.740e-003  1.731e-003  1.634e-003  1.008e-
003  6.689e-004  3.592e-004  5.667e-005  1.240e-005  3.403e-006
1.097e-006  1.595e-007  1.529e-008  6.410e-011  1.464e-012
      0.05  1.740e-003  1.740e-003  1.734e-003  1.664e-003  1.107e-
003  7.633e-004  4.267e-004  7.173e-005  1.615e-005  4.512e-006
1.475e-006  2.193e-007  2.160e-008  9.647e-011  2.301e-012
       0.1  1.740e-003  1.740e-003  1.739e-003  1.716e-003  1.382e-
003  1.083e-003  7.119e-004  1.719e-004  4.874e-005  1.616e-005
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6.059e-006  1.117e-006  1.398e-007  1.034e-009  3.400e-011
       0.2  1.740e-003  1.740e-003  1.740e-003  1.736e-003  1.608e-
003  1.431e-003  1.130e-003  4.344e-004  1.683e-004  7.019e-005
3.151e-005  7.614e-006  1.264e-006  1.580e-008  6.915e-010
       0.3  1.740e-003  1.740e-003  1.740e-003  1.737e-003  1.636e-
003  1.486e-003  1.215e-003  5.246e-004  2.246e-004  1.021e-004
4.946e-005  1.361e-005  2.645e-006  4.731e-008  2.629e-009
       0.4  1.740e-003  1.740e-003  1.740e-003  1.737e-003  1.636e-
003  1.483e-003  1.204e-003  5.056e-004  2.120e-004  9.511e-005
4.567e-005  1.244e-005  2.396e-006  4.207e-008  2.296e-009
       0.5  1.740e-003  1.740e-003  1.740e-003  1.736e-003  1.624e-
003  1.463e-003  1.180e-003  4.929e-004  2.092e-004  9.582e-005
4.711e-005  1.349e-005  2.788e-006  5.871e-008  3.646e-009
      0.75  1.740e-003  1.740e-003  1.740e-003  1.729e-003  1.528e-
003  1.310e-003  9.902e-004  3.651e-004  1.472e-004  6.593e-005
3.215e-005  9.221e-006  1.951e-006  4.607e-008  3.210e-009
         1  1.740e-003  1.740e-003  1.738e-003  1.713e-003  1.403e-
003  1.135e-003  7.950e-004  2.438e-004  8.633e-005  3.488e-005
1.559e-005  3.890e-006  7.031e-007  1.209e-008  6.997e-010
         2  1.740e-003  1.740e-003  1.690e-003  1.457e-003  7.165e-
004  4.390e-004  2.215e-004  3.422e-005  8.066e-006  2.453e-006
8.847e-007  1.617e-007  2.150e-008  2.222e-010  1.019e-011
         3  1.740e-003  1.740e-003  1.547e-003  1.093e-003  3.364e-
004  1.659e-004  6.520e-005  5.905e-006  9.933e-007  2.355e-007
6.967e-008  9.378e-009  8.947e-010  4.771e-012  1.476e-013
         4  1.740e-003  1.740e-003  1.356e-003  7.980e-004  1.731e-
004  7.341e-005  2.432e-005  1.540e-006  2.074e-007  4.179e-008
1.087e-008  1.202e-009  9.279e-011  3.264e-013  7.923e-015


Source: Extensional Gridded
Region: USGS 2008 Western US
  Equation: Boore-Atkinson (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.583e-003  8.467e-003  1.715e-003  4.410e-004  3.457e-
005  1.069e-005  2.660e-006  1.142e-007  1.367e-008  2.656e-009
6.892e-010  7.873e-011  6.552e-012  2.887e-014  8.152e-016
      0.05  8.583e-003  8.514e-003  2.076e-003  5.604e-004  4.547e-
```

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005  1.417e-005  3.551e-006  1.555e-007  1.899e-008  3.766e-009
9.967e-010  1.183e-010  1.037e-011  5.236e-014  1.632e-015
       0.1  8.583e-003  8.572e-003  3.600e-003  1.224e-003  1.323e-
004  4.593e-005  1.293e-005  7.163e-007  1.016e-007  2.264e-008
6.604e-009  9.208e-010  9.801e-011  7.842e-013  3.385e-014
       0.2  8.583e-003  8.582e-003  5.897e-003  2.862e-003  5.100e-
004  2.140e-004  7.325e-005  5.667e-006  9.380e-007  2.285e-007
7.067e-008  1.060e-008  1.197e-009  1.043e-011  4.740e-013
       0.3  8.583e-003  8.583e-003  6.621e-003  3.688e-003  8.205e-
004  3.768e-004  1.423e-004  1.317e-005  2.367e-006  6.019e-007
1.907e-007  2.918e-008  3.299e-009  2.733e-011  1.177e-012
       0.4  8.583e-003  8.582e-003  6.226e-003  3.267e-003  7.064e-
004  3.283e-004  1.269e-004  1.246e-005  2.318e-006  6.015e-007
1.927e-007  2.969e-008  3.329e-009  2.578e-011  1.037e-012
       0.5  8.583e-003  8.582e-003  5.940e-003  3.072e-003  6.936e-
004  3.329e-004  1.340e-004  1.445e-005  2.855e-006  7.739e-007
2.564e-007  4.144e-008  4.865e-009  4.032e-011  1.663e-012
      0.75  8.583e-003  8.573e-003  4.494e-003  2.068e-003  4.392e-
004  2.081e-004  8.275e-005  8.835e-006  1.758e-006  4.817e-007
1.614e-007  2.666e-008  3.214e-009  2.810e-011  1.190e-012
         1  8.583e-003  8.526e-003  3.228e-003  1.358e-003  2.643e-
004  1.202e-004  4.543e-005  4.328e-006  7.990e-007  2.067e-007
6.606e-008  1.010e-008  1.113e-009  7.961e-012  2.952e-013
         2  8.582e-003  7.345e-003  1.134e-003  3.876e-004  5.222e-
005  2.024e-005  6.432e-006  4.387e-007  6.721e-008  1.534e-008
4.466e-009  5.990e-010  5.825e-011  3.429e-013  1.169e-014
         3  8.563e-003  5.251e-003  4.779e-004  1.275e-004  1.075e-
005  3.397e-006  8.556e-007  3.544e-008  3.945e-009  7.092e-010
1.707e-010  1.702e-011  1.198e-012  3.704e-015  8.721e-017
         4  8.488e-003  3.865e-003  2.454e-004  5.542e-005  3.669e-
006  1.056e-006  2.393e-007  7.877e-009  7.539e-010  1.210e-010
2.658e-011  2.302e-012  1.391e-013  3.204e-016  6.442e-018
  Equation: Campbell-Bozorgnia (2008) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.583e-003  8.576e-003  3.682e-003  1.179e-003  9.561e-
005  2.716e-005  5.741e-006  1.403e-007  1.032e-008  1.329e-009
2.431e-010  1.589e-011  7.422e-013  1.701e-015  5.242e-017
      0.05  8.583e-003  8.579e-003  4.176e-003  1.462e-003  1.368e-
```

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004  4.132e-005  9.370e-006  2.669e-007  2.169e-008  3.018e-009
5.879e-010  4.253e-011  2.225e-012  6.170e-015  2.039e-016
       0.1  8.583e-003  8.582e-003  5.430e-003  2.372e-003  3.166e-
004  1.113e-004  3.003e-005  1.239e-006  1.274e-007  2.111e-008
4.730e-009  4.254e-010  2.812e-011  1.181e-013  4.800e-015
       0.2  8.583e-003  8.583e-003  6.936e-003  4.009e-003  8.771e-
004  3.858e-004  1.352e-004  9.740e-006  1.399e-006  2.916e-007
7.731e-008  8.692e-009  6.780e-010  2.658e-012  8.498e-014
       0.3  8.583e-003  8.583e-003  6.960e-003  4.083e-003  9.776e-
004  4.597e-004  1.763e-004  1.569e-005  2.570e-006  5.868e-007
1.663e-007  2.048e-008  1.719e-009  6.716e-012  1.799e-013
       0.4  8.583e-003  8.583e-003  6.493e-003  3.481e-003  7.584e-
004  3.475e-004  1.291e-004  1.039e-005  1.556e-006  3.285e-007
8.690e-008  9.502e-009  6.920e-010  2.008e-012  4.743e-014
       0.5  8.583e-003  8.582e-003  6.013e-003  3.084e-003  6.659e-
004  3.058e-004  1.139e-004  9.313e-006  1.419e-006  3.041e-007
8.147e-008  9.079e-009  6.714e-010  1.894e-012  3.968e-014
      0.75  8.583e-003  8.577e-003  4.543e-003  2.052e-003  3.878e-
004  1.681e-004  5.875e-005  4.330e-006  6.386e-007  1.359e-007
3.654e-008  4.159e-009  3.205e-010  1.024e-012  2.319e-014
         1  8.583e-003  8.546e-003  3.330e-003  1.344e-003  2.124e-
004  8.501e-005  2.723e-005  1.706e-006  2.314e-007  4.669e-008
1.209e-008  1.308e-009  9.647e-011  2.955e-013  6.945e-015
         2  8.583e-003  7.286e-003  9.066e-004  2.470e-004  2.111e-
005  6.642e-006  1.647e-006  6.310e-008  6.444e-009  1.068e-009
2.384e-010  2.090e-011  1.271e-012  3.523e-015  1.232e-016
         3  8.569e-003  4.844e-003  3.053e-004  6.666e-005  3.939e-
006  1.053e-006  2.150e-007  5.299e-009  4.058e-010  5.445e-011
1.033e-011  7.157e-013  3.577e-014  1.161e-016  5.644e-018
         4  8.433e-003  3.014e-003  1.438e-004  2.731e-005  1.248e-
006  2.954e-007  5.222e-008  9.393e-010  5.920e-011  6.928e-012
1.188e-012  7.271e-014  3.482e-015  1.489e-017  7.353e-019
  Equation: Chiou-Youngs (2007) NGA USGS 2008 MRC
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.583e-003  7.548e-003  8.033e-004  1.815e-004  1.124e-
005  3.112e-006  6.733e-007  2.024e-008  1.867e-009  2.988e-010
6.725e-011  6.530e-012  5.270e-013  4.131e-015  2.248e-016
      0.05  8.582e-003  7.389e-003  8.572e-004  2.090e-004  1.450e-
```

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005  4.206e-006  9.641e-007  3.354e-008  3.458e-009  6.056e-010
1.469e-010  1.598e-011  1.434e-012  1.275e-014  7.312e-016
       0.1  8.583e-003  7.867e-003  1.418e-003  4.397e-004  4.634e-
005  1.594e-005  4.402e-006  2.224e-007  2.855e-008  5.801e-009
1.563e-009  1.933e-010  1.865e-011  1.605e-013  9.021e-015
       0.2  8.583e-003  8.460e-003  3.045e-003  1.238e-003  2.032e-
004  8.349e-005  2.781e-005  1.972e-006  3.000e-007  6.739e-008
1.933e-008  2.534e-009  2.438e-010  1.652e-012  7.647e-014
       0.3  8.583e-003  8.532e-003  3.785e-003  1.664e-003  3.053e-
004  1.309e-004  4.543e-005  3.417e-006  5.269e-007  1.181e-007
3.353e-008  4.261e-009  3.866e-010  2.117e-012  8.303e-014
       0.4  8.583e-003  8.549e-003  4.067e-003  1.844e-003  3.545e-
004  1.546e-004  5.444e-005  4.094e-006  6.107e-007  1.308e-007
3.531e-008  4.044e-009  3.157e-010  1.161e-012  3.653e-014
       0.5  8.583e-003  8.548e-003  4.016e-003  1.816e-003  3.497e-
004  1.526e-004  5.373e-005  4.031e-006  5.995e-007  1.279e-007
3.433e-008  3.873e-009  2.930e-010  9.064e-013  2.250e-014
      0.75  8.583e-003  8.508e-003  3.306e-003  1.400e-003  2.468e-
004  1.036e-004  3.490e-005  2.404e-006  3.419e-007  7.098e-008
1.872e-008  2.069e-009  1.543e-010  4.683e-013  1.111e-014
         1  8.583e-003  8.415e-003  2.642e-003  1.057e-003  1.719e-
004  6.983e-005  2.278e-005  1.493e-006  2.090e-007  4.322e-008
1.142e-008  1.277e-009  9.754e-011  3.202e-013  7.930e-015
         2  8.582e-003  6.962e-003  8.805e-004  2.595e-004  2.477e-
005  8.109e-006  2.100e-006  8.874e-008  9.739e-009  1.711e-009
4.011e-010  3.800e-011  2.504e-012  7.556e-015  2.606e-016
         3  8.552e-003  4.802e-003  3.393e-004  7.671e-005  4.896e-
006  1.377e-006  3.034e-007  9.374e-009  8.611e-010  1.340e-010
2.876e-011  2.411e-012  1.435e-013  4.664e-016  2.206e-017
         4  8.360e-003  3.207e-003  1.466e-004  2.697e-005  1.301e-
006  3.304e-007  6.541e-008  1.656e-009  1.369e-010  1.992e-011
4.081e-012  3.231e-013  1.862e-014  6.836e-017  3.605e-018
  Weighted Average
    Period  Amp=0.0001  Amp=0.001   Amp=0.01    Amp=0.02    Amp=
0.05    Amp=0.07    Amp=0.1     Amp=0.2     Amp=0.3     Amp=0.4
Amp=0.5     Amp=0.7     Amp=1       Amp=2       Amp=3
       PGA  8.583e-003  8.197e-003  2.067e-003  6.004e-004  4.714e-
005  1.366e-005  3.025e-006  9.160e-008  8.617e-009  1.428e-009
3.332e-010  3.372e-011  2.607e-012  1.157e-014  3.641e-016
      0.05  8.583e-003  8.161e-003  2.370e-003  7.439e-004  6.559e-
```

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005  1.990e-005  4.629e-006  1.520e-007  1.471e-008  2.463e-009
5.772e-010  5.893e-011  4.677e-012  2.376e-014  8.557e-016
       0.1  8.583e-003  8.340e-003  3.483e-003  1.345e-003  1.651e-
004  5.773e-005  1.579e-005  7.261e-007  8.587e-008  1.652e-008
4.299e-009  5.132e-010  4.826e-011  3.543e-013  1.589e-014
       0.2  8.583e-003  8.542e-003  5.293e-003  2.703e-003  5.301e-
004  2.277e-004  7.876e-005  5.793e-006  8.789e-007  1.958e-007
5.577e-008  7.274e-009  7.063e-010  4.914e-012  2.118e-013
       0.3  8.583e-003  8.566e-003  5.789e-003  3.145e-003  7.012e-
004  3.224e-004  1.213e-004  1.076e-005  1.821e-006  4.356e-007
1.302e-007  1.797e-008  1.801e-009  1.205e-011  4.801e-013
       0.4  8.583e-003  8.571e-003  5.595e-003  2.864e-003  6.064e-
004  2.768e-004  1.035e-004  8.981e-006  1.495e-006  3.536e-007
1.050e-007  1.441e-008  1.446e-009  9.648e-012  3.737e-013
       0.5  8.583e-003  8.571e-003  5.323e-003  2.657e-003  5.697e-
004  2.637e-004  1.006e-004  9.264e-006  1.624e-006  4.020e-007
1.241e-007  1.813e-008  1.943e-009  1.437e-011  5.751e-013
      0.75  8.583e-003  8.553e-003  4.114e-003  1.840e-003  3.579e-
004  1.599e-004  5.880e-005  5.190e-006  9.128e-007  2.295e-007
7.224e-008  1.096e-008  1.230e-009  9.865e-012  4.080e-013
         1  8.583e-003  8.496e-003  3.067e-003  1.253e-003  2.162e-
004  9.167e-005  3.181e-005  2.509e-006  4.131e-007  9.887e-008
2.986e-008  4.228e-009  4.355e-010  2.859e-012  1.034e-013
         2  8.582e-003  7.198e-003  9.738e-004  2.981e-004  3.270e-
005  1.166e-005  3.393e-006  1.968e-007  2.780e-008  6.038e-009
1.702e-009  2.193e-010  2.068e-011  1.180e-013  4.026e-015
         3  8.561e-003  4.966e-003  3.742e-004  9.029e-005  6.528e-
006  1.942e-006  4.580e-007  1.670e-008  1.737e-009  2.992e-010
6.992e-011  6.715e-012  4.590e-013  1.429e-015  3.830e-017
         4  8.427e-003  3.362e-003  1.786e-004  3.657e-005  2.073e-
006  5.606e-007  1.190e-007  3.491e-009  3.167e-010  4.928e-011
1.062e-011  8.993e-013  5.373e-014  1.345e-016  3.594e-018
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C - USGS EARTHQUAKE HAZARDS PROGRAM WEBSITE DATA

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Design Maps Detailed Report

ASCE 7-10 Standard (34.2077°N, 119.1554°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_S = 2.596 g
From Figure 22-2 [2]	S_1 = 0.938 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_s = 2.596 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.938 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.596 = 2.596$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.938 = 1.407$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

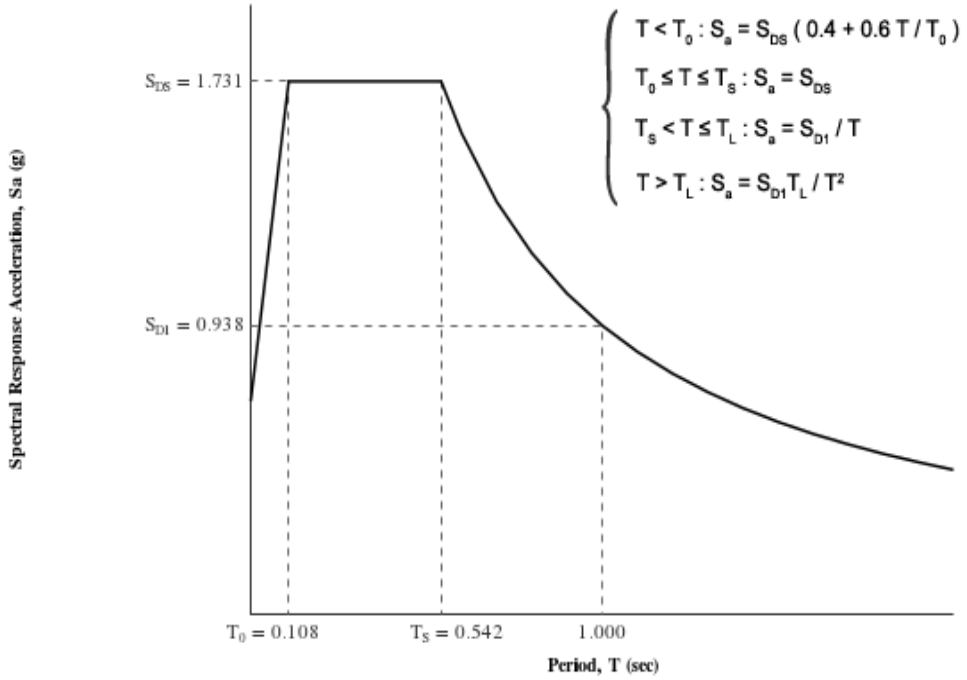
Equation (11.4–3): $S_{DS} = ⅔ S_{MS} = ⅔ \times 2.596 = 1.731$ g

Equation (11.4–4): $S_{D1} = ⅔ S_{M1} = ⅔ \times 1.407 = 0.938$ g

Section 11.4.5 — Design Response Spectrum

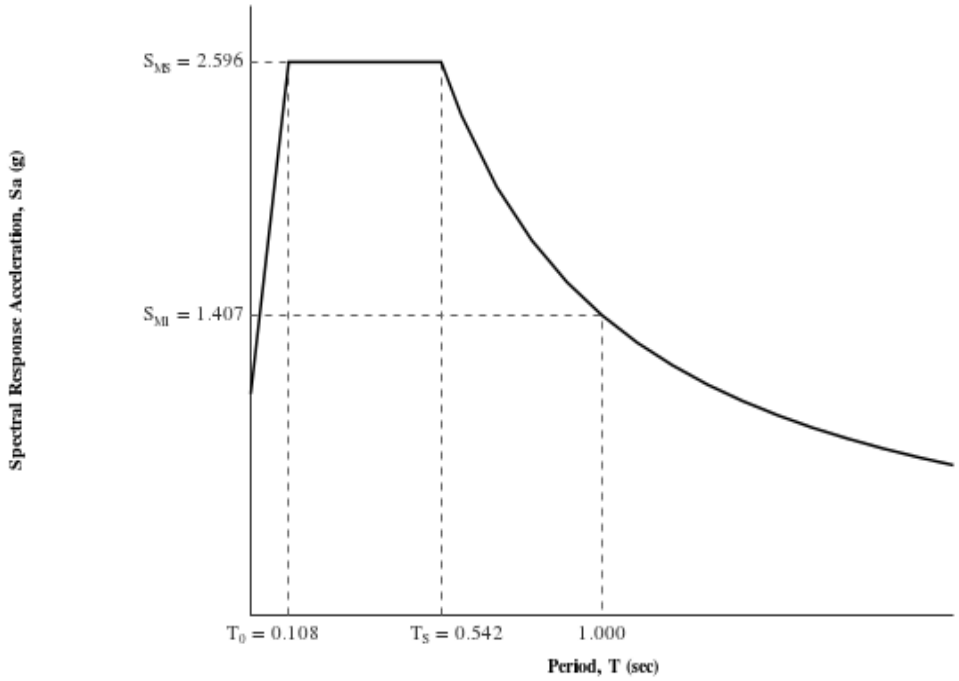
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.020

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.020 = 1.02$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.020 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.910

From Figure 22-18 [6] C_{R1} = 0.909

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.731 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.938 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

34.2077

Time Horizon

Return period in years

2475

Longitude

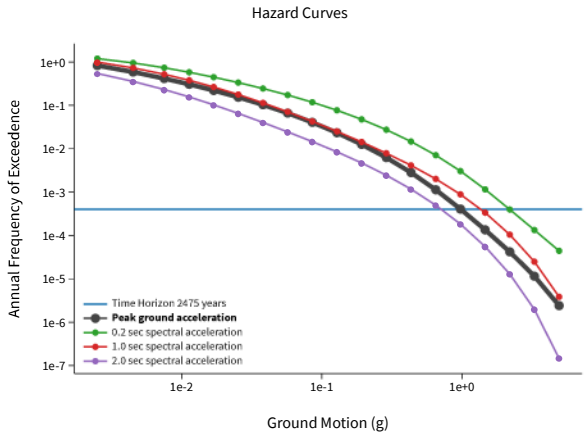
Decimal degrees, negative values for western longi…

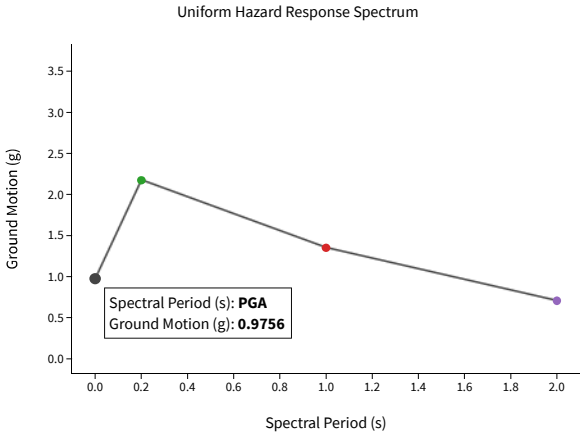
-119.155

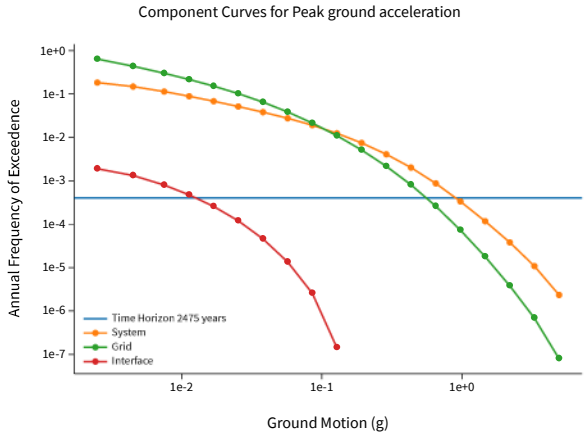
Site Class

259 m/s (Site class D)

Hazard Curve





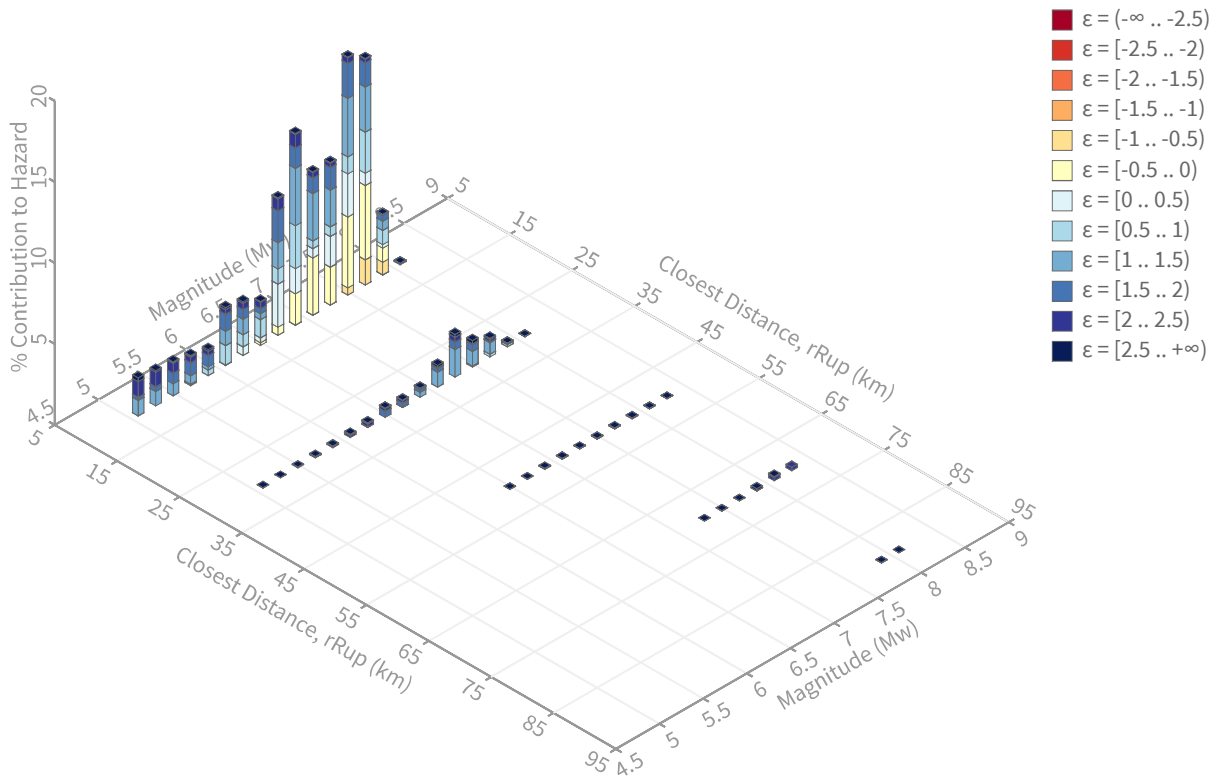


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.97561235 g

Recovered targets

Return period: 2817.3196 yrs
Exceedance rate: 0.0003549473 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.11 %

Mean (for all sources)

r: 10.78 km
m: 7.01
ε_0: 0.93 σ

Mode (largest r-m bin)

r: 9.19 km
m: 7.53
ε_0: 0.57 σ
Contribution: 14.67 %

Mode (largest ε_0 bin)

r: 9.02 km
m: 7.68
ε_0: -0.22 σ
Contribution: 4.59 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							42.70
Simi-Santa Rosa [6]		5.58	6.98	0.59	119.102°W	34.222°N	71.55	10.04
Oak Ridge (Onshore) [0]		6.66	7.36	0.50	119.167°W	34.261°N	349.76	9.57
Oak Ridge (Offshore) [5]		11.16	6.87	1.03	119.273°W	34.240°N	288.42	5.02
Oak Ridge (Onshore) [1]		9.79	7.55	0.61	119.113°W	34.285°N	24.15	3.73
Ventura-Pitas Point [3]		10.13	7.51	0.59	119.195°W	34.290°N	337.93	3.62
Red Mountain [0]		20.72	7.13	1.42	119.304°W	34.347°N	318.65	1.75
Malibu Coast (Extension) alt 2 [3]		15.27	7.54	1.00	119.168°W	34.070°N	184.46	1.41
Ventura-Pitas Point [2]		10.13	7.18	0.76	119.195°W	34.290°N	337.93	1.05
UC33brAvg_FM31	System							39.84
Simi-Santa Rosa [6]		5.58	7.01	0.58	119.102°W	34.222°N	71.55	10.85
Oak Ridge (Onshore) [0]		6.66	7.43	0.48	119.167°W	34.261°N	349.76	9.70
Ventura-Pitas Point [3]		10.13	7.58	0.56	119.195°W	34.290°N	337.93	4.27
Oak Ridge (Onshore) [1]		9.79	7.65	0.58	119.113°W	34.285°N	24.15	3.49
Red Mountain [0]		20.72	7.23	1.36	119.304°W	34.347°N	318.65	1.97
Ventura-Pitas Point [2]		10.13	6.71	1.00	119.195°W	34.290°N	337.93	1.56
Channel Islands Thrust [0]		16.34	6.87	1.50	119.265°W	34.044°N	209.10	1.47
Malibu Coast (Extension) alt 1 [5]		15.27	7.33	1.10	119.172°W	34.068°N	185.76	1.11
UC33brAvg_FM31 (opt)	Grid							8.80
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.20
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.20
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
UC33brAvg_FM32 (opt)	Grid							8.66
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07

Job No. 39153

Phase I Geologic and Environmental Hazards Assessment, Proposed High School No. 8 APN 214-002-059 on North Rose Avenue Oxnard, California

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June 18, 2019

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1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) has prepared this Phase I Geologic and Environmental Hazards Assessment Report (GEHA) for the Oxnard Union High School District (OUHSD) for the proposed High School No. 8 located in the City of Oxnard in Ventura County, California (Figure 1). The proposed High School No. 8 is hereinafter referred to as the "Site." The project will include the construction of new parking areas, driveways, buildings, and athletic facilities on properties currently owned by the Maulhardt Family.

This Phase I GEHA was prepared on behalf of the OUHSD to provide information required to obtain California Department of Education (CDE) project approval in accordance with the requirements of Appendix H of the *School Site Selection and Approval Guide* (CDE 2016). The ultimate goal of completing this Phase I GEHA is to achieve approval from the CDE, California Department of the State Architect (DSA), and California Geological Survey (CGS) for the proposed High School No. 8 site.

1.1 SCOPE OF WORK

This Phase I GEHA evaluates the items listed on the CDE Environmental Hazards Checklist (CDE 2007b) including the following the potential hazards to the Site:

- Surface fault rupture;
- Seismic ground motion;
- Liquefaction;
- Earthquake-induced landslides/slope instability;
- Subsidence;
- Tsunami;
- Seiche inundation;
- Flooding;
- Reservoir failure inundation;
- Expansive soils;
- Asbestos containing serpentine rocks;
- Hazardous or solid waste disposal;
- Water/Fuel Storage Tanks;
- Traffic Corridors;
- Airports/Heliports;
- Railroad Tracks Right of Ways;
- Impacted soil and groundwater;
- Hazardous air emissions;
- High pressure pipelines;

- Electromagnetic radiation from public utility power lines; and
- Oil and gas fields.

1.2 LOCATION, DESCRIPTION, AND HISTORICAL SUMMARY

The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 48 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the city of Oxnard. The geographic coordinates of the Site are approximately Latitude 34° 12' 27.76" North, Longitude 119° 9' 19.44" West (EDR 2017).

The Site is located in the central area of the Oxnard plain. The Site topography is a relatively flat with surface that gently slopes to the south. Surface elevations at the Site range from approximately 60 feet above mean sea level (msl) in the north to 52 feet above msl on the south (Google Earth 2018).

Currently, the Site is used for the cultivation of strawberries. Historical aerial photographs, Google Earth images, and information from the Site owners indicate that the Site has been used for cultivation of row crops from as early as 1869 to the present.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use and is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the south, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single-family housing are located to the east and west of the Site.

1.3 PROPOSED SCHOOL DEVELOPMENT

Tetra Tech's knowledge of the proposed project improvements is limited as of this time and is based on the Overall Site Plan Oxnard High School District High School No. 8 prepared by WLC Architects (WLC Architects 2019) (Figure 2). The Site Plan is summarized in Table 1.

Table 1
Overall Site Plan Summary

Building	Building Area ft^{2} [a]	No. Stories
A - Administration, Library, Nurse, 1st Floor	13,959	Two-Story
A - Administration, Library, Nurse, 2nd Floor	16,823	
B - Theater, Drama, Music, Choir, Band, 1st Floor	29,275	Two-Story
B - Theater, Drama, Music, Choir, Band, 2nd Floor	2,110	
C - Gymnasium, Locker Rooms	48,832	One-Story
D - Classrooms, 1st Floor	14,720	Two-Story
D - Classrooms, 2nd Floor	15,083	
E - Classrooms, 1st Floor	18,256	Two-Story
E - Classrooms, 2nd Floor	11,716	
F - Shop Classrooms	12,613	One-Story
G - Cafeteria, Kitchen	13,313	One-Story
H - Classrooms, Special Ed., 1st Floor	5,092	Two-Story
H - Classrooms, Special Ed., 2nd Floor	7,076	
J - Classrooms, 1st Floor	10,909	Two-Story
J - Classrooms, 2nd Floor	10,677	
K - Classrooms, 1st Floor	6,488	Two-Story
K - Classrooms, 1st Floor	10,924	
L - Classrooms, 1st Floor	6,060	Two-Story
L - Classrooms, 1st Floor	9,213	
M - Team Room	3,253	One-Story
N - Home Bleachers		
P - Home Concession, Restrooms	1,654	One-Story
Q - Visitor Bleachers		
R - Visitor Team Rooms	1,360	One-Story
S - Pool Building	3,620	One-Story
T - Visitor Concession, Restrooms	1,247	One-Story
U - Restrooms, Concession	400	One-Story
V - Maintenance & Ops.	1,056	One-Story
W - Child Care	3,657	One-Story
X - Condor Care	1,925	One-Story
Total	**281,311**	

Parking Lot	Parking Lot ft^{2} [a]	No. Parking Spaces
A	174,870	283
B	191,148	285
C	46,407	58
D	33,230	74
Total	**445,655**	**730**

Table 1
Conceptual Site Plan Summary
(continued)

Sport Facility	Facility ft^{2} [a]	Ground Surface
Track/Football Field	163,000	Turf
Varsity Baseball Field	137,570	Turf
JV Baseball Field	110,050	Turf
Varsity Softball Field	55,420	Turf
JV Softball Field	53,695	Turf
Sports Field	163,395	Turf
Basketball Courts	52,960	Paved
Tennis Courts	46,200	Paved
Pool	10,275	Paved
Total	**792,565**	

Notes:
a – Area estimates are approximate.
ft^{2} - Square Foot

The proposed buildings will be of wood or metal frame construction or cast in place concrete tilt up construction with concrete slab-on-grade foundations. No other structures are planned. The proposed grading plan for the project and finish floor elevations were not provided to Tetra Tech for the preparation of this report. It is anticipated that the final grade will be similar to the existing grade and that the grading required to achieve the building pad subgrade will be minor and necessary only to provide adequate foundation and slab support and positive drainage away from the structures.

It is assumed that surface and subsurface improvements will also be constructed. Surface improvements will include concrete flat work for pedestrian use. Subsurface improvements will include underground utility conduits.

1.4 PREVIOUS INVESTIGATIONS

Tetra Tech has reviewed the following previous studies that were previously prepared for the Site:

- *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California* (Tetra Tech 2018a) (Phase I ESA);
- *Preliminary Foundation Design Parameters and Infiltration Testing Report* (Earth Systems Pacific [ESP] 2018a);
- *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California* (Tetra Tech 2018b) (FSP);
- *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California* (ESP 2018b) (Geotechnical Report);
- *Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California* (Tetra Tech 2018c) (Geohazard Report);

- *Draft Preliminary Environmental Assessment High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California* (Tetra Tech 2018d) (PEA);

- *Technical Memorandum, Supplemental Site Investigation Field Sampling Plan, Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030* (Tetra Tech 2019a) (SSI FSP);

- *Technical Memorandum, Maulhardt Ranch High School No. 8 Water Pipeline Safety Hazard Assessment TETR-02.0* (Water Pipeline Safety Hazard Assessment) (Placeworks 2019);

- *Supplemental Site Investigation, Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030* (SSI) (Tetra Tech 2019b);

- *Recommendations for Shear Wave Velocity* (ESP 2010); and

- *Second Addendum Report, Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California* (Tetra Tech 2019c) (Second Addendum Report).

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2.0 GEOLOGIC SETTING

2.1 REGIONAL GEOLOGY

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa and Pine Mountains, to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (CGS 2002a).

2.2 SITE GEOLOGY

The geology of the Site area is shown on Figures 4A and 4B (Gutierrez, et al. 2008). The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

2.3 EARTH MATERIALS

2.3.1 Stratigraphy

The geology of the Site surface is shown on Figure 3. The geology of the Site subsurface was constructed from the geotechnical soil boring logs in ESP's 2018 Geotechnical Engineering Report (ESP 2018b) and is depicted on Figure 5A (Cross Section A – A') and Figure 5B (Cross Section B – B'). Based on the geologic map in Figure 3 (Gutierrez, et al. 2008) and information in *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area* (Turner, et al 1975), the Site is underlain at the ground surface by Holocene deltaic alluvium and wash fan deposits to approximately 70 feet below ground surface (bgs). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non-marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

2.3.2 U.S. Department of Agriculture, Soil Conservation Service Data

The U.S. Department of Agriculture, Soil Conservation Service (USDA) data identifies the native soil types at the Site to be Mocho loam, Pico sandy loam and sandy loam substratum, Hueneme sandy loam, and Camarillo sandy loam. These soils are nearly level and occur on alluvial fans and flood plains. Permeability is rapid and surface runoff is very slow, such that there is no hazard of erosion by water (USDA 1970).

2.3.3 Earth Systems Pacific April and July 2018 Soil Boring Data

ESP completed 53 geotechnical soil borings to depths ranging from 10 feet bgs to 51.5 feet bgs during April and July 2018 for the OUHSD to collect soil samples and soil blow-count density data for use in development of the High School No. 8 (Figures 3, 5A, and 5B). The general subsurface profile observed in the borings consisted of silty sand at the ground surface extending to approximately 3 to 8 feet bgs, underlain by interbedded poorly to well graded sand and occasional gravel with clay and silt layers that are exposed in the borings completed for this project to 51.5 feet bgs. These alluvium and wash deposits were deposited by the Santa Clara River. Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project. The soils were in a slightly moist to moist condition above the water table and wet below the water table. The sandy soils have a loose to very dense consistency while the silt and clay soils were medium stiff to stiff. Several of these soil layers also had varying amounts of fine to coarse gravel and cobbles. Based on the subsurface profile described above, the Site Class per Chapter 20 Table 20.3-1 (ASCE 2013) is "D", a "Stiff Soil Profile" (ESP 2018b).

2.4 GROUNDWATER

2.4.1 Hydrogeology

The Site is located in the northern portion of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975; Ventura County Public Works Department [VCPWA] 1975). The Oxnard Plain Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Basin are grouped into three major units; 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System (UAS), and 3) the Lower Aquifer System (LAS).

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer. In the Site area, the semi-perched aquifer extends to depths of approximately 75 feet bgs and the clay cap from approximately 75 feet bgs to 150 feet bgs (Turner, et al 1975). The semi-perched aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the deltaic channel complex of the ancestral Santa Clara River and form lenses perpendicular to the channels of the ancestral Santa Clara River (Figures 4A and 4B). The depth to the historically highest groundwater elevation for the Site area shown on Plate 1.2 of the *Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle. Ventura County, California* (CGS 2002a) is approximately 8 feet bgs. The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Oxnard aquifer of the UAS. This clay cap acts as an aquitard. Based on topographic controls, groundwater in the Site vicinity is expected to flow toward the south to south-southwest.

The UAS system consists of the Oxnard and underlying Mugu aquifer zones. These two water bearing units were combined due to their similar, planar structure. Both the Oxnard and Mugu aquifers are composed of sediments deposited largely by the ancestral Santa Clara River during the Upper Pleistocene.

The Oxnard aquifer zone extends from approximately 150 to 200 feet bgs in the Site area and is a laterally continuous layer gravel and cobbles and coarse to fine sand, with local fine-grained lenses deposited in non-marine environment. The underlying Mugu aquifer zone extends from approximately 200 to 400 feet bgs in the Site area and consists of laterally continuous sand and gravel deposited in a shallow marine embayment on an erosional unconformity on top of the San Pedro formation that forms the top of the LAS.

The LAS system in the Site area, in descending order, consists of the Hueneme and Fox Canyon aquifer zones. The sediments in the LAS are more structurally complex than the UAS resulting from folding and faulting. Both the Hueneme and Fox Canyon aquifer zones are composed of lower Pleistocene age San Pedro Formation.

2.4.2 Groundwater Levels Recorded by ESP During April and July 2018

Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project during April and July 2018 (ESP 2018b).

2.4.3 Groundwater Quality

Groundwater in the borings completed for this project in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use (Turner, et al 1975). The groundwater in the underlying UAS system, the Oxnard and underlying Mugu aquifer zones is generally of good quality and serves as a major source of water for agriculture, municipal, and industrial use in the Oxnard area.

2.4.4 Aquifers Impacted by Site Releases

Tetra Tech evaluated potential for impacts to the groundwater of the semi-perched zone from fuel formerly stored in underground storage tanks in the Maulhardt Ranch farmyard area as part of the PEA. Soil and groundwater samples were collected from the area of the Site adjacent to farmyard area and tested for fuel related volatile organic compound (VOCs) and total petroleum hydrocarbons (TPH). The PEA groundwater assessment did not identify any evidence of a release fuel release from the Site to groundwater (Tetra Tech 2018c).

2.5 SURFACE WATER

No surface water was observed at the Site during the reconnaissance performed on July 2, 2018. It is likely that during periods of moderate rainfall, free surface water that accumulates on the Site may flow south and southwest and possibly into gutters along Camino Del Sol and North Rose Avenue (Figures 1 and 2). However, the U.S. Department of Agriculture, Soil Conservation Service report indicates that soil permeability at the Site is moderate to rapidly moderate and surface runoff is very slow, such that there is a low hazard of erosion by water (USDA 1970).

2.6 SEISMICITY

2.6.1 Regional Earthquake Fault Analysis

The high rate of seismic activity in California and the Site area is the result of large-scale earth processes in which the Pacific plate slides northwestward relative to the North American plate at about 2 inches/year. This plate motion results in horizontal slip (primarily on the San Andreas “strike-slip” fault) and crustal block rotation and compression within a restraining bend of the San Andreas Fault, that has

created the series of the prominent mountain ranges and intervening valleys situated between Santa Monica and Santa Barbara and associated thrust and reverse faults (CGS 2002a). Although slower moving than the strike-slip faults of the San Andreas system, these numerous thrust and reverse faults account for over half of the significant earthquakes that have occurred in southern California during the past century, including the damaging 1971 M 6.6 San Fernando, 1994 M 6.7 Northridge, and 2003 M 6.5 San Simeon earthquakes (Ross *et al.* 2004).

Active and potentially active faults in the Site area were evaluated by reviewing the *Fault Activity Map of California and Adjacent Areas* (Jennings 1994), *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California* (Jennings, *et* al. 2010), *Draft Background Report, City of Oxnard General Plan* (City of Oxnard 2006), Figures 2.2.1b, 2.2.2 and 2.2.3b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and *Earthquake Zones of Required Investigation Maps for the Saticoy Quadrangle* (CDMG 1978), *Camarillo Quadrangle* (CDMG 1998a), and *Santa Paula Quadrangle* (CDMG 1998b), and *Oxnard Quadrangle* (CGS 2002a; 2002b). Active faults are defined as those faults with evidence of displacement within the last 11,000 years and potentially active faults are defined as those with evidence of displacement within the last 1.6 million years (CGS 2007). The faults shown on Figures 6A through 6D are from the *Fault Activity Map of California and Adjacent Areas* (Jennings 2010). The terms active and inactive faults have been interpreted differently by geologists, seismologists, and agencies. For this report, active faults are defined as having evidence of surface displacement within the last 11,000 years and potentially active faults are defined as having evidence of surface displacement in the last 1.6 million years (CGS 2007). The fault classification terms shown on Figures 6A through 6D are specific to 2010 Fault Activity Map and will not be considered for design purposes.

Table 2 contains a summary of earthquake faults within approximately 100 kilometers (km) (62.1 miles) listed in *Appendix A: California Fault Parameters for the National Seismic Hazards Map and Working Group on California Earthquake Probabilities* (U.S. Geological Survey [USGS] and CGS 2007) (Appendix A CFP). Most of these faults are shown on the 2010 Fault Activity Map.

The earthquake faults located nearest to the Site are the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site, the Wright Road Fault, located approximately 6.1 km (3.7 miles) north of the Site, the Oak Ridge Fault, located approximately 7.3 km (4.5 miles) north of the Site, the Camarillo Fault located approximately 8.3 km (5.1 miles) east of the Site, and the Ventura-Pitas Point Fault, located approximately 8.9 km (5.5 miles) north of the Site.

The Oak Ridge Fault System (Reference Number 335 on the 2010 Fault Activity Map 2010 in Figure 6A) is a Late Quaternary dip slip fault dipping at approximately 65 degrees to the south that extends from the Santa Susana Mountains where it has been overridden by the north-dipping Santa Susana Thrust Fault, westward along the southerly side of the Santa Clara River Valley and thence into the Oxnard Plain. The Oak Ridge Fault System is an active reverse fault with a slip rate of 3.0 millimeter (mm)/year, a maximum moment magnitude of 6.9 and a recurrence interval of 299 years. It does not have a surface expression nor have any been shown to cut near-surface sediments (alluvium). It is conceivable that past movement of this fault system in the Oxnard Plain area has not resulted in surface displacements but, instead, has resulted in only broad warping or tilting of the near-surface alluvial sediments. The lack of surface evidence of fault displacement in the Oxnard Plain is not necessarily indicative of activity in the recent geologic past as surface features could easily have been obscured by fluvial processes (erosion or deposition of alluvium). Several recorded earthquake epicenters in the offshore as well as mainland area during historic time may have been associated with the Oak Ridge Fault System or within close proximity and associated with it (County of Ventura 2013).

The Ventura-Pitas Point Fault (Reference Number 336 on the 2010 Fault Activity Map 2010 in Figure 6A) is a Holocene, oblique left lateral reverse fault, dipping at approximately 64 degrees to the north that extends along the base of the foothills on the north side of the Santa Clara River from Santa Paula westerly to the mouth of the Ventura River, thence westerly into the Santa Barbara Channel area. Evidence for the existence of the Ventura-Pitas Point Fault is based mainly upon minor faulting of terrace deposits north of San Buenaventura and evidence of faulting from the Tidewater Oil Company corehole #5. It has slip rate of 1.0 mm/year, a maximum moment magnitude of 6.8 and a recurrence interval of 1,112 years (County of Ventura 2013).

The Wright Road Fault (Reference Number 536 on the 2010 Fault Activity Map 2010 in Figure 6A) is considered to be an active "tear" fault, terminating the west end of the Camarillo and Springville anticlines. It may be interpreted as a structural boundary between the Ventura Anticline on the west and South Mountain to the east (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 2), or discussed in the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Springville Fault Zone (Reference Number 348 on the 2010 Fault Activity Map 2010 in Figure 6A) marks the southern edge of the Camarillo Hills, which are largely the expression of the Camarillo Anticline. This fold is relatively young, having developed within the last few hundred thousand years above young, concealed thrust faults of the Springville Fault Zone, which may be a back thrust off of the Oakridge Fault Zone. The Springville Fault Zone is approximately 5.5 miles long. The southern trace is largely concealed, extends approximately 2.5 miles east from the west end of the Camarillo Hills, and it is considered to be an active, Holocene fault, with an estimated an average earthquake recurrence interval of 900 years with a displacement of 0.6 to 11 meters per event. The northern trace lies along the main body of the Camarillo Hills extending approximately 5.5 miles east from the west end of the Camarillo Hills, is considered to be an active fault, and marks the southern margin of the Camarillo Anticline (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 2), so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Camarillo Fault (Reference Number 349 on the 2010 Fault Activity Map 2010 in Figure 6A) is expressed by an east-west anticlinal ridge approximately 5.5 miles long located southwest of Camarillo. This fault extends in an east-west direction immediately south of Camarillo from Calleguas Creek to Camarillo Airport. The present of the fault is based primarily upon the abrupt uplifted sediments along the north side of the fault that resulted in the long linear hill of the southern portion of Camarillo just south of the 101 Freeway (County of Ventura 2013). Limited trenching has not revealed a surface trace for this fault, however the straight planar nature of most of the escarpment and the steepening of bedding near the base of the slope strongly suggests a surface fault. Although there is no hard evidence for Holocene activity on this fault, the step in the Calleguas Creek flood plain across the fault trace appears to be Holocene. Therefore, this fault is considered to be active (Treiman 1997). This fault was not included in the Appendix A CFP (or included in Table 2), so characteristics such as the configuration slip rate, and maximum moment magnitude were not reviewed for this report.

2.6.2 Analysis of Historical Earthquakes

The rate of seismic activity for the Site areas summarized in Table 3 was estimated from the USGS Earthquake Hazards Program Search Earthquake Catalogue website for the Site area from 1900 through 2018 (USGS 2018b).

According to the USGS database, 119 earthquakes with magnitudes exceeding 4.5 have occurred within 63 miles (100 kilometers) of the Site since 1900 (Table 3). Significant historical earthquakes of the Oxnard region include the 1812 earthquake that effected most of southern California (Richter Magnitude [M_L] 7.0), the 1827 Ventura Earthquake (M_L 7.0), the 1857 Fort Tejon Earthquake (M_L 7.1), the 1952 Tehachpi Earthquake (M_L 7.7), and the 2004 Northridge Earthquake (M_L 6.7). While all of these earthquakes were felt in the Site area, no historical earthquakes have caused a great amount of property damage or loss of human life in the Site area. However, the historical earthquake record of California spans a little over 200 years and provides only a partial indication of seismic hazards. The absence of earthquakes on many recognized active faults and fault-related folds in California probably reflects recurrence intervals greater than the historical record.

3.0 GEOLOGIC HAZARDS

The following geologic hazard assessment was performed in general accordance with the guidelines contained in the CGS Note 48 (CGS 2013), *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A* (CGS 2008), and the 2016 California Building Code (CBC) (ICC 2017). It is based on published information on the regional and local geologic conditions along with data from the geotechnical assessments of the Site performed by ESP (ESP 2018b).

3.1 ALQUIST-PRIOLO EARTHQUAKE FAULT ZONES

The Site is not located within a designated Alquist-Priolo Earthquake Fault Zone (AP Zone) (CGS 2007). Because the Site is not located within an AP Zone and there are no known active faults with the potential for surface rupture beneath or trending toward the Site, the probability of surface rupture due to faulting at the Site is considered low. Based on review of the Earthquake Fault Zone Maps for the Saticoy (CDMG 1978), Camarillo (CDMG 1998a), and Santa Paula (CDMG 1998b) Quadrangles, and Figure 2.2.3b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), the nearest AP Zones are located at the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site, the Wright Road Fault, located approximately 6.1 km (3.7 miles) north of the Site, the Camarillo Fault located approximately 8.3 km (5.1 miles) east of the Site, and the Ventura-Pitas Point Fault, located approximately 8.9 km (5.5 miles) north of the Site.

3.2 SITE RECONNAISSANCE/AERIAL PHOTOGRAPH REVIEW

Tetra Tech performed a reconnaissance of the Site on July 2, 2018 to evaluate the Site geomorphology and surface geology to assist in preparation of the Site Plan/Geologic Map presented in Figure 3. The potential for surface fault rupture at the Site was also evaluated through review of historical aerial photographs available from EDR (EDR 2017), and visual evaluation of the Site geomorphology during the July 2, 2018 reconnaissance. No evidence for surface fault rupture at the Site (such as scarps, lineations, or other geomorphic features) was observed during the July 2, 2018 Site reconnaissance or in historical aerial photographs dating from 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017). The Site is generally flat. It is shown as being used for various types of row crop agricultural development in all of the aerial photographs reviewed. Relict lineations of braided stream channel morphology from former flood events of the ancestral Santa Clara River are visible on the Site and surrounding areas in the aerial photographs dating from 1927, 1938, 1947, and 1959.

3.3 SITE SPECIFIC EARTHQUAKE GROUND MOTION ANALYSIS

The Site is in a region of generally high seismicity and has the potential to experience strong ground shaking from earthquakes on regional or local causative faults. According to the 2016 CBC Section 1616A.1.3 (ICC 2017), the Site should be assigned to Seismic Design Category E or F, as the Site's mapped spectral response acceleration parameter at a 1-second period (S_1) is 0.938 g, which is greater than 0.75 g (see Table 1 ASCE 7-10 Standard Acceleration Parameters later in this section). Based on this S_1 parameter, a site-specific response analysis is warranted to analyze the ground motion hazard at the Site. The site-specific response analysis is intended to be in general conformance with ASCE Standard 7-10, Chapter 21, Site Specific Ground Motion Procedures for Seismic Design, Sections 21.1.1 through 21.5.3 (ASCE 2013).

ASCE 7-10 (ASCE 2013) requires that the following site-specific seismic information be developed: 1) Risk-Targeted Maximum Considered Earthquake (MCE_R) Probabilistic and Deterministic response

curves; 2) Site-Specific MCE_R spectral response curve; 3) Site Design Response Curve (2/3 Site-Specific Maximum Considered Earthquake [MCE]); and 4) Site Design Acceleration Parameters.

The MCE_R is defined as an event having a 2 percent chance of exceedance in 50 years, with a return period of approximately 2,475 years, which is expected to achieve a 1 percent probability of partial or total structure collapse within a 50-year period. The deterministic and probabilistic ground motions were calculated using the USGS 2008 Lower 48 California outside of Cascadia seismic source database and Next Generation Attenuations (NGA) from the EZ-FRISK program Version 7.65 by Fugro (Fugro 2019). The NGAs used for this ground motion analysis consider Maximum Rotated Component (MRC) accelerations and were as follows: 1) Boore & Atkinson, 2008 NGA USGS MRC; 2) Campbell & Bozorgnia, 2008 NGA USGS MRC; and 3) Chiou & Young, 2007 NGA USGS MRC, all of which are applicable to shallow crustal earthquakes in the western United States. These three NGAs were used for determining the Probabilistic MCE_R and Deterministic MCE_R.

3.3.1 Site Specific Shear Wave Velocity (V_{S30})

ASCE 7-10 (ASCE 2013) Section 20.1 requires that site soils shall be classified in accordance with Table 20.3-1 and Section 20.3 based on the upper 100 feet (30 meters) of the site profile. ESP developed a Site-Specific Shear Wave Velocity (V_{S30}) for the geologic profile of the Site from upper 100 feet (30 meters) using the average of the sampler blow counts from the seven deeper borings B-1, B-2, B-16, B-22, B-35, B-43, and B-51. Cal sampler blow counts were converted to equivalent SPT blow counts by using a reduction factor of 0.63 (ESP 2019).

The average field standard penetration resistance (SPT N) blow counts were determined by using the equation listed in Section 20.4-2 of Chapter 20 of the ASCE 7-10 (ASCE 2013). Two analyses of the blow count information were performed. One analysis only considered the upper approximately 50 feet of soil and the other used the same information from the upper 50 feet of soil and then used the deepest SPT N blow counts to extrapolate information down to a depth of 100 feet. The results of the analyses yielded average SPT N blow counts of approximately 17 for the 50-foot analysis and 21 for the 100-foot analysis.

Based on the analyses, ESP recommended using the higher average SPT N blow count of 21 for estimating the shear wave velocity as this will likely lead to a higher ground acceleration than using the lower average SPT N blow count of 17. Table 20.3-1 of ASCE 7-10 (ASCE 2013) indicates that the V_{S30} for Class D Soils ranges from 600 feet/second to 1,200 feet/second. Comparing the average SPT N blow count of 21 to the information listed in Table 20.3-1 Site Classification of ASCE 7-10, a V_{S30} shear wave velocity of 705 feet/second (215 meters/second) was estimated for the Site-Specific Ground Motion Analysis. This V_{S30} value of 705 feet/second (215 meters/second) was used in the ground motion analyses performed by Fugro's EZ-FRISK program Version 7.65.

3.3.2 Probabilistic (MCE_R) Ground Motions

To develop the probabilistic MCE_R spectrum for the Site, the EZ-FRISK program Version 7.65 by Fugro was used (Fugro 2019). Mapped faults within a 105-kilometer radius (65 miles) were selected from the program database. The peak horizontal ground acceleration (PGA) and spectral accelerations, at 5 percent damped for a Site Class "D" (ASCE, 2013), were estimated using the NGAs mentioned above. The MRC of these three generated curves was used as the probabilistic MCE_R response spectrum. The ordinates of the probabilistic ground motions were then computed using Method 1 of ASCE 7-10 Section 21.2.1.1 (ASCE, 2013). To obtain the probabilistic MCE_R spectrum using this method, at each spectral response period for which the acceleration is computed, the ordinates of the probabilistic ground motion are determined as the product of the risk coefficient C_R, and the spectral response acceleration from a 5

percent damped acceleration response spectrum having a two percent probability of exceedance within a 50-year period. The value of the risk coefficient C_R is determined using the values of C_{RS} (0.910) and C_{R1} (0.909) from Figures 22-17 and 22-18 of ASCE 7-10 (ASCE, 2013) that were obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix A). The ground motions were multiplied by the mapped risk coefficient C_{RS} (0.910) at periods up to 0.2 seconds, and C_{R1} the mapped risk coefficient (0.909) at periods greater than or equal to 1 second. At response spectral periods greater than 0.2 seconds and less than 1.0 seconds, C_R was based on linear interpolation of C_{RS} and C_{R1}. The Probabilistic Response Spectra (MCE_R) are included in a single graph presented in Figure 7. The Probabilistic MRC with Risk Component PGA (MCE_G) is 0.943g (includes risk factor), which is the PGA with a 2 percent probability of exceedance within a 50-year period.

3.3.3 Deterministic (MCE_R) Ground Motions

A deterministic analysis using the NGAs was performed using the EZ-FRISK program Version 7.65 by Fugro (Fugro 2019) in accordance with ASCE 7-10 (ASCE, 2013). The parameters used in this analysis included the stiff soil classification (Site Class "D"), and the controlling seismic source being the late Quaternary Oak Ridge—Connected-Fault with a maximum magnitude of 7.40 and 5.04 kilometers from the Site and the Oak Ridge (Onshore)-Fault with a maximum magnitude of 7.20 and 5.72 kilometers from the Site. Values for the three spectral NGA curves were calculated using EZ-FRISK. The MRC of the obtained values was used as the basis for calculating the Deterministic Response Spectrum (MCE_R) presented on the graph in Figure 8. The Deterministic (MCE_R) Lower Limit was calculated using F_a = 1.00 and F_v = 1.50, obtained from the USGS Earthquake Hazards Program website (USGS 2018a) (Appendix A). The Deterministic Response Spectra (MCE_R) are included in a single graph presented in Figure 8.

ASCE 7-10 Section 21.2.2 (ASCE, 2013) requires that the ordinates of the deterministic ground motion response spectrum shall not be less than the corresponding ordinates of the Deterministic Lower Limit determined in accordance with Figure 21.2.1. The ordinates of the Deterministic MRC (MCE_R) spectrum are higher than or equal to the corresponding ordinates of the Deterministic Lower Limit response spectrum at all spectral periods. Therefore, it is our opinion that the Deterministic MRC spectrum curve should comprise the Deterministic Site Specific (MCE_R) curve at all spectral periods. This Deterministic Site-Specific (MCE_R) is indicated by the red dashed line on the Deterministic Response Spectra graph presented in Figure 8.

The Deterministic MRC (MCE_R) PGA is 1.03g, which was calculated from the largest source earthquake from the Oak Ridge-Connected-Fault.

3.3.4 Site-Specific (MCE_R)

The Site-Specific (MCE_R) was developed in accordance with ASCE 7-10 (ASCE 2013). The Site-Specific (MCE_R) is defined by ASCE 7-10, Section 21.2.3 (ASCE 2013) as the lesser of the Probabilistic (MCE_R) and the Deterministic (MCE_R). A review of the Probabilistic and Deterministic MRC Response Spectra graphs presented in Figure 9 indicates that the Probabilistic (MCE_R) spectral response acceleration curve is the lesser curve for periods less than 0.13 seconds and greater than 0.23 seconds and the Deterministic MRC spectral response acceleration curve is the lesser curve for periods greater than 0.13 seconds and less than 0.23 seconds. Therefore, the Site-Specific (MCE_R) should consist of the Probabilistic MRC with Risk Coefficient spectral response curve for periods less than 0.13 seconds and greater than 0.23 seconds and the Deterministic MRC spectral response acceleration for periods greater than 0.13 seconds and less than 0.23 seconds. The Probabilistic MRC with Risk Coefficient curve, Deterministic Site Specific (MCEr) curve, and Site-Specific (MCE_R) curve are presented in Figure 9.

3.3.5 ASCE 7-10 Standard Acceleration Parameters

The Site coefficients, mapped, and design seismic ground motions that could occur at the Site were analyzed based on the CBC (ICC 2017) and ASCE 7-10 Standard method (ASCE 2013). The Site coordinates used in this analysis were latitude 34.2077 north and longitude 119.1554 west (Google Earth 2018), with a Site Classification of "D". The ASCE 7-10 Standard method available on the USGS Earthquake Hazards Program website (USGS 2018a) was used (Appendix A). The results of the seismic ground motion analysis are presented in Table 4.

Table 4
ASCE 7-10 Standard Acceleration Parameters

Mapped Acceleration Values for Site Class "B"		**Site Coefficients and Adjusted MCE_R Design Response Spectrum Acceleration Parameters For Site C ass "D"**					
Seismic Parameters	**Values (g)**	**Site Coefficients**	**Values**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_S	2.596	F_a	1.000	S_{MS}	2.596	S_{DS}	1.731
S_1	0.938	F_v	1.500	S_{M1}	1.407	S_{D1}	0.938

3.3.6 Design Response Spectrum

The Site Design Response Spectra were developed in accordance with ASCE 7-10 (ASCE 2013). Per ASCE 7-10 Section 21.3 (ASCE 2013), the Site Design Response Spectra is obtained by taking 2/3 of the Site-Specific (MCE_R), except that the ordinates shall not be less than those obtained from 80% of the ASCE 7-10 Standard adjusted Design Response Spectra values per ASCE 7-10 Section 11.4.5 (ASCE, 2013). The accelerations for 2/3 of the Site-Specific (MCE_R) were lower than 80% of the ASCE 7-10 Standard adjusted Design Response Spectra for periods between 0.013 and 0.63 seconds, and higher for periods lower than 0.013 seconds and greater than 0.63 seconds, as shown on the Site Design Response Spectra graph presented in Figure 10. Therefore, the Governing Site Design Response Spectrum should consist of the ground accelerations for 80% of the ASCE 7-10 Standard adjusted Design Response Spectrum for periods between 0.013 and 0.63 seconds, and the ground accelerations for 2/3 of the Site-Specific (MCE_R) for periods lower than 0.013 seconds and greater than 0.63 seconds. This Governing Site Design Response Spectrum combination is indicated by the red dashed line on the Site Design Response Spectra graph presented in Figure 10.

Note that ASCE 7-10, Section 21.4 (ASCE 2013), requires that the parameter S_{DS} shall be obtained from site-specific spectra as the spectral acceleration S_a, determined in accordance with ASCE 7-10, Section 21.3, at a period of 0.2 second (1.385g), except it shall not be taken as less than 90 percent of the peak acceleration, S_a, at any period larger than 0.2 seconds. In this case, S_a is greater than 90 percent of the peak acceleration spectral acceleration at any period larger than 0.2 seconds. The parameter S_{D1} shall be taken as the greater of the spectral acceleration, S_a, at a period of 1 second (1.020g) or two times the spectral acceleration, S_a, at 2 seconds (0.602g). In this case, the value at two times the spectral acceleration, S_a, at a period of 2 seconds is higher (2 x 0.602g = 1.204g), and therefore, 1.204g shall be used as the value for S_{D1}. The parameters S_{MS} and S_{M1} were taken as 1.5 times S_{DS} and S_{D1}, respectively. The Site Design Response Parameters are provided in Table 5.

Table 5
Site Design Response Parameters

80% of the ASCE 7-10 Design Response Spectrum Acceleration Values for Site Class "D"				Site Design Response Spectrum Acceleration Values for Site Class "D"			
Seismic Parameters	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**	**Seismic Parameters**	**Values (g)**
S_{MS}	2.077	S_{DS}	1.385	S_{MS}	2.077	S_{DS}	1.385
S_{M1}	1.125	S_{D1}	0.750	S_{M1}	1.805	S_{D1}	1.204

3.3.7 Maximum Considered Earthquake MRC (MCE_G) Peak Ground Acceleration

3.3.7.1 Probabilistic (MCE_G) Peak Ground Acceleration

The Probabilistic MRC PGA (MCE_G) is 0.943g (includes risk factor), taken as the MRC PGA with a 2% probability of exceedance over a 50-year period.

3.3.7.2 Deterministic (MCE_G) Peak Ground Acceleration

The Deterministic MCE_G MRC PGA is 1.03g, taken as the MRC peak ground acceleration of the largest 84th percentile earthquake, which was the late Quaternary Age Oak Ridge—Connected-Fault located approximately 5.04 km north of the Site and the Oak Ridge (Onshore)-Fault located approximately 5.72 km north the Site.

ASCE 7-10, Section 11.8.3 (ASCE 2013) indicates that the Site PGA for evaluation of potential liquefaction and soil strength loss shall be determined based on the peak ground acceleration adjusted for site class effects (PGA_M) from equation 11.8-1 ($PGA_M = F_{PGA}$ PGA) using the coefficient F_{PGA} from Table 11.8-1. The PGA value is based on the mapped Maximum Considered Earthquake (MCE) ground motion peak ground acceleration shown on Figure 22-7 of ASCE 7-10 (1.02g) that was obtained from the USGS Earthquake Hazards Program website (USGS 2018) (Appendix A). For Site Class = D, PGA = 1.02g, and F_{PGA} = 1.0. Therefore, PGA_M = 1.02g and should be used as the Deterministic MCE_G MRC PGA.

3.3.7.3 Site-Specific (MCE_G) Peak Ground Acceleration

ASCE 7-10 Section 21.5.3 indicates that the Site-Specific MCE_G PGA is the lesser of the Probabilistic (MCE_G) and the Deterministic (MCE_G) except that it cannot be less than 80 percent of the PGA_M determined from ASCE 7-10 Equation 11.8-1. In this case, the Probabilistic (MCE_R) MRC PGA of 0.943g is the lesser PGA. The Probabilistic (MCE_R) MRC PGA of 0.943g is greater than 80 percent of the PGA_M = 1.02g X 80% = 0.816g determined from ASCE 7-10 Eq. 11.8-1 (ASCE, 2013). Therefore, the Site-Specific MCE_G PGA should be Probabilistic (MCE_R) MRC PGA of 0.943g (ASCE 2013).

3.3.8 Deaggregated Seismic Parameters

A seismic hazards analysis procedure was used to estimate the probabilistic modal magnitude at the Site using the USGS Unified Hazard Tool available at the USGS Earthquake Hazards Program Website (USGS 2018c) (Appendix A). The Probabilistic Maximum Considered Earthquake (MCE) was used in the analysis. The MCE is defined as having a 2 percent chance of exceedance in 50 years, with a return

period of approximately 2,475 years. The results of this analysis indicate that the Site could experience a probabilistic mean magnitude of 7.01 at a distance of 10.78 km.

3.3.9 Seismic Design Category

The S_1 calculated for the Site is 0.938g (Appendix A; USGS 2018a). CBC Section 1613A.3.5 (ICC 2017) states that structures assigned to Risk Category I, II, or III where the $S_1 \geq 0.75g$ should be assigned to Seismic Design Category E. If structures are assigned to Risk Category IV, they should be assigned to Seismic Design Category F.

3.4 LIQUEFACTION

Liquefaction is the significant loss of soil strength due to pore pressure increase (CGS 2008). Ground shaking reorients the unconsolidated sediment grains into a more compact arrangement. If the water table is close to the surface during this reorientation, the grain-to-grain contacts are reduced, and the load is temporarily transferred to the pore water. This increases pore pressure and decreases the soil strength, and the deposit then behaves like a liquid (Costa and Baker 1981). Liquefaction may occur when groundwater is present within the potentially liquefiable material (granular soils within a specific range of grain sizes in a relatively loose state of low relative density). If these conditions are present and strong ground motion occurs, portions of the soil column could liquefy, depending on the intensity and duration of the strong ground motion. Soils most susceptible to liquefaction are saturated, very loose to loose, fine grained sandy and silty soils. Liquefaction may manifest itself at the surface as lateral spreading, sand boils, lurching and ground fissuring, loss of bearing strength, and settlement. Any structures founded on or above potentially liquefiable soils may experience settling (both total and differential) and loss of foundation support during ground shaking.

3.4.1 Regional Conditions

Generally, there is a potential for liquefaction when the following three conditions are met: (1) a site is located on Holocene age, unconsolidated, coarse-grained sediments; (2) the site is in area of potentially strong ground motion; and (3) groundwater is less than 50 bgs. The *Seismic Hazards Zone Report for the Oxnard 7.5-Minute Quadrangle, Ventura County California* (CGS 2002a), *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map* (CGS 2002b), and Figure 2.4b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) indicates that the Site is located in a recognized geological hazard zone for earthquake induced liquefaction. The findings in these data are based on the assumptions that the Site area is underlain by coarse grained Holocene age sediments, which are generally considered have a significant liquefaction potential, because the depth to groundwater for the Site area is less than 50 feet bgs with a historic high groundwater elevation of approximately 8 feet bgs (CGS 2002a). Groundwater was encountered in exploratory soil borings drilled at the Site by ESP in April and July 2018 at depths ranging from approximately 20 to 25 feet bgs, which is much shallower than the 50 feet bgs depth used as the maximum depth criterion for potentially liquefiable conditions.

3.4.2 2018 Earth Systems Pacific Liquefaction Analysis

ESP evaluated the liquefaction potential at the Site in accordance with the 2016 CBC (ICC 2017) and the methods in Special Publication 117A (CGS 2008). ESP has analyzed the boring data for this project and utilized methods suggested in Special Publication 117A, and based on this analysis, concluded that due to the presence of groundwater in the upper 50 feet of soil (measured at 20 to 25 feet bgs) and the density of sand and silt soils, there appears to be a potential for both liquefaction and seismically induced settlement of dry sand to occur at the Site (ESP 2018b). Tetra Tech concurs with this finding.

ESP evaluated the potential effects of liquefaction by performing analysis of the CPT data using the site-specific PGA from the site-specific ground motion analysis, an earthquake modal magnitude of 7.01 g (USGS 2018a), an assumed historical high groundwater depth of 8 feet bgs (CGS 2002a), and the approximate existing groundwater depth of approximately 20 feet bgs. Based on the analyses presented in ESP's 2018 report, it appears liquefaction occurs in relatively thin discontinuous soil layers as shown on in the cross sections on Figures 5A and 5B. Total liquefaction induced dynamic settlement assuming a groundwater depth of 8 feet bgs ranged between 0.2 to 1.2 inches, and 0.1 to 0.6 inches for a groundwater depth of 20 feet bgs (ESP 2018b).

3.5 SEISMICALLY INDUCED SETTLEMENT OF DRY SAND

Seismically induced settlement of dry sand is also caused by a significant seismic event and may occur in lower density and sand and silt soils that are not saturated by groundwater. During a major earthquake, the void spaces between the unsaturated soil particles that are filled with air tend to compress which translates to a decrease in volume or settlement (ESP 2018b).

ESP evaluated seismically induced settlement of dry sand as part of the liquefaction evaluation using a reduced or modified PGA value of 2/3 (0.969 g) = 0.646 g. Additionally, the upper 30 inches of soil were neglected in the analyses because the upper 2 to 3 feet of the surface soils had been recently ripped and plowed as part of the on-going agriculture operations at the Site, and these soils will ultimately be removed and replaced as moisture conditioned compacted fill as part of future Site development as recommended later in the "Grading" section ESP's 2018 report. Total seismically induced settlement of dry sand assuming a groundwater depth of 8 feet bgs ranged between 0 to 0.2 inches, and 0.1 to 0.2 inches for a groundwater depth of 20 feet bgs (ESP 2018b).

3.6 LANDSLIDES/SLOPE INSTABILITY

The Site is relatively flat and is surrounded by flat terrain away from slopes on all sides. Based on the July 2, 2018 Site reconnaissance and review of the CGS Seismic Hazards Map for the 7.5 Minute Series Oxnard Quadrangle (CGS 2002b), Figure 2.7.1b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006), the Site is not in an area prone to landslides and slope instability.

3.7 LATERAL SPREADING

Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on gently sloping ground. Based on the results ESP's liquefaction analysis, the potential for loss of soil bearing strength and lateral spreading was determined to be very low. ESP developed the assessment for loss of soil bearing strength by comparing the thickness of the overlying non-liquefiable soils with respect to the depth, the relatively thin thickness, and the discontinuous nature of the underlying liquefiable soils. Lateral spreading can occur when a soil mass either slides laterally on liquefied soil layers towards a free slope face, or when a soil mass moves downslope on sloping ground. ESP stated that since a free slope face does not exist within or near the Site, they focused on the sloping ground aspect of lateral spreading. ESP deduced from the Google Earth website that the Site slopes at approximately 0.35 percent from the north to the south. The assessment for lateral spreading was developed by considering the relatively flat to very gently sloping ground surface with respect to the discontinuous nature of the underlying liquefiable soils. ESP concluded that the conditions needed for lateral spreading to occur do not appear to exist at the Site. Tetra Tech concurs with this finding.

3.8 SUBSIDENCE

Subsidence is any settling or sinking of the ground surface over a regional area arising from surface or subsurface causes, such as earthquakes or groundwater and/or oil extraction. Figure 2.8 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 6.2.2 of the *City of Oxnard General Plan Draft Background Report* (City of Oxnard 2006) indicates that the Site is located in an area susceptible to subsidence. The subsidence has been caused by overdraft of the groundwater aquifers that underlie the Oxnard Plain. Although it could occur, it is considered to be an insignificant risk due to the absence of reported problems.

3.9 GROUND LURCHING

Ground lurching occurs when the ground is accelerated during a seismic event. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. Because the Site is within a seismically active area, there is a potential for ground lurching to occur.

3.10 FLOODING

3.10.1 FEMA Map Data

According to the FEMA Flood Insurance Rate Map No. 06111C0910E the western half of the Site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain , while the eastern portion of the Site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA, 2010).

3.11 RESERVOIR FAILURE INUNDATION

A dam that stores more than 1,000 acre-feet of water, is higher than 150 feet, and has the potential to cause downstream property damage is classified as a high hazard dam by FEMA. A review of Section 2.11 and Figures 2.11.1 and 2.11.2 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 4.3.3.1 and Tables 4-5, 4-6, and, 4-7, and Figure 4-3 of the *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California* (County of Ventura 2005) indicates that there are four major reservoirs in the Santa Clara River watershed upstream of the Site that are FEMA high hazard dams that would inundate the Site area in the event of a reservoir failure (Figure 11). Information for each of these four dams is summarized below.

Santa Felicia Dam: The Santa Felicia Dam (Lake Piru) is operated by the United Water Conservation District (UWCD), can hold up to 100,000 acre-feet of water, and is located on Piru Creek approximately 32 miles upstream of the Site (Figure 11). Data provided by the UWCD indicates that the Site would be inundated by flood waters approximately 4 hours after the dam failure (UWCD 1974).

Castaic Dam. The Castaic Dam is operated by the California Department of Water Resources (CDWR), can hold up to 325,000 acre-feet of water, and is located on Castaic Creek approximately 42 miles upstream of the Site (Figure 11). Data provided by the CDWR indicates that the Site would be inundated by flood waters approximately 4 hours after a failure of the Castaic Dam (CDWR 1975a).

Pyramid Dam. The Pyramid Dam is operated by the CDWR, can hold up to 179,000 acre-feet of water, and is located on Piru Creek approximately 20 miles upstream of the Santa Felicia Dam and 52 miles

upstream of the Site (Figure 11). Data provided by the CDWR indicates that the Site would be inundated by flood waters to depths of 10 to 20 feet approximately 4 hours after a failure of the Pyramid Dam (CDWR 1975b).

Bouquet Canyon Dam. The Bouquet Canyon Dam is operated by the Los Angeles Department of Water and Power (LADWP), can hold up to 36,500 acre-feet of water, and is located approximately 57 miles upstream of the Site (Figure 11). Data provided by the LADWP indicates that the Site would be inundated by flood waters approximately 4.5 hours after a failure of the Bouquet Canyon Dam (LADWP 2015).

The need for dam failure disaster planning was demonstrated by the midnight collapse in March 1928 of the St. Francis Dam in Los Angeles County, which occurred after the newly constructed cement arched dam was completely filled for the first time. The ensuing flooding from the dam's total collapse resulted in the loss of over 400 lives in Ventura County as floodwaters washed out homes and structures along the banks of the Santa Clara River. The communities of Piru, Fillmore, Santa Paula, Bardsdale, Saticoy, Montalvo and El Rio sustained extensive life and property loss from the flood (County of Ventura 2013).

More recently, the San Fernando Earthquake in 1971 resulted in ground shaking in the vicinity of the Van Norman Dam in Los Angeles County. As a result of the earthquake, structural damage threatened the dam's immediate collapse. Approximately 80,000 residents in the San Fernando Valley had to be evacuated to areas of safety in the midst of many other earthquake-related emergencies (County of Ventura 2013).

The California's Dam Safety Act (Section 8589.5 California Emergency Services Act) requires the preparation of dam inundation maps showing areas of potential flooding in the event of sudden or total dam failure as well as emergency procedures for notification and evacuation of nearby residents (County of Ventura 2013).

In Ventura County, disaster coordination and planning are the responsibility of the Sheriff's Department through its Office of Emergency Services (OES). Within California's emergency management organizational structure, each county serves as an Operational Area. In this role, Sheriff's OES acts as an agent between Cal OES and the cities (including the City of Oxnard), special districts and unincorporated areas of Ventura County. OES is responsible for countywide disaster planning, mitigation, response and recovery activities. The OES serves as the depository for the County's Dam Inundation Maps and is charged with ongoing maintenance of the County's Dam Failure Response Plan which was adopted by the Board of Supervisors on September 13, 1983. The Dam Failure Response Plan was currently updated by the OES during 2013 (County of Ventura 2013).

3.12 TSUNAMIS

The Site is not likely to be inundated by tsunamis because it is located at an elevation higher than approximately 60 to 65 feet above msl and over 12 miles from the ocean, therefore, tsunamis are not a concern. This finding is supported by information on Figure 2.6 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013).

3.13 SEICHE INUNDATION

As there are no large bodies of water near the Site, seiche is not a concern.

3.14 EXPANSIVE SOILS

3.14.1 USDA Soil Survey

The *Soil Survey, Ventura Area, California* (USDA 1970) indicates that the Hueneme sandy loam, and Camarillo sandy loam are non-plastic, have no coefficient of linear extensibility, and no percent expansion rating. Mocho loam, Pico sandy loam and sandy loam substratum have a liquid limit of 25 to 35 percent and a plasticity index of 5 to 10.

3.14.2 2018 ESP Report

The 2018 ESP geotechnical report concluded the upper Site soils were judged to be generally nonexpansive; therefore, no special measures with respect to expansive soils are considered necessary (ESP 2018b).

3.15 CORROSIVE SOILS

ESP retained Cerco Analytical to perform laboratory testing for resistivity, chloride, and sulfate soil content. Based on the testing performed by Cerco Analytical, the upper Site soils were classified as "corrosive" to certain construction materials that will be in contact with the soils. The ESP report recommended that the architect/engineer should refer to the Cerco Analytical report presented in the 2018 ESP report for use in determining appropriate mitigation measures for the soil's corrosivity (ESP 2018b).

3.16 ASBESTOS-CONTAINING ROCKS

Tetra Tech has reviewed available topographic and geologic maps for the Site area and *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDMG 2000) for potential sources of naturally occurring asbestos (NOA) and believes the risk for NOA at the proposed High School No. 8 Site is low. The nearest sources of NOA are in the Santa Ynez River watershed in the Santa Ynez Mountains, approximately 30 miles northwest of the Site. NOA sources are not known to exist in the Santa Clara River watershed.

3.17 CALIFORNIA GEOLOGICAL SURVEY

In the letters dated April 5 and June 5, 2019, the CGS concluded that the information presented in the Geohazard Report (Tetra Tech 2018c), Geotechnical Report (ESP 2018b), and the Addendum Report (Tetra Tech 2019c) had adequately addressed the engineering geology and seismology issues at the Site and no further information was requested (CGS 2019a; 2019b).

4.0 PREVIOUS ENVIRONMENTAL ASSESSMENTS

The Phase I ESA (Tetra Tech 2018a), FSP (Tetra Tech 2018b), and PEA (Tetra Tech 2018c) were prepared for the OUHSD for the proposed High School No. 8 Site under regulatory oversight from the California Department of Toxic Substances Control (DTSC). The Phase I ESA identified the following Recognized Environmental Concerns (RECs) for the Site: potential impacts to shallow soil from former agricultural production land use; potential toxic soil gas from the underlying the Oxnard Oil Field; potential impacts to soil gas, soil, and groundwater from above storage tanks (ASTs) and underground storage tanks (USTs) used for motor fuel and herbicide storage in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas; potential impacts to soil gas, soil, and groundwater from materials stored in buildings in the areas of the Site adjacent to the Maulhardt Ranch farmyard area; potential polychlorinated biphenyl (PCB) impacts to shallow soils from a pole-mounted electrical transformer; and potential hazards posed by high volume water pipelines underlying the streets adjacent to the Site. Tetra Tech recommended that a PEA be performed under DTSC oversight to evaluate these RECs including a hazardous pipeline assessment in accordance with the *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007a). The Water Pipeline Safety Hazard Assessment (Placeworks 2019) was prepared as recommended in the PEA to evaluate hazardous pipelines in vicinity of the Site and is included in Appendix B. The findings, conclusions, and recommendations from these reports are summarized below.

4.1 2018 PHASE I ENVIRONMENTAL ASSESSMENT

Tetra Tech completed a Phase I ESA for the High School No. 8 site in March 2018 in accordance with American Society for Testing and Materials International (ASTM) Standard Practice E1527-13 document entitled, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM 2013) (Tetra Tech 2018a). The purpose of this Phase I ESA was to evaluate RECs associated with the Site. Pursuant to the updated ASTM standard effective November 1, 2013, ASTM defines RECs as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The Phase I ESA identified the following six RECs at the Site.

4.1.1 Oxnard Oil Field

The Site is located within the Oxnard Oil Field. No oil wells are present on the Site and no evidence for oil production activities at the Site or current Maulhardt Ranch property was noted in the historical aerial photographs. The presence of oil wells and historical oil production activities within 0.25 mile of the Site from 1934 through 2000 are well documented in the historical topographic maps, and DOGGR records (DOGGR 2001; 2018). This information indicates that there is a potential that the Site soils may have been impacted from toxic hydrogen sulfide or methane gas from the underlying Oxnard Oil Field.

4.1.2 Former Agricultural Land Use

Potential impacts to Site soils from former pesticide applications associated with former agricultural land use practices is a REC for the Site. The Site owners indicated that the Site has been used for agricultural production since at least 1869 and that legal pesticides in common use were applied to the Site, including organochlorine pesticides (OCPs) or heavy metals. The historical aerial photographs and Google images reviewed for this report indicate that the Site was used for crop production from at least 1927 through 2017. OCPs and heavy metals from pesticides were commonly used for crop production from the 1940s through the 1960s and were detected in soil samples collected for the 2002 PEA conducted for Rio

Rosales Elementary School Site (ENSR 2002) located on a property adjacent to the east side of the Site. Therefore, there was a potential that the Site soil was impacted with OCPs and heavy metals from pesticides.

The Site owners indicated that smudge pots fueled by heating oil were formerly throughout the cultivated areas of the Site for frost abatement when they were planted with citrus groves. There is a potential that soil at the Site have been impacted with fuel oil that contains semivolatile organic compounds (SVOCs) and polyaromatic hydrocarbons (PAHs).

4.1.3 Above Ground and Underground Storage Tanks

Potential impacts to shallow soil, soil gas, and groundwater were identified in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas:

- A former 250-gallon (approximate) gasoline UST site located near the southeast corner of the Apartment;
- A former 500-gallon (approximate) gasoline AST site located near the southwest corner of the Garage;
- A former 500-gallon (approximate) diesel fuel UST site located near the southeast corner of the Garage; and
- A former 250-gallon (approximate) weed oil AST located near the northwest corner of the Garage.

4.1.4 Hazardous Substances and Petroleum Products

Potentially impacts to the Site from hazardous substances and petroleum products that were used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area. Pesticides/herbicides/fertilizers were historically stored and mixed within the Storage Shed at the western edge of the farm yard and within the Tin Shed and outside the southwest corner of the Tin Shed. Discussion with the Site owners and review of historical aerial photographs and Google Earth images dating from 1943 through 2015 indicate that the Site was used for crop production throughout that time period and that OCPs were in use.

4.1.5 PCB-Containing Transformers and Equipment

One pole-mounted transformer is currently located onsite along the southern Site boundary along Camino Del Sol. Potential impacts to surface soil were identified from PCBs that may have been used in this pole mounted transformer.

4.1.6 Pipelines

California Code of Regulation (CCR) Title 5, Section 14010(h) requires that new school sites shall not be located or within 1,500 feet of the easement of an above ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional. Hazardous pipelines are defined as:

- Pipelines carrying chemical products, natural gas, and other hydrocarbon products that are operating at a pressure of 80 per square inch gauge (psig) or higher; and

- High-volume water lines, which are defined as water lines 12 inches or greater in diameter and include open aqueducts of comparable and greater volume handling capacity.

Four hazardous high-volume water transmission pipelines as defined by CCR Title 5, Section 14010(h) were identified within 1,500 feet of the Site:

- The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site (Figure 2);

- The City of Oxnard maintains a 12-inch diameter asbestos concrete pipe (ACP) water pipeline routed east-west beneath Camino Del Sol immediately south of the Site (Figure 2);

- The UWCD maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site (Figure 2); and

- The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch (Figure 2).

4.1.7 Phase I ESA Recommendations

Based on the Phase I ESA findings, Tetra Tech recommended that a PEA be performed under DTSC oversight to evaluate the six RECs identified in the Phase I ESA at the Site. The hazardous pipeline assessment should be evaluated in accordance with the *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007a) as part of the PEA.

4.1.8 DTSC Phase I ESA Approval Letter

In a letter dated April 24, 2018, the DTSC approved the Phase I ESA (Tetra Tech 2018a) and concurred with the recommendation to perform a PEA under DTSC oversight. DTSC indicated they would prepare an Environmental Oversight Agreement (EOA) for the PEA for review and signature by the OUHSD and indicated a project manager would contact OUHSD to schedule a PEA scoping meeting (DTSC 2018a).

4.2 PEA

In accordance with Senate Bill 162 and the CEC, the State of California has adopted an environmental policy requiring that all new school sites obtain "No Further Action" designation before proceeding with acquisition and/or construction. Tetra Tech completed a PEA for the High School No. 8 site in November 2018 (Tetra Tech 2018c) under DTSC oversight to evaluate the RECs identified in in Phase I ESA (Tetra Tech 2018a) with the objective of obtaining a "No Further Action" designation from DTSC for the High School No. 8. This PEA Report was prepared, and work at the Site was conducted, in accordance with the guidelines of the DTSC, as detailed in the *Preliminary Endangerment Assessment Guidance Manual* (DTSC 2015).

Based on the background data collected for the PEA, the objectives of the sampling program, as detailed in the FSP (Tetra Tech 2018b), were as follows:

- Assess the potential presence and/or migration of methane, hydrogen sulfide, and fixed gases (carbon dioxide, carbon monoxide, oxygen, and nitrogen) in soil gas due to the underlying Oxnard Oil Field;

- Assess the potential presence of OCP residues, arsenic, SVOCs, PAHs, and total petroleum hydrocarbon diesel extended (TPHde) in surface soil due to former crop production activities;

- Assess the potential presence of PCBs in surface soil beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol; and

- Assess the potential VOC, SVOC, gasoline phase total petroleum hydrocarbons (TPHg), and TPHde impacts to soil gas, shallow subsurface soil, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas.

Pursuant to California Code of Regulations, Title 5, Section 14010 [h], a pipeline risk assessment was performed by Placeworks in accordance with *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007a) under subcontract to Tetra Tech to determine whether the four high volume water transmission pipelines pose a safety hazard. The pipeline risk assessment is summarized in Section 4.2.6.

4.2.1 PEA FSP

Tetra Tech conducted a PEA scoping meeting on July 25, 2018 with DTSC and the OUHSD to review the background research for the Site in the High School No. 8 Phase I ESA (Tetra Tech 2018a) and discuss the proposed field program for the PEA to be presented in the FSP. The FSP (Tetra Tech 2018b) was prepared following the scoping meeting to evaluate the six RECs identified in the Phase I ESA. The FSP sampling program is described in Section 4.2.2.

4.2.2 PEA Sampling Program

4.2.2.1 Soil Gas Sampling Locations and Rationale

A soil gas survey was conducted by to assess potential oil field–related toxic gases in soil gas beneath the Site using direct push drilling methods. Sixty soil gas samples were collected at depths of 5 feet bgs and 15 feet bgs from temporary soil gas wells in 30 direct-push borings (SV-1 through SV-30) configured in a grid pattern across the Site (Figure 12). Soil gas samples were collected to assess potential toxic gas contamination associated with the underlying Oxnard Oil Field from borings SV-1 through SV-25, and to assess potential risks from VOC and TPHg impacts to soil gas in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from borings SV-26 through SV-30. Soil gas samples were analyzed onsite in an onsite mobile laboratory for methane, hydrogen sulfide (H_2S), VOC, and TPHg gas. Soil gas samples were also analyzed for fixed gases (carbon dioxide, oxygen, nitrogen, and carbon monoxide) at a stationary laboratory offsite. The soil gas samples were analyzed for methane by EPA method 8015B, for H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, VOCs by EPA method 8260B, TPHg by LUFT GCMS, and fixed gases by ASTM Method D-1946. Six field duplicate samples were collected for quality assurance/quality control (QA/QC) purposes. The soil gas survey was conducted in accordance with *Advisory – Active Soil Gas Investigations* (DTSC and Los Angeles Regional Water Quality Control Board [LARWQCB] 2015).

4.2.2.2 Surface Soil Sampling Locations and Rationale

Sixty-one surface soil samples were collected at the Site by Tetra Tech using hand sampling methods to assess potential OCP and arsenic contamination associated with agricultural activities, to assess potential hydrocarbon contamination from former smudge pot frost abatement activities (samples SS-1 through SS-60), and to assess potential PCB contamination in the surface soil beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol (sample SS-61) (Figure 12). Following guidelines recommended in *Interim Guidance for Sampling Agricultural Fields for School Sites* (Ag Guidance) (DTSC 2008), surface soil samples were collected on an approximate grid pattern at a density of approximately 1.2 sample locations per acre for a total of 60 locations: SS-1 through SS-60 (Figure 12) to assess potential OCP impacts and were analyzed for OCPs using EPA method 8081A. Surface soil samples were collected from 15 locations (SS-1, SS-4, SS-6, SS-9, SS-16, SS-23, SS-29, SS-34, SS-35, SS-38, SS-42, SS-44, SS-47, SS-57, and SS-60) to assess potential impacts to from arsenic following using EPA method 6061B and potential impacts from smudge pot fuel (for SVOCs using EPA method 8270C, PAHs using EPA method 8310, and TPHde using EPA method 8015B). Surface soil sample SS-61 was collected from beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol to assess the potential PCBs impacts using EPA method 8082.

4.2.2.3 Subsurface Soil Sampling Locations and Rationale

Ten subsurface soil samples were collected using direct push drilling methods at depths of 10 and 20 feet bgs from five direct-push borings (SV-26 through SV-30) in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas to assess potential VOC, SVOC, TPHg, and TPHde impacts from ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas. The ten subsurface soil samples were analyzed for VOCs via EPA method 8260B, TPHg (C_4-C_{12} carbon range) via EPA method 8015B, and TPHde via EPA method 8015B. The TPHde analysis is broken out as C_{13}-C_{22} carbon range (TPHd), C_{23}-C_{40} carbon range (TPHmo), and C_{13}-C_{40} carbon range (TPHde).

4.2.2.4 Groundwater Sampling Locations and Rationale

Five hydropunch groundwater samples were collected using direct push drilling methods at 20 feet bgs from 5 direct-push borings (SV-26 through SV-30) in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas to assess potential VOC, TPHg, and TPHde impacts from ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas. The groundwater samples were analyzed for VOCs via EPA method 8260B and TPHg (C_4-C_{12} carbon range) via EPA method 8015B, and TPHde via EPA method 8015B. The TPHde analysis is broken out as C_{13}-C_{22} carbon range (TPHd), C_{23}-C_{40} carbon range (TPHmo), and C_{13}-C_{40} carbon range (TPHde).

4.2.3 PEA Sampling Results

4.2.3.1 Soil Gas Survey Analytical Results

For the 50 soil gas samples collected to assess potential toxic gas contamination associated with the underlying Oxnard Oil Field from borings SV-1 through SV-25, methane, H_2S, carbon monoxide, and carbon dioxide gas, were not detected in any soil gas samples. The oxygen content ranged between 22.4 and 10.3%, and the nitrogen content ranged between 66.6 and 90.6%.

For the ten soil gas samples collected to assess potential fuel related compounds in soil gas from the former ASTs and USTs in the adjacent Maulhardt Ranch farmyard and residential areas from borings SV-26 through SV-30, toluene was detected at concentrations below the DTSC Screening Level (310

micrograms per liter [µg/L]) ranging from 0.030 µg/L in samples SV-26-15, SV-26-15 Dup, SV-27-15, SV-28-5, SV-29-5, SV-29-15, SV-30-5, and SV-30-15 to 0.070 µg/L in sample SV-26-5. Naphthalene was detected at concentrations below the DTSC Screening Level (11 µg/L) in samples SV-27-15, SV-28-15, and SV-30-5 at 0.020 µg/L.

No significant impacts to soil gas from the Oxnard Oil Field or the AST and UST sites in the Maulhardt Ranch farmyard and residential areas was identified.

4.2.3.2 Surface Soil Samples Analytical Results

OCPs were detected in all 60 of the discrete surface oil samples and the nine duplicate samples collected for OCP analysis. The OCP toxaphene was detected at concentrations exceeding its respective DTSC Screening Level (490 micrograms per kilogram [µg/kg]) in 33 surface soil samples at concentrations ranging from 510 µg/kg in sample SS-32 to 2,600 µg/kg in sample SS-49 (Soil Dupe 3-1) (Figure 13). Deildrin was detected at concentrations exceeding its respective DTSC Screening Level (34 µg/kg) in three surface soil samples at concentrations of 37.20 µg/kg in sample SS-49 (Soil Dupe 3), 34.70 µg/kg is sample SS-51 (Soil Dupe 3-3), and 40.40 µg/kg in sample 40.40 µg/kg (Figure 13). No other OCPs were detected at concentrations exceeding their respective DTSC Screening Levels.

Arsenic was detected in one sample (sample SS 42-0) at 2.65 milligrams per kilogram (mg/kg). Arsenic was not detected at concentrations above the laboratory method detection limit (MDL) (2.5 mg/kg) or the DTSC arsenic screening value for soil at California School Sites (DTSC-ASL) (DTSC 2008) of 12 mg/kg in any other of the 16 surface soil samples. No significant impacts to the Site from arsenic in surface soil were identified.

SVOCs were not detected at concentrations above their respective laboratory MDLs or DTSC Screening Levels in any of the 17 samples. The PAHs fluoranthene and phenanthrene were detected in sample Soil Dup 3, the duplicate sample for SS-29 at concentrations of 0.0100 mg/kg (0.0117 mg/kg), respectively. The DTSC Screening Level for fluoranthene is 2,400 mg/kg and there is no DTSC Screening Level for phenanthrene. TPH as diesel fuel (C9-C22 carbon range) was detected in surface soil sample SS-35 (8 mg/kg) as compared to the DTSC Screening Level of 230 mg/kg. TPH as heavy hydrocarbons (C22-C40 carbon range) was detected in surface soil samples SS-4 (4.3 mg/kg), SS-29 (9.9 mg/kg), the duplicate sample for SS-29, Soil Dup 3 (11.3 mg/kg), SS-35 (19.1 mg/kg), SS-57 (12.6 mg/kg), and the duplicate sample for SS-57, Soil Dup 5 (5.8 mg/kg) as compared to the DTSC Screening Level of 5,100 mg/kg. TPH as diesel and heavy hydrocarbons (C9-C40 carbon range) was detected in surface soil samples SS-4 (4.3 mg/kg), SS-29 (9.9 mg/kg), the duplicate sample for SS-29, Soil Dup 3 (11.3 mg/kg), SS-35 (27.1 mg/kg), SS-57 (12.6 mg/kg) and the duplicate sample for SS-57, Soil Dup 5 (5.8 mg/kg) as compared to the DTSC Screening Level of 230 mg/kg. TPH was not detected in any other surface soil samples. No significant impacts to Site surface soils from SVOCs, PAHs, TPHde, and TPHg were identified.

PCBs were not detected at a concentration above its respective laboratory MDL or DTSC Screening Level in surface soil sample SS-61. No significant impacts to Site surface soils from PCBs were identified.

4.2.3.3 Subsurface Soil Analytical Results for VOCs, SVOCs, and TPHde

VOCs and SVOCs were not detected in any of the soil samples collected from borings SV-26 though SV-30 at concentrations above their respective MDLs or DTSC Screening Levels. Gasoline (C4-C12 carbon range), diesel (C9-C22 carbon range), and diesel and heavy hydrocarbons range (C9-C40 carbon range) TPH were detected in sample SV-28-20 at concentrations of 0.128 mg/kg, 2.7 mg/kg, and 2.7 mg/kg, respectively. TPH was not detected in any other subsurface soil samples.

4.2.3.4 Groundwater Analytical Results for VOCs, TPHg, and TPHde

VOCs, TPHg, and TPHde were not detected in any of the groundwater samples collected from borings SV-26 though SV-30 at concentrations above their respective MDLs or DTSC Screening Levels. No significant impacts to Site groundwater from VOCs, TPHg, and TPHde were identified.

4.2.4 PEA Human Health Screening Evaluation

A screening level human health risk evaluation was conducted for residential exposures to the chemicals of potential concern (COPCs) identified in soil and soil gas at the proposed High School No. 8 Site. All of the detected organic chemicals at the Site, including OCPs, TPHde, TPHg, and VOCs, were selected as COPCs and are evaluated in this screening-level evaluation. As previously indicated, only arsenic was analyzed for in soil and was only detected in one sample at a concentration well below the DTSC screening level of 12 mg/kg. Based on this data, arsenic was not selected as a COPC. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. The COPCs identified in soil gas included VOCs, and the COPCs identified in soils at the Site include metals, OCPs, and VOCs. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. Receptors were evaluated for (1) carcinogenic risks and (2) noncarcinogenic hazards. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. Noncarcinogenic hazard from assumed exposures to the COPCs in soil and soil gas at the Site (HI = 0.2) is well below the threshold level of 1.

The estimated risk is primarily attributable to toxaphene (71%) and dieldrin (16%). No other chemicals were detected at concentrations that exceeded the corresponding screening levels. Toxaphene was detected at 34 sampling locations at levels that exceeded the corresponding residential screening level of 490 µg/kg. Dieldrin was detected at three sampling locations (SS-49, SS-51, and SS-59) with concentrations ranging from (34.7 µg/kg to 40.4 µg/kg) that slightly exceeded the corresponding residential screening level of 34 µg/kg.

4.2.5 PEA Ecological Screening Evaluation

Ecological risks were evaluated qualitatively. This assessment consisted of identifying on-site habitats, ecological receptors, and the likelihood that sensitive receptors could be exposed to Chemicals of potential ecological concern (COPECs). Currently, the Site does not support any aquatic habitat. In addition, the Site does not support any vegetation that would present attractive habitat for terrestrial wildlife populations. Species likely to be exposed at the Site are common, abundant species that are frequently observed in row crop fields of central California. Many of these species are introduced and are highly tolerant of human disturbance. Special-status species that occur within the Oxnard USGS 7 1/2-minute quadrangle special-status species are unlikely to occur at the Site. Given current conditions, ecological exposure pathways related to groundwater, surface water, and air are considered to be incomplete or insignificant. Exposure pathways to metals and organic compounds including OCPs and VOCs in soils are considered to be complete. However, wildlife bioaccumulation of OCPs and metals at the Site are considered to be limited because wildlife observed at the Site are likely to be infrequent visitors. Thus, ecological impacts from the Site are considered to be insignificant or negligible.

4.2.6 Pipeline Risk Assessment

Based on the information summarized in Section 4.1.6, four potentially hazardous pipelines as defined in CCR Title 5, Section 14010(h) were identified within 1,500 feet of the Site (Figure 2). These pipelines are described in Section 4.1.6.

Pursuant to California Code of Regulations, Title 5, Section 14010 [h], a pipeline risk assessment was performed by Placeworks in accordance with *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007a) under subcontract to Tetra Tech to determine whether the four high-volume water transmission pipelines pose a safety hazard. Placeworks' Water Pipeline Safety Hazard Assessment (Placeworks 2019) is presented in Appendix B.

The Water Pipeline Risk Analysis Report concluded that the pipeline risk analysis results indicate that no meaningful level of risk would be posed to persons at the proposed Site from two high-volume water transmission pipelines operated by the City of Oxnard that are located beneath North Rose Avenue and Camino Del Sol, and the high-volume water transmission pipeline operated by the UWCD located beneath North Rose Avenue.

The high-volume water pipelines located on the Maulhardt Ranch that are and owned operated by the Maulhardt Ranch (Figure 2) will be removed from the Site and surrounding areas prior to the development of the High School No. 8. Therefore, these pipelines were not included in the pipeline Placeworks Water Pipeline Safety Hazard Assessment.

4.2.7 PEA Recommendations

The surface soil sampling performed for the PEA has adequately defined the lateral extent of OCP-impacted soil at the Site at concentrations exceeding DTSC Screening Levels. The PEA recommended that a Supplemental Site Investigation (SSI) workplan be developed and implemented at the Site under DTSC oversight to assess the depth of OCP-impacted soil at the Site at concentrations exceeding DTSC Screening Levels (specifically toxaphene and dieldrin). A remedy for the OCP-impacted soil at the Site will be developed following completion of the SSI.

4.2.8 DTSC PEA Concurrence Letter

In a letter dated December 27, 2018, the DTSC concurred with the adequacy of the PEA (Tetra Tech 2018c) pending review of public comment (DTSC 2018b).

4.2.9 Public Review Period and DTSC PEA Approval Letter

The Public Review Period for the Draft PEA Report was held from February 1 through March 4, 2019. The Public Hearing for the Draft PEA Report was held by the OUHSD on February 13, 2019 at the OUHSD District Office Board Room at 220 South K Street in Oxnard, California. No public comments were received by the OUHSD at the Public Hearing and during the Public Review Period on the subject Draft PEA Report. In the letter dated March 12, 2019, the DTSC approved the Draft PEA Report and concurred with the recommendation in the Draft PEA Report to perform a SSI to determine the nature and extent of OCP-impacted soil at the Site (DTSC 2019a).

4.3 SSI

4.3.1 SSI Rationale and Field Sampling Program

A SSI was performed under DTSC oversight to further delineate the nature and extent of OCPs in soil at concentrations above screening levels as recommended in the PEA (Tetra Tech 2018c). The SSI field sampling assessment consisted of a subsurface soil sample collection program using hand auger sampling methods. Soil samples were collected at the locations where the 10 highest surface soil OCP concentrations were detected in the PEA sampling program (sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59) (Figure 14). Subsurface soil samples were collected at depths of 1.0 feet bgs, 1.5 feet bgs, and 2.0 feet bgs. A total of 21 discrete and three duplicate soil samples were collected. For each of the ten sample locations, the subsurface soil samples collected from 1.0-foot bgs plus one duplicate soil sample was initially analyzed. The soil samples collected at 1.5 feet bgs were analyzed if the corresponding sample from 1.0-foot bgs contained OCPs at concentrations that exceed the screening levels. Nine of the discrete soil samples and a duplicate soil sample collected at 1.0-foot bgs contained toxaphene at concentrations that exceeded the screening levels (soil samples SS-41-1, SS-43-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Soil Dup 1). The soil samples collected at 2.0 feet bgs were analyzed if the corresponding sample from 1.5 feet bgs contained toxaphene at concentrations that exceed the screening levels. Two of the discrete soil samples collected from 1.5 feet bgs contained OCPs at concentrations that exceeded the screening levels (soil samples SS-43-1.5 and SS-53-1.5). The corresponding discrete samples collected at 2.0 feet bgs were analyzed for OCPs (soil samples SS-43-2 and SS-53-2).

In the 11 samples analyzed from 1.0-foot bgs, toxaphene was detected in nine discrete and one duplicate sample at concentrations above the screening level (490 µg/kg) (soil samples SS-41-1, SS-43-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Soil Dup 1). In the 11 samples collected from 1.0-foot bgs with toxaphene at concentrations above the screening level, the toxaphene concentrations ranged from 992 µg/kg in sample SS-51-1 to 3,110 µg/kg in the duplicate sample for SS-56-1, Soil Dup 1 (Figure 14).

For the nine discrete and one duplicate soil sample analyzed from 1.5 feet bgs, (soil samples SS-41-1.5, SS-43-1.5, SS-48-1.5, SS-49-1.5, SS-50-1.5, SS-51-1.5, SS-53-1.5, SS-56-1.5, SS-59-1.5, and Soil Dup 2), two soil samples (soil samples SS-43-1.5 and SS-53-1.5) contained toxaphene at concentrations above the screening level (490 µg/kg). Soil sample SS-43-1.5 contained 2,240 µg/kg toxaphene and soil sample SS-53-1.5 contained 898 µg/kg toxaphene (Figure 14).

Toxaphene was not detected at concentrations above the screening level in the two discrete and one duplicate soil sample analyzed from 2.0 feet bgs (soil samples SS-43-2, SS-53-2, and Soil Dup 3) (Figure 14).

4.3.2 SSI Risk Characterization Summary

Risks were characterized for potential residential and school-based student receptors using the ratio of concentrations measured at the Site to the RBSLs identified for each environmental medium. This evaluation consisted of three steps: (1) specifying the target risk and hazard quotient to use in calculating the RBSLs; (2) estimating EPCs for each environmental medium (i.e., the maximum detected concentration or the 95% upper confidence limit (95% UCL) of the arithmetic mean concentration; and (3) comparing the EPCs to the RBSLs to estimate risks and hazards for potential receptors.

School children and staff at the proposed High School are the receptor groups most likely to be exposed to any chemicals potentially present at the Site. The human health risk was evaluated assuming unrestricted residential land use (residential scenario), regardless of current and future uses. School-based receptors (students and teachers) were also evaluated for potential exposures to chemicals in soil. As the proposed site is intended to serve as a high school (grades 9-12), students associated with grades 9-12 and teachers were evaluated in the human health screening evaluation. For this evaluation, it was conservatively assumed that students attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

The results of the risk characterization for the residential scenario based on the maximum detected concentrations indicate that toxaphene levels detected in soil result in an estimated risk that exceed the residential target risk level (1×10^{-6}). However, the estimated cumulative risks for the school-based student scenario (range from 2×10^{-7} to 4×10^{-7}) were well below the student target risk level (1×10^{-6}). For the school-based teacher scenario, the estimated cumulative risks ranged from 7×10^{7} to 2×10^{-6}, which are well below the target risk level for teachers (1×10^{-5}). It is noteworthy, that for the teacher scenario, only the estimated risk based on the maximum detected concentrations (2×10^{-6}) exceeded the low end of the USEPA target risk range of 10^{-6} to 10^{-4}. The estimated risks based on the 95% UCL concentrations and modified soil screening level for toxaphene were equal to, or lower than the low end of the USPEA target risk range of 10^{-6} to 10^{-4}. The school-based scenarios best represent the conditions that will be encountered by students and teachers at the High School site. Therefore, the results of this human health risk evaluation indicate that it is unlikely that the COPCs detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated in the SSI report.

4.3.3 SSI Conclusions and Recommendations

The lateral extent of OCPs in surface soils at the Site at concentrations exceeding Screening Levels was defined in the PEA sampling event and comprises approximately 24 acres (Tetra Tech 2018d). This SSI was performed to assess the depth of OCP-impacted soil at the Site at concentrations exceeding screening levels (specifically toxaphene and dieldrin). Based on the results of the SSI sampling program, the maximum depth of OCP-impacted soil at the Site at concentrations exceeding screening levels has been defined and is between approximately 1.5 and 2.0 feet bgs.

The results of the SSI risk characterization for the residential scenario based on the maximum detected concentrations indicate that toxaphene levels detected in soil result in estimated risk that exceed the residential target risk level (1×10^{-6}). However, the estimated cumulative risks for the school-based student scenario (range from 2×10^{-7} to 4×10^{-7}) were well below the student target risk level (1×10^{-6}). For the school-based teacher scenario, the estimated cumulative risks ranged from 7×10^{-7} to 2×10^{-6}, which are well below the target risk level for teachers (1×10^{-5}). It is noteworthy, that for the teacher scenario, only the estimated risk based on the maximum detected concentrations (2×10^{-6}) exceeded the low end of the USEPA target risk range of 10^{-6} to 10^{-4}. The estimated risks based on the 95% UCL concentrations and modified soil screening level for toxaphene were equal to, or lower than the low end of the USPEA target risk range of 10^{-6} to 10^{-4}. The school-based scenarios best represent the conditions that will be encountered by students and teachers at the High School site. Therefore, the results of this human health risk evaluation indicate that it is unlikely that the COPCs detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated in this SSI report.

Based on the results of the SSI risk characterization, Tetra Tech recommended a No Further Action determination by DTSC for the High School No. 8 site.

4.3.4 DTSC SSI Approval Letter

In the letter dated April 26, 2019, the DTSC approved the SSI Report and concurred with the recommendation in the SSI Report for a No Further Action determination the Site (DTSC 2019b).

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5.0 ENVIRONMENTAL HAZARDS

5.1 HAZARDOUS AND SOLID WASTE DISPOSAL

Based on the information contained in the EDR Radius Report (EDR 2017), the Site has not been used for hazardous or solid waste disposal and there are no hazardous or solid waste disposal sites located within one mile of the Site.

No evidence of solid waste disposal was observed at the Site during the Site reconnaissance. Domestic trash collection and disposal is managed by the City of Oxnard.

5.2 HAZARDOUS AIR EMISSIONS

Tetra Tech evaluated the neighborhood during the Site reconnaissance for facilities or businesses considered likely to emit hazardous air pollutants; none were observed in the Site vicinity. Based on observations of surrounding properties, review of the EDR Radius Report (EDR 2017), which tracks the emissions database inventory of the California Air Resources Board, there are no hazardous air emission sources within 0.25 mile of the Site and it is unlikely that the Site would be impacted by hazardous air emissions.

5.3 HAZARDOUS PIPELINES

Information on potentially hazardous pipelines within 1,500 feet of the Site is documented in Sections 4.1.6 and 4.2.6. Four high-volume water transmission, hazardous pipelines as defined in CCR Title 5, Section 14010(h), were identified within 1,500 feet of the Site (Figure 2): A Water Pipeline Risk Analysis was performed in accordance with *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007a) to evaluate the potential hazards posed to the Site by the high volume water transmission, hazardous pipelines located within 1,500 feet of the Site. The Water Pipeline Risk Analysis Report concluded that the pipeline risk analysis results indicate that no meaningful level of risk would be posed to persons at the proposed Site from the high-volume water transmission pipelines (Placeworks 2019).

5.4 WATER/FUEL STORAGE TANKS

Based on review of the EDR Radius Report (EDR 2017) interviews with the Site owners (the Maulhardt family), and observations made during the Site reconnaissance, no water or fuel storage tanks are located onsite.

No drums or other containers that may store hazardous substances or petroleum products were observed at the Site.

The following former AST and UST sites were identified during the Site reconnaissance in the farmyard and residential areas of the Maulhardt Ranch near to the Site:

- A 500-gallon (approximate) gasoline fuel above ground storage tank (AST) removed in 1980's near the southwest corner of the Garage (Figure 15 and Table 6 Item 11);

- A 500-gallon (approximate) diesel fuel UST removed in 1980's near the southeast corner of the Garage (Figure 15 and Table 6 Item 12):

- An Oil Change Sump inside of the Garage (Figure 15 and Table 6 Item 13);

- A 500-gallon (approximate) weed oil AST removed in the 1970's near the northwest corner of the Garage (Figure 15 and Table 6 Item 15); and

- A 250-gallon (approximate) gasoline UST at the southeast corner of the Apartment building (Figure 15 and Table 6 Item 23).

5.5 FREEWAYS AND BUSY TRAFFIC CORRIDORS

Senate Bill 352 created a requirement to determine whether a school site is located within 500 feet of a freeway or busy traffic corridor would create a health hazard from exposure to high levels of criteria pollutants. Freeways and busy traffic corridors are defined as roadways with average daily traffic in excess of 50,000 vehicles in rural areas and 100,000 daily vehicles in urban areas. Based on review of the Oxnard, California Quadrangle, USGS 7.5-minute topographic series map (USGS 2015), a Google Earth Image dated November 19, 2018, and information from the City of Oxnard Traffic Engineering Department (City of Oxnard 2019) there are no freeways or other busy traffic corridors located within 500 feet of the Site. Highway 101 is located approximately 1 mile north of the Site.

5.6 RAILROAD TRACK EASMENTS

Title 5 of the California Code of Regulations (CCR) stipulates that a railroad safety study must be completed for any proposed school site located within 1,500 feet of a railway track easement. Based on review of the Oxnard, California Quadrangle, USGS, 7.5-minute topographic series map (USGS 2015), and a Google Earth Image dated January 5, 2015, the Site is not located within 1,500 feet of a railroad track easement. The railroad track easement located nearest to the Site is approximately 0.6 miles south of the Site.

5.7 AIRPORTS/HELIPORTS

California Code of Regulations Title 21 requires the State Department of Transportation to review any proposed school site that is located within 2 nautical miles of a runway. There are no airports within two nautical miles of the Site. Based on review of a Google Earth Image date January 5, 2015, and AirNav.com (AirNav.com 2017), no airports are located within two nautical miles of the Site. The closest airport to the Site is the Oxnard Airport, which is approximately 2.4 nautical miles west of the Site. In addition, the Camarillo Airport is located approximately 3.2 nautical miles east of the Site.

Based on review of data from AirNav.com, the Site is located within two nautical miles of a heliport. The St John's Regional Medical Center Heliport is located approximately 0.6 nautical miles north of the Site (AirNav.com 2017).

5.8 ZONING

Based on review of the City of Oxnard Zoning Map (City of Oxnard 2017), most of the Site is zoned as Single Family Residential Planned Development (R1PD). The very northernmost area of the Site is zoned Community Reserve (CR).

5.9 OIL AND GAS FIELDS

Tetra Tech reviewed DOGGR Map 214 (DOGGR 2001), the online DOGGR Well Finder (DOGGR 2018), and associated well history documents to evaluate potential presence of oil fields or wells within the Site vicinity. Records indicate that the Site is located within the Oxnard Oil Field; however, no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on

107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. Several plugged abandoned oil wells are located within one quarter mile of the Site. The nearest plugged and abandoned well is Maulhardt Community No. 11A, located approximately 850 feet south southwest of the Site on Imperial Street near the intersection of San Luis Street. Plugged and abandoned well Maulhardt Community No. 10 is located approximately 870 feet west of the Site just north of Camino Del Sol. Plugged and abandoned well Maulhardt Community No. 3 is located approximately 1,350 feet west southwest of the Site on North Lombard Street. Plugged and abandoned well Maulhardt Community No. 7 is located approximately 1,500 feet west northwest of the Site. Plugged and dry well Standard Schoelle No. 1 is located approximately 1,570 feet north east of the Site on Ribera Place. Plugged dry well A. Pfeiler Est. No. 1 is located approximately 1,600 feet northwest of the Site in West Village Park. Plugged and abandoned well Maulhardt No. 9 is located approximately 1,750 feet east of the Site. Numerous other abandoned wells are present further south and east of the site but were not described in this report.

5.10 ELECTRICAL UTILITY EASEMENTS AND POWER LINES

Title 5 of the California Code of Regulations (CCR) stipulates that a school site shall not be within the following distances from a high-power electric transmission line:

- 100 feet from a 50-133 kilovolt (kV) line;
- 150 feet from a 220-230 kV line; or
- 350 feet from a 500-550 kV line.

Pole-mounted electrical power lines located within 350 feet of the Site that are owned and operated by Southern California Edison in the Site area are shown on Figure 2. These power lines are:

- Located along the north side of Camino Del Sol at the southern Site boundary; and
- Routed through the Site a north-south alignment approximately 210 feet east of North Rose Avenue.

Southern California Edison indicated that all of these pole-mounted power lines are rated at 16 kV (Wall 2017).

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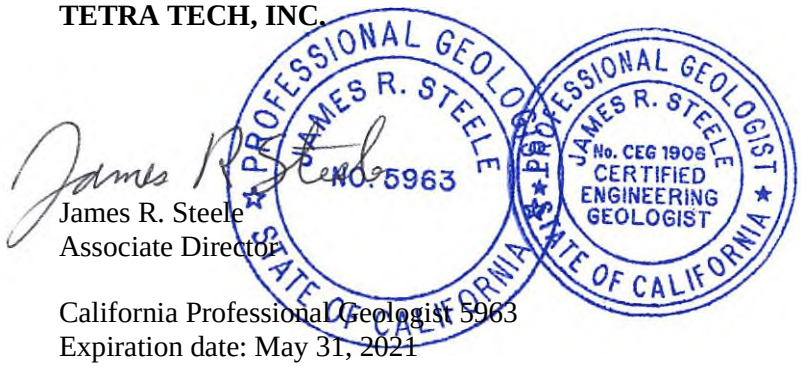
6.0 DISCLAIMER

This report was compiled based partially on information supplied to Tetra Tech from outside sources and other information that is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others that may be contained in the report, except that is has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. As the facts forming the basis for the report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under local, state, or federal laws or any modifications or changes to such laws. This report is not a Geologic Hazards Assessment/Geotechnical Soils Study and does not satisfy the requirements for completion of a Geologic Hazards Assessment/Geotechnical Soils Study prior to construction of new school sites.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature but shall be representation of findings of fact from records examined.

Respectfully submitted,

TETRA TECH, INC.



James R. Steele
Associate Director

California Professional Geologist 5963
Expiration date: May 31, 2021

California Certified Engineering Geologist EG 1906
Expiration date: May 31, 2021

California Certified Hydrogeologist HG 247
Expiration date: May 31, 2021

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7.0 REFERENCES

AirNav.com
2017 https://www.airnav.com/cgi-bin/airport-search. September 15.

American Society of Civil Engineers (ASCE)
2013 *Standard 7-10, Minimum Design Loads for Buildings and other Structures (7-10, third printing).*

ASTM International (ASTM)
2013 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. E 1527–13.

California Department of Conservation, Division of Mines and Geology (CDMG)
1978 *Special Studies Zones, Saticoy Quadrangle, Ventura County, California*. July 1.

1998a *Earthquake Fault Zones, Camarillo Quadrangle Official Map, Ventura County, California*. May 1.

1998b *Earthquake Fault Zones, Santa Paula Quadrangle, Official Map Ventura County, California*. May 1.

2000 *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. April.

California Department of Conservation, California Geological Survey (CGS)
2002a *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

2002b *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map.* December 20.

2007 *Special Publication 42. Fault-Rupture Hazard Zones In California, Alquist–Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*. Interim Revision.

2008 *Special Publication 117A Guidelines for Evaluating and Mitigating Seismic Hazards in California.*

2013 *Note 48. Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*. October.

2019a *Engineering Geology and Seismology Review for Oxnard Union High School District – New High School No. 8 North Rose Avenue and Camino Del Sol, Oxnard, CA CGS Application No. 03-CGS3810.* April 5.

2019b *Third Engineering Geology and Seismology Review for Oxnard Union High School District – New High School No. 8 North Rose Avenue and Camino Del Sol, Oxnard, CA CGS Application No. 03-CGS3810*. June 5.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2001 Map 214. February 14.

2018 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.)

California Department of Education (CDE)

2007a *Guidance Protocol for School Site Pipeline Risk Analysis*.

2007b *Environmental Hazards Checklist.*

2016 *School Site Selection and Approval Guide.* June 21. http://www.cde.ca.gov/ls/fa/sf/schoolsiteguide.asp.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2008 *Interim Guidance for sampling Agricultural Properties (Third Revision).* August 7.

2015 *Preliminary Endangerment Assessment Guidance Manual*. January 1994 (Revised October 2015).

2018a *Approval of Phase I Environmental Assessment, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard, Ventura County (Site Code 304669).* April 24.

2018b *Adequacy of Draft Preliminary Environmental Assessment Report for Public Comment, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669).* December 27.

2019a *Approval of Draft Preliminary Environmental Assessment Report, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669).* March 12.

2019b *Approval of Supplemental Site Investigation Report, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669).* April 26.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB)

2015 *Advisory – Active Soil Gas Investigations*. June.

California Department of Water Resources (CDWR)

1975a *Inundation Map for Castaic Dam.* February 28.

1975b *Inundation Map for Pyramid Dam.*

City of Oxnard

2006 *City of Oxnard General Plan Draft Background Report*. April.

2017 City of Oxnard Zoning Map. January 11.

2019 *EIR Traffic Study 2008 Average Daily Traffic (ADT) Counts*. https://www.oxnard.org/city-department/public-works/traffic-engineering/. April 26.

County of Ventura
2005 *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California*. March.

2013 *Ventura County General Plan Hazards Appendix*. 2008, Amended October 22, 2013.

Costa, J.E., and V.R. Baker
1981 *Surficial Geology, Building With the Earth.* John Wiley & Sons, Canada.

Earth Systems Pacific (ESP)
2018a *Preliminary Foundation Design Parameters and Infiltration Testing Report*. May 15.

2018b *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California.* August 31.

2019 *Recommendations for Shear Wave Velocity*. April 19.

Environmental Data Resources, Inc. (EDR)
2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Federal Emergency Management Agency (FEMA)
2010 Flood Insurance Rate Map No. 06111C0910E. May 16.

Fugro
2019 EZ-FRISK Seismic Hazard Analysis Program. April 24 – July 24.

Google Earth
2018 Image of Oxnard California Area. November 19.

Gutierrez, Carlos I., Siang, Tan S. and Clahan, Kevin B.
2008 *Geologic Map of the East Half of the Santa Barbara 30' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

International Code Council (ICC)
2017 2016 California Building Code (CBC). January 1.

Jennings, Charles W.
1994 *Fault Activity Map of California and Adjacent Areas*, California Department of Conservation, Division of Mines and Geology California Geologic Data Map Series Map No. 06.

Jennings, Charles W, William A Bryant, and George Saucedo.
2010 *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California.*

Los Angeles Department of Water and Power (LADWP)
2015 *Inundation Map of Bouquet Dam.*

Norris, R.M. and Webb, R.W.
1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Oakeshott, Gordon B.
1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

Placeworks
2019 *Technical Memorandum, Maulhardt Ranch High School No. 8 Water Pipeline Safety Hazard Assessment TETR-02.0.* January 14.

Ross, Stephanie L., David M. Boore, Michael A. Fisher, Arthur D. Frankel, Eric L. Geist, Kenneth W. Hudnut, Robert E. Kayen, Homa J. Lee, William R. Normark, and Florence L. Wong
2004 *Comments on Potential Geologic and Seismic Hazards Affecting Coastal Ventura County, California.* U.S. Department of the Interior, U.S. Geological Survey Open File Report 2004-1286.

Tetra Tech
2018a *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California*. March 29.

2018b *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California.* July 27.

2018c *Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California.* October 11.

2018d *Draft Preliminary Environmental Assessment High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California.* November 9.

2019a *Technical Memorandum, Supplemental Site Investigation Field Sampling Plan, Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030.* January 31.

2019b *Supplemental Site Investigation, Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030.* March 19.

2019c *Second Addendum Report, Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California* (May 31).

Treiman, Jerome A.
1997 *Springville, Camarillo and Related Faults in the Camarillo and Santa Paula Quadrangles, Ventura County, California*. California Division of Mines and Geology (CDMG) Fault Evaluation Report FER-237. September 23.

Turner, John, and Mike Mukae
1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

United Water Conservation District
1974 *Inundation Map of Santa Felicia Dam*. January.

U.S. Department of Agriculture, Soil Conservation Service (USDA)
1970 *Soil Survey of Ventura Area, California.* July.

U. S. Geological Survey (USGS)
2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program
2018a U.S. Seismic Design Maps. https://earthquake.usgs.gov/hazards/designmaps/. July.

2018b Search Earthquake Catalogue. https://earthquake.usgs.gov/earthquakes/search/. September.

2018c Unified Hazards Tool. https https://earthquake.usgs.gov/hazards/interactive/. September.

U.S. Department of the Interior, Geological Survey (USGS) and California Geological Survey (CGS)
2007 *Appendix A: California Fault Parameters for the National Seismic Hazards Maps and Working Group on California Earthquake Probabilities.*

2008 *The Uniform California Earthquake Rupture Forecast, Version 2 (UCEFR 2).*

Ventura County Public Works Department (VCPWA)
1975 *Ventura County Water Resources Management Study, Aquifer Delineation in the Oxnard-Calleguas Area, Ventura County*

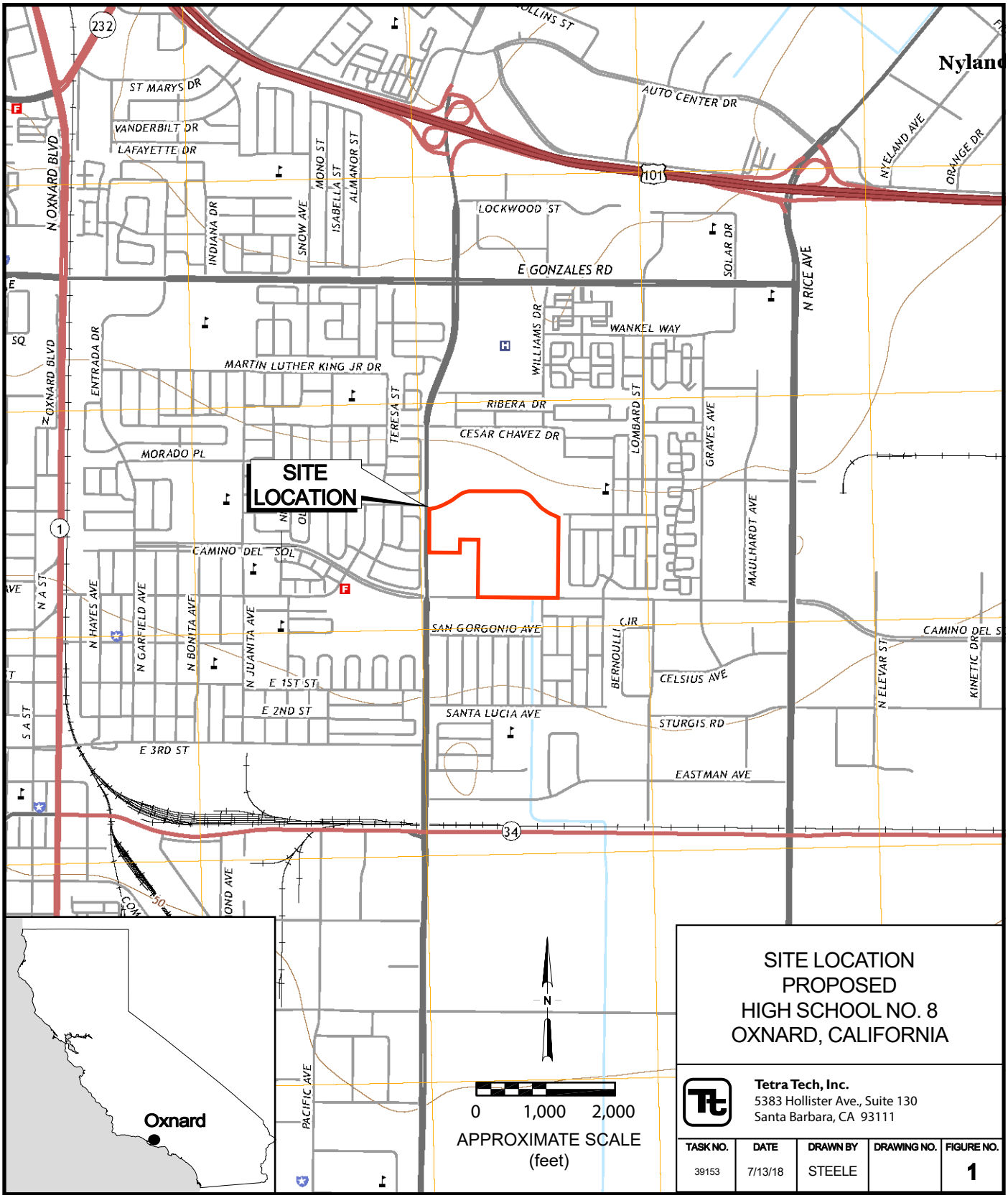
Wall, Steve
2017 Personal communication for Southern California Edison (SCE). November 20.

WLC Architects
2019 Overall Site Plan. April 16.

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FIGURES

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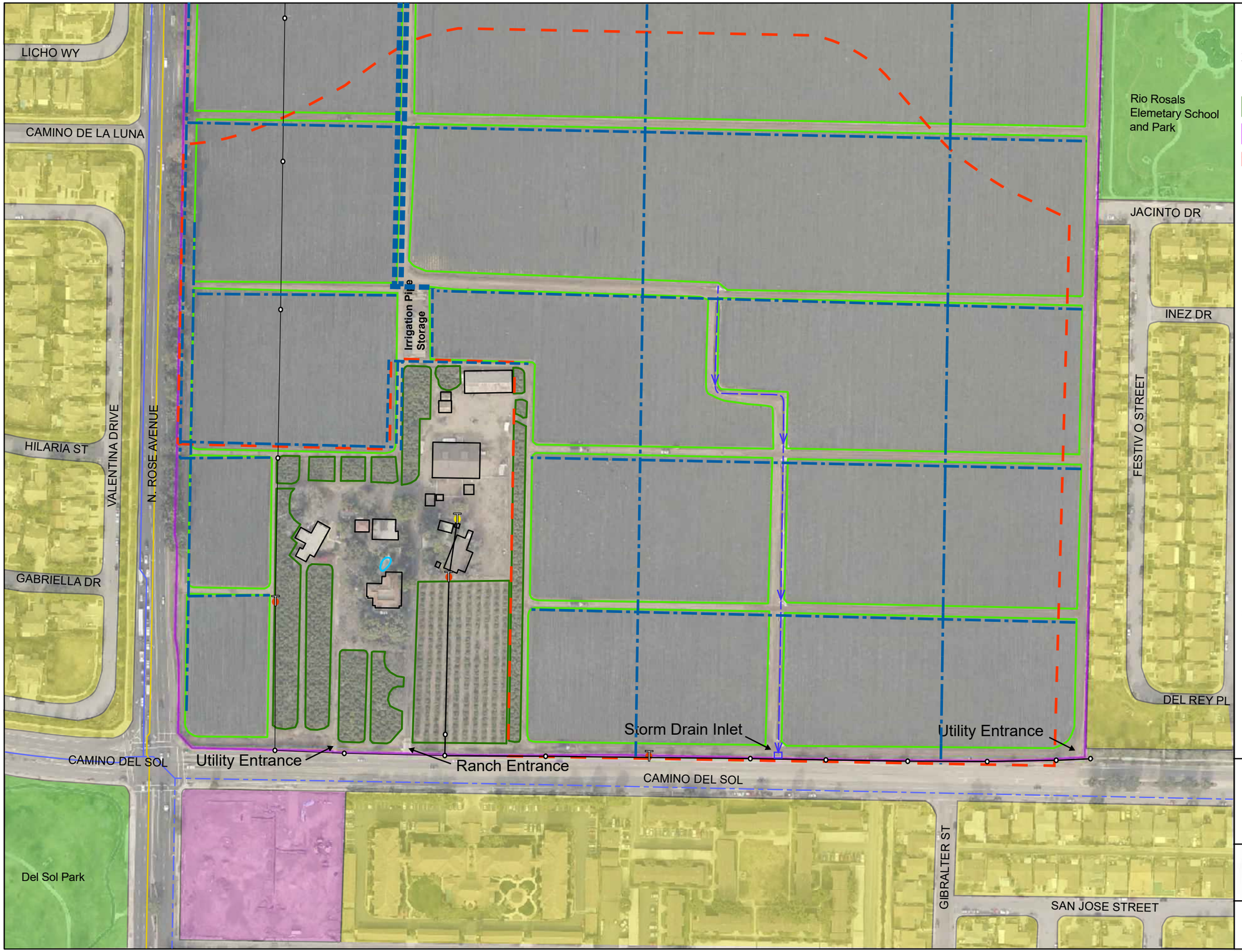
SITE LOCATION
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
39153	7/13/18	STEELE		1

Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)

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Legend

Site Features

- Building
- Pool
- Orchard
- Strawberries
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inchAsbestos-Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Surrounding Area Land Use

- Residential
- Commercial
- Park

Note: All building and utility locations are approximate.

N

0 50 200 400 Feet

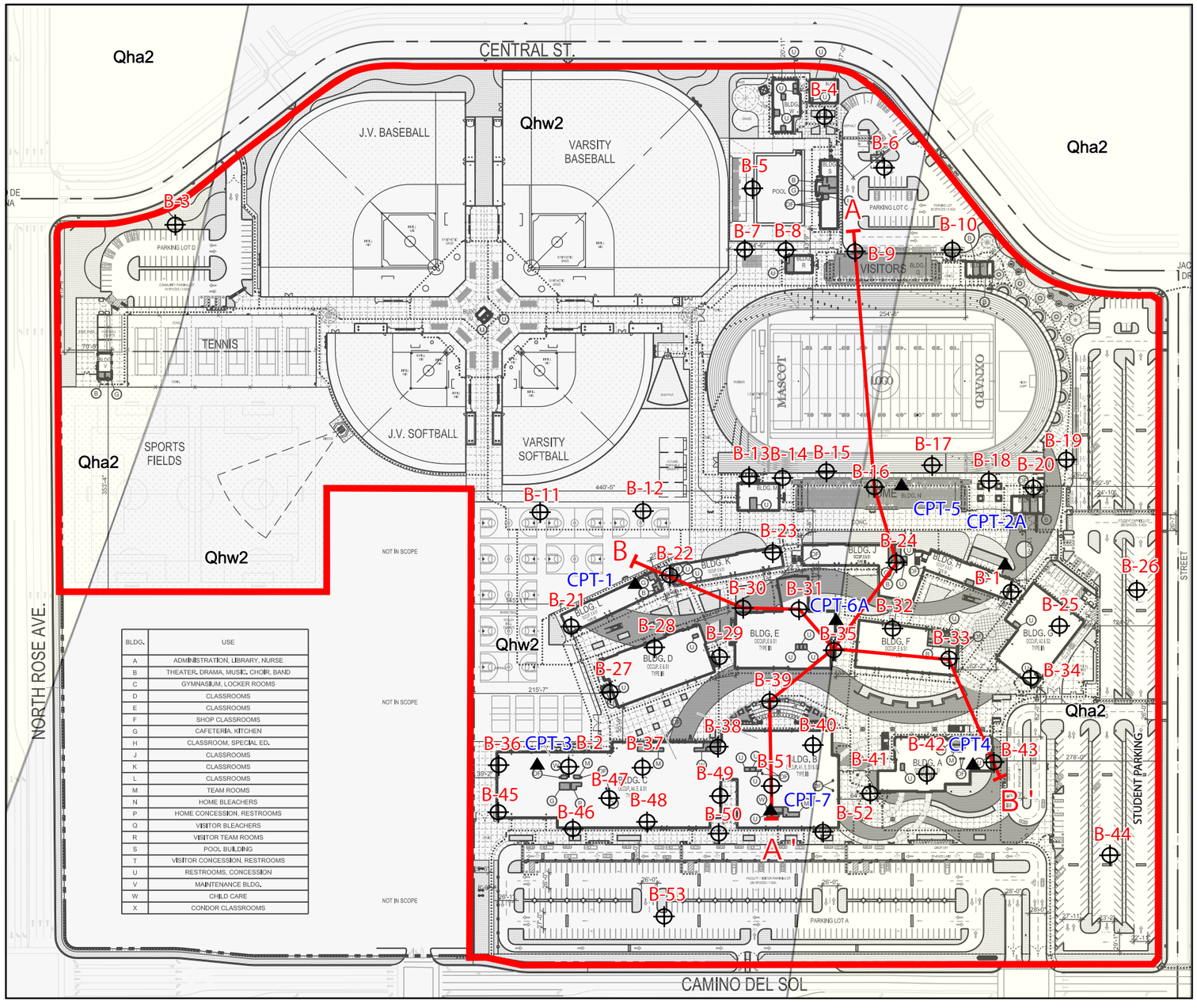
Background imagery: Ventura County, 2016

SITE PLAN
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
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BLDG.	USE
A	ADMINISTRATION, LIBRARY, NURSE
B	THEATER, DRAMA, MUSIC, CHOIR, BAND
C	GYMNASIUM, LOCKER ROOMS
D	CLASSROOMS
E	CLASSROOMS
F	SHOP CLASSROOMS
G	CAFETERIA, KITCHEN
H	CLASSROOM, SPECIAL ED.
J	CLASSROOMS
K	CLASSROOMS
L	CLASSROOMS
M	TEAM ROOMS
N	HOME BLEACHERS
P	HOME CONCESSION, RESTROOMS
Q	VISITOR BLEACHERS
R	VISITOR TEAM ROOMS
S	POOL BUILDING
T	VISITOR CONCESSION, RESTROOMS
U	RESTROOMS, CONCESSION
V	MAINTENANCE BLDG.
W	CHILD CARE
X	CONDOR CLASSROOMS

Legend

Site Boundary

A — A' Line of Cross Section (Refer to Figures 4A and 4B)

Borings and Soundings

⊕ Hollow Stem Auger (HSA) Exploratory Soil Boring

▲ Cone Penetrometer Test (CPT) Sounding

Geologic Formations

Qhw2 Holocene Alluvial Wash Deposits, Associated With Qha2

Qha2 Holocene Alluvium and Colluvial Deposits, Associated With Qhw2

Notes:

1) All features locations, including borings, CPT soundings,building, utility, and boundary locations are approximate.

2) The geologic formations are based on the *Geologic Map of the Santa Barbara 30' x 60' Quadrangle, California* (Gutierrez, et al. 2008)

3) The map shows the proposed school campus features superimposed on the existing Maulhardt Ranch facilities and is based on the *Overall Site Plan* (WLC Architecs April 16, 2019).

0 100 200 400

Feet

SITE PLAN/GEOLOGIC MAP
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
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STATE OF CALIFORNIA - ARNOLD SCHWARZENEGGER, GOVERNOR
THE RESOURCES AGENCY - MIKE CHRISMAN, SECRETARY
DEPARTMENT OF CONSERVATION - BRIDGETT LUTHER, DIRECTOR

CALIFORNIA GEOLOGICAL SURVEY
JOHN G. PARRISH, Ph.D., STATE GEOLOGIST


119°30'
119°00'
34°30'
34°00'
SANTA BARBARA CHANNEL
PACIFIC OCEAN
Ventura Fault
Ventura Syncline
Anticline
Oakridge Fault
Montalvo Fault
McGrath Fault
Oxnard Syncline
Camarillo Fault
Bailey Fault
Springville Fault
SITE LOCATION
Ventura
Oxnard
Port Hueneme
Middle Point
Pierpont Bay
Hollywood Beach
Oxnard Beach
Hollywood by the Sea
Silver Strand
Oxnard Airport
Camarillo Airport
Channel Islands National Park
Santa Paula
Limoneira
Haines
Nyland
Springville
El Rio
Ojai
Punta Qhps
Dunes
Qhps
Qb
Tp
Tpsc
af
Qes
Qhf
Qhfy
Qhfp
Qhfm
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Qhfff
Qhfffp
Qhfffs
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Qhfffq
Qhfffr
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GEOLOGIC MAP OF THE EAST HALF SANTA BARBARA 30' × 60' QUADRANGLE, CALIFORNIA

Compiled by

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2008

Digital preparation by

Carlos I. Gutierrez[1] and Karen Toman-Sager[1]

1. Department of Conservation, California Geological Survey

ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only;
see pamphlet for more detailed information

Holocene

af	Artificial fill (Holocene)
alf	Artifical levee fill (Holocene)
Qb	Active beach deposits (Holocene)
Qe	Active coastal eolian (sand dune) deposits (Holocene)
Qes	Active coastal estuarine deposits (Holocene)
Qw	Active wash deposits within major river channels (Holocene)
Qw_1	Historically active wash deposits adjacent to active channel (Holocene)
Qhw_3	Wash deposits Unit 3 (Holocene), associated with units Qht_3 and Qha_3
Qhw_2	Wash deposits Unit 2 (Holocene), associated with unit Qha_2
Qhw_1	Wash deposits Unit 1 (Holocene), associated with units Qht_1 and Qha_1
Qhfy	Alluvial fan deposits (latest holocene)
Qhf	Alluvial fan deposits (Holocene)
Qhff	Alluvial fan deposits, fine facies (Holocene)
Ql	Lacustrine deposits (Holocene)
Qls	Landslide deposits (Holocene to Pleistocene)
Qha	Alluvial deposits and colluvial deposits, associated with Qw (Holocene)
Qha_3	Unit 3, associated with unit Qhw_3
Qha_2	Unit 2, associated with unit Qhw_2
Qha_1	Unit 1, associated with unit Qhw_1
Qht	Stream terrace deposits, associated with unit Qw (latest Holocene)
Qht_3	Unit 3, associated with unit Qhw_3
Qht_1	Unit 1, associated with unit Qhw_1
Qhps	Paralic deposits of the Sea Cliff marine terrace (Holocene)

Pleistocene

Qf	Alluvial fan deposits (late Pleistocene)
Qppp	Paralic deposits of Punta Gorda marine terrrace (Pleistocene)
Qpmw	Undivided mass-wasting deposits (Pleistocene)
Qpa	Alluvial deposits, undivided (late Pleistocene)
Qpa_2	Unit 2
Qpa_1	Unit 1
Qpf	Alluvial fan deposits (late to middle Pleistocene)
Qpf_2	Unit 2
Qpf_1	Unit 1
Qoa	Alluvial deposits (early to middle Pleistocene)
Qca	Casitas Formation (Pleistocene)
Qs	Saugus Formation (Pleistocene)
Qlp	Las Posas Formation (Pleistocene)
Qsb / Qsbc	Santa Barbara Formation (Pleistocene) Qsbc - conglomerate

Pliocene

Tps / Tpsc (Tp)	Pico Formation (Pliocene) Tp - undivided Tps -sandstone Tpsc - sandstone and conglomerate
Tsq	Sisquoc Formation (Pliocene-Miocene)

Miocene

Ta	Andesite sill (Miocene)
Tcvai	Conejo Volcanics, andesitic (middle Miocene)
Tcvdi	Conejo Volcanics, dacitic (middle Miocene)
Tcvb	Conejo Volcanics, basaltic (middle Miocene)
Tcvbs	Conejo Volcanics, interbedded with sandstone and siltstone (middle Miocene)
Tcvbb	Conejo Volcanics, basaltic flow breccias (middle Miocene)
Tcvab	Conejo Volcanics, andesitic flow breccias (middle Miocene)
Tcvdb	Conejo Volcanics, dacitic flow breccias (middle Miocene)
Tcvadb	Conejo Volcanics, mix of andesitic and dacitic flow breccias (middle Miocene)
Tdb	Undivided diabase and mafic hypabyssal intrusive rocks (Miocene)
Tmyu / Tmyl (Tmy)	Monterey Formation (middle and late Miocene) Tmy - undivided Tmyu - upper Tmyl - lower
Tm / Tmb	Modelo Formation (Miocene) Tmb - burnt rock
Tr	Rincon Shale (Miocene)
Tt / Tts	Topanga Formation (middle to early Miocene) Tts - dominantly sandstone
Tv / Tvs	Vaqueros Sandstone (early Miocene) Tvs - dominantly sandstone

Oligocene

Ts	Sespe Formation (Oligocene)

Eocene

Tcw / Tcwsh	Coldwater Sandstone (late Eocene) Tcwsh - dominantly shale
Tcd	Cozy Dell Shale (late Eocene)
Tma / Tmash	Matilija Sandstone (middle to late Eocene) Tmash - micaceous shale
Tj / Tjs	Juncal Formation (early to middle Eocene) Tjs - dominantly arkosic sandstone

Cretaceous

Ku	Unnamed conglomerate (late Cretaceous)

SYMBOL EXPLANATION

Contact between map units - Solid where accurately located, dashed where approximately located; dotted where concealed; queried where uncertain.

Fault - Solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed, queried where uncertain. Ball and bar on downthrown block. Arrow and number indicate direction and angle of dip of fault plane.

Contact between similar map units; approximately located.

Inferred shoreline angle of marine terraces.

Erosional scarps in terraced alluvial units; hatchures point towards topograhically lower surfaces

Anticline - Solid where accurately located, dashed where approximately located, dotted where concealed, queried where uncertain, arrow indicates direction of plunge.

Overturned Anticline - Solid where accurately located, dotted where concealed, queried where uncertain.

Syncline - Solid where accurately located, dotted where concealed, queried where uncertain arrow indicates direction of plunge.

Overturned Syncline - Solid where accurately located, dotted where concealed, queried where uncertain.

Strike and dip of sedimentary beds:

- Inclined bedding
- Vertical bedding
- Overturned bedding

Landslide - arrow indicates principal direction of movement; hachured where headscarp is mappable. The existence of some landslides may be questionable; .

Prepared in cooperation with the U.S. Geological Survey, Southern California Areal Mapping Project.

ABBREVIATED INDEX TO GEOLOGIC SOURCE DATA

See pamphlet for complete citation

Anacapa Island
Dibblee, 2001.

Camarillo Quadrangle
Bailey, 1951; Dibblee and Ehrenspeck, 1990a; Gamble, 1957; Hitchcock and others, 2000; Jakes, 1979; Pasta, 1958; Tan and others, 2004a; Williams, 1977.

Matilija Quadrangle
Barnard, 1979; Dibblee, 1987a; Moser and Frizzell, 1983; Tan and Jones, 2006; Weber and others, 1973; William Lettis and Associates, 2001.

Ojai Quadrangle
Dibblee, 1987b; Morton, 1976; Moser and Frizzell, 1983; Tan and Irvine, 2005a; Weber and others, 1973; William Lettis and Associates, 2000.

Oxnard Quadrangle
Clahan, 2003; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Sarna-Wojcicki and others, 1976.

Pitas Point Quadrangle
Dibblee, 1988; Hitchcock and others, 2000; Tan and others, 2003a.

Point Mugu Quadrangle
Dibblee and Ehrenspeck, 1990b; Gamble, 1957; Hitchcock and others, 2000; Tan and Clahan, 2003.

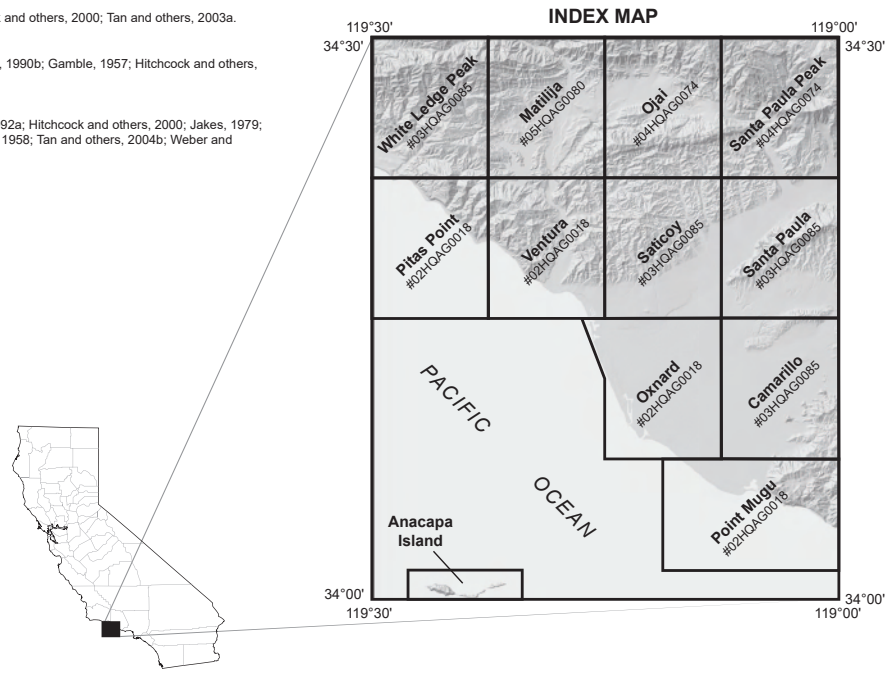
Santa Paula Quadrangle
Bailey, 1951; Dibblee, 1992a; Hitchcock and others, 2000; Jakes, 1979; Lung, 1958; Morton, 1976; Pasta, 1958; Tan and others, 2004b; Weber and others, 1973.

Santa Paula Peak Quadrangle
Dibblee, 1990; Morton, 1976; Tan and Irvine, 2005b; Weber and others, 1973; William Lettis and Associates, 2000.

Saticoy Quadrangle
Dibblee, 1992b; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Morton, 1976; Sarna-Wojcicki and others, 1976; Tan and others 2004c; Weber and others, 1973; Yerkes and others, 1987.

Ventura Quadrangle
Dibblee, 1988; Hitchcock and others, 2000; McCoy and Sarna-Wojcicki, 1978; Sarna-Wojcicki and others, 1976; Tan and others, 2003b; Yerkes and others, 1987.

White Ledge Peak Quadrangle
Dibblee, 1982, 1987c; Moser and Frizzell, 1983; Tan and Clahan, 2004; Upson, 1951.

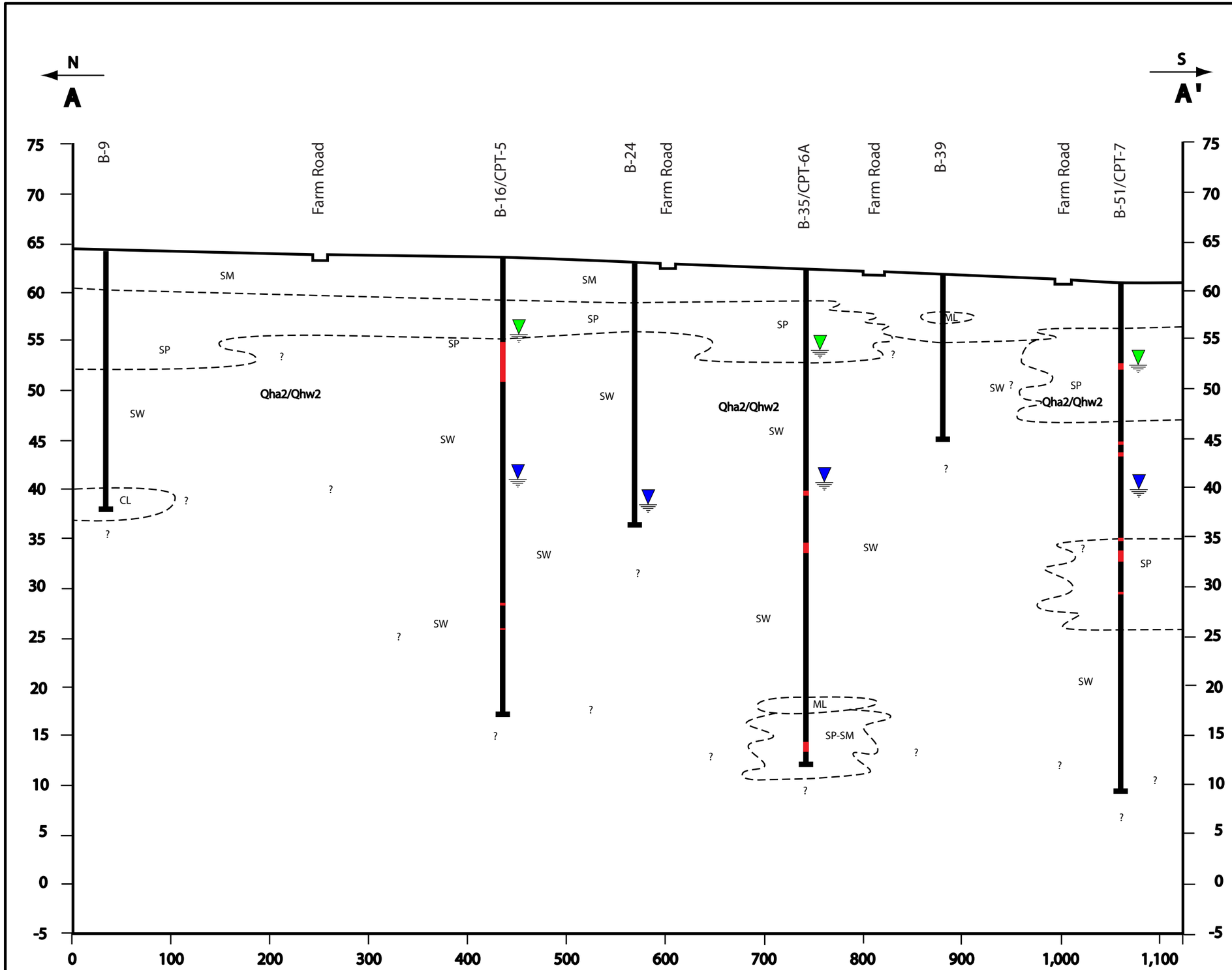


REGIONAL GEOLOGIC MAP KEY HIGH SCHOOL NO. 8 OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

JOB NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
39153	07/24/18	STEELE		4B

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LEGEND

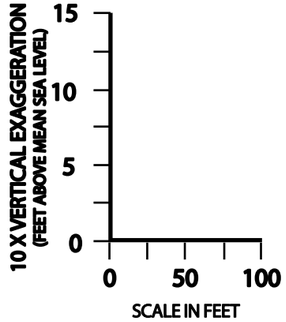
- GROUND SURFACE
- SOIL BORING
- POTENTIALLY LIQUEFIABLE SOIL INTERVAL FROM CPT DATA
- ESTIMATED HIGHEST HISTORIC GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION DURING JULY 2018

SOIL CLASSIFICATION SYMBOLS

Qha2/Qhw2	HOLOCENE WASH, ALLUVIAL, AND COLLUVIAL DEPOSITS (GUTIERREZ, ET AL. 2008)
?	APPROXIMATE SOIL TYPE CONTACT, QUERIED WHERE UNCERTAIN

UNITED SOIL CLASSIFICATION SYSTEM

SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SM	SILTY SAND
SP-SM	POORLY GRADE SAND WITH SILT
CL	LEAN CLAY
ML	SILT



Notes:
1) The lines of cross section are shown on Figure 3.
2) The depiction of the ground surface and all elevations are approximate.
3) The cross sections are constructed from boring logs prepared by Earth System Pacific (Earth System Pacific 2018).

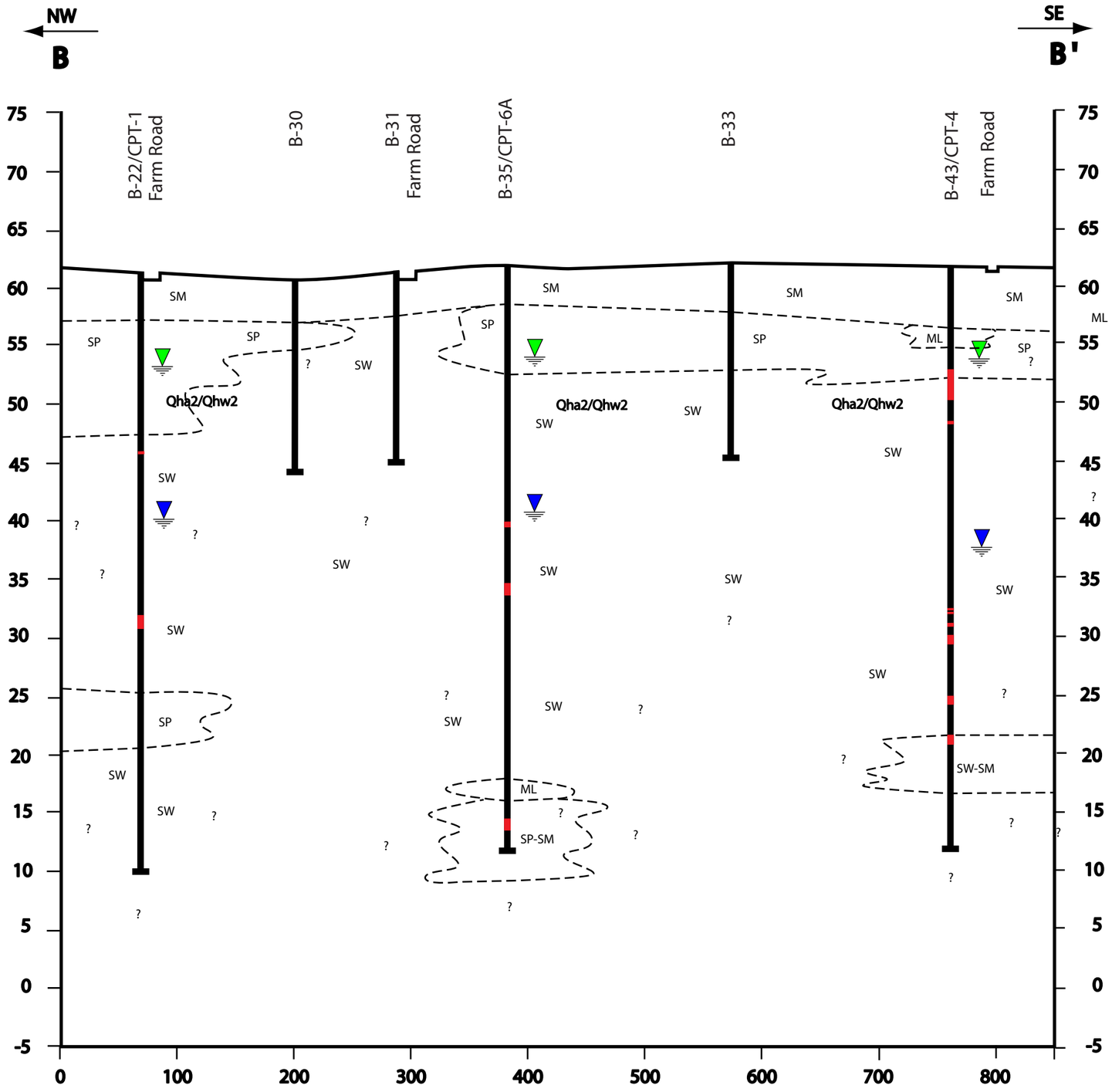
High School No. 8
Oxnard Union High School District
Oxnard, California

Cross Section A-A '

TETRA TECH, INC.
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Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	DWG NO.	FIGURE
39153	10/6/18	STEELE		5A

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LEGEND

GROUND SURFACE

SOIL BORING

POTENTIALLY LIQUEFIABLE SOIL INTERVAL FROM CPT DATA

ESTIMATED HIGHEST HISTORIC GROUNDWATER ELEVATION

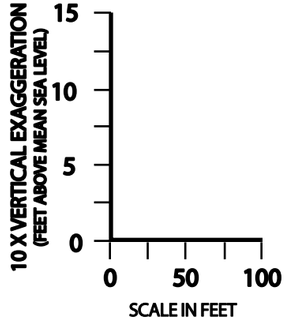
GROUNDWATER ELEVATION DURING JULY 2018

SOIL CLASSIFICATION SYMBOLS

Qha2/Qhw2	HOLOCENE WASH, ALLUVIAL, AND COLLUVIAL DEPOSITS (GUTIERREZ, ET AL. 2008)
?	APPROXIMATE SOIL TYPE CONTACT, QUERIED WHERE UNCERTAIN

UNITED SOIL CLASSIFICATION SYSTEM

SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SM	SILTY SAND
SP-SM	POORLY GRADED SAND WITH SILT
SW-SM	WELL GRADED SAND WITH SILT
ML	SILT



Notes:
1) The lines of cross section are shown on Figure 3.
2) The depiction of the ground surface and all elevations are approximate.
3) The cross sections are constructed from boring logs prepared by Earth System Pacific (Earth System Pacific 2018).

High School No. 8
Oxnard Union High School District
Oxnard, California

Cross Section B-B '

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TC NO.	DATE	DRAWN BY	DWG NO.	FIGURE
39153	10/6/18	STEELE		5B

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NOTE: Map Explanation shown on Figures 5a through 5c.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

0 12

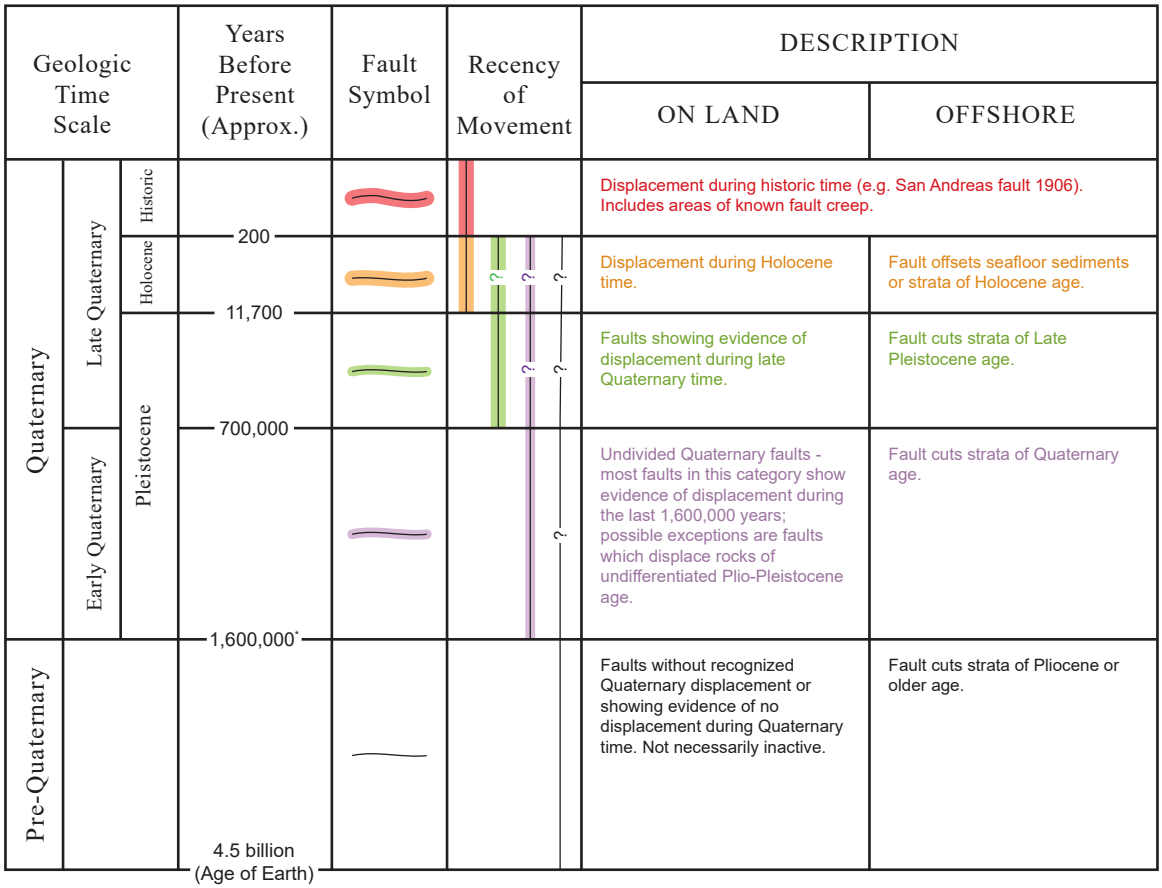
APPROXIMATE SCALE IN MILES

REGIONAL FAULT MAP
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

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TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
39153	07/23/18	STEELE		6A

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* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

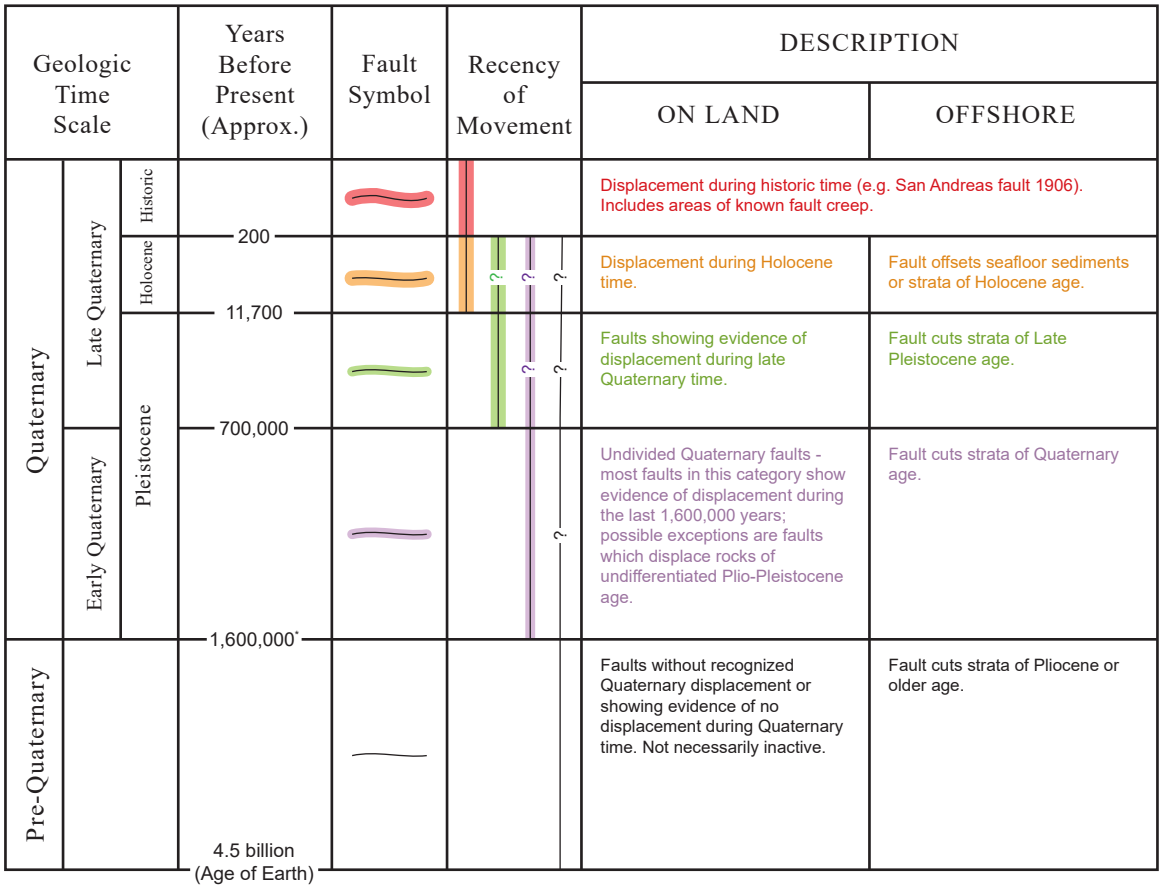
SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

REGIONAL FAULT MAP EXPLANATION
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OXNARD, CALIFORNIA

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Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
39153	07/23/18	STEELE		6B

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* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

REGIONAL FAULT MAP EXPLANATION
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TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
39153	07/23/18	STEELE		6B

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FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines.



A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.



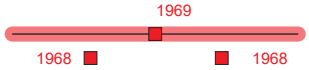
Date bracketed by triangles indicates local fault break.



No triangle by date indicates an intermediate point along fault break.



Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.



Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).



Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.



Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.



Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.



Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

SOURCE: Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California , Charles W. Jennings and William A Bryant with assistance from George Saucedo, 2010, California Department of Conservation Geological Survey. Copyright © 2010 by the California Department of Conservation, Geological Survey. All rights reserved.

REGIONAL FAULT MAP EXPLANATION
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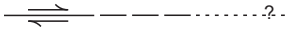
TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
39153	07/23/18	STEELE		6C

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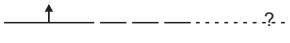
ADDITIONAL FAULT SYMBOLS



Bar and ball on downthrown side (relative or apparent).



Arrows along fault indicate relative or apparent direction of lateral movement.

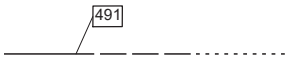


Arrow on fault indicates direction of dip.



Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

OTHER SYMBOLS



Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.

Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks.



Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

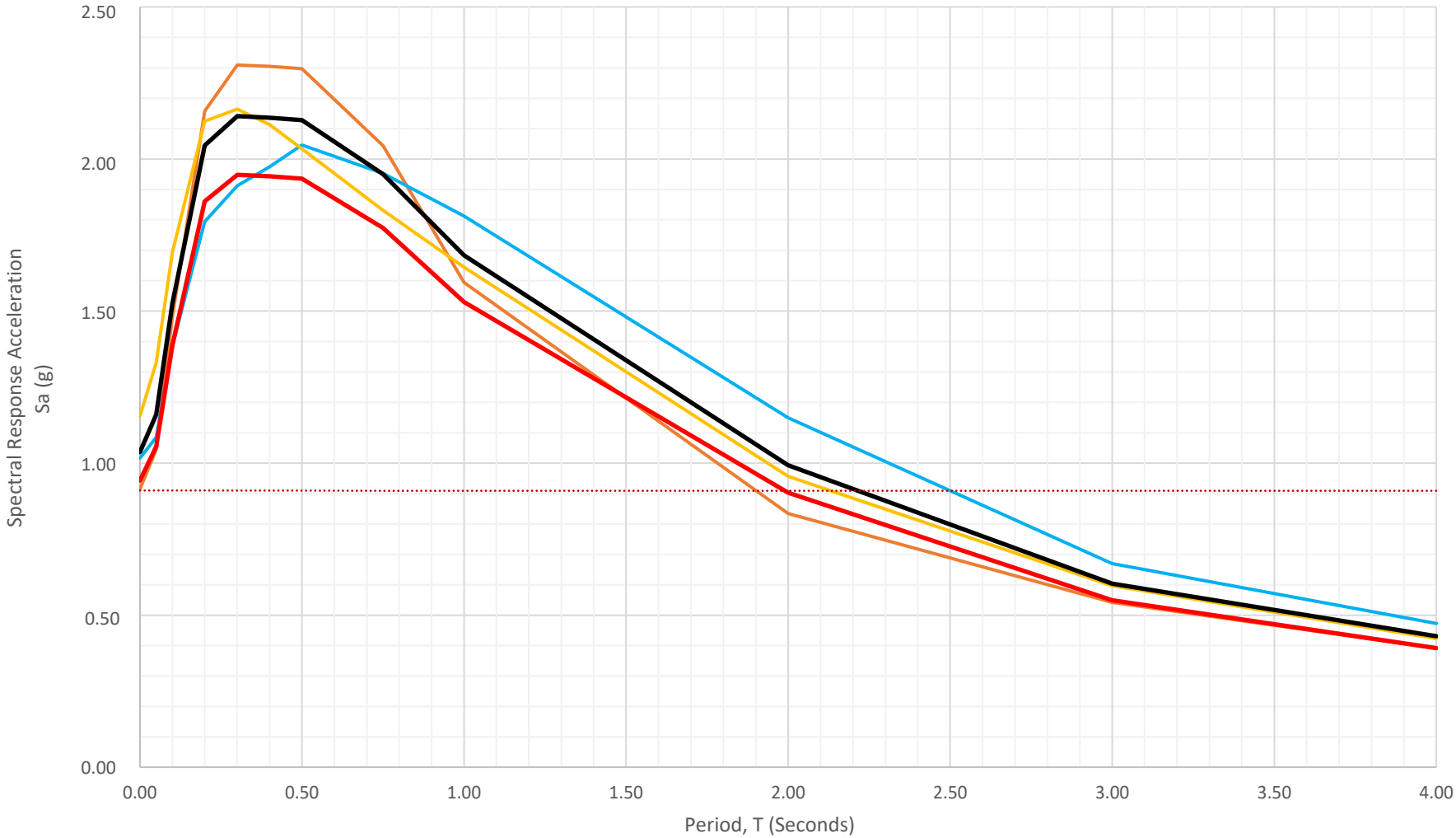
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TASK NO.	DATE	DRAWN BY	AI FILE NO.	FIGURE NO.
39153	07/23/18	STEELE		6D

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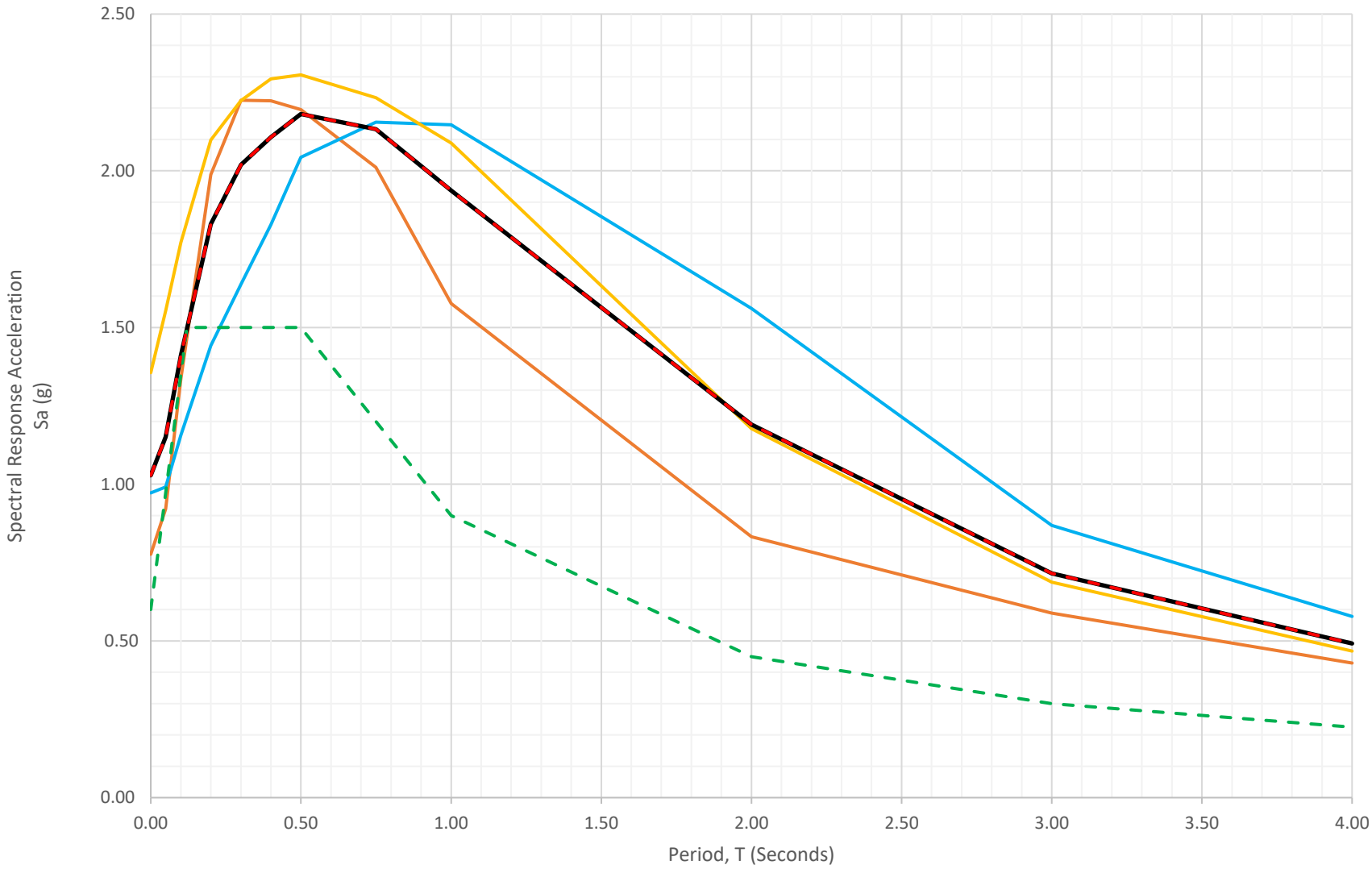
PROBABLISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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TC NO.	DATE	DRAWN BY	FIGURE
T39153	5/30/2019	JRS	7

Note:
MRC = Maximum Rotated Component

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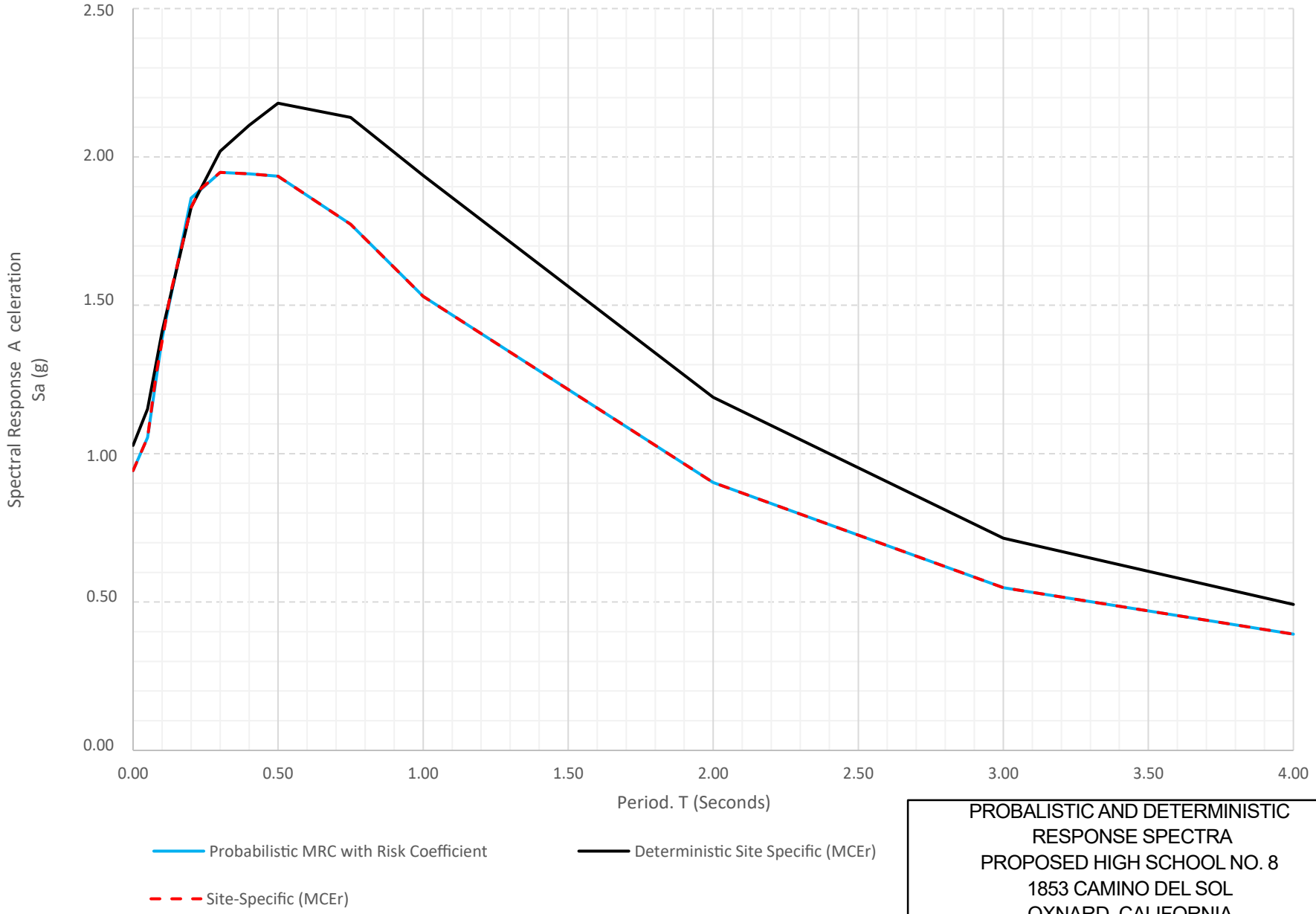
DETERMINISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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TC NO.	DATE	DRAWN BY	FIGURE
T39153	5/30/2019	JRS	8

Notes:
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component

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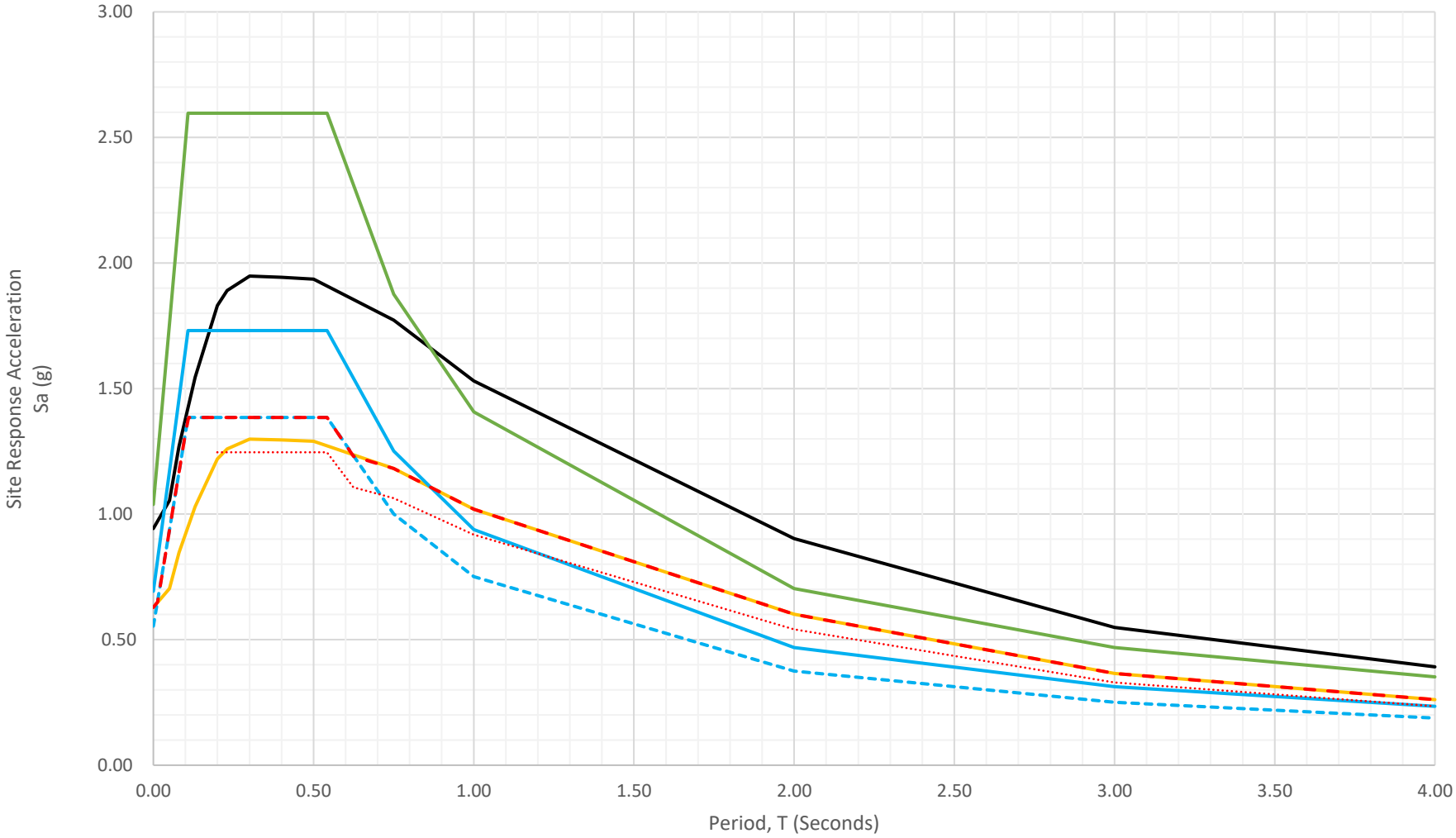
PROBALISTIC AND DETERMINISTIC RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T39153	5/30/2019	JRS	9

Notes:
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component

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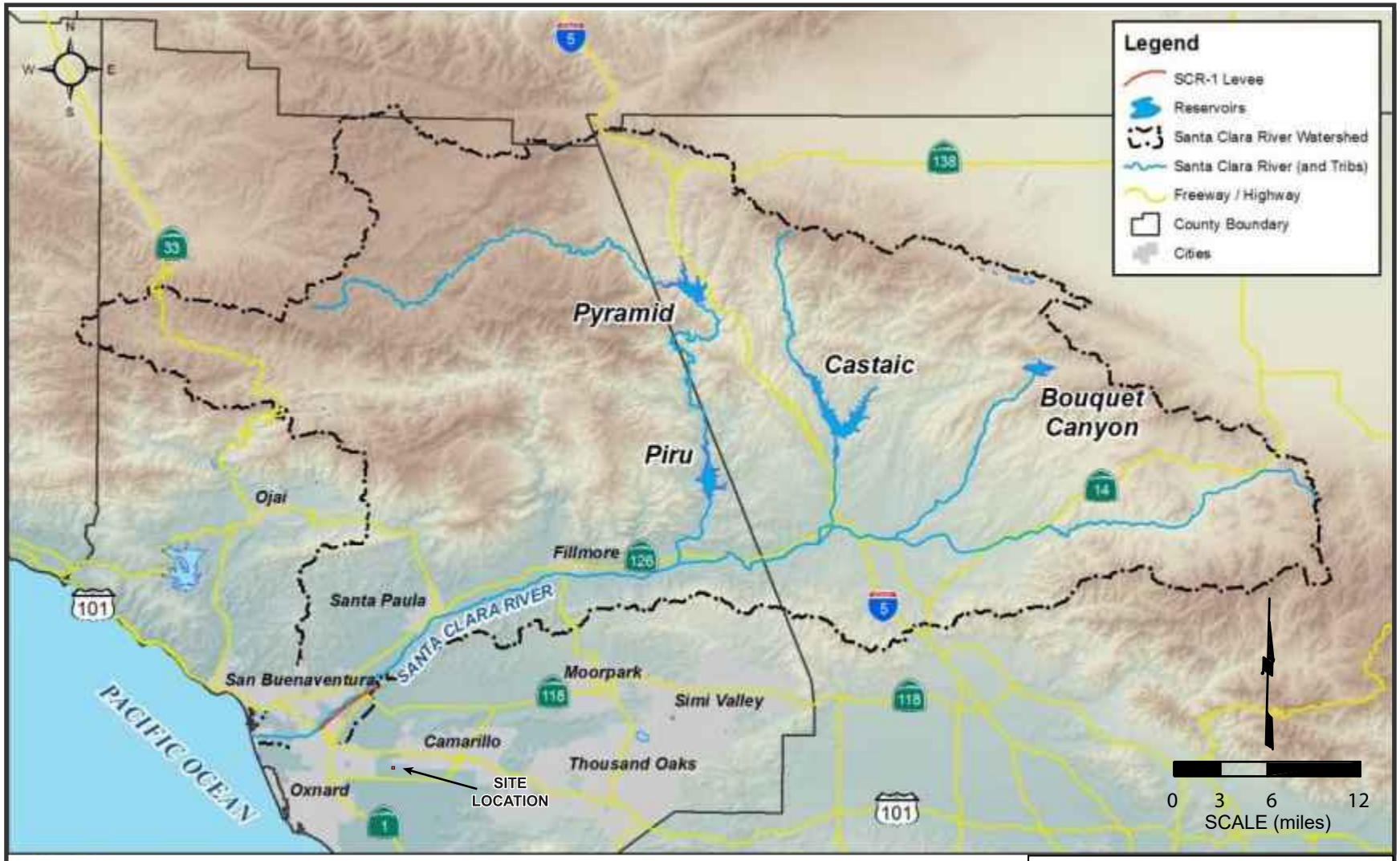
Notes:
MCE = Maximum Considered Earthquake
MCEr = Risk-Targeted Maximum Considered Earthquake
MRC = Maximum Rotated Component

SITE DESIGN RESPONSE SPECTRA
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

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Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	FIGURE
T39153	5/30/2019	JRS	**10**

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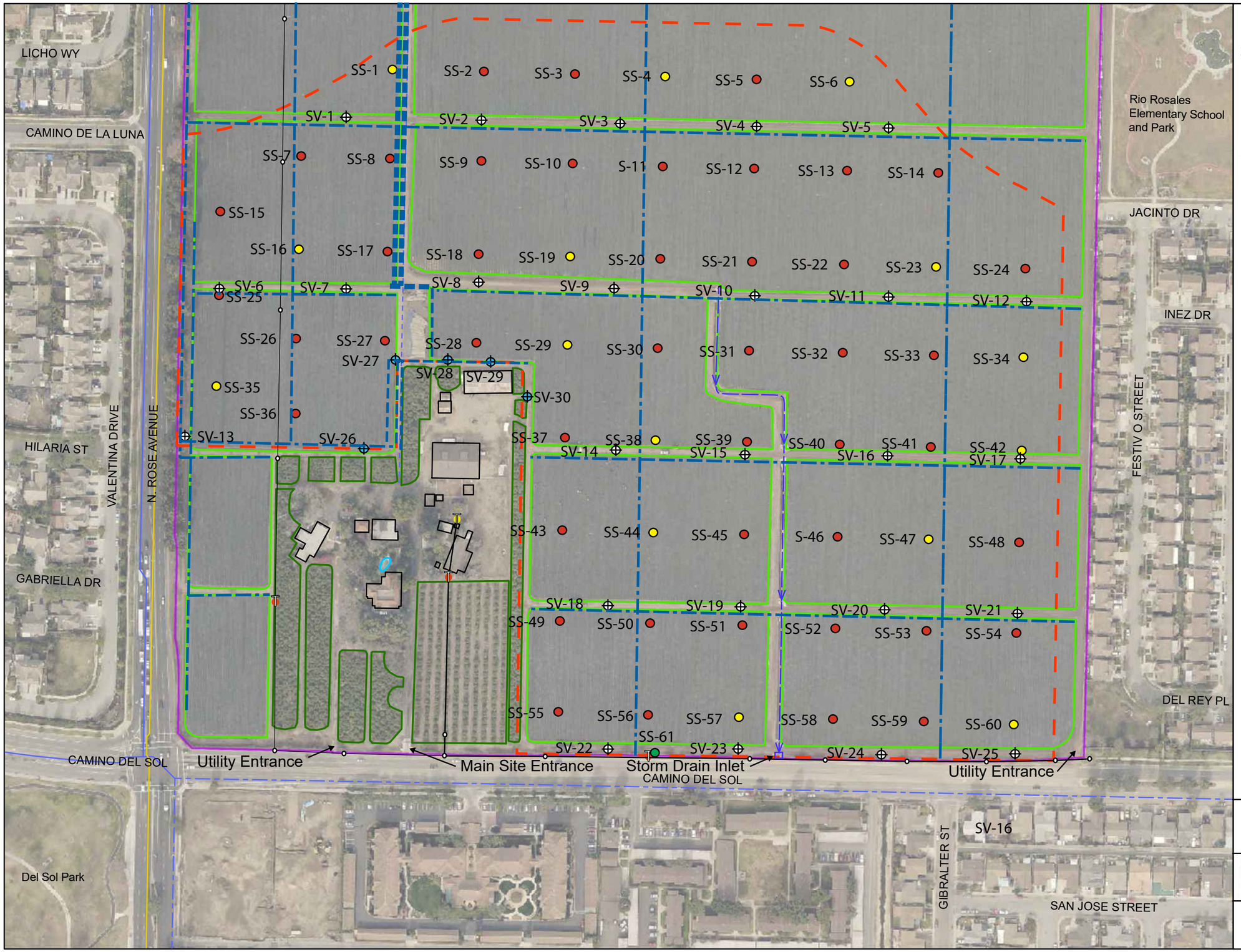


MAJOR RESEVOIR LOCATIONS
PROPOSED HIGH SCHOOL NO. 8
1853 CAMINO DEL SOL
OXNARD, CALIFORNIA

Tetra Tech, Inc.
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JOB NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
39153	10/4/18	STEELE		11

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Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:
All features, including PEA sample, building, utility, and boundary locations are approximate.
As - Arsenic
OCP - Oganochlorine Pesticide
PAH - Polyaromatic Hydrocarbon
PCB- Polychlorinated Biphenyl
SVOC - Semivolatile Organic Compond
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

N

0 100 200 400 Feet

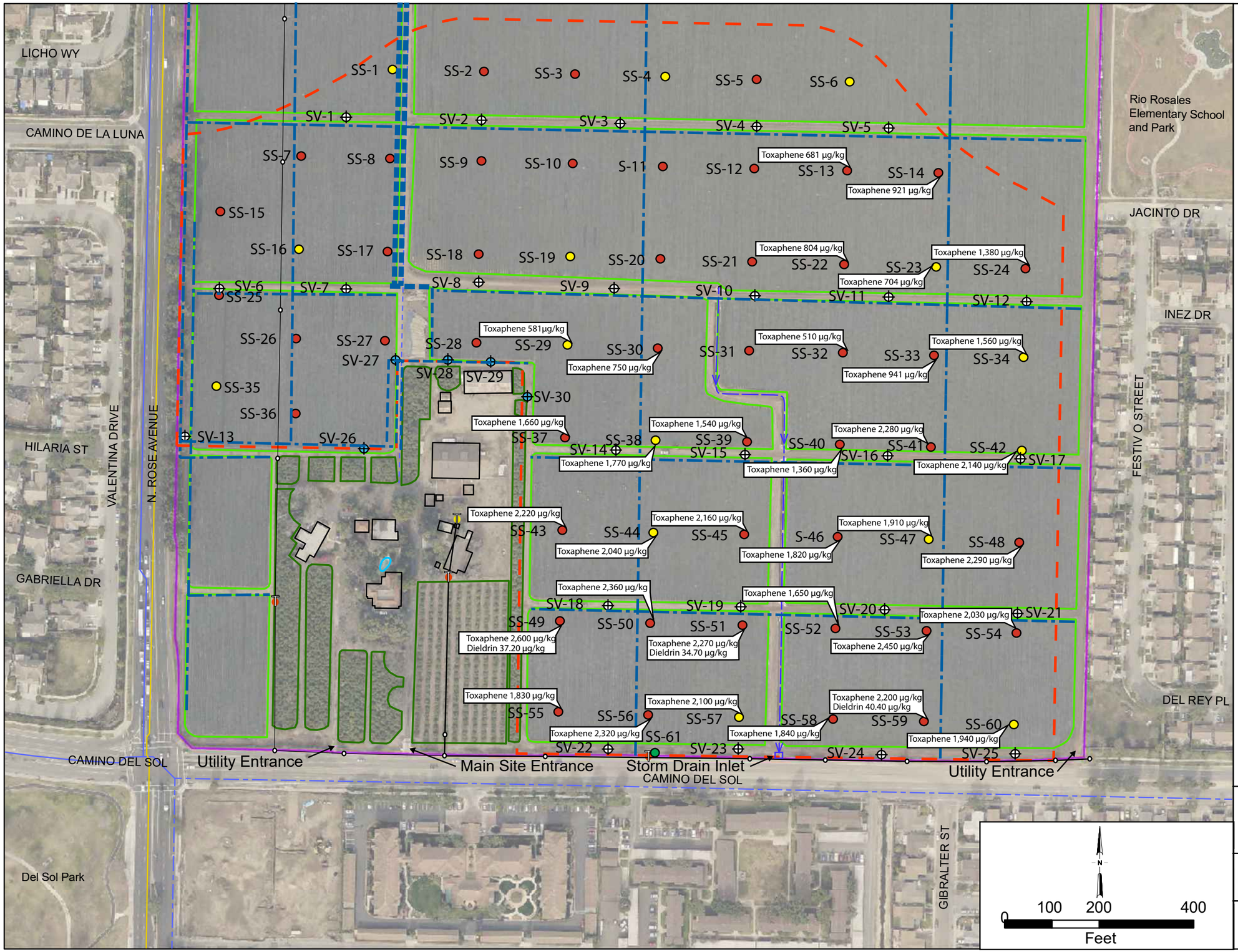
Background imagery: Ventura County, 2016

PEA SAMPLE LOCATIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39153	10/12/2018	tr/JS	10045	12

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Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:
1.) All features, including PEA sample, building, utility, and boundary locations are approximate.
2.) The maximum concentrations are show where duplicate soil samples were collected.
Definitions:
As - Arsenic
DTSC - California Department of Toxic Substances Control
OCP - Oganochlorine Pesticide
PAH - Polyaromatic Hydrocarbon
PCB - Polychlorinated Biphenyl
µg/L - Micrograms per Kilogram
SVOC - Semivolatile Organic Compond
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

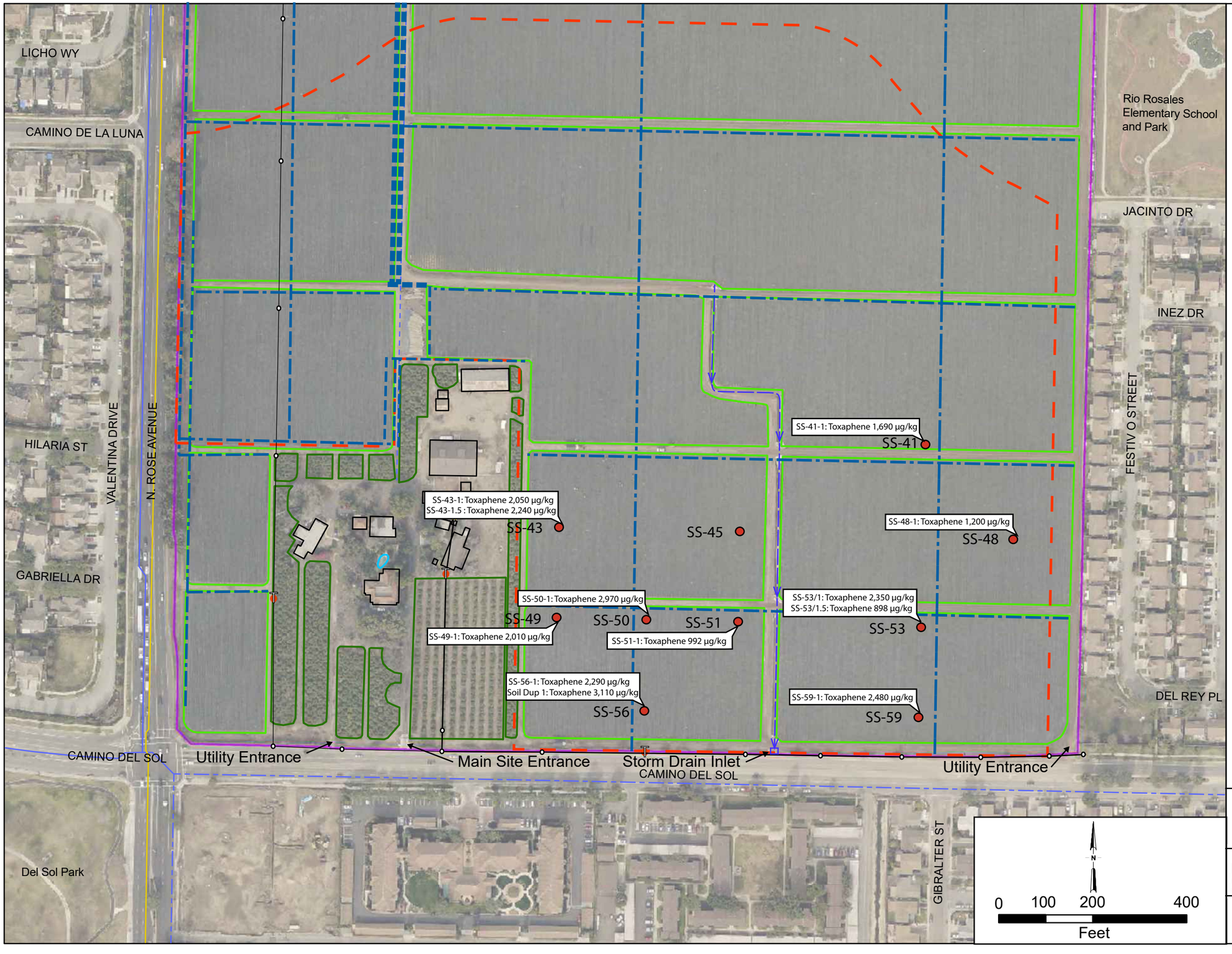
Background imagery: Ventura County, 2016

SOIL SAMPLE RESULTS AT CONCENTRATIONS ABOVE DTSC SCREENING LEVELS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39153	10/12/2018	tr/JS	10045	**13**

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Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Serving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

SSI Soil Sample Locations

- SSI subsurface soil sample locations. The SSI soil samples were collected at 1 ft bgs, 1.5 ft bgs, and 2.0 ft bgs. The SSI surface soil sample results at concentrations that exceed the PEA screening levels are shown.

Relevant PEA Soil Screening Level

Toxaphene - 490 µg/kg

Note:
All features, including SSI sample, building, utility, and boundary locations are approximate.

Definitions:
DTSC - Department of Toxic Substances Control
ft bgs - feet below ground surface
µg/kg - Micrograms per Kilogram
OCP - Oganochlorine Pesticide

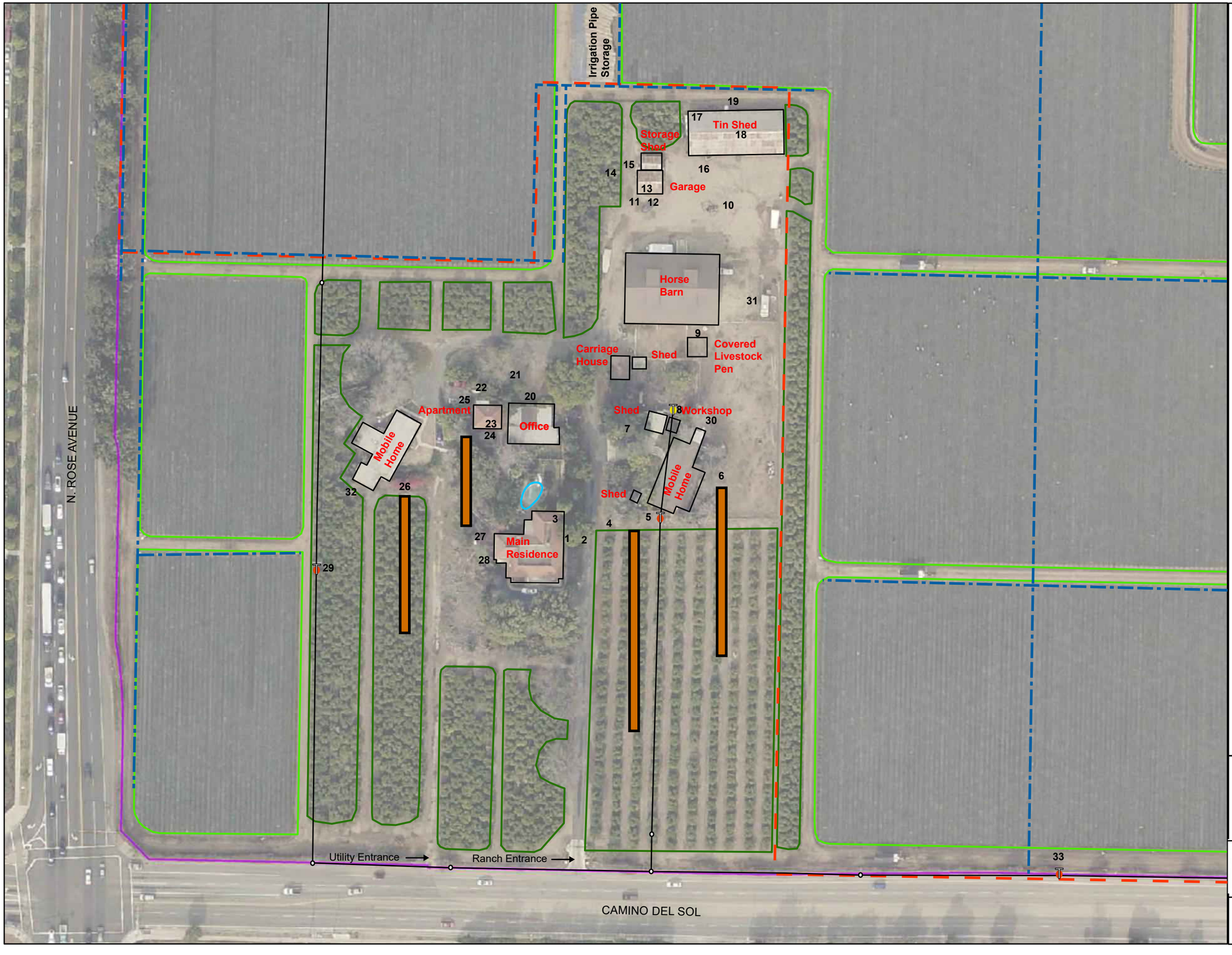
Background imagery: Ventura County, 2016

SSI SOIL SAMPLE RESULTS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39153	3/4/2019	tr/JS	10045	**14**

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Legend

- Building
- Orchard
- Strawberries
- Pool
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- Septic Line
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- 12 Potential Recognized Environmental Concern (Refer to Table 2)
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Note: All building and utility locations are approximate.

N

0 50 100 200 Feet

Background imagery: Ventura County, 2016

MAULHARDT RANCH
RESIDENCE/FARM YARD AREA DETAIL
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39153	10/15/18	tr/JS	10046	15

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TABLES

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Table 2
Regional Fault Characteristics

Fault Name and Section	Approximate Distance from Site (kilometers)	Seismic Source Type	Maximum Magnitude (Mmax)	Slip Rate (mm/yr)	Fault Type
SAN LUIS RANGE (S. Margin)	5.6	B	7	0.2	DS
CASMALIA (Orcutt Frontal Fault)	8.4	B	6.5	0.25	DS
LIONS HEAD	15.3	B	6.6	0.02	DS
LOS OSOS	16.6	B	6.8	0.5	DS
LOS ALAMOS-W. BASELINE	21.2	B	6.8	0.7	DS
HOSGRI	29.8	B	7.3	2.5	SS
RINCONADA	43.2	B	7.3	1	SS
SANTA YNEZ (West)	49.5	B	6.9	2	SS
SAN JUAN	50.9	B	7	1	SS
NORTH CHANNEL SLOPE	54.7	B	7.1	2	DS
BIG PINE	62.2	B	6.7	0.8	SS
SANTA YNEZ (East)	67.3	B	7	2	SS
SAN ANDREAS - Cholame	67.6	B	6.9	34	SS
SAN ANDREAS - Carrizo	67.6	A	7.2	34	SS
SAN ANDREAS - 1857 Rupture	67.6	A	7.8	34	SS
M.RIDGE-ARROYO PARIDA-SANTA ANA	78.5	B	6.7	0.4	DS
SAN ANDREAS - Parkfield Segment	83.7	B	6.7	34	SS
VENTURA - PITAS POINT	98.2	B	6.8	1	DS
SANTA CRUZ ISLAND	99.7	B	6.8	1	DS
CHANNEL IS. THRUST (Eastern)	99.7	B	7.4	1.5	BT
RED MOUNTAIN	100.6	B	6.8	2	DS
SANTA ROSA ISLAND	100.6	B	6.9	1	DS

Notes: - The data presented in this table are from the data file "CDMGUBCR" from the UBCSEIS computer program (Blake 1998). The data file is based on information from *Maps of Known Active Fault Near-Source Zones in California and Adjacent Parts of Nevada to be Used with the 1997 Uniform Building Code* (ICBO 1998).

A - Faults with a MwMax ≥ 7 and a slip rate ≥ 5 mm/yr.

B - Faults with a MwMax ≥ 7 and a slip rate < 5 mm/yr, MwMax < 7 and a slip rate > 2, or MwMax ≥ 6.5 and a slip ra

BT - blind thrust fault

DS - dip slip fault

ICBO - International Conference of Building Officials

mm/yr - millimeters per year

Mmax - Fault segment earthquake maximum magnitude as defined in *Maps of Known Active Fault Near-Source Zones in California and Adjacent Parts of Nevada to be Used with the 1997 Uniform Building Code* (ICBO 1998).

MwMax - Maximum earthquake moment magnitued (Mw) where Mw is equal to the rigidity of the earth times the average amount of slip on the fault times the amount of fault area that slipped

SS - strike slip fault

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Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Estimated Site	Modified	Approximate
Latitude North	Longitude West	Date	Magnitude (M_L)	PGA (g)	Mercalli Intensity	Distance From Site mi (km)
34.9	120.4	3/29/1928	5.3	0.227	IX	3.7(6.0)
34.857	120.47	6/21/1966	4.1	0.105	VII	5.0(8.1)
35	120.5	11/19/1927	5	0.16	VIII	5.5(8.9)
35	120.5	7/26/1917	4	0.094	VII	5.5(8.9)
34.868	120.376	9/23/1982	4	0.088	VII	6.2(9.9)
34.8	120.4	12/12/1902	5.7	0.165	VIII	9.4(15.2)
34.833	120.583	10/16/1936	4	0.066	VI	9.8(15.7)
34.8	120.3	9/11/1902	4	0.055	VI	12.5(20.2)
34.8	120.3	9/11/1902	4	0.055	VI	12.5(20.2)
34.883	120.683	2/1/1962	4.5	0.069	VI	13.2(21.3)
34.9	120.7	11/4/1927	7.5	0.322	IX	13.9(22.4)
34.717	120.417	11/30/1944	4.1	0.051	VI	14.8(23.8)
34.7	120.3	7/31/1902	5.5	0.093	VII	18.1(29.1)
34.7	120.3	1/12/1915	5.5	0.093	VII	18.1(29.1)
34.667	120.5	6/13/1944	4.4	0.052	VI	18.2(29.3)
34.667	120.5	6/13/1944	4	0.042	VI	18.2(29.3)
34.667	120.5	6/13/1944	4.6	0.057	VI	18.2(29.3)
34.849	120.774	2/16/1937	4	0.041	V	18.8(30.3)
34.918	120.8	6/20/1984	4.2	0.044	VI	19.5(31.3)
35.2	120.6	10/20/1913	4	0.038	V	20.4(32.9)
34.931	120.819	5/29/1980	4.7	0.055	VI	20.5(33.1)
34.737	120.148	10/25/1984	4.5	0.047	VI	21.9(35.3)
34.736	120.147	11/6/1986	4	0.036	V	22.0(35.4)
35.25	120.5	7/9/1917	5	0.061	VI	22.3(35.9)
35.25	120.5	7/10/1917	5.3	0.071	VI	22.3(35.9)
35.25	120.5	7/10/1917	5.3	0.071	VI	22.3(35.9)
35.25	120.5	7/9/1917	5.3	0.071	VI	22.3(35.9)
34.6	120.4	8/1/1902	6.3	0.118	VII	22.9(36.9)
34.6	120.4	7/28/1902	6.3	0.118	VII	22.9(36.9)
35.17	120.75	12/1/1916	5.7	0.084	VII	23.5(37.9)
35.28	120.48	5/21/1940	4	0.034	V	24.3(39.1)
34.583	120.333	12/18/1934	4	0.033	V	24.9(40.0)
34.583	120.333	12/17/1934	4.5	0.043	VI	24.9(40.0)
35.25	120.67	12/15/1869	4.3	0.038	V	25.3(40.6)
35.25	120.67	7/21/1931	4	0.033	V	25.3(40.6)
35.25	120.67	6/28/1920	4	0.033	V	25.3(40.6)
35.25	120.67	12/17/1852	5.7	0.08	VII	25.3(40.6)
35.25	120.67	00/00/1830	5.7	0.08	VII	25.3(40.6)
35.25	120.67	9/5/1922	4	0.033	V	25.3(40.6)
35.25	120.67	5/4/1923	4	0.033	V	25.3(40.6)
34.7	120.1	7/28/1945	4.2	0.036	V	25.6(41.2)
34.6	120.7	12/31/1927	4	0.031	V	26.6(42.8)
34.6	120.7	12/5/1927	4.3	0.037	V	26.6(42.8)
35.3	120.7	12/7/1906	5.9	0.08	VII	29.1(46.8)

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Estimated Site	Modified	Approximate
Latitude North	Longitude West	Date	Magnitude (M_L)	PGA (g)	Mercalli Intensity	Distance From Site mi (km)
34.5	120.5	8/27/1949	4.9	0.046	VI	29.7(47.8)
34.5	120.5	8/26/1949	4.2	0.032	V	29.7(47.8)
35	121	3/27/1947	4.2	0.031	V	31.2(50.1)
34.55	120.783	9/29/1938	4	0.027	V	32.1(51.6)
34.55	120.783	6/16/1940	4	0.027	V	32.1(51.6)
34.55	120.783	3/19/1935	4	0.027	V	32.1(51.6)
34.55	120.783	10/17/1939	4	0.027	V	32.1(51.6)
34.461	120.521	11/18/1936	4.5	0.035	V	32.5(52.3)
34.456	120.521	10/1/1959	4.5	0.035	V	32.8(52.8)
34.661	119.973	5/7/1984	4.2	0.03	V	33.0(53.2)
34.445	120.467	9/9/1936	4	0.026	V	33.4(53.7)
34.5	120.8	12/24/1937	4	0.025	V	35.5(57.1)
35.5	120.5	6/4/1953	4.3	0.027	V	39.5(63.6)
34.37	120.623	11/22/1937	4.5	0.03	V	39.7(63.9)
35.5	120.6	01/01/1830	5	0.039	V	40.3(64.8)
35.47	120.75	2/3/1953	4.1	0.024	IV	40.9(65.8)
34.395	120.022	5/9/2004	4.4	0.026	V	44.3(71.3)
35.3	119.8	01/09/1857	7.9	0.163	VIII	45.1(72.5)
34.365	120.888	6/12/1969	4	0.021	IV	46.0(74.0)
35.544	120.811	10/2/2004	4.1	0.021	IV	47.0(75.6)
35.5	120.92	11/27/1946	4.3	0.024	IV	47.3(76.2)
35.529	120.89	12/22/2003	4.1	0.021	IV	48.1(77.5)
35.553	120.839	12/25/2003	4.4	0.024	V	48.2(77.6)
35.525	120.93	12/23/2003	4	0.02	IV	49.1(79.0)
34.855	121.319	10/23/1969	4.1	0.021	IV	49.1(79.1)
34.232	120.662	11/1/1936	4	0.019	IV	49.5(79.7)
35.6	120.8	6/29/1942	4	0.019	IV	50.2(80.8)
34.42	119.82	00/00/1862	5.7	0.047	VI	50.4(81.1)
35.544	120.938	12/22/2003	4	0.019	IV	50.4(81.2)
34.471	119.757	11/16/1958	4	0.019	IV	50.7(81.6)
35.631	120.754	11/28/2006	4.1	0.02	IV	51.3(82.6)
34.291	120.938	1/9/1989	4.1	0.02	IV	51.8(83.4)
34.402	119.802	3/10/1986	4.1	0.02	IV	52.0(83.6)
34.5	119.7	8/26/1919	4	0.019	IV	52.1(83.9)
34.5	119.7	7/29/1925	4	0.019	IV	52.1(83.9)
34.5	119.7	8/26/1919	4	0.019	IV	52.1(83.9)
34.4	119.8	9/9/1929	4.6	0.026	V	52.2(83.9)
35.67	120.67	9/8/1915	4	0.019	IV	52.6(84.6)
34.49	119.691	9/16/1962	4	0.018	IV	52.9(85.2)
35.4	121.2	1/2/1960	4	0.018	IV	53.1(85.5)
34.5	119.67	06/01/1893	5	0.031	V	53.5(86.2)
34.5	119.67	05/31/1854	4.3	0.021	IV	53.5(86.2)
34.5	119.67	2/9/1902	4.3	0.021	IV	53.5(86.2)
34.5	119.67	03/14/1857	4.3	0.021	IV	53.5(86.2)

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Estimated Site	Modified	Approximate
Latitude North	Longitude West	Date	Magnitude (M_L)	PGA (g)	Mercalli Intensity	Distance From Site mi (km)
34.5	119.67	06/25/1855	4.3	0.021	IV	53.5(86.2)
34.5	119.67	07/09/1885	4.3	0.021	IV	53.5(86.2)
35.705	120.335	6/28/1966	4.1	0.019	IV	54.0(86.9)
34.333	119.833	6/26/1933	4.3	0.021	IV	54.3(87.3)
34.333	119.833	6/26/1933	4.3	0.021	IV	54.3(87.3)
34.707	121.377	12/3/1969	4	0.018	IV	54.4(87.5)
34.35	119.767	11/10/1940	4	0.018	IV	55.9(90.0)
34.649	121.389	11/10/1969	4	0.018	IV	56.3(90.6)
34.4	119.7	7/6/1926	4	0.018	IV	56.4(90.7)
34.4	119.7	8/26/1927	4	0.018	IV	56.4(90.7)
34.4	119.7	03/25/1806	5	0.03	V	56.4(90.7)
34.4	119.7	6/24/1926	4	0.018	IV	56.4(90.7)
34.4	119.7	8/9/1926	4	0.018	IV	56.4(90.7)
35.643	120.951	6/20/2009	4.4	0.022	IV	56.7(91.2)
35.75	120.45	12/31/1967	4.3	0.02	IV	56.7(91.3)
35.75	120.33	3/16/1922	4.5	0.023	IV	57.1(92.0)
35.75	120.33	8/18/1922	5	0.029	V	57.1(92.0)
35.2	119.5	6/9/1928	4	0.017	IV	57.2(92.0)
35.2	119.5	12/1/1920	4.6	0.024	IV	57.2(92.0)
34.3	119.8	7/3/1925	5.3	0.034	V	57.2(92.1)
34.3	119.8	6/29/1925	6.25	0.057	VI	57.2(92.1)
34.3	119.8	7/3/1925	5.3	0.034	V	57.2(92.1)
34.653	121.41	11/9/1969	4.1	0.018	IV	57.3(92.3)
34.325	119.761	8/9/1956	4	0.017	IV	57.4(92.4)
34.744	121.446	11/5/1969	4.5	0.023	IV	57.5(92.6)
35.75	120.25	3/10/1922	6.5	0.064	VI	57.9(93.1)
35.75	120.67	10/03/1888	4.3	0.02	IV	58.0(93.3)
35.75	120.67	01/14/1855	4.3	0.02	IV	58.0(93.3)
35.77	120.47	11/9/1929	4.4	0.021	IV	58.1(93.5)
35.6	121.1	02/01/1853	5	0.029	V	58.9(94.7)
34.347	119.696	8/13/1978	5.1	0.03	V	59.0(94.9)
35.647	121.026	12/22/2003	4.4	0.021	IV	59.1(95.1)
35.77	120.25	10/31/1942	4	0.017	IV	59.2(95.3)
35.77	120.67	2/23/1931	4.1	0.018	IV	59.3(95.5)
35.77	120.67	2/23/1931	4.5	0.022	IV	59.3(95.5)
34.609	121.435	11/5/1969	5.6	0.039	V	59.7(96.1)
35.645	121.053	12/22/2003	4.6	0.023	IV	59.8(96.2)
35.654	121.045	12/23/2003	4.7	0.024	V	60.1(96.7)
35.8	120.45	8/12/1967	4.1	0.018	IV	60.2(96.8)
34.317	119.7	10/21/1953	4	0.017	IV	60.2(96.9)
35.8	120.33	6/14/1934	4.5	0.022	IV	60.6(97.5)
35.8	120.33	6/5/1934	5	0.028	V	60.6(97.5)
35.8	120.33	6/8/1934	4.5	0.022	IV	60.6(97.5)
35.8	120.33	6/5/1934	4.3	0.019	IV	60.6(97.5)

Table 3
Historic Earthquake Catalogue Data Summary

Earthquake Location		Earthquake	Earthquake	Estimated Site	Modified	Approximate
Latitude North	Longitude West	Date	Magnitude (M_L)	PGA (g)	Mercalli Intensity	Distance From Site mi (km)
35.8	120.33	6/5/1934	4	0.017	IV	60.6(97.5)
35.8	120.33	6/14/1934	4	0.017	IV	60.6(97.5)
35.8	120.33	6/14/1934	4	0.017	IV	60.6(97.5)
35.8	120.33	6/5/1934	4.3	0.019	IV	60.6(97.5)
35.8	120.33	6/8/1934	6	0.048	VI	60.6(97.5)
35.8	120.33	12/28/1939	5	0.028	V	60.6(97.5)
35.8	120.33	6/10/1934	4.5	0.022	IV	60.6(97.5)
35.8	120.33	6/8/1934	4	0.017	IV	60.6(97.5)
35.8	120.33	6/8/1934	4	0.017	IV	60.6(97.5)
35.8	120.33	6/8/1934	5	0.028	V	60.6(97.5)
35.806	120.348	9/28/2004	4.8	0.025	V	60.9(98.0)
34.5	121.4	4/3/1944	4	0.016	IV	61.2(98.5)
34.754	121.515	10/28/1969	4	0.016	IV	61.2(98.5)
35.651	121.087	10/2/2005	4	0.016	IV	61.2(98.6)
35.652	121.093	12/25/2003	4	0.016	IV	61.5(99.0)
35.819	120.364	9/28/2004	6	0.047	VI	61.7(99.3)
35.82	120.37	7/31/1961	4.7	0.024	IV	61.7(99.3)
34.5	119.5	8/5/1930	5	0.028	V	61.8(99.5)
34.5	119.5	12/5/1920	4.5	0.021	IV	61.8(99.5)
34.5	119.5	6/29/1926	5.5	0.036	V	61.8(99.5)

Summary

Earthquake Magnitude Range (M_L):	
Minimum	4.00
Maximum	9.00
Site Coordinates:	
Latitude:	34.9284
Longitude:	120.4236
Search Time Period:	1800 - 2012
Approx. Search Radius in mi(km):	62.2 (100)
Nearest Earthquake Distance in mi(km):	3.7 (6.0)
Largest Earthquake Magnitude (M_L):	7.9
Largest Estimated Site Acceleration (g)	0.322

Earthquake Magnitudes and Exceedances

Earthquake Magnitude (M_L)	Number of Times Exceeded	Cumulative No./Year	Cumulative Estimated Recurrence Interval (years)
4	152	0.71362	1.40
4.5	58	0.2723	3.67
5	36	0.16901	5.92
5.5	18	0.08451	11.83
6	8	0.03756	26.62
6.5	3	0.01408	71.02
7	2	0.00939	106.50
7.5	2	0.00939	106.50

Table 3
Historic Earthquake Catalogue Data Summary

Notes: - **Red Bold** text indicates the maximum magnitude (7.9 ML from the 1857 Fort Tejon Earthquake) and maximum site acceleration (0.322 g from the 1927 Lompoc Earthquake) .

- The data presented in this table are from the data file "ALLQUAKE" from the EQSEARCH computer program (Blake 2000). The data file is based on information from the California Geologic Survey (CGS) computerized historic earthquake catalogue for the State of California compiled through December 2012.

g - Standard acceleration of gravity where g = 9.81 meters/second as estimated using a deterministic method.

km - kilometer

mi - mile

MM - Modified Mercalli Scale. An earthquake intensity scale having twelve divisions ranging from I (not felt by people) to XII (damage nearly total).

IV	- Felt indoors by many to all people, and outdoors by few people. Some awakened. Dishes, windows, and doors disturbed, and walls make cracking sounds. Chandeliers and indoor objects shake noticeably. The sensation is more like a heavy truck striking building. Standing automobiles rock noticeably. Dishes and windows rattle alarmingly. Damage none.
V	- Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	- Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	- Everybody runs outdoors. Damage negligible in buildings of good design and construction slight to moderate in well built ordinary structures; considerable in poorly built or badly designed structures. Some chimneys broken. Noticed by persons driving motor cars.
VIII	- Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.
IX	- Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

M_L - Richter Scale. A logarithmic scale of earthquake magnitude where the magnitude is the logarithm to base ten of the maximum seismic wave amplitude (in thousandths of a millimeter) measured on a standard seismograph 100 kilometers from the earthquake epicenter.

PGA - Peak Ground Acceleration from the probabilistic method in EQSEARCH (Blake 2000) using the ground attenuation method for a California Buildingd Code Site Class “D” stiff soil profile (Boore et. al, 1997).

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Table 6
Site Reconnaissance Features

Number	Item	Location
1	Series of active concrete residential septic tanks.	East of Main Residence near kitchen window.
2	Potential abandoned septic tank	Underlying driveway east of the Main Residence.
3	Underground laundry room wastewater septic tank.	Under northeast corner of Main Residence.
4	Abandoned cesspool	Near northeastern corner of orchard on the east side of the Main Residence.
5	Pole mounted transformer	In citrus orchard south of eastern Mobile Home.
6	Eastern Mobile Home septic tank	Approximately 10-15 feet east of eastern Mobile Home.
7	Abandoned water well	Southwest of Workshop.
8	Power pole and former location of three pole mounted transformers	Northwest of Workshop.
9	Abandoned septic tank	South of Horse Barn.
10	Bonfire area	North of Horse Barn and south of Tin Shed.
11	Former location of removed 500-gallon (approximate) gasoline fuel above ground storage tank (AST) removed in 1980's.	Southwest corner of Garage.
12	Former location of 500-gallon (approximate) diesel fuel UST removed in 1980's.	Southeast corner of Garage.
13	Oil Change Sump.	Inside of Garage.
14	Former location of two 2-story Bunkhouses removed in 1970's. Abandoned septic tank and cesspool likely present.	In orchard west of Garage and Storage Shed.
15	Former 500-gallon (approximate) weed oil AST removed in the 1970's without a removal permit.	Located along northwest corner of Garage.
16	Former pesticide mixing area.	Located near southwest corner of Tin Shed.
17	Smudge Pot	Inside of Tin Shed at northwest corner.
18	Soil/ floor staining observed.	Located inside of Tin Shed.
19	Old concrete footing from removed wind electric machine.	Located north of Tin Shed.
20	Abandoned septic tank.	North of Office.
21	Abandoned redwood septic tank	Northwest of Office.
22	Apartment septic tank	North of Apartment.
23	Oil residue under Apartment garage. Area was backfilled with concrete slurry.	Inside Apartment garage at southeast corner.
24	Former location of 250-gallon (approximate) gasoline UST and pump.	South of the Apartment.
25	500-gallon (approximate) propane AST owned and operated by AAA Propane Services, Inc. (AAA).	Northwest corner of Apartment.
26	Septic Tank	East of western Mobile Home.
27	500-gallon (approximate) propane AST owned and operated by AAA	West of Main Residence.
28	Abandoned 500-gallon (approximate) heating oil AST.	West of Main Residence.
29	Pole mounted transformer	In orchards west of Main Residence.
30	500-gallon (approximate) propane AST owned and operated by AAA	North of eastern Mobile Home.
31	Recreational Vehicle	East of the Horse Barn.

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A USGS ANALYSES OUTPUT

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Design Maps Detailed Report

ASCE 7-10 Standard (34.2077°N, 119.1554°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_S = 2.596 g
From Figure 22-2 [2]	S_1 = 0.938 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_s = 2.596 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.938 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.596 = 2.596$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.938 = 1.407$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

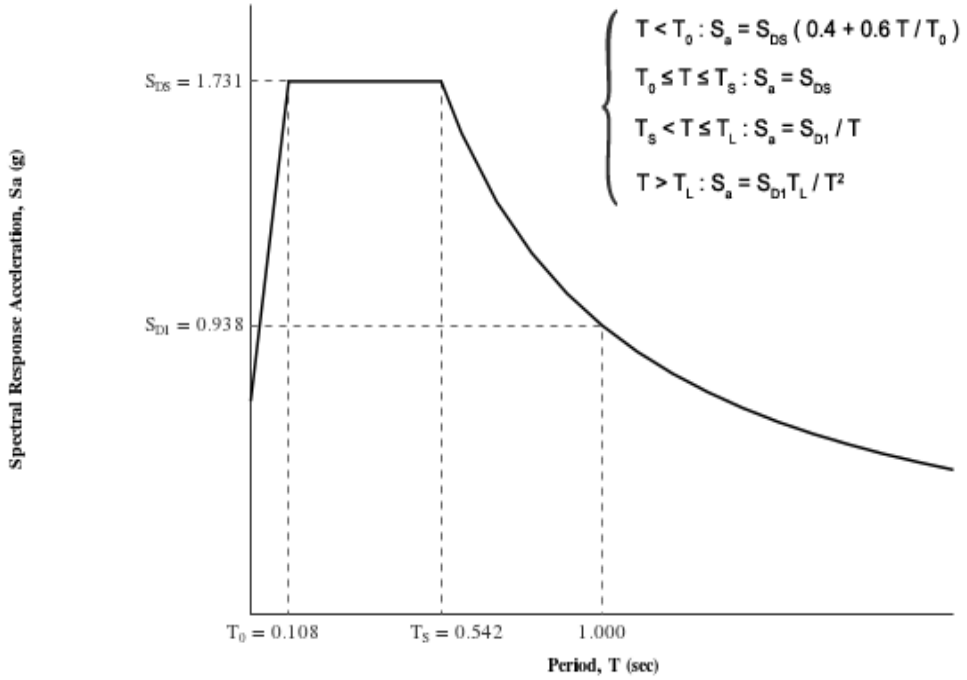
Equation (11.4–3): $S_{DS} = ⅔ S_{MS} = ⅔ \times 2.596 = 1.731$ g

Equation (11.4–4): $S_{D1} = ⅔ S_{M1} = ⅔ \times 1.407 = 0.938$ g

Section 11.4.5 — Design Response Spectrum

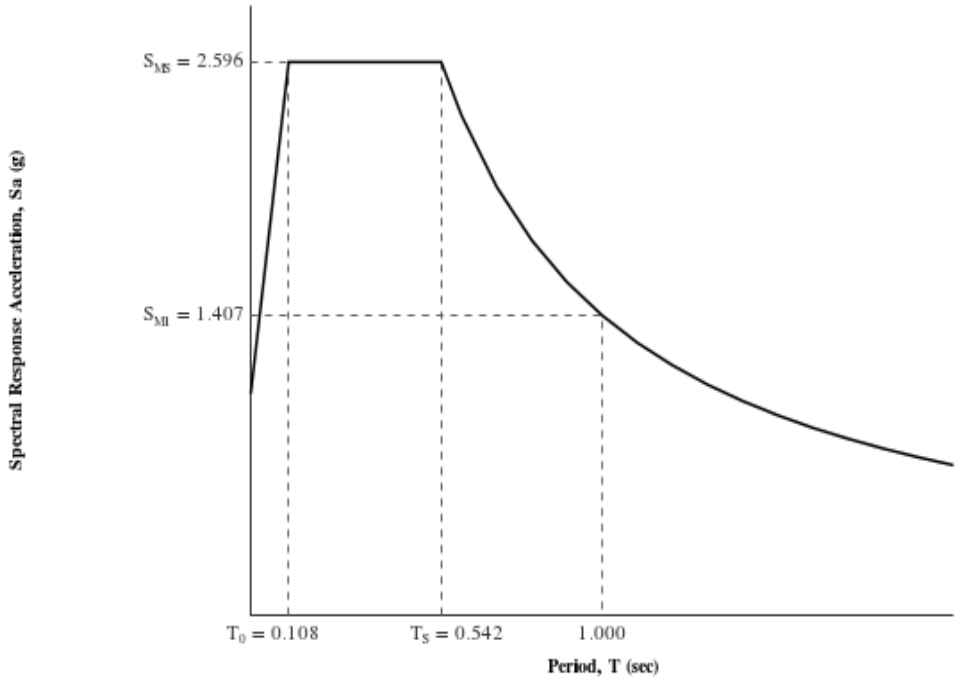
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.020

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.020 = 1.02$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.020 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.910

From Figure 22-18 [6] C_{R1} = 0.909

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.731 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.938 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

34.2077

Time Horizon

Return period in years

2475

Longitude

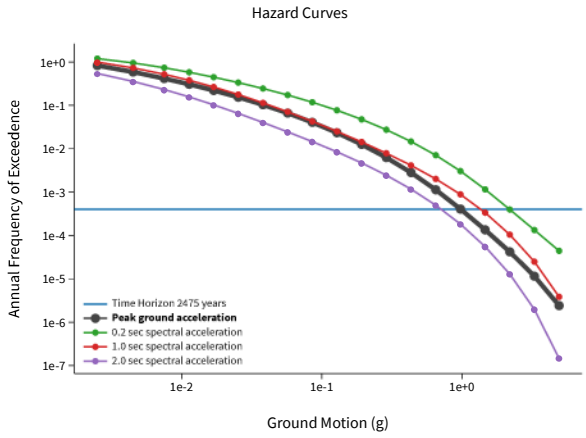
Decimal degrees, negative values for western longi…

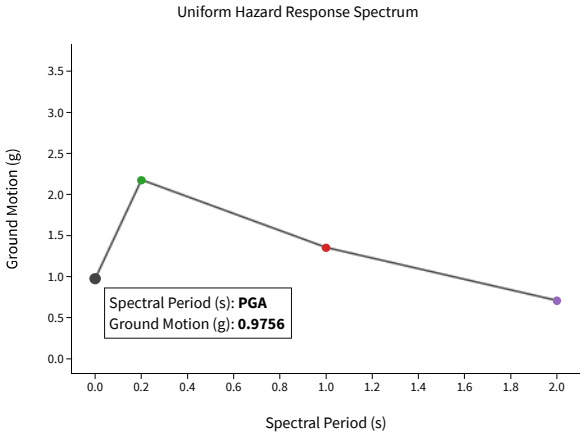
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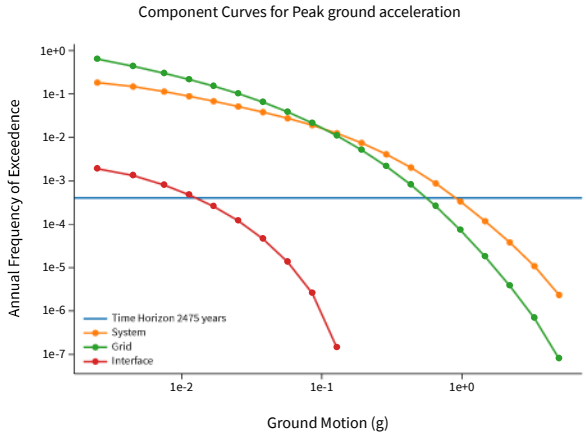
Site Class

259 m/s (Site class D)

Hazard Curve





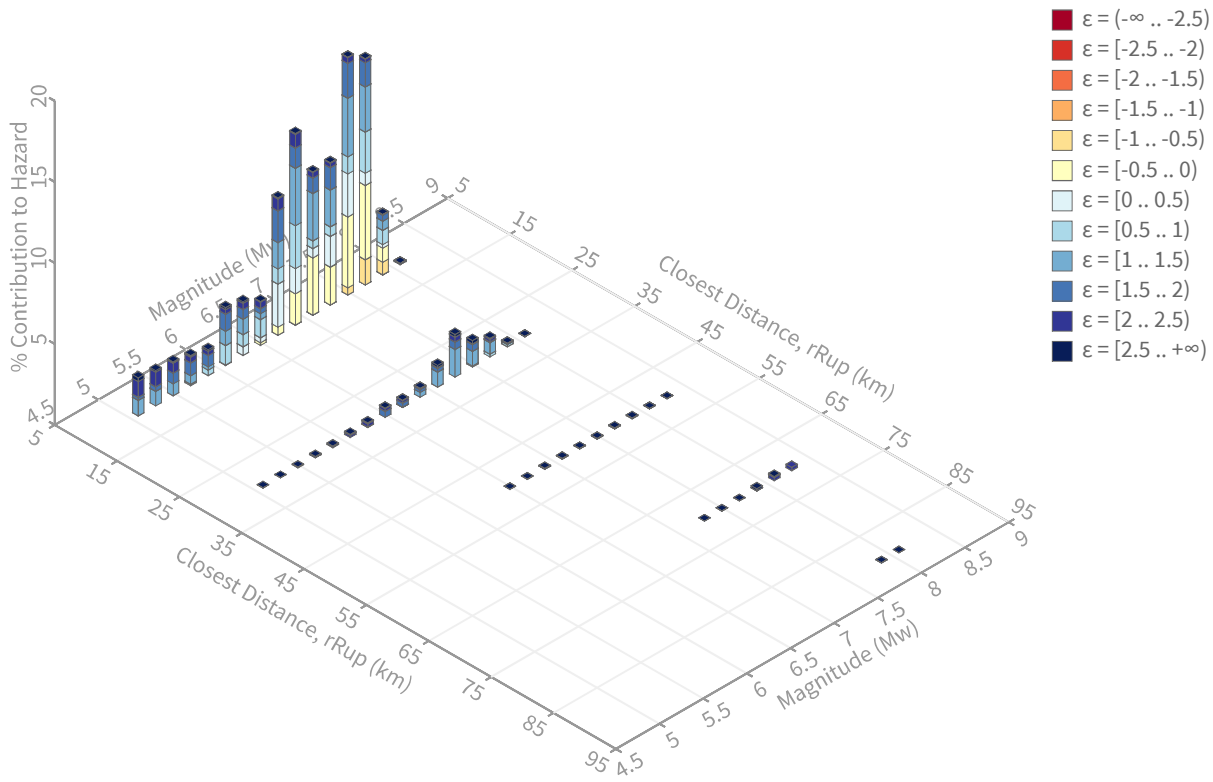


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.97561235 g

Recovered targets

Return period: 2817.3196 yrs
Exceedance rate: 0.0003549473 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.11 %

Mean (for all sources)

r: 10.78 km
m: 7.01
ε_0: 0.93 σ

Mode (largest r-m bin)

r: 9.19 km
m: 7.53
ε_0: 0.57 σ
Contribution: 14.67 %

Mode (largest ε_0 bin)

r: 9.02 km
m: 7.68
ε_0: -0.22 σ
Contribution: 4.59 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							42.70
Simi-Santa Rosa [6]		5.58	6.98	0.59	119.102°W	34.222°N	71.55	10.04
Oak Ridge (Onshore) [0]		6.66	7.36	0.50	119.167°W	34.261°N	349.76	9.57
Oak Ridge (Offshore) [5]		11.16	6.87	1.03	119.273°W	34.240°N	288.42	5.02
Oak Ridge (Onshore) [1]		9.79	7.55	0.61	119.113°W	34.285°N	24.15	3.73
Ventura-Pitas Point [3]		10.13	7.51	0.59	119.195°W	34.290°N	337.93	3.62
Red Mountain [0]		20.72	7.13	1.42	119.304°W	34.347°N	318.65	1.75
Malibu Coast (Extension) alt 2 [3]		15.27	7.54	1.00	119.168°W	34.070°N	184.46	1.41
Ventura-Pitas Point [2]		10.13	7.18	0.76	119.195°W	34.290°N	337.93	1.05
UC33brAvg_FM31	System							39.84
Simi-Santa Rosa [6]		5.58	7.01	0.58	119.102°W	34.222°N	71.55	10.85
Oak Ridge (Onshore) [0]		6.66	7.43	0.48	119.167°W	34.261°N	349.76	9.70
Ventura-Pitas Point [3]		10.13	7.58	0.56	119.195°W	34.290°N	337.93	4.27
Oak Ridge (Onshore) [1]		9.79	7.65	0.58	119.113°W	34.285°N	24.15	3.49
Red Mountain [0]		20.72	7.23	1.36	119.304°W	34.347°N	318.65	1.97
Ventura-Pitas Point [2]		10.13	6.71	1.00	119.195°W	34.290°N	337.93	1.56
Channel Islands Thrust [0]		16.34	6.87	1.50	119.265°W	34.044°N	209.10	1.47
Malibu Coast (Extension) alt 1 [5]		15.27	7.33	1.10	119.172°W	34.068°N	185.76	1.11
UC33brAvg_FM31 (opt)	Grid							8.80
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PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
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UC33brAvg_FM32 (opt)	Grid							8.66
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.248		6.56	5.73	1.36	119.155°W	34.248°N	0.00	1.21
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07
PointSourceFinite: -119.155, 34.257		7.21	5.72	1.43	119.155°W	34.257°N	0.00	1.07

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B PIPELINE RISK ANALYSIS

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PLACEWORKS

TECHNICAL MEMORANDUM

DATE January 14, 2019

TO James R. Steele, P.G., C.E.G., C.H.G.
Associate Director

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111

FROM Steve Bush, P.E., Senior Engineer

SUBJECT Maulhardt Ranch High School No. 8
Water Pipeline Safety Hazard Assessment
TETR-02.0

Introduction

PlaceWorks was retained by Tetra Tech Inc. on behalf of the Oxnard Union High School District (District) to conduct a Water Pipeline Safety Hazard Assessment (WPSHA) for Maulhardt Ranch High School No. 8. The District proposes to develop a new high school on an approximately 48.2-acre site within the 108-acre Maulhardt Ranch property at 1853 Camino Del Sol in the City of Oxnard. Four large volume (12-inch diameter and larger) water pipelines were identified within 1,500 feet of the project site. The WPSHA evaluates potential flooding impacts to the project site, and was conducted as required by California Code of Regulations (CCR), Title 5, Section 14010(h).

1.1 PROJECT LOCATION

The project site is located at the northeast corner of N. Rose Avenue and Camino Del Sol in the City of Oxnard, Ventura County, California (Figure 1). The site is relatively flat; gently sloping from northeast to southwest. Site elevations are between approximately 60 and 70 feet above mean sea level (amsl). The property is bounded by Camino Del Sol to the south, N. Rose Avenue to the west, and predominately residences to the north and east. Rio Rosales Elementary School is also located east of the proposed school site. Commercial and residential uses are located to the south across from Camino Del Sol. The remaining land uses within the Maulhardt Ranch property include residences, open space, parks, and neighborhood commercial. US Route 101 is approximately 1 mile to the north of the school site.

2. Water Pipeline Safety Hazard Assessment

2.1 REGULATORY REQUIREMENTS

Under Education Code Section 17251, the California Department of Education (CDE) has authority to approve the acquisition of proposed school sites. The school district must obtain CDE approval for sites to receive state funds under the state's School Facilities Program administered by the State Allocation Board. CDE standards and regulations for this process are presented in CCR, Title 5, Sections 14010, 14011, and 14012. Information on assessing safety hazard related to pipelines is discussed in Section 14010 (h):

> *The site shall not be located near an above-ground water or fuel storage tank or within 1,500 feet of the easement of an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission.*

No high pressure natural gas pipelines or hazardous liquid pipelines were identified within 1,500 feet of the project site.[1] The CDE School Site Selection and Approval Guide also contains provisions for evaluating high-pressure water pipelines:[2]

> *To ensure the protection of students, faculty, and school property if the proposed school site is within 1,500 feet of the easement of an aboveground or underground pipeline that can pose a safety hazard, the school district should obtain the following information from the pipeline owner and operator:*
>
> - *Pipeline alignment, size, type of pipe, depth of cover,*
> - *Operating water pressures in pipelines near the proposed school site,*
> - *Estimated volume of water that might be released from the pipeline should a rupture occur on the site, and*
> - *Owner's assessment of the structural condition of the pipeline.*

[1] National Pipeline Mapping System (NPMS), 2018. Hazardous liquids pipeline map produced by the NPMS Public Viewer at https://pvnpms.phmsa.dot.gov/PublicViewer/. Accessed on January 4, 2019.

[2] California Department of Education (CDE), 2000. Resources for School Facilities Planning, School Selection and Approval Guide. Prepared by School Facilities Planning Division, CDE, Sacramento, CA.

2.2 ASSESSMENT METHODOLOGY

To meet the requirements of CCR Title 5 Sections 14010 (d) and (h) and CDE's policy on pipelines, this WPSHA is designed to meet the following objectives:

» Identify all high pressure/high volume water pipelines within 1,500 feet of the proposed school site and evaluate the potential for flooding, and
» Where appropriate, identify and develop mitigation measures to reduce flooding impacts to acceptable levels.

The CDE has developed risk analysis procedures for evaluating flooding associated with releases from large diameter water pipelines, as described in CDE's Guidance Protocol for School Site Pipeline Risk Analysis.[3] A safety issue associated with large diameter water pipelines is the potential for flooding. Also, releases from underground water pipelines can cause subterranean erosion of saturated soil, leading to subsidence or formation of a sinkhole. The most likely cause of failure is a large magnitude earthquake and associated strong ground shaking.

Although no specific criteria have been established by the CDE as a threshold of significance for flooding at a project site, a water depth of 12 inches or greater is a trigger that could warrant further evaluation.[4]

2.3 PIPELINE LOCATION AND OPERATIONAL DATA

Based on maps provided by Tetra Tech and United Water Conservation District (UWCD), there are four high volume (≥12 inch diameter) water pipelines within 1,500 feet of the project site, as summarized in Table 1. The alignments of the pipelines are shown on Figure 1.

Table 1 Water Pipelines

PIPELINE DIAMETER	PIPELINE LOCATION	OWNER	MATERIAL OF CONSTRUCTION
12- inch	N. Rose Avenue	City of Oxnard	Polyvinyl chloride (PVC)
12- inch	Camino Del Sol	City of Oxnard	Asbestos Cement Pipe (ACP)
12- inch	Kohala Street	City of Oxnard	ACP
42-inch	N. Rose Avenue	United Water Conservation District	Cement Mortar Lined and Coated (CCLC) Steel Pipe

[3] California Department of Education (CDE), 2007. Guidance Protocol for School Site Pipeline Risk Analysis, Prepared by URS Corporation. Dated February 2007.

[4] Ibid.

2.4 WATER PIPELINE FLOODING ANALYSIS

The CDE requires that the risk of releases from large volume (≥12 inches) water pipelines be evaluated. The CDE Guidance Protocol for School Pipeline Risk Analysis provides a methodology for evaluating the potential for flooding. A probability analysis is not required.

All water pipelines listed in Table 1 are located beneath streets. According to the preliminary grading and site plan for the project, curbing will be installed on all the streets surrounding the development, including the east side of N. Rose Avenue. Additionally, N. Rose Avenue will undergo improvements and street widening with project implementation.

A pipeline flooding analysis was conducted for these pipelines to determine the depth and location of water flow within the street in the event of a pipeline leak or rupture. For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. In addition, no credit was taken for the presence of storm drains along these streets. Release impacts were calculated based on the procedures specified in the CDE manual. The release rate was determined by multiplying the pipe area by an assumed velocity of 5 feet per second (fps). Then the release rate was compared to the carrying capacity of the street, taking into account longitudinal slope, to determine if the water would be contained within the confines of the street curbing.[5] The result is provided in Table 2.

Table 2 Street Flow

PIPELINE DIAMETER	PIPELINE LOCATION	RELEASE RATE (CFS)	STREET WIDTH (FT)	DEPTH OF FLOW IN STREET (IN)	EXCEEDS STREET CARRYING CAPACITY?[1]
12- inch	N. Rose Avenue	3.93	104	3.8	No
12- inch	Camino Del Sol	3.93	72	4.1	No
12- inch	Kohala Street	3.93	40	4.1	No
42-inch	N. Rose Avenue	48.1	104	9.8	Yes

[1] Assuming 8-inch curbing for arterial streets and 6-inch curbing for residential streets.

Assuming a standard 8-inch curb for arterial roadways (e.g., N. Rose Avenue and Camino Del Sol) and 6-inch curb for all residential streets (e.g., Kohala Street), the water released from a full-flow rupture of the 12-inch water mains would be entirely contained within the confines of the curbing and would not result in flooding at the school site. However, a release from the 42-inch UWCD pipeline along N. Rose Avenue would exceed the carrying capacity of the street, and could potentially impact the project site.

The predicted worst-case depth of flow in the street was 9.8 inches for a full release of the 42-inch water line. Assuming a standard 8-inch curb for N. Rose Avenue, released water from the 42-inch

[5] Jeffers & Associates, 2006. Modified Manning's Equation Solver. Version 3.0.

water line would exceed the carrying capacity of the street by 1.8 inches. However, the CDE has postulated a level of concern as a water depth of 12 inches or greater at the school site. Therefore, the calculated water depth of 1.8 inches would be less than CDE's level of concern and would not pose a significant risk to occupants at the project site in the unlikely event of a water pipeline break.

For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. Given that the pipeline is buried approximately 2 to 3 feet bgs, only a portion of the water released from the pipeline would reach the surface.[6] In addition, no credit was taken for the existing surface topography and the presence of storm drains along the streets.

3. Conclusions

In summary, a potential break in any of the water pipelines located within 1,500 feet of the site would not result in significant flooding at the project site.

Respectfully submitted,

PlaceWorks

Steve Bush, PE
Senior Engineer



[6] United Water Conservation District (UWCD). Correspondence provided by Robert Richardson, Associate Engineer, to Dina El Chammas Gass, Project Engineer, PlaceWorks. Dated January 4, 2019.



Source: ESRI, 2019

Figure 1
Site Location and Pipeline Map

Appendix A – Water Analysis

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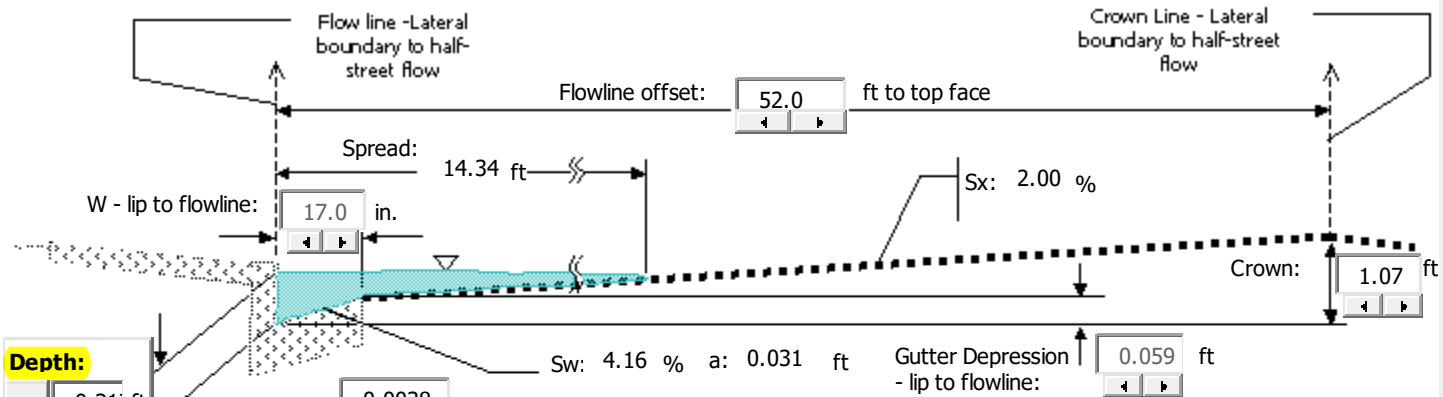
Modified Manning's Equation Solver

Version: 3.0<>2/26/2018 4:59:12 PM

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Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.61 %

Length of curb opening inlet: 12.0 ft

Lt: 13.48 ft

80 % Clear Efficiency 89.4 %

Curb opening flowby: 0.42 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.67 ft/s

Eo: 99.96 %

Rs: 19.71 % Rf: 100.00 %

Side flow captured: 0.04 cfs Frontal captured: 0.21 cfs

Total combined CB flowby: 0.17 cfs

Street Parameters:

Q: 3.93 cfs

K: 63.8

Vel: 1.89 ft/s

Eo: 26.0 %

W/T: 0.0988

Standard Manning's:

Q: 3.23 cfs

K: 52.5

Vel: 1.56 ft/s

Rh: 0.14 ft

Area: 2.08 sf

Street Flow - N Rose Avenue
12-inch Water Main

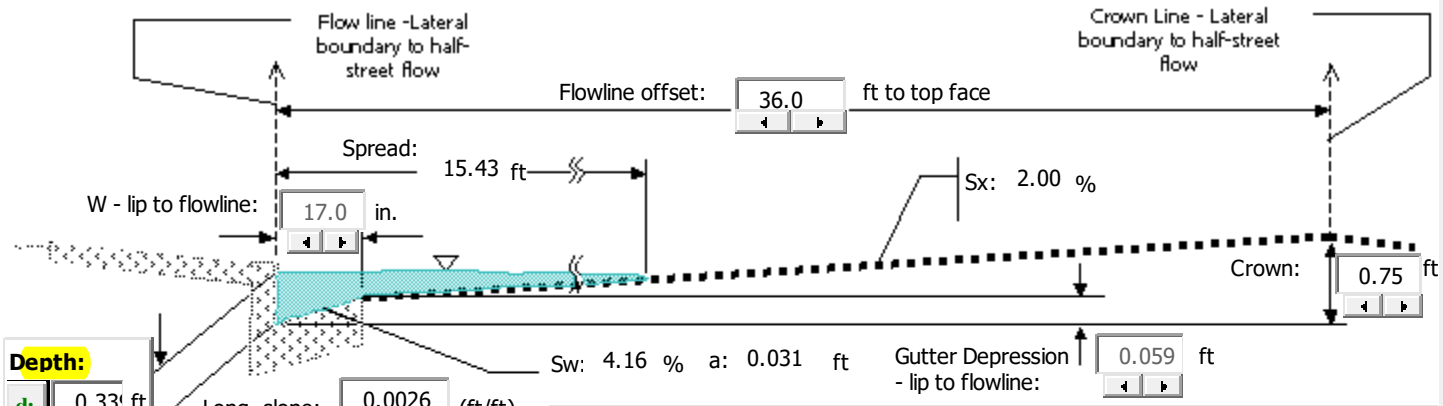
Modified Manning's Equation Solver

Version: 3.0<>2/26/2018 4:59:12 PM

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Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	77.2	
Vel:	1.64	ft/s
Eo:	24.2	%
W/T:	0.0918	

Standard Manning's:

Q:	3.24	cfs
K:	63.6	
Vel:	1.35	ft/s
Rh:	0.15	ft
Area:	2.40	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.37 %

Length of curb opening inlet: 12.0 ft

Lt: 12.36 ft

80 % Clear Efficiency 93.3 %

Curb opening flowby: 0.27 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.30 ft/s

Eo: 100.00 %

Rs: 25.87 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.13 cfs

Total combined CB flowby: 0.10 cfs

Street Flow - Camino Del Sol
12-inch Water Main

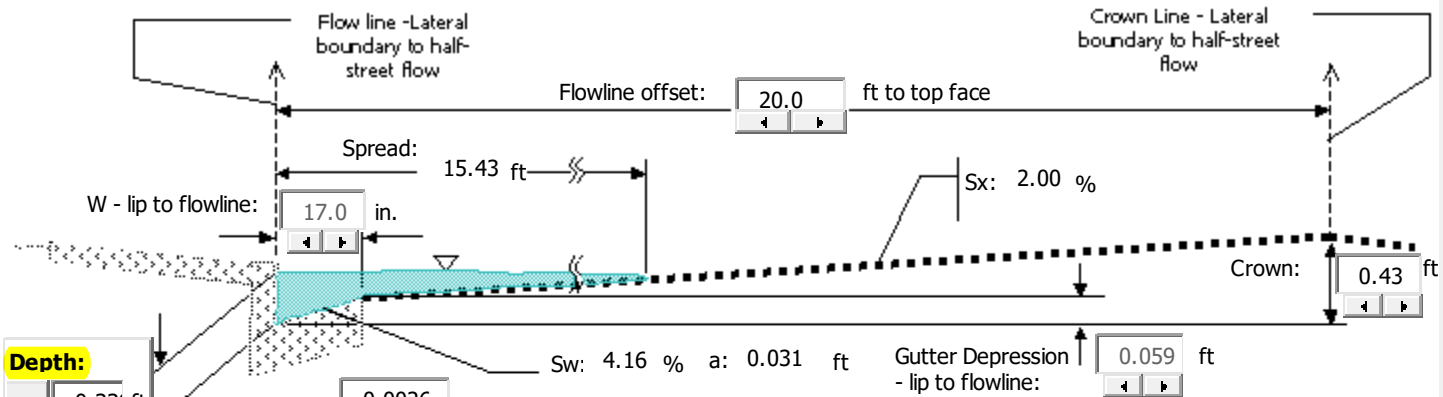
Modified Manning's Equation Solver

Version: 3.0<>1/10/2019 3:39:32 PM

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Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	77.1	
Vel:	1.64	ft/s
Eo:	24.2	%
W/T:	0.0918	

Standard Manning's:

Q:	3.24	cfs
K:	63.5	
Vel:	1.35	ft/s
Rh:	0.15	ft
Area:	2.40	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.37 %

Length of curb opening inlet: 12.0 ft

Lt: 12.36 ft

80 % Clear Efficiency 93.3 %

Curb opening flowby: 0.26 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.29 ft/s

Eo: 100.00 %

Rs: 25.86 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.13 cfs

Total combined CB flowby: 0.10 cfs

Street Flow - Kohala Street
12-inch Water Main

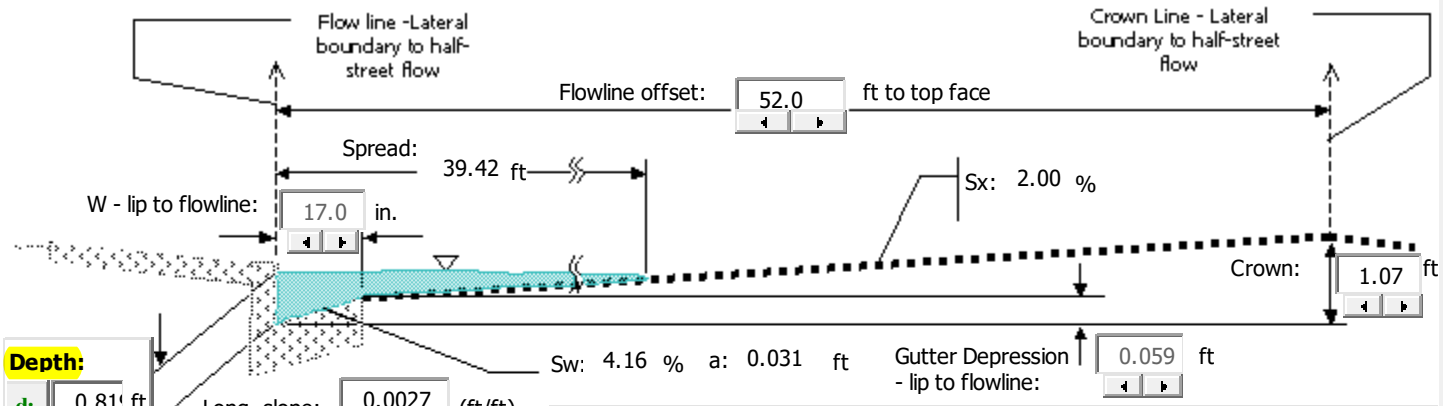
Modified Manning's Equation Solver

Version: 3.0<>1/10/2019 3:39:32 PM

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Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 3.33 %

Length of curb opening inlet: 12.0 ft

Lt: 47.63 ft

80 % Clear Efficiency 33.3 %

Curb opening flowby: 32.08 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 3.99 ft/s

Eo: 18.36 %

Rs: 8.82 % Rf: 100.00 %

Side flow captured: 2.57 cfs Frontal captured: 2.94 cfs

Total combined CB flowby: 26.56 cfs

Street Parameters:

Q: 48.10 cfs

K: 925.7

Vel: 3.09 ft/s

Eo: 9.6 %

W/T: 0.0359

Standard Manning's:

Q: 39.82 cfs

K: 766.3

Vel: 2.56 ft/s

Rh: 0.39 ft

Area: 15.55 sf

Street Flow - N Rose Avenue
42-inch Water Pipeline

Appendix B – Agency Correspondence

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SEE MAP R-19

Site

CAMINO DEL SOL

61-220 B SHT # 1

CITY OF OXNARD

DEL REY PL

SAN JOSE ST

SAN GORGONIO AVE

GIBRALTAR ST

HALCON ST

IMPERIAL ST

JULIAN ST

SAN JACINTO ST

SAN LUIS ST

KOHALA ST

BERNOULLI CIR

BALSAM ST

CORDOVA ST

N DRISKILL ST

EVEREST ST

FEATHERSTONE ST

ALTAR ST

4"FIRE LINE

BURIED OR MISSING

BACKFLOW DEVICE

IRRIG

SEE MAP Q-20

SEE MAP S-20

SEE MAP R-21

R-20	City of Oxnard	0 180 360 FEET	WATER ATLAS	June 2011	§	FH: 35 W V: 93	R-20

SEE MAP Q-19

FLORENTINA DR

SHT # 34

8" PVC

12" PVC

42" UWCD

90-57A SHT # 49

CITY OF OXNARD

95-06A SHT # 36

ABANDONED

CAMINO DEL SOL

91-171A SHT # 9

95-06A SHT # 30

4" BLOWOFF VALVE

12"X10" RED.

CITY OF OXNARD

10" ACP

12" ACP

61-222 B SHT # 2

4" RP

AR

GLORIA CT

H-1

H-2

H-3

H-4

H-5

H-6

H-7

H-8

H-9

H-10

H-11

H-12

H-13

H-14

H-15

H-16

H-17

H-18

H-20

H-21

H-22

61-221 B SHT # 1

4" PVC

4"FIRE LINE

4" DEVICE

N ROSE AVE

SAN GORGONIO AVE

8" ACP

6" CIP

CARMELITA CT

DOLORES CT

ELIZA CT

ALPINE ST

BALSAM ST

E FIRST ST

Site

SEE MAP P-20

SEE MAP R-20

SEE MAP Q-21

Q-20	City of Oxnard	0 160 320 FEET	WATER ATLAS		February 2010	§	FH: 21 W V: 44	Q-20

Steve Bush

From: Robert Richardson <robertr@unitedwater.org>
Sent: Friday, January 4, 2019 1:10 PM
To: Dina El Chammas
Cc: Maryam Bral; Christy Ramirez; Mike Ellis; Craig Morgan; Adrian Quiroz
Subject: RE: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard
Attachments: OH-100-024.tif; OH-100-025.tif

Hello Ms. Chammas,

I am responding to your inquiry regarding the 42-inch UWCD-owned pipeline on Rose Ave. The pipeline material is cement mortar lined and coated cylindrical steel with spirally wound reinforcing rods. Attached are drawings for your reference. If you have any additional questions, please do not hesitate to contact me.

Thank you and respectfully,

Robert Richardson, PE
Associate Engineer
United Water Conservation District
(805) 317-8982 ext 124
robertr@unitedwater.org

From: Mike Ellis
Sent: Friday, January 4, 2019 12:47 PM
To: Craig Morgan <craigm@unitedwater.org>; Robert Richardson <robertr@unitedwater.org>; Adrian Quiroz <AdrianQ@unitedwater.org>
Cc: Maryam Bral <Maryamb@unitedwater.org>; Christy Ramirez <christyr@unitedwater.org>
Subject: Fwd: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard

Engineers,
Can you provide the requested OH pipeline information to Ms. Chammas please?

Michael Ellis
Chief Operations Officer
United Water Conservation District
3561 N. Rose Ave.
Oxnard, CA 93036
(805) 485-5114 ext. 16
mikee@unitedwater.org

Begin forwarded message:

> **From:** "Dina El Chammas" <delchammas@placeworks.com>
> **To:** "Mike Ellis" <mikee@unitedwater.org>
> **Subject: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard**
>
> Good morning,

The Oxnard Union High School District is evaluating a site for a proposed school campus, located at 1853 Camino Del Sol in the City of Oxnard. In compliance with CCR Title V Section 14010 (h), the District has contracted the services of PlaceWorks to complete a safety hazard assessment related to water pipelines 12-inches in diameter or greater located within a 1,500-foot radius of the school site. The water atlas attached shows a UWCD 42" water pipeline in North Rose Avenue directly west of the proposed school site.

Would it be possible to get more information regarding the pipeline material?

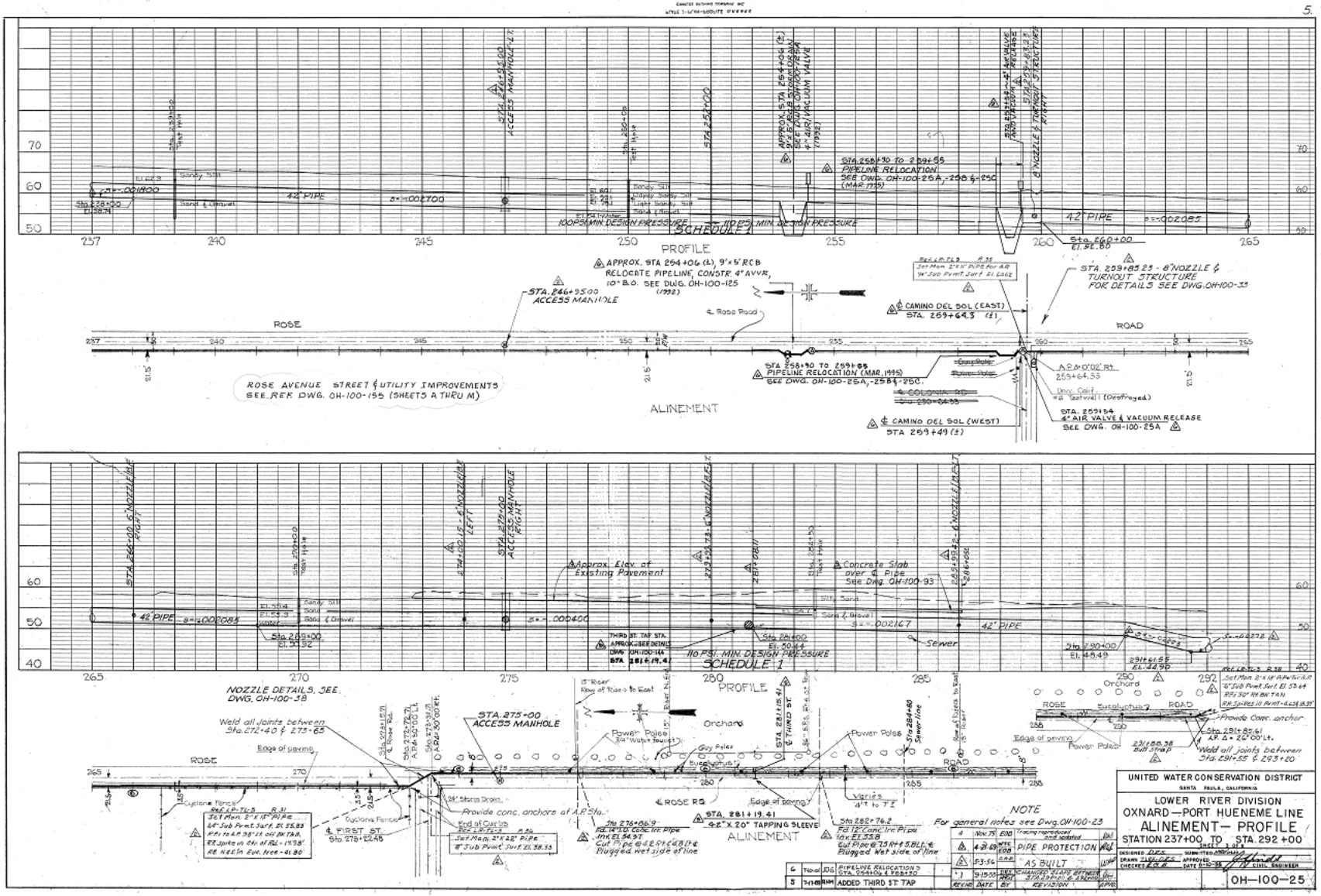
Thank you in advance,

DINA EL CHAMMAS GASS
Project Engineer/Planner, Environmental Services

3 MacArthur Place, Suite 1100 | Santa Ana, California 92707
714.966.9220 | delchammas@placeworks.com | placeworks.com

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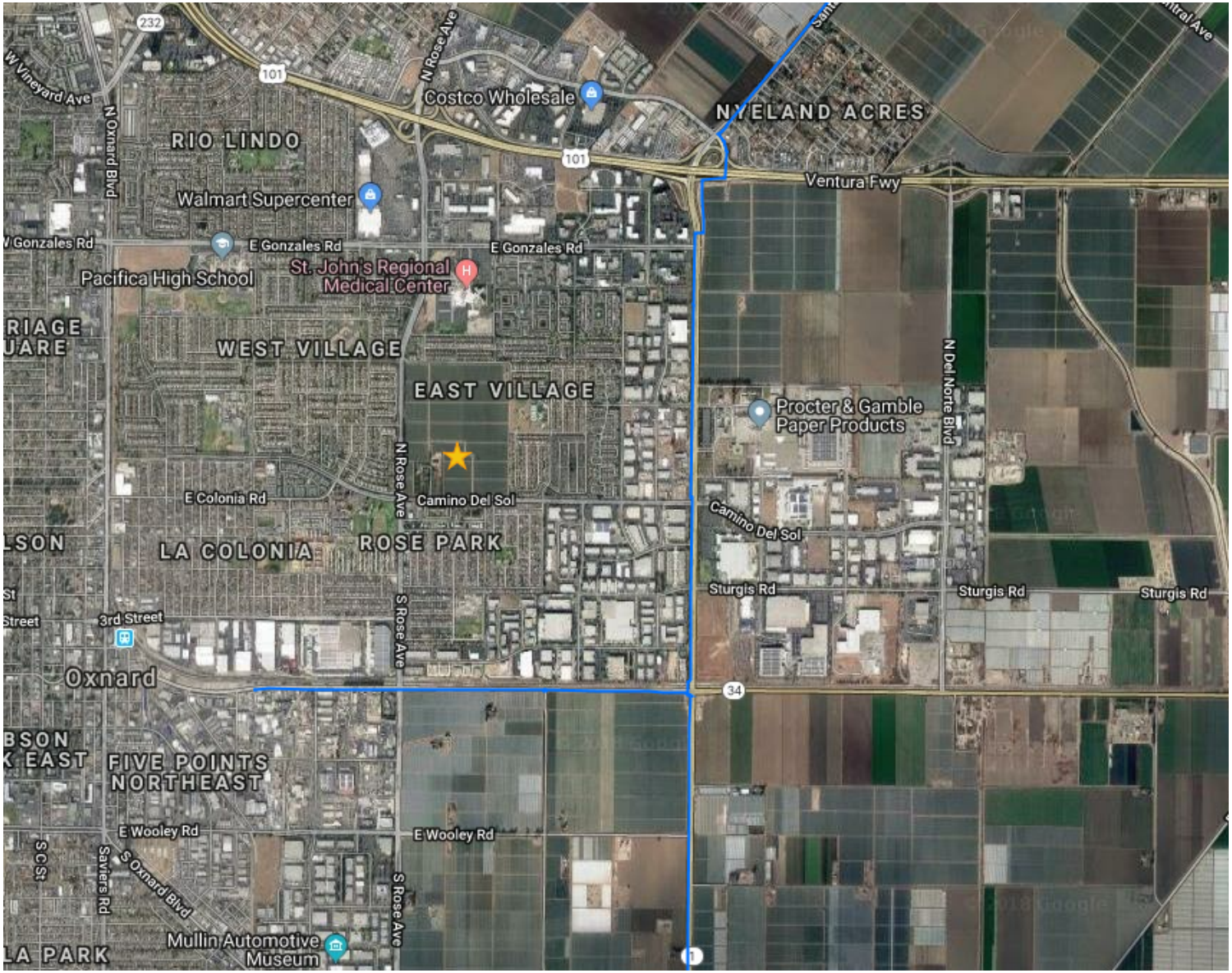
6	Tread	JDG	PIPELINE RELOCATIONS STA. 254+06 & 258+90		
5	7-11-69	RWH	ADDED THIRD ST TAP		
4	Nov 75	EMB	Tracing reproduced and updated	DAJ	
3	4-2-69	WYC	PIPE PROTECTION	WAL	
2	5-3-56	GAR	AS BUILT	WAL	
1	9-15-55	REM	CHANGED SLOPE BETWEEN STA 13+41 & 14+00	DAJ	
REVNO	DATE	BY	REVISION	APPD	

UNITED WATER CONSERVATION DISTRICT
SANTA PAULA, CALIFORNIA

LOWER RIVER DIVISION
OXNARD—PORT HUENEME LINE
ALINEMENT— PROFILE
STATION 237+00 TO STA. 292+00

SHEET 1 OF 4
DESIGNED DFS SUBMITTED
DRAWN JDG/GES APPROVED
CHECKED RSB DATE 8-10-55 CIVIL ENGINEER

OH—100—25



Legend

- Gas Transmission Pipelines
- Hazardous Liquid Pipelines

500 m
1000 ft

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: Jan 14, 2019

811 Know what's below. Call before you dig.

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F PHASE I ENVIRONMENTAL SITE ASSESSMENT

Job No. T37656

Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8 APN 214-002-059 on North Rose Avenue Oxnard, California 93030

Prepared for:

Dr. Penelope DeLeon
Superintendent
Oxnard Union High School District
309 South K Street
Oxnard, California 93030

Prepared by:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, California 93111

March 2, 2018

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1.0 INTRODUCTION

1.1 SUMMARY

This report presents the findings of a Phase I Environmental Site Assessment (ESA) prepared for the Oxnard Union High School District (OUHSD) to evaluate an approximate 48.6-acre portion of assessor's parcel number (APN) 214-002-059, a 107.25-acre property, located in the city of Oxnard California (hereinafter referred to as the Site). The Site location is shown on Figure 1. Figures 2 depicts the Site plan showing existing conditions, approximate boundary of the proposed school, and other property details. Figure 3 depicts the adjacent Maulhardt Ranch farmyard and residential areas. A conceptual plan of the proposed school is included in Appendix A (WLC Architects 2018). The Site is under consideration for acquisition by OUHSD for the proposed Oxnard High School No. 8.

This Phase I ESA was performed by Tetra Tech, Inc. (Tetra Tech), under contract with OUHSD, in accordance with ASTM International (ASTM) Standard Practice E1527-13 document entitled, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM 2013). In addition, as a conservative measure the assessment was conducted in accordance with the guidelines of proposed Title 40, Code of Federal Regulations (40 CFR) Part 312, *Standards and Practices for All Appropriate Inquiries* (AAI) (Federal Register 2015).

1.2 PURPOSE AND SCOPE

The purpose of this Phase I ESA was to evaluate potential Recognized Environmental Concerns (RECs) associated with the Site. Pursuant to the updated ASTM standard effective November 1, 2013, ASTM defines RECs as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions." This study was conducted to identify, to the extent possible and based on available information, whether former activities at or near the Site may have involved or resulted in the use, storage, disposal, and/or release of hazardous or potentially hazardous substances to the environment. Using professional judgement, Tetra Tech has developed an opinion regarding the potential for environmental concerns at the Site.

The scope of services performed for this project included the following tasks:

- Research and review of pertinent and readily available geologic and hydrogeologic literature and available historical aerial photographs and topographic maps of the Site and surrounding area;
- A reconnaissance of the Site and surrounding properties;
- Interviews with the current property owner, employees, and tenants;
- Evaluation of on-Site hazardous substance use, storage, and/or disposal;
- Interaction with appropriate municipal, regional, and state agencies to review available records and permits;
- Acquisition and review of a regulatory agency database report; and

- Preparation and submittal of this report summarizing the results of the Phase I ESA and presenting interpretations and recommendations.

1.3 METHODS OF INVESTIGATION

Literature Review. Available published and unpublished geologic, hydrogeologic, and environmental reports were reviewed. A list of these reports is presented in Section 10.0 of this report.

Topographic Map Review. Historical topographic maps obtained through Environmental Data Resources, Inc. (EDR) (EDR 2017) were reviewed to evaluate past land use and site development. These topographic maps are provided in Appendix B.

Aerial Photograph Survey. Historical aerial photographs obtained through EDR were reviewed and incorporated into this report (EDR 2017). This review consisted of examining the photographs for evidence of previous activities that may affect the environmental condition of the Site. The aerial photographs are provided in Appendix C.

Site Reconnaissance. Site reconnaissance, consisting of a walk-through visit of the Site and surrounding area. During the reconnaissance, visible indications of hazardous substance use, storage, and/or disposal practices were evaluated at the Site and adjacent areas. Photographs of the Site taken during the reconnaissance are provided in Appendix D.

Interviews. Interviews were conducted by email, telephone, or in person with various regulatory agency representatives (see below), and current Site occupants (business owners/managers) to obtain information on the Site history, land use, surrounding land use, and regulatory agency data.

Agency Contacts. During the course of this assessment, the following agencies/organizations were contacted via email, telephone, personal interviews, and/or record searches for information relating to the Site:

- California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR);
- County of Ventura Environmental Health Division (VCEHD);
- City of Oxnard Fire Department Certified Unified Program Agency (CUPA);
- California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC);
- County of Ventura Agricultural Commissioner (VCOAC);
- Office of the California State Fire Marshal (CSFM);
- National Pipeline Mapping System (NPMS);
- Ventura County Air Pollution Control District (VCAPCD);
- Los Angeles Regional Water Quality Control Board (LARWQCB);

- County of Ventura Assessors Office;
- City of Oxnard Public Works; and
- Federal Emergency Management Agency (FEMA).

Documentation of these contacts is provided in Appendix E.

Regulatory Agency Database and Sanborn Map Search. EDR maintains comprehensive environmental information databases and historical information, including Sanborn Maps, City Directories, and Building Permits, and specializes in providing such data for use in real estate and environmental documents. EDR performed a search of multiple databases containing specific government records, each within a prescribed search radius of the Site. The search radii varied from 0.25 to 1 mile depending on the database. The specific search radii for each database are listed in the EDR report (Appendix F). EDR also reviewed their Sanborn Map and City Directory collection for coverage in the Site area (EDR 2017).

1.4 SIGNIFICANT ASSUMPTIONS, LIMITATIONS, AND EXCEPTIONS, SPECIAL TERMS AND CONDITIONS

1.4.1 Significant Assumptions

Information provided by others to Tetra Tech is assumed to be accurate and complete. When provided, Tetra Tech has made reasonable inquiry into the accuracy of such information. Unless such inquiry indicated otherwise, the information was considered to be accurate and complete. As discussed below in Section 1.4.2, there are limitations to this assumption.

There were no other significant assumptions made during the conduct of this Phase I ESA.

1.4.2 Limitations and Exceptions

Tetra Tech did not significantly delete or deviate from the scope and limitations set forth in the ASTM Standard Practice E1527-13 document entitled, "Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process," except for:

- A limited visual survey of the Site for the presence of suspect asbestos containing materials (ACMs), lead based paint (LBP) and other lead containing materials (LCMs), and obvious mold/microbial growth/moisture accumulation or water damage. Tetra Tech's limited visual inspection for suspect ACMs, suspect LBP and other LCMs, and obvious mold conditions or water damage included observations in readily and physically accessible areas. The limited visual survey was not a formal survey and was not performed by a certified asbestos, LBP/LCM, and mold inspector.

- A specific search for environmental liens and activity use limitations (AULs) was not performed for the Site parcels; however, the EDR RadiusMap™ Report with Geocheck® (EDR 2017) (which contains regulatory agency database listings for environmental liens) was reviewed for such information.

Our professional services have been performed, our findings obtained, and our conclusions prepared in accordance with customary principles and practices in the fields of environmental science and

engineering. This warranty is in lieu of all other warranties either expressed or implied. Tetra Tech is not responsible for the independent conclusions, opinions, or recommendations made by others based on the records review, Site inspection, and/or laboratory test data presented in this report.

It should be noted that all surficial environmental assessments are inherently limited in the sense that conclusions are drawn from information obtained from limited research and Site evaluation. Subsurface conditions were not field investigated as part of this study and may differ from the conditions implied by the surficial observations. Additionally, the passage of time may result in a change in the environmental characteristics at this Site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated. This report is not a regulatory compliance audit.

This study is not intended to assess if any soil contamination, waste emplacement, or groundwater contamination exists by subsurface sampling through the completion of soil borings and the installation of monitoring wells. The scope of work, determined by the client, did not include these activities.

Tetra Tech reviewed past ownership of the Site with the intent to evaluate past Site usage. Tetra Tech is not a professional title insurance firm and makes no guarantee, either explicit or implied, that the listing which was reviewed represented a comprehensive delineation of past Site ownership or tenancy for legal purposes.

Certain information contained in this report may have been rightfully provided to Tetra Tech by third parties or other outside sources. When provided, Tetra Tech has made reasonable inquiry into the accuracy of such information; however, Tetra Tech does not make any warranties or representations, either expressed or implied, regarding the accuracy of such information, and shall not be held accountable or responsible in the event that any such inaccuracies are present.

1.4.3 Special Terms and Conditions

There were no special terms or conditions associated with this Phase I ESA.

1.5 USER RELIANCE

It is Tetra Tech's understanding that this Phase I ESA is being requested in conjunction with due diligence activities by the OUHSD. Tetra Tech recognizes that this report is to be used exclusively by OUHSD, and it is a report upon which OUHSD can rely, in accordance with the provisions of the contract between OUHSD and Tetra Tech.

1.6 STATEMENT OF QUALIFICATIONS

Tetra Tech is a leading provider of specialized management consulting and technical services in three principal business areas: resource management, infrastructure and communications. The Company's clients include a diverse base of public and private sector organizations serviced through more than 400 offices located in the United States and internationally.

Our technical staff have demonstrated competence and ability in preparing environmental assessments through long-term working relationships with local commercial firms and government agencies.

Tetra Tech has conducted environmental assessments at a wide variety of properties including industrial, manufacturing, commercial, and residential sites. Tetra Tech has performed Phase I ESAs for banks, private developers, county and city agencies, and commercial firms.

Tetra Tech personnel are well trained and have extensive experience in the acquisition and interpretation of the collected data. Data gathering efforts focus on historic aspects of site activities that would contribute to spills, leakage or disposal of hazardous materials and petroleum products. Identifying contaminant issues that could impede development of the site, through either high costs or extended time periods for remedial actions, is a goal of data gathering and interpretation. Tetra Tech also identifies potential sources of contamination in the areas adjacent to the site, such as leaking underground storage tanks that could impact the site, and therefore become a REC.

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2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE LOCATION

The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map (Appendix E) indicates that the Site comprises approximately the southernmost 45 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the city of Oxnard. The geographic coordinates of the Site are approximately Latitude 34° 12' 23.08" North, Longitude 119° 9' 31.40" West. Surface elevations at the Site are approximately 63 feet above mean sea level (EDR 2017).

2.2 SITE VICINITY CHARACTERISTICS

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2). The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

2.3 CURRENT AND PAST USES OF THE SITE

Currently, the Site is used for the cultivation of strawberries (Figures 2 and 3). Historical aerial photographs and Google Earth images indicate that the Site was previously used for cultivation of row crops from as early as 1927 to the present.

2.4 DESCRIPTION OF STRUCTURES, ROADS, AND OTHER IMPROVEMENTS

2.4.1 Site

At the time of the October 23, 2017 Site reconnaissance, the Site contained an approximate 48.6-acre area devoted to strawberry cultivation (Figures 2 and 3). PVC irrigation pipe is stored in a 0.18-acre area of the Site just north of the Maulhardt Ranch farmyard. The Site contains eight internal unpaved access roads. The Site drains from north to south along the furrows between the rows of strawberries to east-west drainage channels along the north sides of the east-west road ways that are routed to a central north-south drainage channel along the east side of the north-south road through the Site that empties into a storm drain inlet at the southern Site boundary along Camino Del Sol. No structures are located on the Site.

2.4.2 Adjacent Residential and Farmyard Areas

The residential and farmyard areas of the Maulhardt Ranch as located adjacent to the Site on the south and west. The residential area contains the Main Residence, Apartment, and two Mobile Homes, and an Office (Figure 3). The residential area is surrounded by citrus orchards. The farm yard area is located north of the residential area and contains the Carriage House, Horse Barn, Tin Shed, Garage, Storage Shed, Workshop, covered livestock pen, a storage building, and three sheds. Agricultural fields of the Site that are used for strawberry cultivation are present to the west, north, and east of the residential and farmyard areas. Access to the Site and to the residential and farmyard areas of the Maulhardt Ranch is through a gated paved driveway along Camino Del Sol. Unpaved access roads intersect the agricultural plots throughout the Site with two additional utility entrance gates located along Camino Del Sol. The utility providers for the Maulhardt Ranch and the Site are summarized below:

Utility	Provider
Electricity	Southern California Edison
Natural Gas	Southern California Gas Company (Sempra Energy)[a]
Potable Water	Private Well owned and operated by the Maulhardt family located at the northeast corner of APN 214-002-059
Propane	AAA Propane Services, Inc.
Sewage Disposal	Onsite septic systems operated by the Maulhardt family
Solid Waste Disposal	City of Oxnard

Note:
a:- Although Sempra Energy provides natural gas to the Site area, it does not provide natural gas to the Site. The buildings in the residential and farmyard areas of the Maulhardt Ranch are provided with propane for cooking and heating from storage tanks located onsite owned and serviced by AAA Propane Services, Inc.

2.5 HISTORICAL RECORDS REVIEW

Past uses of the Site and surrounding properties were evaluated by reviewing available historical map coverage, historical aerial photographs, and information obtained from various agencies identified in Section 1.3. The information collected is summarized in the following sections.

2.5.1 Sanborn Map and City Directory Review

While the geographic coverage of Sanborn Maps is comprehensive for many major cities, many rural areas and small towns are not covered. There were no Sanborn Maps for the Site area in the EDR collection (EDR 2017). A City Directory report provided by EDR (EDR 2017) was reviewed and is provided in Appendix F. The address of 1853 Camino Del Sol Oxnard, CA 93030, and adjacent properties 440 Rose Avenue, 480 Rose Avenue, and 1900 Camino Del Sol were researched for the years between 1926 and 2014. The Site was listed in the City Directory report provided by EDR under agricultural info systems use for years 2005, 2010, and 2014.

2.5.2 Topographic Map Review

The following historical United States Geological Survey (USGS) topographic maps were obtained from EDR (EDR 2017): 15-Minute Topographic Series, Hueneme map dated 1904, 1943, and 1947; and 7.5 Minute Topographic Series, Oxnard map dated 1949, 1951, 1967, and 2012. Copies of the maps are provided in Appendix B. The maps were reviewed to evaluate previous development of the Site, adjoining properties, and surrounding areas.

The 1904 Hueneme map shows the Site located northeast of the intersection of Colonia Road and Rose Road. Three structures are seen on the residential and farmyard areas of the Maulhardt Ranch property that is adjacent to the Site with road entering the west side of the Site from Rose Road. The area surrounding the Site appears to be developed in large land holdings typical of areas of agricultural development with largely vacant land and individual farm houses and other structures spaced approximately one half to one mile apart within a network of roads also spaced approximately one half to one mile apart. The Southern Pacific Railway tracks are visible approximately six tenths of a mile south of the Site trending east-west, curving around to a north-south alignment approximately one mile southwest of the Site, then trending north-south 1 mile west of the Site with Oxnard Boulevard immediately west of the railroad tracks. Ventura Boulevard is present approximately one mile north of the Site trending northwest-southeast and Rice Avenue is present approximately six tenths of a mile east of the Site in a north-south alignment. The town of Oxnard is adjacent to the curve in the railway south-west of the Site and the town of El Rio is located at the intersection of Oxnard Boulevard and Ventura Boulevard approximately one and three quarters miles northwest of the Site.

On the 1943 and 1947 Hueneme maps minimal changes are seen at the Site and surrounding area. A single structure is present in the residential and farmyard areas of the Maulhardt Ranch property at the location of the current Main Residence with orchards in the northwest area of the Site and clear areas devoted to row crops in the remainder of the Site. The general road and railroad networks are similar to the 1904 map with "Alt Highway 101" (Oxnard Boulevard) depicted one mile west and Ventura Boulevard one mile north of the Site, and the Southern Pacific Railroad south and west of the Site. Fifth Street is now present just south of the south railroad tracks. To the southwest of the Site, the road network in the City of Oxnard has expanded to the north and south with residential/commercial development. The road network in El Rio has also expanded eastward with three additional roads. New residential development is present approximately one-mile northeast of the Site at Nyland, northeast of the intersection of Rice Road, Ventura Boulevard, and Santa Clara Avenue.

On the 1949 and 1951 Oxnard maps, structures are seen in residential and farmyard areas of the Maulhardt Ranch property at the current locations of the Main Residence, Apartment, Carriage House, Horse Barn, and Tin Shed. Orchards are present on the Site to the west and north of the residence-farm yard areas with open areas devoted to row crops in the remainder of the Site. The general road and railroad networks, and development of the Site area is similar to the 1943 and 1947 maps. One oil well is depicted within 0.25 mile of the Site, the Standard Schoelle No. 1 oil well, located approximately 1,000 feet north of the Site. The area surrounding the Site is developed in agricultural land use with orchards and open areas devoted to row crops. Development in the City of Oxnard has expanded further to the south and east with the city limit depicted approximately two tenths of a mile west of the Site.

The 1967 Oxnard map shows no changes at the Site and the areas to the west, north, and east of the Site from the 1949 and 1951 Oxnard maps. Residential development has expanded to the east from the City of Oxnard in a three tenths of a mile to four tenths of a mile wide area along the south side of Colonia Road to one tenth of a mile east of the Site. The 101 Freeway has been constructed just south of Ventura Boulevard approximately 1 mile north of the Site and Rose Road has been realigned between two tenths of a mile and one half mile north of the Site eliminating two ninety degree turns with and s-curve. The Standard Schoelle No. 1 oil well is shown approximately 1,000 feet north of the Site and the Maulhardt No. 3 oil well is shown approximately 1,300 feet east of the Site.

On the 2012 Oxnard map no structures are shown on the Site or residential and farmyard areas of the Maulhardt Ranch property. The area comprising the 107.25-acre Maulhardt Ranch (APN 214-002-059) and the current site of Rio Rosales Elementary School and associated park to the east of the Site are shown as vacant land. The road networks and general development of the surrounding area is similar to

the present with residential development present in the areas to the north, east, and west of the Maulhardt Ranch and the Site. Colonia Road has been renamed Camino Del Sol and Rose Road has been renamed North and South Rose Avenue. The oil wells shown on the 1967 map are not present.

2.5.3 Aerial Photograph Review

A review of historical aerial photographs obtained from EDR included photographs dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017). The photographs are included in Appendix C. A summary of the data from the aerial photography is provided below.

The 1927 photograph is a negative impression black and white photograph at a scale of one inch equals 500 feet with blurred imagery. The majority of the Site and surrounding areas appear graded and developed for agricultural land use. The land to the south, west, and north of the Site appear to be open fields planted in grain or row crops and areas north-northeast and east of the Site are planted in orchards. Colonia Road (the future site of Camino Del Sol) is visible directly south of the Site, and Rose Road (the future site of North Rose Avenue) is visible immediately west of the Site. The Main Residence, Apartment, Carriage House, Horse Barn, Tin Shed, Garage, and Storage structures are visible on the residential and farmyard areas of the Maulhardt Ranch property. A row of eucalyptus trees is visible along the east side of Rose Road extending approximately 550 feet to the north of Colonia Road. There are five unpaved roads entering the Maulhardt Ranch property. Four roads enter the residence-farmyard area. One road enters the Maulhardt Ranch property from the west along Rose Road approximately 550 feet north of Colonia Road and extends approximately 400 feet east into the farm yard area at the north end of the residential area and turns north for 200 along the west edge of the farm yard. Eucalyptus trees are located along the western edge of the farm yard. Three roads enter the residential and farmyard areas of the Maulhardt Ranch property from Colonia Road at approximately 300, 400, 550 feet east of Rose Road extending into the residential area. The residential area is defined by the western and eastern roads that are lined with eucalyptus trees and extend approximately 550 and 400 feet north from Colonia Road, respectively. The central road entering the residential-farmyard areas from Colonia Road bifurcates into an oval loop approximately 100 feet north of Colonia Road that extends 150 feet to the main residence. Another road is located just east of a row of eucalyptus trees trending north to south approximately 700 feet east of the Horse Barn that extends across the entire length of current Maulhardt Ranch property and the Site. The cultivated area of the Site appears to be planted in grain or row crops on the west side of the row of eucalyptus trees and a citrus orchard east of them. Another farmhouse compound with surrounding trees is visible approximately 400 feet southwest of the Site across the intersection of Rose Road and Colonia Road. A second farmhouse compound is visible approximately 700 feet southeast of the Site across Colonia Road.

The 1938 photograph is a black and white photograph at a scale of one inch equals 500 feet with slightly blurred imagery. The Site and surrounding area appear similar to the 1927 photograph, developed in agricultural land use. The road entering the residential and farmyard areas of the Maulhardt Ranch property from Rose Road shown in the 1927 photograph is gone and is planted in row crops. The same structures at the residential and farmyard areas of the Maulhardt Ranch property and surrounding areas noted in the 1927 photograph are clearly visible. The western and eastern quarter of the Site and current Maulhardt Ranch property, and the area of the Site between the residential-farmyard areas and the row of eucalyptus trees approximately 700 feet east of the residential-farmyard areas are planted in row crops. Orchards are no longer present in the eastern portion of the Site. New rows of young eucalyptus trees have been planted along the east side of Rose Road along the entire western boundary of the current Maulhardt Ranch property and the Site. New rows of young eucalyptus trees have also been planted within the Maulhardt Ranch and Site at 400 and 800 feet east of Rose Road extending approximately 1,550 and 1,600 feet south from the current northern boundary of the Maulhardt Ranch. Young orchard

trees are visible on the Maulhardt Ranch and Site in the area between the new rows of young eucalyptus trees located 400 and 800 feet east of Rose Road. No other significant changes are seen on the Site or surrounding areas.

The 1947 photograph is a black and white photograph at a scale of one inch equals 500 feet with slightly blurred imagery. The Site and surrounding area appear similar to the 1938 photograph except that entire eastern quarter of Maulhardt Ranch and Site are now developed in orchards. Two new structures approximately 350 square feet in size are visible just east of the Carriage House in the farmyard area of the Maulhardt Ranch. One of the Site owners, Richard Maulhardt, indicated that chicken coops were formerly located here. No other significant changes from the 1938 photograph were noted.

The 1959 photograph is a black and white photograph at a scale of one inch equals 500 feet with clear imagery. The Site and surrounding area appear generally similar to the 1947 photograph except for the changes noted below. The residential area of the Maulhardt Ranch has been reconfigured and reduced with a single entrance road off of Colonia Road at its current location. The eucalyptus tree lined roads entering the Site from Colonia Road are gone and the eucalyptus trees formerly along the western edge of the farm yard are gone with orchards now occupying the area south of the main residence. The row of eucalyptus trees formerly located approximately 700 feet east of the Horse Barn is gone. Pole mounted power lines are visible trending east-west along the south side of Colonia Road with a north-south trending trunk line entering the residential and farmyard area of the Maulhardt Ranch approximately 550 feet east of Rose Road and extending approximately 375 into the Site. Two additional structures of approximately 350 square feet each are visible along the western edge of the farm yard. One of the Site owners, Richard Maulhardt, indicated that two worker bunk houses were formerly located here as long ago as the 1930s into the early 1980s. They were not observed in earlier photographs because they were obscured by the eucalyptus trees formerly located here. A small circular structure approximately 15 feet in diameter is visible in the open area between the Horse Barn and Tin Shed structures. This was noted to be the location of a recreational fire pit by the Site owner, Richard Maulhardt. New residential development is visible approximately 700 feet south of the Site along the west side of Rose Road. No other significant changes from the 1947 photograph were noted.

The 1967 photograph is a black and white photograph at a scale of one inch equals 500 feet, with slightly blurred imagery. The Site and area north of Colonia Road appear similar to the 1959 photograph except for the changes noted below. The Site and surrounding area is developed in agricultural (orchards) and residential use. The farmhouse compound formerly located southwest the intersection of Rose Road and Colonia Road is gone. New residential development is visible immediately south of Colonia Road to the south of the Site along newly constructed Gibralter Street, San Gorgonio Avenue, and San Jose Street. The 15-acre lot immediately south of the Site southeast of the intersection of Rose Road and Colonia Road was vacant and undeveloped. Rose Road has been realigned between 0.2 and 0.5 mile north of the Site eliminating two ninety degree turns with an s-curve. No other significant changes are seen on the Site or adjacent area since 1959.

The 1978 photograph is a black and white photograph at a scale of one inch equals 500 feet with clear imagery. The Site and surrounding area appear generally similar to the 1967 photograph except for the changes noted below. Two Mobile Homes, the Work Shop, and adjacent Shed next to the eastern Mobile Home have been erected in the residential area of the Maulhardt Ranch. The three chicken coop structures to the east of the Carriage House have been replaced by a single structure. The entire cultivated area of the Site and Maulhardt Ranch is now planted in orchards. It is assumed that the name of Rose Road has been changed to North Rose Avenue and Colonia Road to Camino Del Sol. Colonia Road has been realigned on the west side of North Rose Avenue to its current configuration as Camino Del Sol, curving north then west. The eastern portion of the previously undeveloped parcel south of the site across

Camino Del Sol has been developed into an apartment complex and the southern portion along the north side of San Gorgonio Avenue into single family homes. A six-acre lot immediately south of the Site southeast of the intersection of Rose Road and Colonia Road was vacant and undeveloped. No other significant changes are seen on the Site or adjacent areas since 1967.

The 1985 photograph is a thermal infrared image. It is at a scale of one inch equals 500 feet and features are somewhat blurred. The Site and surrounding area appear generally similar to the 1978 photograph except for the changes noted below. A swimming pool is visible to the north of the Main Residence in the residential area of the Maulhardt Ranch. The two bunk houses formerly located at the western edge of the farm yard are gone. The rows of eucalyptus trees formerly located 400 and 800 feet east of North Rose Avenue that extended approximately 1,550 and 1,600 feet south from the current northern boundary of the Maulhardt Ranch have been removed. The orchards have been cleared from a 2.3-acre area immediately east of the farm yard and a 9.9-acre area of the eastern Maulhardt Reach, including the 3.2-acre area in the northeast portion of the Site. An agricultural compound and number of associated buildings are visible approximately 625 feet northeast of the Site. Del Sol Park is visible southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. No other significant changes are seen on the Site or adjacent areas since 1978.

The 1994 photograph is a black and white photograph at a scale of one inch equals 500 feet and features are relatively clear. The Site and surrounding area appear generally similar to the 1985 photograph except for the changes noted below. Agricultural use changes are visible at the Site with the conversion of orchards to row crops notably in the eastern portion of the site. Vacant land to the north of parcel APN 214-002-059 has been developed into the St. Johns Regional Hospital. Additional commercial buildings are present southwest of the Site along the south side of Camino Del Sol. No other significant changes are seen on the Site or adjacent areas since 1985.

The 2005 photograph is color photograph at a scale of one inch equals 500 feet and features are relatively clear. Significant changes have occurred to the Site and surrounding areas since 1994. The development of the Site and surrounding areas appear similar to the present. Most of the cultivated areas of the Maulhardt Ranch and Site have been converted to row crop cultivation of strawberries with the internal roads and drainages that are presently on the Site. Orchards are still present in the area surrounding the residences. The driveway accessing the Maulhardt Ranch from the south has been paved and the unpaved roads have been established within the Site that currently dissect strawberry fields. New residential development is present immediately to the north, south, west, and east of the Maulhardt Ranch property (APN 214-002-059) except along the eastern boundary at the future site of the Rio Rosales Elementary School and park where vacant land and a paved area with portable structures are visible adjacent to the northeast corner of the Site. Two large canvas roofed structures and various associated small circular storage tanks can be seen at the northeast corner of the Maulhardt Ranch where a water production well has been constructed.

The 2009 photograph is a color photograph at a scale of one inch equals 500 feet and features are slightly blurry. The conditions of the Site and surrounding areas are similar to those observed in the 2005 photograph. The paved area with portable structures that were adjacent to the northeast corner of the Site have been removed and the structures of the Rio Rosales Elementary School that currently occupies the site are visible.

The 2010, and 2012 images are color photographs at a scale of one inch equals 500 feet. The features on each of the photographs are relatively clear. The appearance of the Site and surrounding areas has not changed from the 2009 photograph.

2.5.4 Agency Records Review

The following is a summary of information obtained from correspondence with agencies during the course of this assessment. These agencies were contacted via email, telephone, and/or records searches for information relating to the Site and surrounding areas. Documentation obtained from the various agencies is included in Appendix E.

2.5.4.1 California Department of Conservation, Division of Oil, Gas, and Geothermal Resources

Tetra Tech reviewed DOGGR Map 214 (DOGGR 2001), the online DOGGR Well Finder (Appendix E) (DOGGR 2017), and associated well history documents to evaluate potential presence of oil fields or wells within the Site vicinity. Records indicate that the site is located within the Oxnard Oil Field, however no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on 107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. Several plugged abandoned oil wells are located within one quarter mile of the Site. The nearest plugged and abandoned well is Maulhardt Community No. 11A, located approximately 850 feet south southwest of the Site on Imperial Street near the intersection of San Luis Street. Plugged and abandoned well Maulhardt Community No. 10 is located approximately 870 feet west of the Site just north of Camino Del Sol. Plugged and abandoned well Maulhardt Community No. 3 is located approximately 1,350 feet west southwest of the Site on North Lombard Street. Plugged and abandoned well Maulhardt Community No. 7 is located approximately 1,500 feet west northwest of the Site. Plugged and dry well Standard Schoelle No. 1 is located approximately 1,570 feet north east of the Site on Ribera Place. Plugged dry well A. Pfeiler Est. No. 1 is located approximately 1,600 feet northwest of the Site in West Village Park. Plugged and abandoned well Maulhardt No. 9 is located approximately 1,750 feet east of the Site. Numerous other abandoned wells are present further south and east of the site but were not described in this report.

2.5.4.2 California State Water Resources Control Board

Tetra Tech reviewed online resources at the California Environmental Protection Agency (Cal EPA) State Water Resources Control Board (SWRCB) Geotracker database (SWRCB 2017) for any records pertaining to the Site. No records for the Site or other portions of the 107.25-acre property where the Site is located were found in the Geotracker database. According to the Geotracker database a closed Leaking Underground Storage Tank (LUST) Cleanup Site GTE (T0611100137) is located adjacent to the Site at 751 N Rose Avenue. However, further research using the Ventura County Environmental Health Department database indicate that the actual address for GTE (T0611100137) LUST cleanup site is 751 S Rose Avenue such that the listing is outside of the relevant search radius and does not pose any risk to the Site. In addition, the Geotracker database search identified a completed case closed voluntary cleanup program site, Arenales/Kohala Property (clan/meth LAB) (T0611182768) located approximately 700 feet west of the site in a nearby residential neighborhood. Five other complete case-closed LUST sites are also located within one quarter to one half mile downgradient of the site. These records are discussed further in Section 5.3.

2.5.4.3 Department of Toxic Substances Control

Tetra Tech reviewed online resources provided by the California Environmental Protection Agency - Department of Toxic Substances Control (DTSC) for any records pertaining to the Site. No records of the Site were located in the DTSC EnviroStor database aside from those located in the Geotracker database and described in Section 2.5.4.2.

2.5.4.4 County of Ventura Environmental Health Division

A request was submitted by email to the VCEHD for the research and review of all the records pertaining to the Site. According to the response received there was one prior record of septic activity at the Site and one record of hazardous materials inventories pertaining to the Eclipse Berry Ranch No. 9 that cultivates strawberries at the Maulhardt Ranch, which includes the Site (Appendix E).

There were VCEHD records dating from July through November 1994 documenting the permitting of two residential septic systems present in the residential area of the Maulhardt Ranch, one located 60 feet east of the main residence, and a second one located 25 feet east of a second mobile home structure. The records include a questionnaire dated July 25, 1994 on the property condition that was completed by Richard Maulhardt, a memorandum dated August 29, 1994 from the VCEHD indicating the application was incomplete and requesting a scaled plot plan showing the septic systems and a septic pumping tank report, a memorandum dated November 14, 1994 from the VCEHD indicating that the application was complete, a VCEHD septic tank pumping inspection report dated August 31, 1994, indicating the system was in good condition, a scaled plot plan showing the septic systems, and an analytical report for water from FGL Environmental Laboratory for coliform bacteria that indicated they were not present.

A Hazardous Materials Inventory Report provided by VCEHD dated September 19, 2017 provided the following information for materials by the Eclipse Berry Farm at Ranch No. 9 (the Maulhardt Ranch, including the Site):

Common Name	Maximum Daily Amount Stored
calcium nitrate	500 gallons
diesel fuel	250 gallons
sulfuric acid	500 gallons

These materials are currently stored for use at the northeast corner of the Maulhardt Ranch (APN 214-002-059) approximately 1,050 feet north of the Site. No additional records for the Site were located using VCEHD online records database.

2.5.4.5 City of Oxnard Fire Department Certified Unified Program Agency

A request was submitted by email to the City of Oxnard Fire Department Certified Unified Program Agency (CUPA) for the research and review of all records pertaining to the Site. According to the response received there have been no prior records of CUPA cases associated with the Site (Mattern 2017) (Appendix E).

2.5.4.6 Ventura County Agricultural Commissioner

Pesticide use records on file with the VCOAC indicate that the Site and 107.25-acre APN 214-002-059 lot which the Site is located within was actively farmed between January 2011 and February 2016 (Appendix E). The VCOAC does not generally maintain records for longer than approximately 4 to 5 years, however records for the Site were available through 2011 (Enriquez-Pratt 2017). However, due to evidence of ongoing agricultural activities from historical aerial photographs, and information contained in the disclosure provided by the property owners (Appendix G) it can be assumed that there was pesticide use prior to January 2011.

2.5.4.7 California Code of Regulations Hazardous Pipeline Requirements

California Code of Regulations (CCR) Title 5, Section 14010(h) requires that new school sites shall not be located or within 1,500 feet of the easement of an above ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional. Hazardous pipelines are defined as:

- Pipelines carrying chemical products, natural gas, and other hydrocarbon products that are operating at a pressure of 80 psig or higher; and

- High-volume water lines, which are defined as water lines 12 inches or greater in diameter, and include open aqueducts of comparable and greater volume handling capacity.

The NPMS, Office of the California State Fire Marshall, City of Oxnard Utilities-Sewer, Trash, and Water Department, and Maulhardt Ranch were contacted for information on hazardous pipelines within 1,500 feet of the Site.

National Pipeline Mapping System

The U.S Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration NPMS website is an interactive database that maps the locations of hazardous liquid and gas transmission pipelines under DOT jurisdiction. Tetra Tech reviewed the NPMS website for information on hazardous liquid and gas transmission pipelines in the Site area. The NPMS data base indicated that no hazardous liquid pipelines are located within 1,500 feet of the Site (Appendix E). The nearest natural gas pipeline transmission pipeline under NPSM jurisdiction is located approximately 0.65 miles east and south from the Site along North Rice Avenue and West Fifth Street respectively (NPMS 2017).

Office of the California State Fire Marshal

Tetra Tech contacted the CSFM for information concerning potential high pressure petroleum product or natural gas transmission pipelines in the Site vicinity. According to the response received there have been no prior records of hazardous pipelines within 1,500 feet of the Site (Henigan 2017) (Appendix E)

City Oxnard Public Works

The City of Oxnard Public Works Water Division is the water purveyor for the Site area. Tetra Tech contacted the City of Oxnard Public Works Water Division for information on water pipelines within 1,500 feet of the Site and was provided with the City of Oxnard Water Atlas pages showing water pipelines within 1,500 feet of the Site (City of Oxnard 2010; 2011). The City of Oxnard Water Atlas indicated that there were two water pipelines located within 1,500 feet of the Site that were 12 inches or greater in diameter:

- A 12-inch diameter polyvinyl chloride (PVC) water pipeline routed north-south beneath North Rose Avenue directly west of the Site (Figure 2); and

- A 12-inch diameter Asbestos Concrete Pipe (ACP) water pipeline routed east-west beneath Camino Del Sol immediately south of the Site (Figure 2)

Copies of the City of Oxnard Public Works Water Division Water Atlas pages for the Site area are included in (Appendix E).

United Water Conservation District.

The United Water Conservation District (UWCD) manages the water resources of the Santa Clara River and its associated aquifers and provides water to Ventura County and the cities of Oxnard, Port Hueneme, Ventura, Santa Paula, and Fillmore. The Oxnard Water Atlas indicates that the UWCD maintains a 42-inch water pipeline beneath North Rose Avenue west of the Site (Figure 2) (Appendix E).

Maulhardt Ranch.

The Maulhardt Ranch is supplied with water from a groundwater production well located at the northeast corner of the Maulhardt Ranch (APN 214-002-059) that is owned and operated by the Maulhardt Ranch. The well is connected to a buried 12-inch diameter PVC water pipeline located approximately 920 feet north of the Site just south of the northern boundary of Maulhardt Ranch (Maulhardt 2018). This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch (Figures 2 and 3). The groundwater production well is also connected to a network of 10-inch and smaller PVC pipelines that provide water to the strawberry fields of the Maulhardt Ranch and the Site.

2.5.4.8 Ventura County Air Pollution Control District

A request was submitted by email to the VCAPCD. According to the response received there has been no prior or current records pertaining to the Site (Penhart 2017) (Appendix E).

2.5.4.9 Federal Emergency Management Agency

Tetra Tech obtained the Flood Insurance Rate Map No. 06111C0910E for the Site vicinity from the FEMA website for information regarding the current location of flood zones. This information is summarized in Section 3.3.2.

2.5.4.10 Ventura County Planning and Development, City of Oxnard Community Development Department

An EDR Building Permit Report (EDR 2017) that searched building department records of Ventura County and the City of Oxnard was reviewed for building permit record information pertaining to the Site. No permits found were associated with the surrounding 107.25-acre site.

3.0 PHYSICAL SETTING AND CONDITIONS

The Site is depicted on the Oxnard, California Quadrangle U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 2015) (Figure 1). The approximate latitude and longitude of the Site is 34°12'23.08" north and 119°9'31.40" west. The USGS 7.5 topographic series map indicates that the Site is at an elevation between 60 and 70 feet above mean sea level (amsl). The EDR report indicates that the Site elevation is approximately 63 feet amsl. The topographic gradient of the site is generally flat with a gentle slope to the south (EDR 2017).

3.1 REGIONAL GEOLOGY

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa and Pine Mountains, to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (Department of Conservation, California Geological Survey [CGS] 2002).

3.2 LOCAL GEOLOGY

The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

Based on the Geologic Map of the Oxnard 7.5' Quadrangle, Ventura County, California the Site is underlain at the ground surface by Holocene deltaic alluvial fan deposits composed predominantly of clay with interbeds of sand and occasional gravel that were deposited by the Santa Clara River and extend to approximately 70 feet below ground surface (bgs) (Clahan, et al 2003; Turner, et al 1975). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

3.3 HYDROLOGY

3.3.1 Hydrogeology

The Site is located in the northern portion of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975). The Oxnard Plain Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Basin are grouped into three major units including 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System, and 3) the Lower Aquifer System.

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer zone and extends to depths of approximately 75 feet bgs (Turner, et al 1975). This aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the Santa Clara River and form lenses perpendicular to the Santa Clara River. Groundwater in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use. Groundwater is generally expected within approximately 10 feet of the surface. However, groundwater may be shallower during periods of high precipitation or in heavily irrigated areas. The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Upper Aquifer System. This clay cap acts as an aquitard. Based on topographic controls, groundwater in the site vicinity is expected to flow toward the south to south-southwest.

3.3.2 Flood Zoning

According to the FEMA Flood Insurance Rate Map No. 06111C0910E the Western half of the Site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2% (500-yr) annual chance floodplain , while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1%(100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA, 2010).

3.3.3 Wetlands

The EDR report indicates the Site area is covered in the National Wetlands Inventory prepared by the U. S. Fish and Wildlife Service (USFW) (EDR 2017) (Appendix F). The U.S. Fish and Wildlife Service maintains the National Wetlands Inventory (NWI), a Geographic Information System (GIS)-based relational database of wetlands that have been mapped throughout the country. Based on the information provided in the EDR Report and review of the USFW map for the area surrounding the Site, the nearest wetland is located within approximately 1.33 miles southeast of the Site (USFW 2015). Additional larger delineated wetlands are present along the Santa Clara River which lies approximately 2.8 miles northwest of the Site. These wetlands are not considered to be a concern to the Site.

3.3.4 Asbestos Containing Rocks

Tetra Tech has reviewed available topographic and geologic maps for the Site area and *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDMG 2000) for potential sources of naturally occurring asbestos (NOA) and believes the risk for NOA at the proposed Oxnard High School No. 8 Site is low. The nearest sources of NOA are in the Santa Ynez River watershed in the Santa Ynez Mountains, approximately 35 miles northwest of the Site. NOA sources are not known to exist in the Santa Clara River watershed.

4.0 SITE RECONNAISSANCE AND INTERVIEWS

On October 23, 2017, Tetra Tech performed a visual reconnaissance of the Site property and conducted interviews with the Site owners Lynn and Richard Maulhardt. The purpose of the reconnaissance was to evaluate the Site and neighboring properties for visible indications of potential hazardous substance use, storage, and disposal, including the presence of underground storage tanks (USTs), above ground storage tanks (ASTs), asbestos-containing materials, polychlorinated biphenyl (PCB) containing transformers or electrical equipment, and/or evidence of soil staining, stressed vegetation, ponds, pits, sumps, suspicious odors, fill and depressions, drums and barrels, or any other condition indicative of potential contamination. A Site reconnaissance checklist is included in Appendix H.

4.1 SITE RECONNAISSANCE

The Site reconnaissance consisted of walking around the Site accompanied by the Site owners Lynn and Richard Maulhardt and interviewing them about the items observed. Photographs were taken to document current conditions. Copies of the Site photographs are included in Appendix D. Items of concern noted during the Site reconnaissance are shown as numbered items on Figure 3.

4.1.1 Storage Tanks and Drum Storage

No evidence for existing or past use of storage tanks (UST or ASTs) or drum storage was observed on the Site during the Site reconnaissance.

4.1.2 Hazardous Substances and Petroleum Products

No hazardous substances were observed at the Site during the reconnaissance.

4.1.3 PCB-Containing Transformers and Equipment

One pole-mounted transformer was observed onsite along the southern Site boundary on the north side of Camino Del Sol (Figures 2 and 3). No evidence of transformers leakage, such as soil staining, was observed during the Site reconnaissance.

4.1.4 Stained Soils/Stains/Stressed Vegetation

During the Site reconnaissance no evidence of stained soils/stains/stressed vegetation was observed at the Site.

4.1.5 Asbestos-Containing Materials

The environmental professional preparing this report has reviewed the site history and performed a site inspection such that an educated opinion could be rendered. This opinion shall in no means constitute confirmation of the presence or absence of asbestos-containing building materials (ACBM). For confirmation, a complete survey with sampling and analysis would need to be performed. The use of ACBM was generally discontinued after 1980 with certain types of insulation, fireproofing, and acoustical materials banned by 1978.

During the Site reconnaissance no buildings or structures were identified at the Site thus an asbestos survey was not necessary and therefore not conducted.

4.1.6 Lead-Based Paint

The environmental professional preparing this report has reviewed the site history and performed a site inspection such that an educated opinion could be rendered. This opinion shall in no means constitute confirmation of the presence or absence of LBP. For confirmation, a complete survey with sampling and analysis would need to be performed. The use of LBP was banned in 1978.

During the Site reconnaissance no buildings or structures were identified at the Site thus a LBP survey was not necessary and therefore not conducted.

4.1.7 Maulhardt Ranch Water Distribution System

The Maulhardt Ranch is supplied with water from a groundwater production well located at the northeast corner of the Maulhardt Ranch (APN 214-002-059) that is owned and operated by the Maulhardt Ranch. The well is connected to a buried 12-inch diameter PVC water pipeline located approximately 920 feet north of the Site just south of the northern boundary of Maulhardt Ranch (Maulhardt 2018). This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch (Figures 2 and 3). The groundwater production well is also connected to a network of 10-inch and smaller PVC pipelines that provide water to the strawberry fields of the Maulhardt Ranch and the.

4.1.8 Electromagnetic Radiation

Title 5 of the California Code of Regulations (CCR) stipulates that a school site shall not be within the following distances from a high power electric transmission line:

- 100 feet from a 50-133 kilovolt (kV) line;
- 150 feet from a 220-230 kV line; or
- 350 feet from a 500-550 kV line.

Pole-mounted electrical power lines located within 350 feet of the Site that are owned and operated by Southern California Edison in the Site area are shown on Figures 2 and 3. These power lines are:

- Located along the north side of Camino Del Sol at the southern Site boundary; and
- Routed through the Site a north-south alignment approximately 210 feet east of North Rose Avenue.

Southern California Edison indicated that all of these pole-mounted power lines are rated at 16 kV (Wall 2017).

4.1.9 Hazardous Air Emitters

Tetra Tech evaluated the neighborhood during the Site reconnaissance for facilities or businesses considered likely to emit hazardous air pollutants; none were observed in the Site vicinity. Based on observations of surrounding properties, review of the EDR Radius Report (EDR 2017) (Appendix F), which tracks the emissions database inventory of the California Air Resources Board, there are no

hazardous air emission sources located within 0.25 mile of the Site and it is unlikely that the Site would be impacted by hazardous air emissions.

4.1.10 Railways

Title 5 of the California Code of Regulations (CCR) stipulates that a railroad safety study must be completed for any proposed school site located within 1,500 feet of a railway track easement. Based on review of the Santa Maria, California Quadrangle, USGS, 7.5-minute topographic series map (USGS 2015), and a Google Earth Image dated October 2, 2016, the Site is not located within 1,500 feet of a railroad track easement. The railroad track easement located nearest to the Site is approximately 0.6 miles south of the Site.

4.1.11 Freeways and Busy Traffic Corridors

Senate Bill 352 created a requirement to determine whether a school site is located within 500 feet of a freeway or busy traffic corridor would create a health hazard from exposure to high levels of criteria pollutants. Freeways and busy traffic corridors are defined as roadways with average daily traffic in excess of 50,000 vehicles in rural areas and 100,000 daily vehicles in urban areas. Based on review of the Oxnard, California Quadrangle, USGS 7.5-minute topographic series map (USGS 2015), and a Google Earth Image dated January 5, 2015, there are no freeways or other busy traffic corridors located within 500 feet of the Site. Highway 101 is located approximately 1 mile north of the Site.

4.1.12 Airports

California Code of Regulations Title 21 requires the State Department of Transportation to review any proposed school site that is located within 2 nautical miles of a runway. There are no airports within two nautical miles of the Site. Based on review of a Google Earth Image date January 5, 2015, and AirNav.com (AirNav.com 2017) (Appendix E), no airports are located within two nautical miles of the Site. The closest airport to the Site is the Oxnard Airport, which is approximately 2.4 nautical miles west of the Site. In addition, the Camarillo Airport is located approximately 3.2 nautical miles east of the site.

Based on review of data from AirNav.com, the Site is located within two nautical miles of a heliport. The St John's Regional Medical Center Heliport is located approximately 0.6 nautical miles north of the Site (AirNav.com 2016) (Appendix E).

4.1.13 Pesticides/Herbicides/Fertilizers

During the site visit the property owners disclosed that agricultural chemicals associated with the current strawberry cultivation activities performed on the Maulhardt Ranch and the Site are stored offsite at the northern end of the parcel. The VCOAC was contacted regarding past pesticide use for the Site, their response is discussed in Section 2.5.4.6. Discussion with the site owners and review of historical aerial photographs and Google Earth images dating from 1943 through 2015 indicate that the Site was used for crop production throughout the time period and that organochlorine pesticides (OCPs) were in use, and that OCPs were used at the Site.

4.1.14 Rodents

During the Site reconnaissance no evidence of rodents was observed at the Site.

4.1.15 Potable Water Supply/Wells

No wells were observed during Site reconnaissance. The Site property owners indicated that the Maulhardt Ranch owns and operates an active water well offsite at the northeast corner of the Maulhardt Ranch property (Section 2.5.4.7).

4.1.16 Wastewater

During Site reconnaissance, no industrial wastewater generation was observed.

4.1.17 Storm Water

Storm water runoff on the Maulhardt Ranch and Site drains to the south in furrows between the raised strawberry beds to shallow east west trending drainage channels along the east-west trending farm roads where it is routed to central drainage ditch located along the east side of the main north-south farm road in the eastern area of the Site (Figure 2). The central drainage ditch flow to the south and empties into the storm drain beneath Camino Del Sol through an inlet at the south boundary of the Site.

4.1.18 Wetlands/Intertidal Lagoon

The EDR report indicates that the Site is covered in the National Wetlands Inventory prepared by the USFW (EDR 2017) (Appendix F). Based on the information provided in the EDR report and by the USFW, the nearest delineated wetland is located within approximately 1.3 miles southeast of the Site (EDR 2017; USFS 2015).

4.1.19 Sewage Disposal System/Septic Systems

No evidence of septic systems was noted at the Site during the reconnaissance.

4.1.20 Drains/Sumps/Vaults/Pools

No drains, sumps, vaults, pools or similar receptacles where liquids drain, collect, or are stored were observed during the Site reconnaissance.

4.1.21 Solid Waste

No evidence of solid waste disposal was observed at the Site. Domestic trash collection and disposal is managed by the City of Oxnard.

4.2 OTHER SITE-SPECIFIC ENVIRONMENTAL CONDITIONS

There were no other Site specific environmental conditions noted during the site reconnaissance.

4.3 VICINITY RECONNAISSANCE

The land use of the area surrounding Site is depicted on Figures 2 and 3. The Maulhardt Ranch residential and farmyard areas are adjacent to the Site on the south and west (Figure 3). Areas of residential development are present to the west, south, and east of the Site. A strip mall is located south of the Site across Camino Del Sol at the southeast corner of Camino Del Sol and North Rose Avenue. Del Sol Park is located at the southeast corner of Camino Del Sol and North Rose Avenue and a park and

Rio Rosales Elementary School are located across Jacinto Drive from the northeast corner of the Site. The area immediately north of the Site on Maulhardt Ranch is developed for strawberry cultivation. The Maulhardt Ranch farmyard and residential areas are immediately south and west of the Site.

A search of the Geotracker database identified two adjacent properties having previous remediation cases (SWRCB 2017). Eleven other previous remediation cases were identified within a 1 mile radius of the site in the EDR report (EDR 2017). These cases are discussed in Section 5.3.

4.3.1 Maulhardt Ranch Residential and Farmyard Areas

The Maulhardt Ranch residential and farmyard areas that are adjacent to the Site on the south and west are described in detail in this Section due to their close proximity to the Site (Figure 3). Table 1 lists the numbered items identified on Figure 3.

4.3.1.1 Tin Shed

The Tin Shed is a single story warehouse-like structure that occupies approximately 5,140 square feet. It was reportedly originally constructed in the early 1900s (Maulhardt 2017) (Figure 3). It is of gable roofed wood frame construction covered in sheet metal, with walls approximately 8.5 feet high and an open beam ceiling approximately 20 feet high at the roof ridge line. The Maulhardts indicated that the floor was partially paved with concrete, however, it was covered in soil at the time of the reconnaissance. Shelves, workbenches, cupboards full of various pieces of equipment and supplies are located along the north, west, and southwest walls of the building. The Tin Shed is used to store various pieces of farming equipment and farming equipment maintenance items and supplies. The general housekeeping was of random organization. Items observed in this building included two tractors, a lima bean planting device fabricated by the Maulhardts, acetylene welding equipment and supplies (gas cylinders), a steel anvil, PVC irrigation pipe, aluminum ladders, three poly pesticide-fertilizer distribution tanks (approximately 100 to 300 gallon capacity), various pieces of aluminum greenhouse framework, several plastic portable fuel containers (approximately 5 to 20 gallon capacity), an old smudge pot, various lengths of rubber and plastic hose, an air compressor, mountain bike, various smaller gasoline and diesel fuel powered farm equipment, hand tool (shovels, rakes, etc.…), a drill press, grinding wheel, a used automobile battery, automotive maintenance equipment (jacks, engine hoist, a 150-gallon (approximate) waste oil drum with a “Back Gold” label, two empty 20-gallon (approximate) oil drums, and other items. Stained soil was observed in the central area of the Tin Shed, and more may be present beneath the equipment and materials stored in the building. The Tin Shed is depicted in photographs 18 through 31 of Appendix D.

4.3.1.2 Horse Barn

The Horse Barn is a two story warehouse-like structure that occupies approximately 7,740 square feet. It was reportedly originally constructed in 1908 (Maulhardt 2017) (Figure 3). It is of gable roofed wood frame construction covered in wood siding. The first story floor walls are approximately 8.5 feet high and an open beam-joist construction. The Maulhardts indicated that the first story floor was partially paved with concrete, however, it was covered in soil at the time of the reconnaissance. Horses are housed in the southern half of the first floor. The northern half is used for storage of various items including three vintage nonoperational automobiles, and a small (10-foot long) fishing boat. The second story is accessed by a ten foot wide wooden ramp that can be accessed by automobiles. The second story has a wood floor with an open ceiling and exposed post and beam construction with walls approximately eight-feet high on the north and south and 20 feet high on the gable ends. Three bales of hay, a motorcycle, and a 12-foot long boat were observed in this area. The general housekeeping was reasonably organized. The Horse Barn area is depicted in photographs 45 through 50 of Appendix D.

4.3.1.3 Garage

The Garage is a single-story structure that occupies approximately 700 square feet (Figure 3). It was reportedly originally constructed in the early 1900s (Maulhardt 2017). It is of gable roofed wood frame construction covered in sheet metal, with walls approximately 7 feet high and an open beam ceiling approximately 12 feet high at the roof ridge line. It has a concrete floor with a concrete lined mechanics pit on the south side that was used for automotive repair and maintenance. Two vintage automobiles and a motorcycle were parked inside of the garage during the reconnaissance and various automotive equipment and maintenance items were stored inside. The general housekeeping was of random organization. A fuel storage AST and UST were formerly located adjacent to this building (Section 4.3.1.10) and the fuel dispenser equipment associated with them is still present in the eastern wall of the building interior. The Garage is depicted in photographs 10 through 14 of Appendix D.

4.3.1.4 Storage Shed

The Garage is a single-story structure that occupies approximately 400 square feet (Figure 3). It was reportedly originally constructed in the early 1900s (Maulhardt 2017). It is of gable roofed wood frame construction covered in wood siding, with walls approximately 8.5 feet high and an open beam ceiling approximately 10 feet high at the roof ridge line. It has a concrete floor. Various farming equipment and supplies were observed in the Storage Shed during the Site reconnaissance. The Maulhardts indicated that pesticides were formerly stored in this building. The Storage Shed is depicted in photographs 15 and 16 of Appendix D.

4.3.1.5 Carriage House and Shed

The Carriage House is a single-story structure that occupies approximately 500 square feet (Figure 3). It was reportedly originally constructed in 1880 (Maulhardt 2017). It is of gable roofed wood frame construction covered in wood siding, with walls approximately 8.5 feet high and an open beam ceiling approximately 10 feet high at the roof ridge line. It has a concrete floor. It was empty during the Site reconnaissance. The Maulhardts indicated that horse carriages and automobiles were formerly stored in this building. The shed on the east side of the Carriage House is a former chicken coop originally constructed in the 1930s. It is single-story, occupies approximately 100 square feet, of shed roofed wood frame construction, and covered in wood siding with a dirt floor. It was reportedly used as a chicken coop and for storage of various farm supplies.

4.3.1.6 Covered Livestock Pen

The Covered Livestock Pen is a single-story structure that occupies approximately 450 square feet. Review of historical aerial photographs indicates it was originally constructed between 2012 and the present (Figure 3). It is gable roofed, of wood frame construction, with open sides, with a dirt floor. It has been reportedly used to house pigs (Maulhardt 2017). The Covered Livestock Pen is depicted in photograph 50 of Appendix D.

4.3.1.7 Workshop and Shed

The Workshop and adjacent Shed are single-story structures that occupies approximately 200 and 440 square feet, respectively (Figure 3). Review of historical aerial photographs indicates they were originally constructed between 1967 and 1978. They are roofed, of wood frame construction, covered in wood siding, with concrete floors. The general housekeeping of the Workshop was well organized. Various woodworking tools and supplies were observed in the Workshop during the Site reconnaissance.

The Workshop is depicted in photograph 19 of Appendix D. The interior of the Shed was not observed during the reconnaissance. It is reportedly used for storage of various farm supplies.

4.3.1.8 Office

The Office is a single-story structure that occupies approximately 2,300 square feet (Figure 3). The north central portion was reportedly originally constructed in in the early 1900s and gradually added onto with four additions (Maulhardt 2017). It is of gable-shed roofed, wood frame construction covered in stucco and wood siding. It has a raised foundation. It was originally a laundry and has been used as a residence and the main office for the Maulhardt Ranch. The interior was divided into a back utility room, two bedrooms, a kitchen, and a sitting-parlor room area. During the reconnaissance, numerous old computers, printers, and various office related electronic equipment and supplies were stored throughout the building. The general housekeeping was of random organization. The Office is depicted in photograph 33 of Appendix D.

4.3.1.9 Residential Structures

The residential structures adjacent to the Site are the Main Residence (approximately 4,420 square feet), Apartment (approximately 780 square feet), and two Mobile Homes (approximately 3,040 square feet each) (Figure 3). The Main Residence and Apartment were constructed in 1917 (Maulhardt 2017). The Main Residence and Apartment are two-story structures. The Main Residence is constructed with concrete walls and a stucco exterior with a roof that is hip-framed and covered with tile around the exterior of the building with a flat roofed interior area covered with asphaltic roofing material. The Apartment is constructed with either concrete walls or wood framed walls and a stucco exterior. The roof is hip-framed and covered with tile. The Apartment has a garage on the first floor with living quarters on the second floor. The two Mobile Homes were constructed between 1967 and 1978 and are of wood frame construction with flat roofs. Tetra Tech did not access the interior of the residential structures during the Site reconnaissance because they were occupied.

4.3.1.10 Storage Tanks and Drum Storage

Based on information provided by the Maulhardts, two fuel storage USTs and one fuel storage AST were formerly located within the residential and farmyard areas of the Maulhardt Ranch and removed in the 1970's or 1980's. The USTs and AST were operated and removed without permits from the County of Ventura that the Maulhardts believed were not required at that time. A 500-gallon (approximate) AST formerly used to store gasoline and 500-gallon UST (approximate) formerly used to store diesel fuel were located adjacent to the Garage or "gas house", and removed approximately 30 years ago (Figure 3; Table, 1 Item 11). A gasoline 250-gallon (approximate) UST was formerly located adjacent to the southeast corner of the two story Apartment and was removed 20-30 years ago (Figure 3; Table, 1 Item 24). According to the Maulhardts, no known fuel releases occurred from either the AST or USTs. No evidence for spills or stained soils were observed at the former AST or UST locations during the reconnaissance (Appendix D, Photographs 10, 11, 36, and 37).

Four existing 500-gallon (approximate) propane ASTs owned and operated by AAA Propane Services, Inc. (AAA) were observed near to the Main Residence, Apartment, eastern Mobile Home, and western Mobile Home (Figure 3; Table 1, Items 25, 27, 30, and 32) (Appendix D, Photograph 35, and 41).

An existing abandoned 500-gallon (approximate) heating oil AST is present immediately west of the Main Residence (Figure 3; Table 1, Item 28); Appendix D, Photograph 40). The heating oil AST was

formerly used to provide heating oil for an oil furnace to heat the Main Residence. The Main Residence is now heated with a natural gas furnace.

According to the property owners, a 500-gallon (approximate) weed oil AST was formerly located adjacent to the northwest corner of the Garage that was removed over 30 years ago. This AST was operated and removed without permits from the County of Ventura that the Maulhardts believed were not required at that time. The Maulhardts indicated that the AST likely leaked in the past and that stained soils were observed during removal (Figure 3; Table 1, Item 15).

One 30-gallon storage drum (approximate) was observed partially covered with debris near the southern wall inside of the Storage Shed (Appendix D, Photograph 16). Several trailer mounted pesticide and fertilizer distribution tanks of various sizes were observed inside of the Tin Shed building (Appendix D, Photographs 18-24). A heavily stained waste oil tank with a "Black Gold" label on it was observed within the Tin Shed (Appendix D, Photographs 22). Several small five gallon plastic portable fuel containers and an empty 25 gallon (approximate) waste oil drum were observed at the western end of the Tin Shed (Appendix D, Photograph 14). The drum was labeled however it was not legible due to age and condition.

4.3.1.11 Hazardous Substances and Petroleum Products

Small quantities of household hazardous chemicals, agricultural chemicals, petroleum products, and waste oil were observed within the Tin Shed, Garage, and Storage Shed (Appendix D, Photographs 14, 16, 18-20, 22, 24, 25 and 27-30). Lynn Maulhardt indicated that waste oil was discovered in the soil underlying the Apartment garage floor, and that this area was filled with concrete slurry over 40 years ago (Figure 3, Item 23).

Records reviewed for this report indicate that hazardous substances including pesticides, herbicides, and various petroleum products, may have been stored in the Maulhardt Ranch farmyard area. According to the property owners, the current chemical storage area for the Maulhardt Ranch strawberry farm is located at the northern end of the parcel, which is not within the boundary of the Site.

4.4 INTERVIEWS

4.4.1 Interview with Owner

Two of the current owners of the property, Lynn and Richard Maulhardt were interviewed by Tetra Tech during the October 23, 2017 Site reconnaissance. The Maulhardt brothers indicated that the Site is part of the 107.25-acre property located at the southeast corner of North Rose Avenue and Camino Del Sol that is currently being considered for sale and redevelopment. The past and current use of the Site was for agricultural purposes. The Maulhardt brothers indicated that their family has owned and occupied the property since 1869. The Maulhardt brothers indicated that various septic tanks, ASTs, and USTs are present or have been removed at the residential and farmyard areas of the Maulhardt Ranch over the years. These items were discussed during the Site reconnaissance and are included in the disclosure letter discussed in Section 5.7 (Appendix G). The approximate locations and descriptions of these items provided during the onsite interview are shown in Figure 3 and Table 1.

4.4.2 Interview with Site Manager

The Site is managed by the Maulhardt family as represented by Lynn and Richard Maulhardt. The interview with Lynn and Richard Maulhardt is discussed in Section 4.4.1.

4.4.3 Interview with Occupants

Richard Maulhardt, who currently lives on the Site was interviewed. Richard and Lynn's mother Ms. Ruth Maulhardt has occupied the Main Residence since 1952. Mrs. Maulhardt was not available to be interviewed.

4.4.4 Interview with Past Owners and Occupants

The Maulhardt family has owned the Site since 1869. Therefore, there are no other past owner-occupants to interview.

4.4.5 Interview with Local Government Officials

Tetra Tech contacted local government officials at agencies where records for the Site were available and reviewed by Tetra Tech. Additional information from interviewed government officials, if any, is included in the discussion in previous sections of this report.

4.4.6 Interview with Others

No other interviews were conducted with individuals other than those cited above in this section of the Report.

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5.0 ENVIRONMENTAL RECORDS REVIEW

As part of this assessment, Tetra Tech retained the services of EDR, a Connecticut-based company that maintains comprehensive environmental information databases and specializes in providing such data for use in real estate and environmental documents, such as this Phase I ESA. EDR performed a database search of the target property in accordance with current ASTM standards. A copy of this report is included as Appendix F.

Among the environmental databases searched were National Priorities List (NPL) sites; Resource Conservation and Recovery Information System (RCRIS) facilities; Superfund Enterprise Management System (SEMS) sites; Cal-Sites; California Hazardous Materials Incident Report System (CHMIRS); Spills, Leaks, Investigation and Cleanup Cost Recovery System (SLIC); Facility Index System/Facility Identification Initiative Program Summary Report (FINDS); Facility Inventory Database (CA FID UST); Hazardous Substance Storage Container Database (HIST UST); California Environmental Protection Agency/Office of Emergency Information (CORTESE); and California Leaking Underground Storage Tank (LUST) sites. Each of the databases was searched at a radius appropriate for ASTM E1527-13. Sites identified in the databases are listed and plotted in the complete environmental database report provided in Appendix F. The following includes a summary of information regarding the Site itself, properties immediately adjacent to the Site, and/or properties that have the potential to affect the Site based on their proximity to the Site.

5.1 ON-SITE EDR LISTINGS

Listings for the target property were in three databases in the EDR-Radius Map report. Eclipse Berry Ranch #9 with the address listed as 1853 Camino Del Sol, Oxnard, CA was listed in the FINDS database. FINDS contains both facility information and references to other sources that contain more detail. EDR included the following FINDS databases in their report: (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System). Further research indicated that Eclipse Berry Ranch #9 was listed on the Cal EPA regulated site portal. According to the Cal EPA site portal the Site is currently in compliance with Hazardous Materials Release Response Plans (HMRRP) requirements, however one minor citation was listed for June 19, 2017 for failing to meet the annual deadline for business plan submittal. Records reviewed from the Cal-EPA site portal confirmed information documented in The Hazardous Materials Inventory Report provided by VCEHD indicating that hazardous agricultural chemicals and fuels are used and stored on the Maulhardt Ranch property for the Eclipse Berry Ranch #9 (Appendix E). According to the owners of the Maulhardt Ranch, the Eclipse Berry Ranch #9 stores these materials at the northeast corner of the Maulhardt Ranch (APN 214-002-059) approximately 550 feet north of the Site.

5.2 SITE-ADJACENT EDR LISTINGS

- Maulhardt Farms with the address, 1853 Camino Del Sol, Oxnard, CA was listed in the Ventura County Business Plan, Hazardous Waste Producers, and Operating Underground Tanks (Ventura Co. BWT) and Facility and Manifest (HAZNET) Databases. The Ventura County BWT list indicates by site address whether the Environmental Health Division has a Business Plan (B), is a Waste Producer (W), and or any Underground Tank (T) information. The EDR findings indicate that a Farm-Business plan is on record with the VCEHD, confirming past and present agricultural use of the Site. A search

on the VCEHD online database returned record of two septic tanks associated with residential properties located in the Maulhardt Ranch residential area which are considered low risk and are described in Section 2.5.4.4. The HAZNET database is made up of extracted data from copies of hazardous waste manifests received each year by the DTSC (Department of Toxic Substances Control). The EDR report identified HAZNET waste records from 1999 that indicated several waste streams originating at the site including organic solids, unspecified oil-containing waste, and unspecified solvent mixtures. These records confirm waste generation from historical agricultural activities at the Maulhardt Ranch and likely pesticide use at the Site.

- Vineyard Plaza Cleaners, is listed on the EDR Hist Cleaner database at the address of 1944 Camino Del Sol. This location is in the Holiday Manor apartments that are located south of the Site along Camino Del Sol. EDR searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed include, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as High Risk Historical Records (HRHR). EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records. The EDR report indicates that Vineyard Plaza Cleaners operated from 2011 through 2013. No additional records were found associated with this listed property indicating the release of hazardous materials, response, or enforcement actions. 1944 Camino Del Sol is located downgradient from the Site. This listing is not considered to be a REC to the Site.

- Rio Rosales Elementary School is listed on the EDR DTSC ENVIROSTOR database at Kohala and Jacinto streets in Oxnard CA 93030. A Phase 1 Environmental Site Assessment, and Preliminary Environmental Assessment (PEA) were completed for this site during 2002 prior to the construction of the Rio Rosales Elementary School. The current site status is no further action. Relevant findings of the PEA are described in this Section 5.4.1. This is not considered a REC for the Site.

- Superior Carpet Cleaning, with the address listed 633 Ursula, Drive, Oxnard, CA 93030, was also listed on the EDR Hist Cleaner database. The listed address is located in a single family home in a residential neighborhood approximately 477 feet west of the Site. The EDR report indicates that this business operated in 2008. No additional records were found associated with this listed property indicating the release of hazardous materials, response, or enforcement actions. In general, this site is expected to be cross gradient from the Site. This listing is not considered a REC for the site.

5.3 EDR LISTINGS IN THE SITE VICINITY

5.3.1 Properties Between One Eighth and One Quarter Mile From the Site

Four listings were identified by the EDR Report database search located one eighth to one quarter mile from the Site.

- Arenales/Kohala Property, located at 765 Kohala Street, 670 feet east of the Site, was listed on the EDR LUST SLIC and CDL databases. The database indicates that this site was an illicit methamphetamine lab. The case was completed through the voluntary cleanup program in 2007. The case is closed. This listing is not considered a REC for the Site.

- Continental Heritage Corp, located at 275 Rose Avenue, 0.181 mile south of the site, was listed on the Ventura Co. UST database as an inactive site and is located downgradient from the Site. This listing is not considered a REC for the site.

- Maulhardt Farm, located at 1953 E Colonia Road, 0.237 miles west of the Site, was listed on the Hazardous Substance Storage Container database (HIST UST) maintained by the State Water Resource Control Board. The Record indicated that 500 gallons of Diesel fuel used for agricultural activities was stored at the site. Records did not indicate past spills or releases at this property, therefore this listing is not a REC for the site.

- McCaslin Oil Company, located at 2425 Colonia Road, 0.237 miles west of the Site, was listed on the ENVIROSTOR, LUST, HIST UST, HIST CORTESE, SWEEPS UST, and CA FID UST databases. The site case was closed as of October 13, 1998. Given the distance from the Site, completed remedial actions, and no further action status this listing is unlikely to pose any risk to the Site. This listing is not a REC for the site.

5.3.2 Properties Between One Quarter and One Half Mile From the Site

Eight State and Tribal Leaking Storage tank listings were listed in the EDR database at elevation equal or higher than the Site at distances from one quarter to one half mile from the Site. All of these listings were completed or case closed sites and not considered RECs to the Site. These site listings are summarized below.

- Wilma Pacific Inc., located at Bernoulli Circle, 0.280 miles east of the Site, was listed on the LUST database.

- Oxnard Fire Station #5, located at 1450 Colonia Avenue, 0.283 miles west of the Site was listed on the LUST database.

- Standard Pacific of Ventura, located at 1191 Colonia Road, 0.411 miles west of the Site, was listed on the LUST, UST, and HIST CORTESE databases.

- Jones Intercable, located at 721 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST and HIST CORTESE databases.

- Maul-Graves Leasing Co., located at 833 Maulhardt Avenue, 0.487 miles east of the Site, was listed on the LUST, HIST UST, and HIST CORTESE databases.

- Certified Freight lines, located at 965 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST database.

- System 99, located at 965 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST and HIST UST databases.

- Mission Linen, located at 505 Maulhardt Ave, 0.489 miles east of the Site, was listed on the LUST, DRYCLEANERS, and HIST CORTESE databases.

Seven State and Tribal Leaking Storage tank records were identified at elevation lower than the Site at distances of one quarter to one half mile from the Site. None of these listings were considered RECs to the Site. These site listings are summarized below.

- Four records associated with the address 121 Rose Avenue, 0.291 miles south of the Site were identified. The first was associated with Exxon (Sanchez) and listed on the LUST and HIST CORTESE databases. This site gained regulatory closure in 1996. Three other records associated with Mobile Oil SS#18-P7C were listed on the LUST database. Two of these gained regulatory closure in 1996, and the third one in 2007. Based on the distance from the Site and downgradient location, these sites are not considered to be RECs to the Site.

- Oxnard (City) Treatment Plant, located at Perkins Road, 0.395 miles west of the Site, was listed on the LUST and HIST CORTESE databases. This site gained regulatory closure in 1992. Based on the distance from the Site and downgradient location, this site is not considered to be a REC to the Site.

- Two records associated with Oxnard (City), located at 300 Marquita N, 0.397 miles west of the Site was listed on the LUST database. These sites gained regulatory closure in 1994. Based on the distance from the Site and downgradient location, these sites are not considered to be RECs to the Site.

One SLIC site was identified that is located from one quarter to one half mile of the Site.

- Nishimori Farms / Cambridge Development Co., located Southeast of Williams Drive, Soccorro Way, and Wankel Way, 0.432 miles north of the Site was listed on the SLIC database. This listing obtained completed – case closed status in 1999 and is not considered a REC to the Site.

Several other sites, including "orphan" (i.e. unmappable sites) were listed within ASTM recommended search distances. However, due to the type of listing, distance from the Site, location of the Site with respect to assumed regional groundwater flow, topographical features, and/or status of the listed sites, these nearby sites are not considered to be RECs in connection with the Site.

5.4 PREVIOUS INVESTIGATIONS

5.4.1 2002 Preliminary Environmental Assessment for the Rio Rosales Elementary School

ENSR International (ENSR) completed a PEA for the Rio School District in 2002 under DTSC oversight prior to construction of the Rio Rosales Elementary School (ENSR 2002). The Rio Rosales Elementary School is located adjacent to the northeast corner of the Site at Jacinto Drive and Kohala Street (Figure 2). The PEA evaluated potential OCP, arsenic, and lead residuals in soil from past farming practices, polyaromatic hydrocarbons (PAHs) in soil from oil production, methyl bromide in soil and the ambient air from applications at the Maulhardt property located immediately to the west, methane and hydrogen sulfide gas in soil from oil field activities, and potential hydrocarbons, PAHs , and metals from a crushed drum that was observed at the site in 2000. The sampling program comprised:

- Seven soil vapor probes were completed using direct push drilling to depths ranging from 6.5 to 10 feet bgs to collect soil vapor samples that were analyzed for volatile organic compounds (VOCs) using EPA method TO-15, methane using EPA method TO-3, and hydrogen sulfide using EPA method 16;

- Thirty soil samples were collected using direct push drilling to depths ranging from 12 to 16.5 feet bgs to collect soil samples at depths ranging from the ground surface to 15 feet bgs that were analyzed for OCPs using EPA method 8081A, arsenic and lead using EPA methods 7060 and 7421, CAM 17 metals using EPA method 6010B, hexavalent chrome using EPA method 7196, semivolatile organic compounds (SVOCs) using EPA method 8270C, VOCs

using EPA method 8260B, PCBs using EPA method 8082, and total petroleum hydrocarbons (TPH) – fuel fingerprinting (TPH-ff) using EPA method 8015M;

- One ambient air sample was collected and analyzed for VOCs using EPA method TO-15 and methane using EPA method TO-3; and

- Two groundwater samples were collected at approximately 14 feet bgs and analyzed for OCPs using EPA method 8081A, CAM 17 metals using EPA methods 6000/7000, SVOCs using EPA method 8270C, VOCs using EPA method 8260B.

The results of the PEA sampling program indicated the following:

- Low concentrations of VOCs were detected in soil vapor samples across the site at concentrations that were comparable to the ambient air sample;

- Methane gas was detected at low concentrations in approximately one half of the soil vapor samples. It was concluded that the methane was generated by decaying plant matter in the soil;

- Hydrogen sulfide was not detected in the soil vapor samples;

- The pesticides toxaphene, DDT, DDE, and DDE were detected in soil samples from different depths and locations across the site. The SVOCs fluoranthene and phenanthrene were detected at low concentrations in one sample, and the metals beryllium, silver, and thallium were detected at concentrations higher than the background values; and

- No pesticides, SVOCs, and VOCs were detected in the groundwater samples. Selenium and molybdenum were detected in groundwater samples at concentration below DTSC action levels.

The PEA sample results were used to perform a site screening evaluation of chronic human health risk. Toxaphene, DDT, DDE, DDD, fluoranthene, phenanthrene, beryllium, silver, and thallium in soil were selected as chemicals of potential concern (COPCs) for the site screening evaluation of chronic human health risk. The PEA concluded that based on model assumptions, the inhalation pathway does not provide a significant excess cancer risk for soils impacted with the COPCs. The site screening evaluation of chronic human health risk indicated that the hazard quotient was less than one (total hazard between 0.0065 and 0.084) and the excess lifetime cancer risk was 2.7 X 10-6 for soil ranging in depth from the ground surface to 9 feet bgs. Based on these results, ENSR concluded that the results of the site screening evaluation of chronic human health risk indicated that the site-wide risk was sufficiently protective of human health to allow the site to be used as a school site. ENSR recommended that no further investigation be conducted and that the DTSC concur by issuing a "No Further Action" determination for the site.

The DTSC provided their evaluation of the ENSR PEA for the Rio Rosales Elementary School site in a letter dated June 26, 2002, and concluded that they concurred with ENSR's recommendations that no further investigation was required for the Rio Rosales Elementary School site and approved the PEA (DTSC 2002).

5.5 ENVIRONMENTAL CLEANUP LIENS

No environmental cleanup liens are known to have been filed against the Site under federal, state, or local laws.

5.6 RADON

Radon is a naturally occurring, odorless, colorless gas produced by certain geologic materials. It is known to be a human carcinogen and can pose a cancer risk greater than one in one million in humans at concentrations equal to or greater than 4 picoCuries per liter (pCi/L).

The EDR environmental database search indicated that Ventura County is in a Radon Zone 1 area. Zone 1 areas have a predicted average indoor screening level greater than 4 pCi/L. The EDR database search reported that of 38 sites listed in the California Radon database that have been tested for the zip code of 93030, one had radon at levels greater than 4 pCi/L. The Federal Area Radon Information database reported 9 sites tested for radon in the 93454 zip code. The average concentration of tested sites was 0.478 pCi/L in first floor living areas (EDR 2017).

The EDR report gives a passing result for the Site with no further action required. These findings suggest there are no health concerns related to radon at the Site.

5.7 PROPERTY OWNER DISCLOSURE OF EXISTING CONDITIONS

The Maulhardt Ranch property owner's attorney Mr. Kenneth M. High. Jr. of Lowthrop Richards provided Tetra Tech with a memorandum dated October 5, 2017, *Memorandum, Disclosure of Existing Conditions Affecting Phase I Environmental Report* (High 2017) through Sage. The memorandum describes the Maulhardt Ranch property owners' recollection of existing conditions at the property with information that is relevant to this Phase I Environmental Assessment Report (Appendix G). The memorandum is summarized below.

Farming Operations

Since the property was acquired by the Maulhardt Family ancestors about 1869, it has been used for farming operations with various crops over the years, including various dry farming crops in the early days, lemons and avocadoes, row crops and currently strawberries. Those operations involved the application of all the pesticides, herbicides, fertilizers, and other chemicals customarily used and/or permitted in such operations over the decades. No known sites of any spills or tanks or pits, or other locations where any particular concentration of chemicals existed or exists, except the metal building along the northern edge of the home site was historically used to store tractors and farm equipment and it has a hard packed dirt and/or concrete floor not evenly distributed, which could have absorbed gas, diesel fuel, oil or other chemicals resulting from such use.

Gasoline, Diesel, and Herbicide Tanks

The following gasoline, diesel, and herbicide tanks exist or formerly existed at the Maulhardt Ranch farmyard and residential areas.

- A heating oil 500-gallon (approximate) AST is located adjacent to the west side of the big Main Residence. It was formerly used to store heating oil for a furnace located in the basement of the Main

Residence. It is no longer in use. The Main Residence is currently heated with propane supplied by AAA.

- A 250-gallon (approximate) gasoline UST was removed about 20-30 years ago from the southeast corner of the Apartment. No known leak has occurred from this UST. No permits were obtained from any agency for the operation or removal of this UST, although it is believed none was required when the UST was operated and removed.

- A 500-gallon (approximate) gasoline AST was formerly located adjacent to the southwest corner of the Garage. It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. No known leak occurred.

- A 500-gallon (approximate) diesel fuel UST was formerly located adjacent to the southeast corner of the Garage. It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. No known leak occurred.

- A 250-gallon (approximate) weed oil AST was formerly located at the northwest corner of the Garage. It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. It is believed to have leaked and the last memory of it is that the dirt was stained before the hole was filled in.

- A concrete lined mechanics pit is located in the floor of the Garage, like those in oil change facilities. It was used to change the oil and/or do mechanical work on tractors, farm equipment and vehicles.

- Propane storage ASTs (approximately 500-gallon capacity) are located near the Main Residence, Apartment, western Mobile Home, and eastern Mobile Home (five propane storage ASTs total). They are owned and filled periodically by AAA.

Septic Systems

The following septic systems are currently or formerly were present at the residential area of the Maulhardt Ranch. For the most part, these were installed and operated without permits, which the Maulhardts believed were not necessary.

- A currently operating septic tank is present at the northeast corner of the Main Residence just outside the kitchen window. The top is visible on the surface of the ground. The leach field for this 100 year old system is located to the east in the road and/or in the orchard.

- A formerly operating septic tank is present in the road east of the Main Residence southeast of the kitchen window. It was abandoned in place and not filled about 30 plus years ago, without a permit, which the Maulhardts believed was necessary.

- A currently operating prefabricated concrete septic tank is present near the northeast corner of the Main Residence and east of the driveway into the property. The leach field for this system is located south of the tank.

- A formerly operating septic tank is located adjacent to Office north of the Main Residence and east of the Apartment. It was abandoned in place and filled with dirt and scrap concrete about 20 plus years ago.

- A formerly operating wooden septic tank is located adjacent to the Office. It is located in the lawn about 10 feet north and 8 feet west of the front door. It was abandoned and filled with dirt about 30 years ago.

- A formerly operating septic tank is located outside to the west of the Office, outside of the kitchen window. It was abandoned and filled with dirt about 30 years ago.

- A formerly operating cesspool is located approximately three to four feet north of the Apartment. It was abandoned and filled with dirt about 15 or more years ago.

- A currently operating septic tank is located about eight feet north of the Apartment. It was installed about 20 years ago. The leach field is located south of the tank. Whether there was a permit obtained is unknown.

- A currently operating septic tank is located about 16 feet behind and about the middle of the eastern Mobile Home. One leach field extends due east, which was abandoned about 20-25 years ago. Another leach field that is in service extends south into the orchard.

- A currently operating septic tank is located about 15 to 20 feet east of the western Mobile Home. It was installed in 1973. The leach field for this system extends south, with an offshoot added later to either the east or west.

- A septic tank was formerly located west of the Garage, that used to service a bunk house for farm workers that was located to the west of the Garage where a lemons orchard is now located. There was a cesspool crushed in place when the bunk house was removed about 30 or more years ago.

- A four-foot diameter vertical concrete irrigation pipe is located at the southeast corner of the Horse Barn that was formerly used for sewage from a trailer located there for one year and removed 43 years ago. It is capped now. No leach field existed.

- An abandoned washing machine septic tank may be located east of the jacaranda tree by the back porch of the Main Residence. If so, it was believed to have been filled in about 25 or more years ago.

- An abandoned septic tank may be located west of power pole to the east of the northeast corner of the Main Residence. If so, it was believed to have been filled in about 25 or more years ago.

- An abandoned septic tank may be located west of the Apartment. If so, it was believed to have been filled in about 25 plus years ago.

- There was a hole in the floor of the Apartment garage that may have had oil deposited in it. It was plugged with concrete over 40 years ago to level the floor.

Water Wells, Pipelines, and Wind Machines

- An existing above ground horizontal water tank is located east of the driveway into the home site before it reaches the garage. South of that tank, there was a water well at the same location which was abandoned and properly backfilled, with a permit from Ventura County about 25 plus years ago.

- There is an existing buried 12" PVC water pipeline routed west from the water well along the northern Maulhardt Ranch property boundary. The pipeline is split into two PVC pipes a few feet apart that are routed to the south directly beneath or near the north-south farm road approximately 480 feet east of Rose Avenue (Figure 2).

- There is also a separate irrigation PVC pipeline system extending from the water well at the northeast corner of the Maulhardt Ranch property throughout the strawberry fields.

- There are no existing wind machines and all previously removed wind machines were electric.

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6.0 USER PROVIDED INFORMATION

Mr. Sid Albaugh, Assistant Superintendent for OUHSD completed the User Questionnaire for Phase I ESAs as required by ASTM Standard E1527-05 and it is included in Appendix I. The findings of the User Questionnaire for Phase I ESAs for the Site are summarized below.

6.1 LAND TITLE AND JUDICIAL RECORDS FOR ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

For Item 1 of the User Questionnaire, Environmental Cleanup Liens, Mr. Albaugh indicated that they have no information regarding environmental liens for the Site.

6.2 ACTIVITY AND USE LIMITATIONS

For Item 2 of the User Questionnaire, Activity and Use Limitations (AULs), Mr. Albaugh indicated that there are no known AULs for the Site and that this issue would be further reviewed upon opening of escrow and review of the preliminary title reports.

6.3 SPECIALIZED KNOWLEDGE

For Item 3 of the User Questionnaire, Specialized Knowledge, Mr. Albaugh indicated they have no specialized knowledge of any environmental issues that might affect the Site.

6.4 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

For Item 4 of the User Questionnaire, Fair Market Value, Mr. Albaugh indicated that the property purchase price was not significantly below fair market value.

6.5 OBVIOUS INDICATORS

For Item 5 of the User Questionnaire, Obvious Indicators, Mr. Albaugh indicated that they did not know of any obvious indicators of possible contamination on or near the Site.

6.6 COMMON KNOWLEDGE

For Item 5 of the User Questionnaire, Obvious Indicators, Mr. Albaugh responded as indicated in the underlined text below:

- Describe paste uses of the property: Resident, Agriculture, and Barn.
- Describe specific chemicals that may have been present at the property: To be determined (TBD).
- Describe any other information that may help us in identifying possible contamination: Not Applicable.

6.7 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

The current owner of the Site is the Maulhardt Family. The Maulhardts are the current occupants on the Site. Eclipse Berry Farms is leasing the Site from the Maulhardt Ranch for strawberry cultivation.

6.8 REASONS FOR PHASE I ESA PERFORMANCE

It is Tetra Tech's understanding that this Phase I ESA is being requested in conjunction with due diligence activities by OUHSD.

7.0 FINDINGS

Based on the information discussed in this Phase I ESA and Tetra Tech's understanding of current regulatory guidelines and judgment, the following six RECs have been identified for the Site that might pose a risk to future Site occupants (students, teachers, and school district employees).

7.1 OXNARD OIL FIELD

The Site is located within the Oxnard Oil Field. No oil wells are present on the Site and no evidence for oil production activities at the Site or current Maulhardt Ranch property was noted in the historical aerial photographs. The presence of oil wells and historical oil production activities within 0.25 mile of the Site from 1934 through 2000 are well documented in the historical topographic maps, and DOGGR records. This information indicates that there is a potential that the Site soils may have been impacted from toxic hydrogen sulfide or methane gas from the underlying Oxnard Oil Field.

7.2 FORMER AGICULTURAL LAND USE

Potential impacts to Site soils from former pesticide applications associated with former agricultural land use practices is a REC for the Site. The Site owners indicated that the Site has been used for agricultural production since at least 1869 and that legal pesticides in common use were applied to the Site, including OCPs or heavy metals. The historical aerial photographs and Google images reviewed for this report indicate that the Site was used for crop production from at least 1927 through 2017. OCPs and heavy metals from pesticides were commonly used for crop production from the 1940s through the 1960s and were detected in soil samples collected for the 2002 Preliminary Environmental Assessment conducted for Rio Rosales Elementary School Site (ENSR 2002) on property that was formerly part of the Maulhardt Ranch. Therefore, there is a potential that the Site soil is impacted with OCPs and heavy metals from pesticides.

The Site owners indicated that smudge pots fueled by heating oil were formerly throughout the cultivated areas of the Site for frost abatement when they were planted with citrus groves. There is a potential that soil at the Site have been impacted with fuel oil that contains SVOCs and PAHs.

7.3 ABOVE GROUND AND UNDERGROUND STORAGE TANKS

There are potential impacts to shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas:

- A former 250-gallon (approximate) gasoline UST site located near the southeast corner of the Apartment;
- A former 500-gallon (approximate) gasoline AST site located near the southwest corner of the Garage;
- A former 500-gallon (approximate) diesel fuel UST site located near the southeast corner of the Garage; and
- A former 250-gallon (approximate) weed oil AST located near the northwest corner of the Garage.

7.4 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS

Potentially hazardous substances and petroleum products have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area. Pesticides/herbicides/fertilizers were historically stored and mixed within the Storage Shed at the western edge of the farm yard and within the Tin Shed and outside the southwest corner of the Tin Shed. Discussion with the Site owners and review of historical aerial photographs and Google Earth images dating from 1943 through 2015 indicate that the Site was used for crop production throughout that time period and that OCPs were in use.

7.5 PCB-CONTAINING TRANSFORMERS AND EQUIPMENT

One pole-mounted transformer is currently located onsite along the southern Site boundary along Camino Del Sol. There is a potential that this pole mounted transformer contained PCBs that may have been released to the soils beneath them.

7.6 PIPELINES

CCR Title 5, Section 14010(h) requires that new school sites shall not be located or within 1,500 feet of the easement of an above ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional. Hazardous pipelines are defined as:

- Pipelines carrying chemical products, natural gas, and other hydrocarbon products that are operating at a pressure of 80 psig or higher; and

- High-volume water lines, which are defined as water lines 12 inches or greater in diameter, and include open aqueducts of comparable and greater volume handling capacity.

Four hazardous pipelines as defined by CCR Title 5, Section 14010(h) were identified within 1,500 feet of the Site:

- The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site (Figure 2) (Appendix E);

- The City of Oxnard maintains a 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site (Figure 2) (Appendix E);

- The UWCD maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site (Figure 2) (Appendix E); and

- The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch (Figures 2 and 3).

8.0 RECOMMENDATIONS

In the professional opinion of Tetra Tech, an appropriate level of inquiry has been made into the previous ownership and uses of the Site consistent with good commercial and customary practice with the intent to minimize environmental liability. Based on the information cited in this assessment and Tetra Tech's understanding of current regulatory guidelines and judgment, it is Tetra Tech's recommendation that a Preliminary Environmental Assessment (PEA) be performed under DTSC oversight to evaluate the six RECs described in Section 7.0. A hazardous pipeline assessment should also be conducted in accordance with the *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007) as part of the PEA.

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9.0 DISCLAIMER

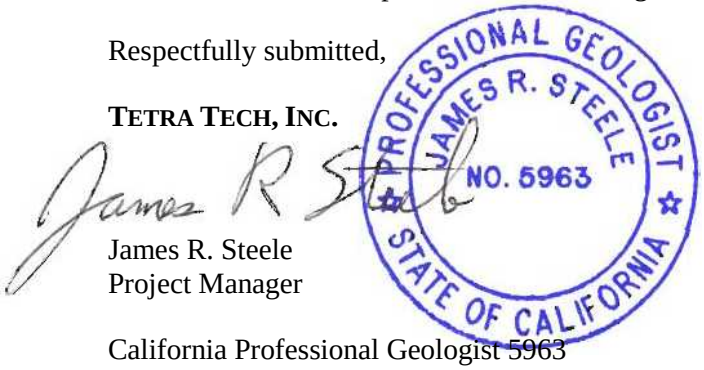
This report was compiled based partially on information supplied to Tetra Tech from outside sources and other information that is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others which may be contained in the report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for the report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under federal, state, or local laws or any modifications or changes to such laws.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR Part 312. We have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the AAI in conformance with the standards and practices set forth in 40 CFR Part 312.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

TETRA TECH, INC.



James R. Steele
Project Manager

California Professional Geologist 5963
California Certified Engineering Geologist EG 1906
California Certified Hydrogeologist HG 247
Expiration date: May 31, 2019

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10.0 REFERENCES

AirNav.com
2017 https://www.airnav.com/cgi-bin/airport-search, September 15.

ASTM International (ASTM)
2013 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. E 1527–13.

California Department of Conservation, California Geological Survey (CGS)
2002 *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

California Department of Conservation, Division of Mines and Geology (CDMG)
2000 *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos.* April.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)
2001 Map 214. February 14.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)
2017 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.

California Department of Education (CDE)
2007 *Guidance Protocol for School Site Pipeline Risk Analysis.*

California Environmental Protection Agency State Water Resources Control Board (SWRCB)
2017 Geotracker database at http://geotracker.waterboards.ca.gov/. September 14.

California Environmental Protection Agency Department of Toxic Substances Control (DTSC)
2002 *Approval of Preliminary Environmental Assessment, Proposed Permanent Rio Rosales Elementary School (Formerly Known as Rio Rosales School and Playground Site), Located Northwest of the Intersection of Jacinto and Kohala Streets, Oxnard, (Site Code 3044101)*. June 26.

California Department of Conservation, California Geological Survey (CGS)
2002 *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

Clahan, Kevin B and Marina Mascorro
2003 *Geologic Map of the Oxnard 7.5' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

City of Oxnard
2010 City of Oxnard Water Atlas. February

City of Oxnard
2011 City of Oxnard Water Atlas. June

Clahan, Kevin B and Marina Mascorro
2003 *Geologic Map of the Oxnard 7.5' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

Enriquez-Pratt, Blanca
2017 Personal Communication for Ventura County Agricultural Commissioner's Office. September 27.

ENSR International (ENSR)
2002 *Results of the Preliminary Environmental Assessment, Environmental Oversight Agreement HAS-A-99/007, Proposed Permanent Rio Rosales Elementary School Site Located at Jacinto Drive and Kohala Street, Oxnard, California.*

Environmental Data Resources, Inc. (EDR)
2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Federal Emergency Management Agency (FEMA)
2010 Flood Insurance Rate Map No. 06111C0910E. May 16.

Federal Register
2015 Environmental Protection Agency, 40 CFR Part 312, *Standards and Practices for All Appropriate Inquiries and Notice of Public Meeting to Discuss Standards and Practices for All Appropriate Inquiries*; Proposed Rules.

Henigan, Anne
2017 Personal Communication for Cal Fire. September 20.

High, Kenneth M.
2017 *Memorandum, Disclosure of Existing Conditions Affecting Phase I Environmental Report.* October 5.

Mattern, Darlene
2017 Personal Communication for the City of Oxnard CUPA. September 18.

Maulhardt, Lynn and Richard
2017 Personal Communication. October 23.

2018 Map and Text Summary of Maulhardt Ranch Water Distribution System. January.

National Pipeline Mapping System (NPMS)
2017 https://www.npms.phmsa.dot.gov/PublicViewer/. May 16.

Norris, R.M. and Webb, R.W.
1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Penhart, Marie
2017 Personal Communication for the Ventura County APCD. September 20.

Oakeshott, Gordon B.
1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

Turner, John, and Mike Mukae
1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

U. S. Fish and Wildlife Service (USFW)
2015 *National Wetlands Inventory.* September 15.

U. S. Geological Survey (USGS)
2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

Ventura County Public Works Department (VCPWA)
1975 *Ventura County Water Resources Management Study, Aquifer Delineation in the Oxnard-Calleguas Area, Ventura County*

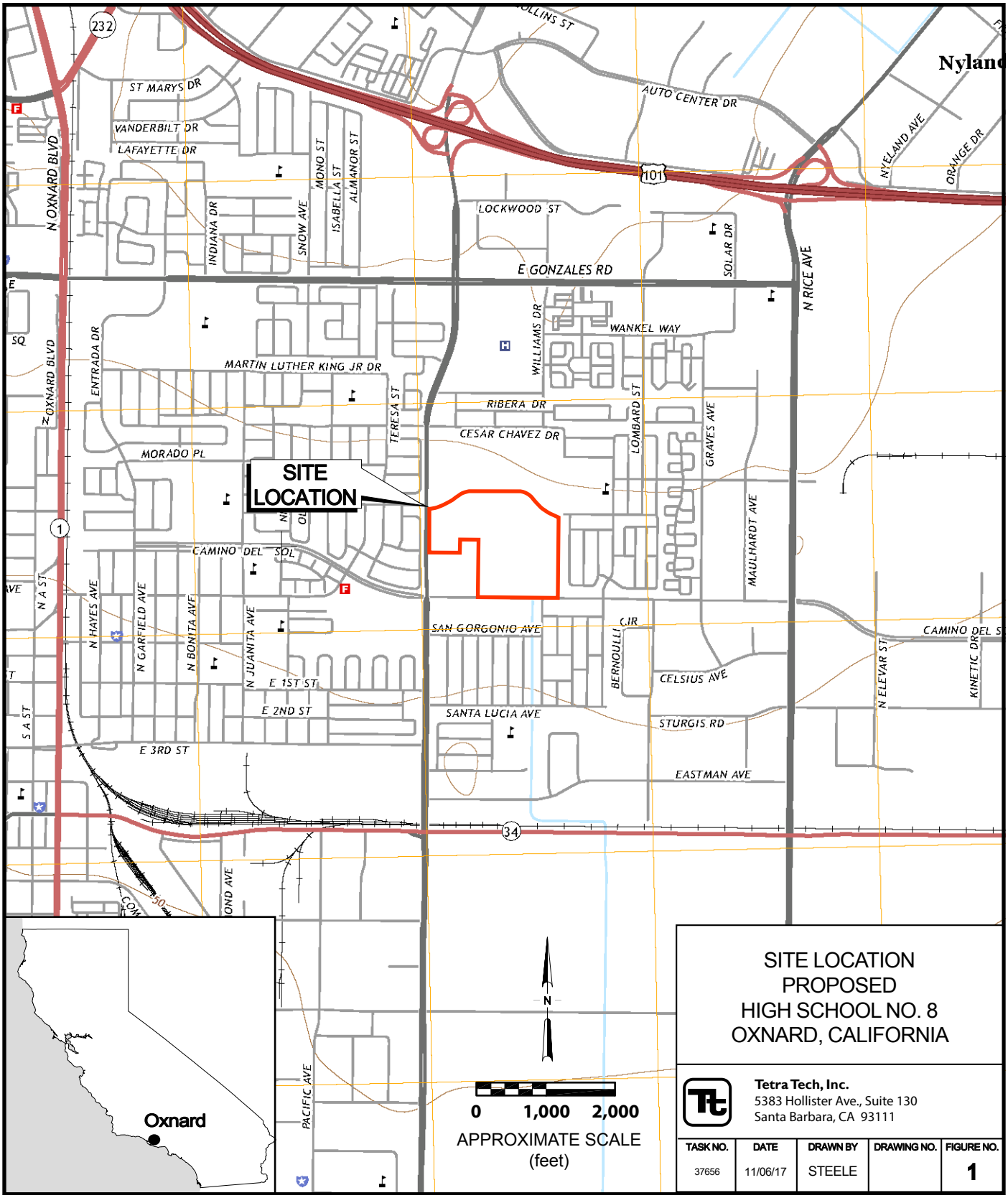
Wall, Steve
2017 Personal communication for Southern California Edison (SCE). November 20.

WLC Architects
2018 Site Plan. February 28.

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FIGURES

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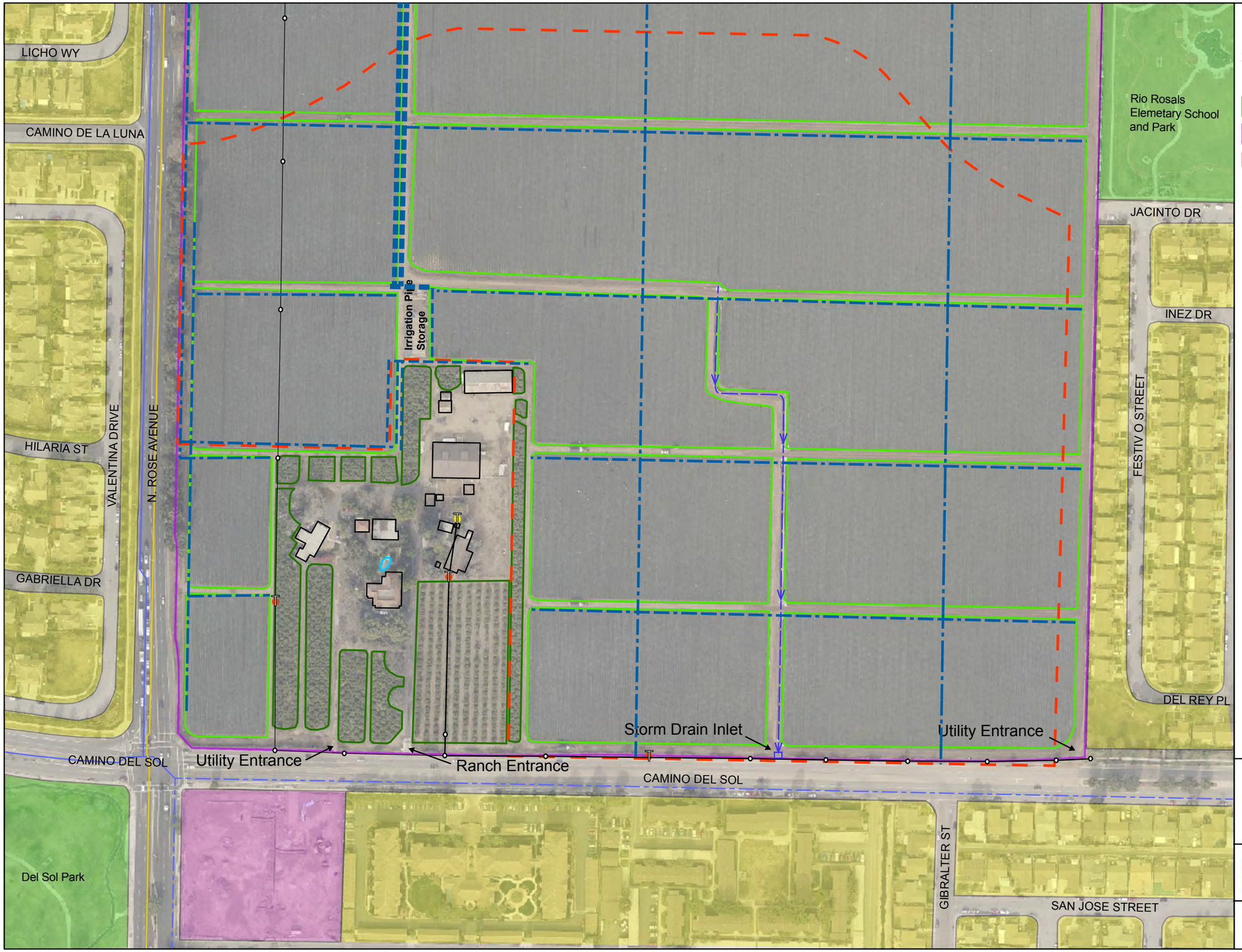
SITE LOCATION
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	DRAWING NO.	FIGURE NO.
37656	11/06/17	STEELE		1

Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)

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Legend

Site Features

- Building
- Pool
- Orchard
- Strawberries
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inchAsbestos-Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Surrounding Area Land Use

- Residential
- Commercial
- Park

Note: All building and utility locations are approximate.

0 50 200 400 Feet

Background imagery: Ventura County, 2016

SITE PLAN
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
37656	11/08/2017	tr/JS	10045	**2**

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Legend

- Building
- Orchard
- Strawberries
- Pool
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- Septic Line
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- 12 Potential Recognized Environmental Concern (Refer to Table 1)
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Note: All building and utility locations are approximate.

N

0 50 100 200 Feet

Background imagery: Ventura County, 2016

MAULHARDT RANCH
RESIDENCE/FARM YARD AREA DETAIL
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

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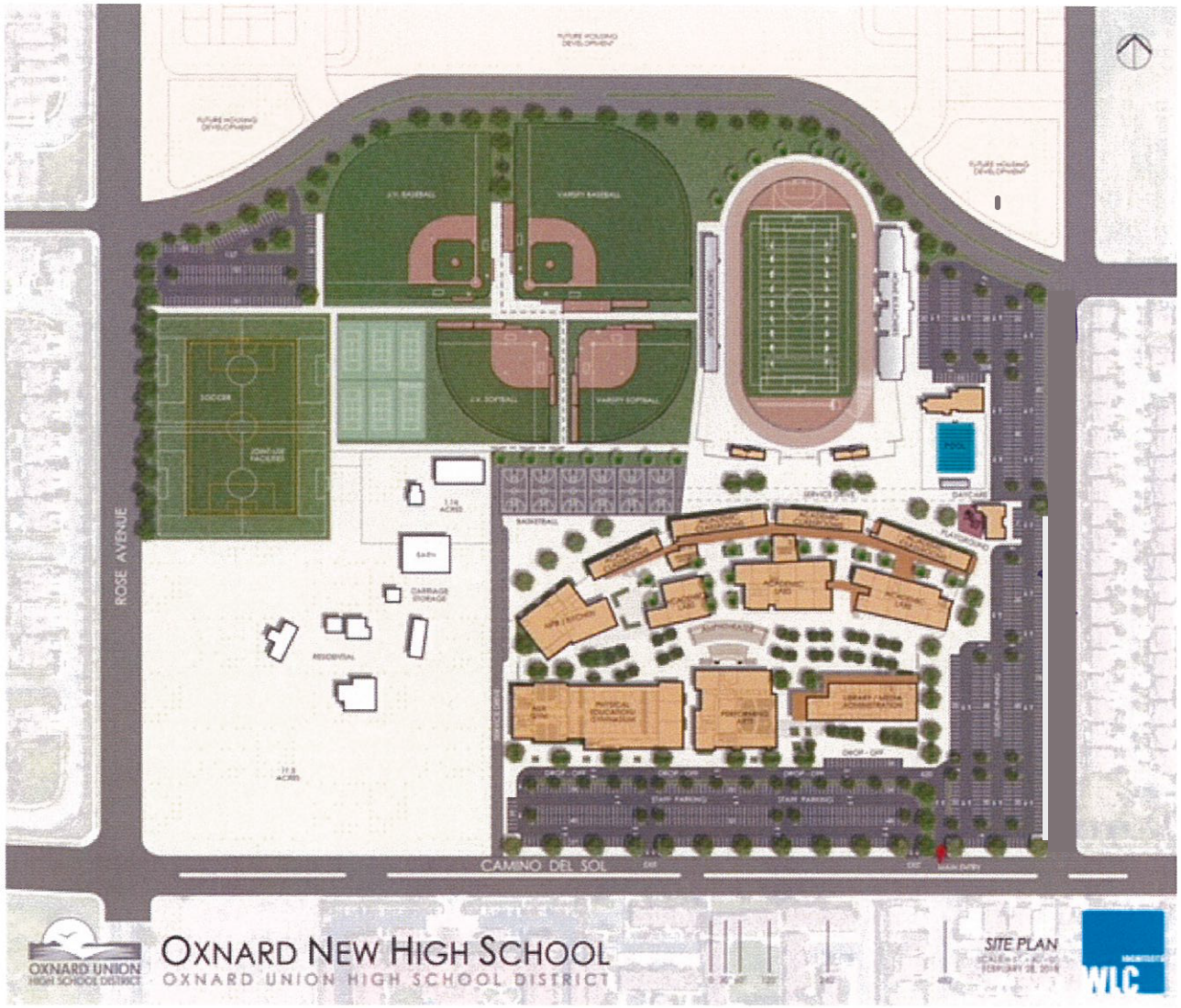
Table 1
Site Reconnaissance Features

Number	Item	Location
1	Series of active concrete residential septic tanks.	East of Main Residence near kitchen window.
2	Potential abandoned septic tank	Underlying driveway east of the Main Residence.
3	Underground laundry room wastewater septic tank.	Under northeast corner of Main Residence.
4	Abandoned cesspool	Near northeastern corner of orchard on the east side of the Main Residence.
5	Pole mounted transformer	In citrus orchard south of eastern Mobile Home.
6	Eastern Mobile Home septic tank	Approximately 10-15 feet east of eastern Mobile Home.
7	Abandoned water well	Southwest of Workshop.
8	Power pole and former location of three pole mounted transformers	Northwest of Workshop.
9	Abandoned septic tank	South of Horse Barn.
10	Bonfire area	North of Horse Barn and south of Tin Shed.
11	Former location of removed 500-gallon (approximate) gasoline fuel above ground storage tank (AST) removed in 1980's.	Southwest corner of Garage.
12	Former location of 500-gallon (approximate) diesel fuel UST removed in 1980's.	Southeast corner of Garage.
13	Oil Change Sump.	Inside of Garage.
14	Former location of two 2-story Bunkhouses removed in 1970's. Abandoned septic tank and cesspool likely present.	In orchard west of Garage and Storage Shed.
15	Former 500-gallon (approximate) weed oil AST removed in the 1970's without a removal permit.	Located along northwest corner of Garage.
16	Former pesticide mixing area.	Located near southwest corner of Tin Shed.
17	Smudge Pot	Inside of Tin Shed at northwest corner.
18	Soil/ floor staining observed.	Located inside of Tin Shed.
19	Old concrete footing from removed wind electric machine.	Located north of Tin Shed.
20	Abandoned septic tank.	North of Office.
21	Abandoned redwood septic tank	Northwest of Office.
22	Apartment septic tank	North of Apartment.
23	Oil residue under Apartment garage. Area was backfilled with concrete slurry.	Inside Apartment garage at southeast corner.
24	Former location of 250-gallon (approximate) gasoline UST and pump.	South of the Apartment.
25	500-gallon (approximate) propane AST owned and operated by AAA Propane Services, Inc. (AAA).	Northwest corner of Apartment.
26	Septic Tank	East of western Mobile Home.
27	500-gallon (approximate) propane AST owned and operated by AAA	West of Main Residence.
28	Abandoned 500-gallon (approximate) heating oil AST.	West of Main Residence.
29	Pole mounted transformer	In orchards west of Main Residence.
30	500-gallon (approximate) propane AST owned and operated by AAA	North of eastern Mobile Home.
31	Recreational Vehicle	East of the Horse Barn.

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A OXNARD HIGH SCHOOL NO. 8 CONCEPTUAL PLAN

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OXNARD NEW HIGH SCHOOL

OXNARD UNION HIGH SCHOOL DISTRICT

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B HISTORICAL TOPOGRAPHIC MAPS

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.4
September 11, 2017

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

09/11/17

Site Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.4

Client Name:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Tetra Tech, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: Oxnard High School #8

Coordinates:

Latitude:	34.206412 34° 12' 23" North
Longitude:	-119.158724 -119° 9' 31" West
UTM Zone:	Zone 11 North
UTM X Meters:	301112.55
UTM Y Meters:	3787149.83
Elevation:	63.00' above sea level

Maps Provided:

2012
1967
1951
1949
1947
1943
1904

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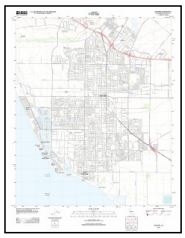
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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Oxnard
2012
7.5-minute, 24000

1967 Source Sheets



Oxnard
1967
7.5-minute, 24000
Aerial Photo Revised 1967

1951 Source Sheets



Oxnard
1951
7.5-minute, 24000
Aerial Photo Revised 1947

1949 Source Sheets



Oxnard
1949
7.5-minute, 24000
Aerial Photo Revised 1947

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1947 Source Sheets



HUENEME
1947
15-minute, 50000

1943 Source Sheets



Hueneme
1943
15-minute, 62500
Aerial Photo Revised 1938

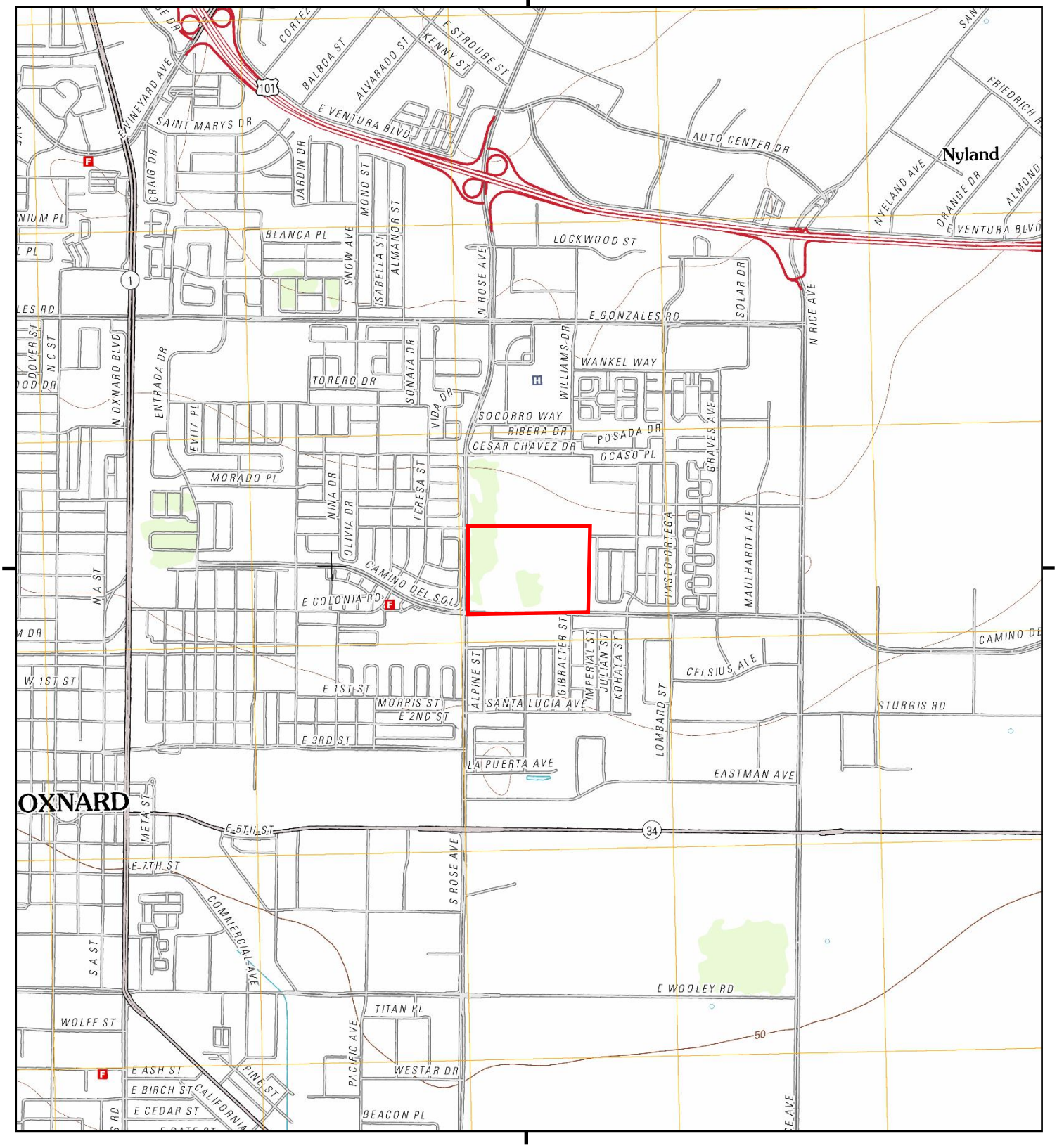
1904 Source Sheets



Hueneme
1904
15-minute, 62500

Historical Topo Map

2012



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SW S SE

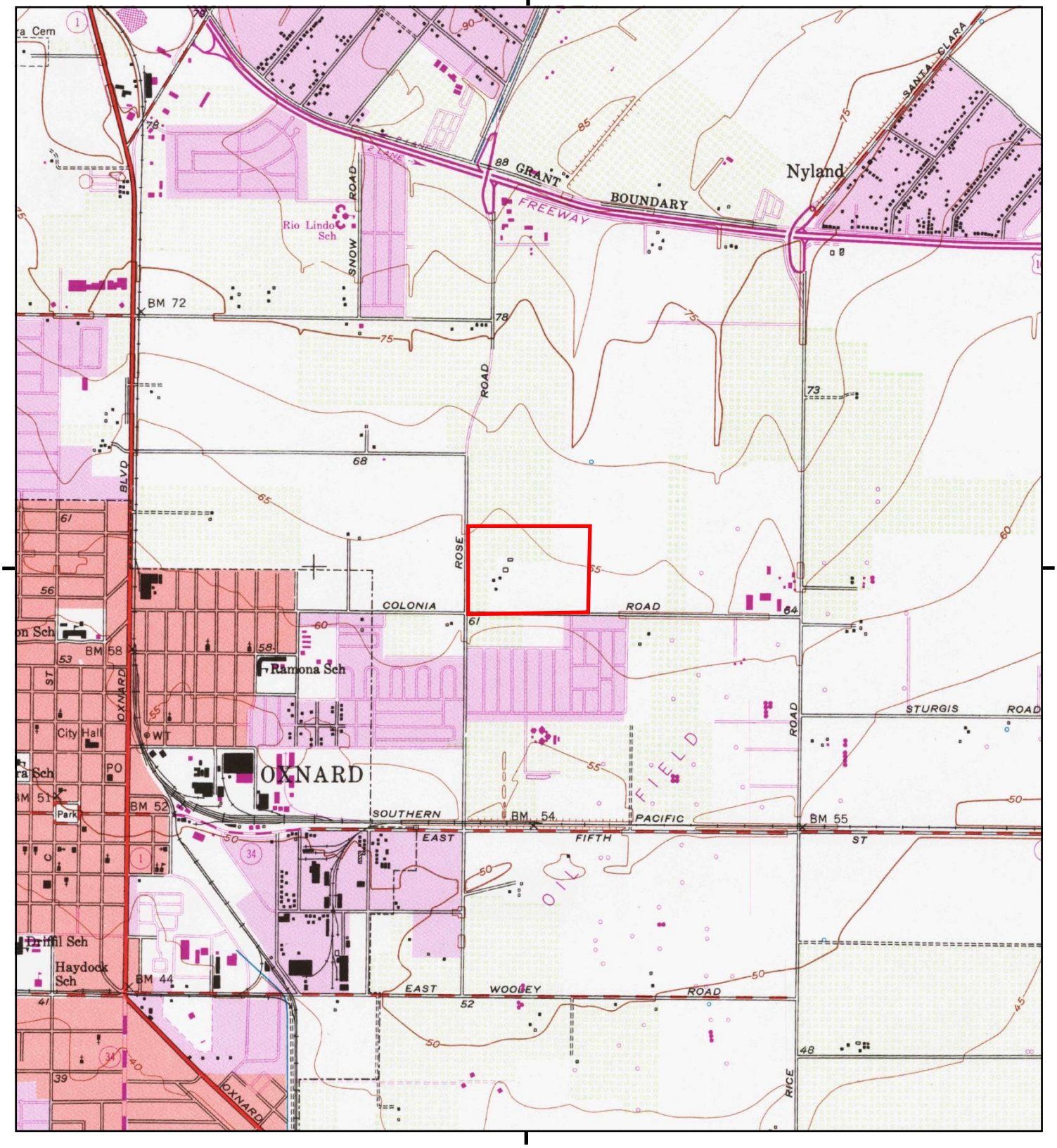
TP, Oxnard, 2012, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

Historical Topo Map

1967



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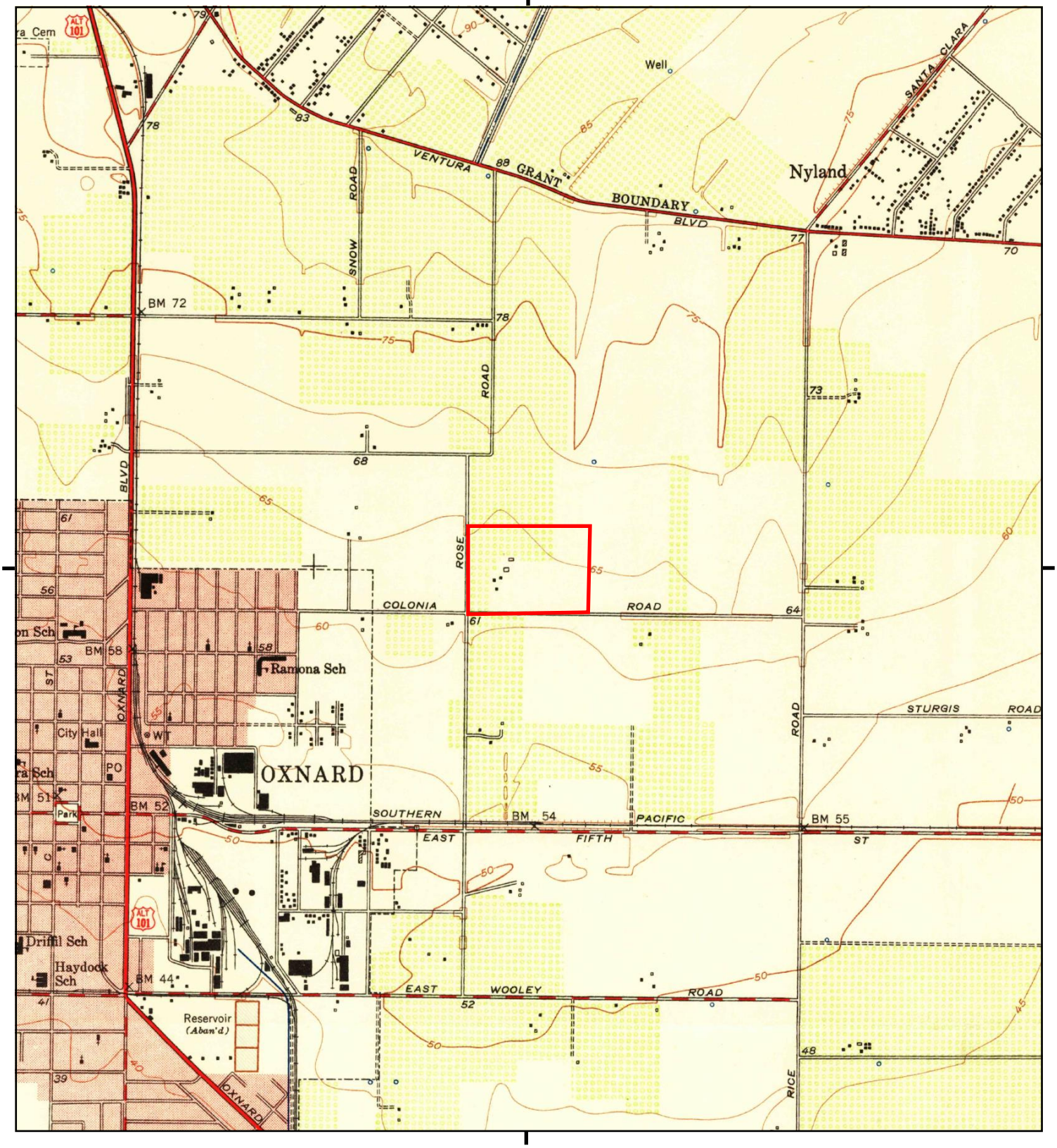
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NW N NE
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SW S SE

TP, Oxnard, 1967, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

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This report includes information from the following map sheet(s).

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SW S SE

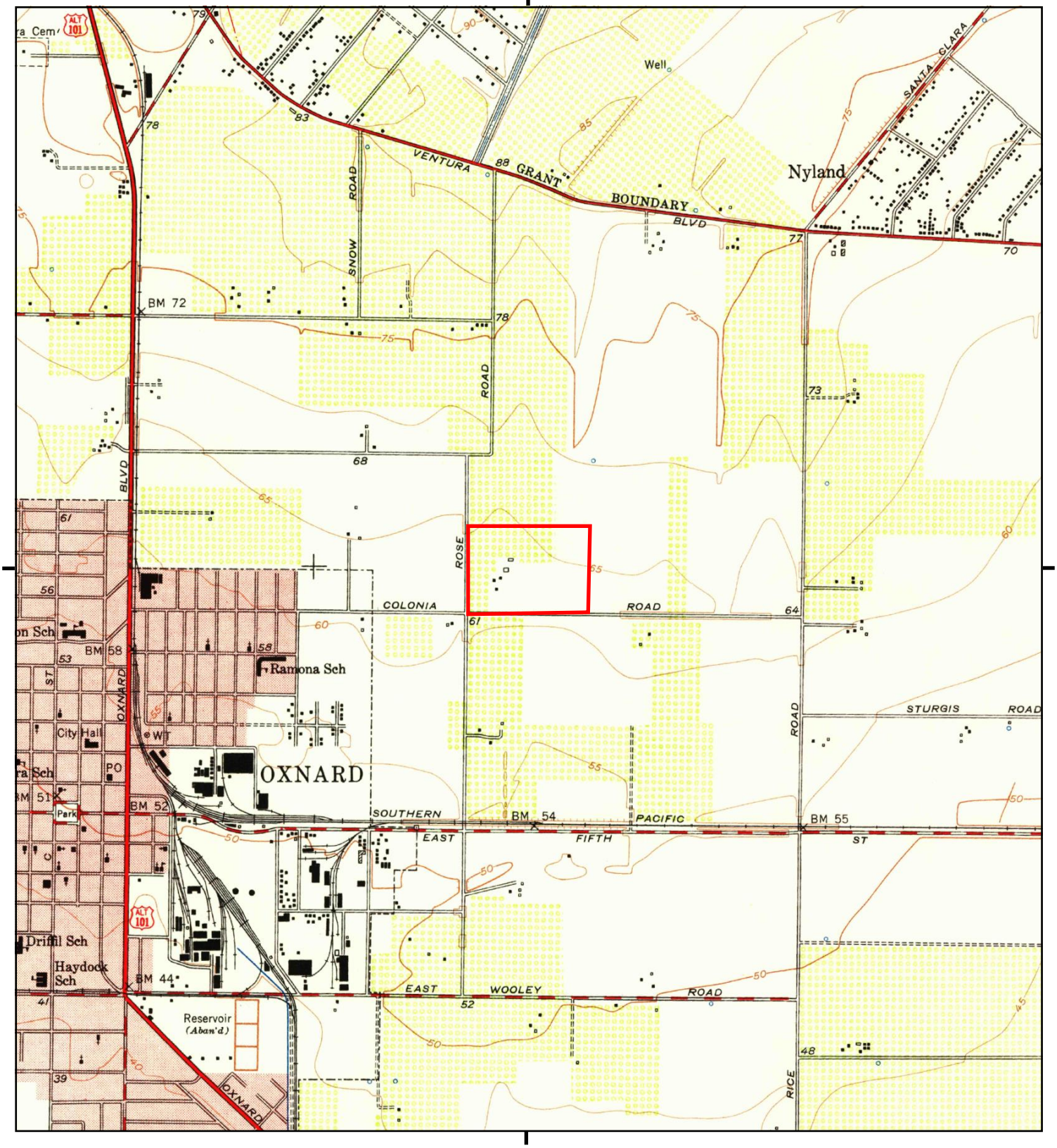
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SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

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Historical Topo Map

1949



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SW S SE

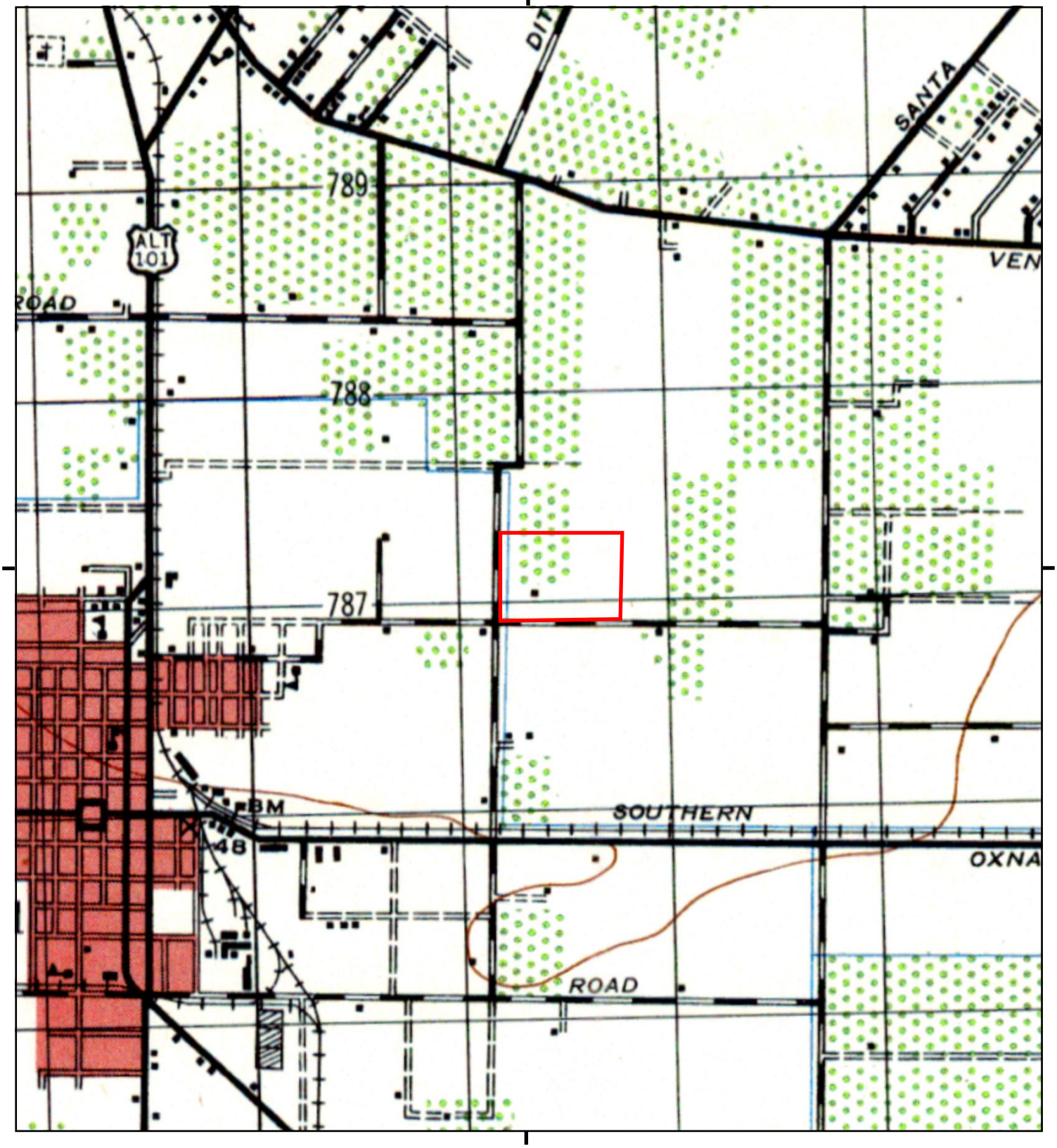
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SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

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Historical Topo Map

1947



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W E
SW S SE

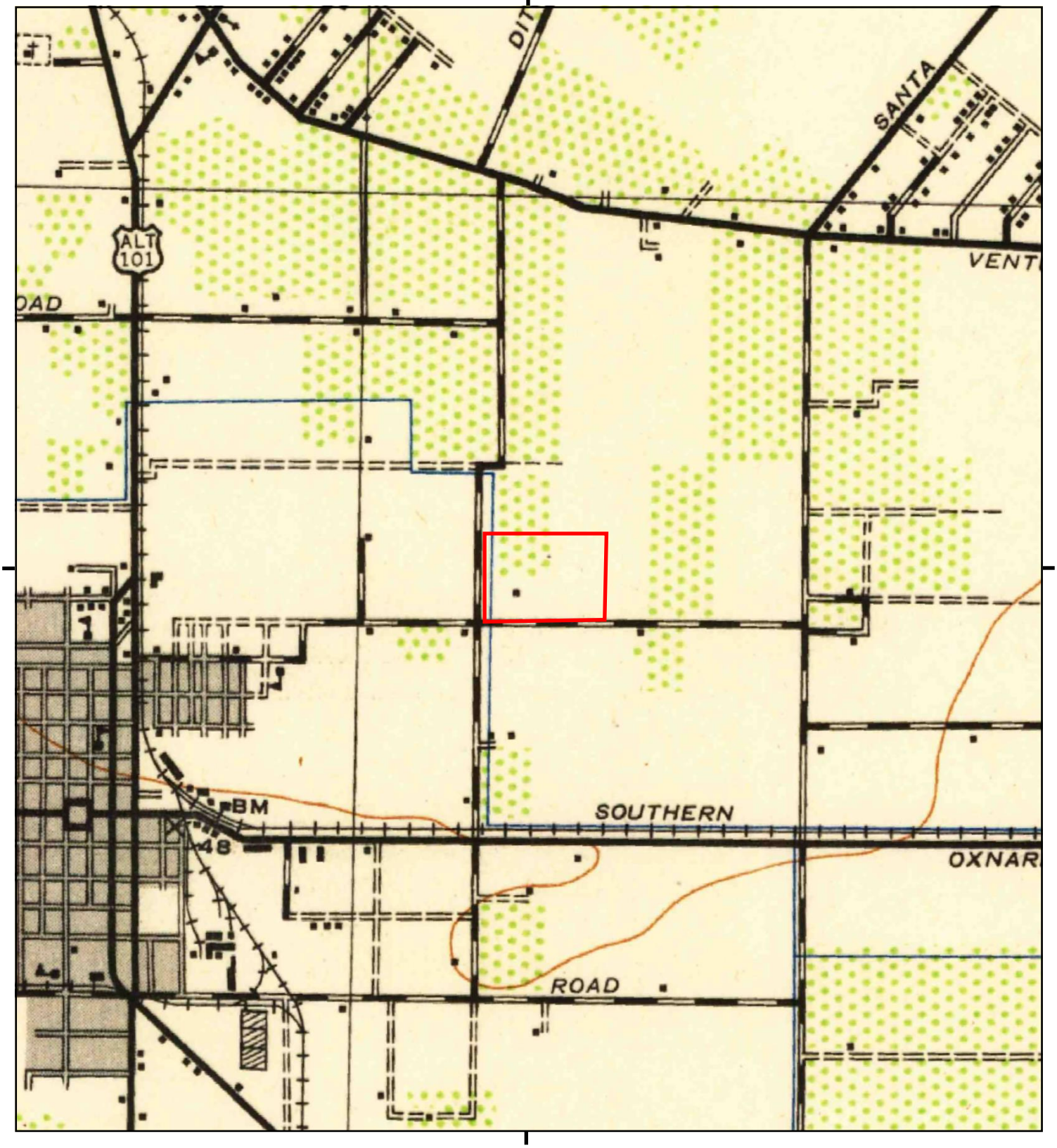
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SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

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Historical Topo Map

1943



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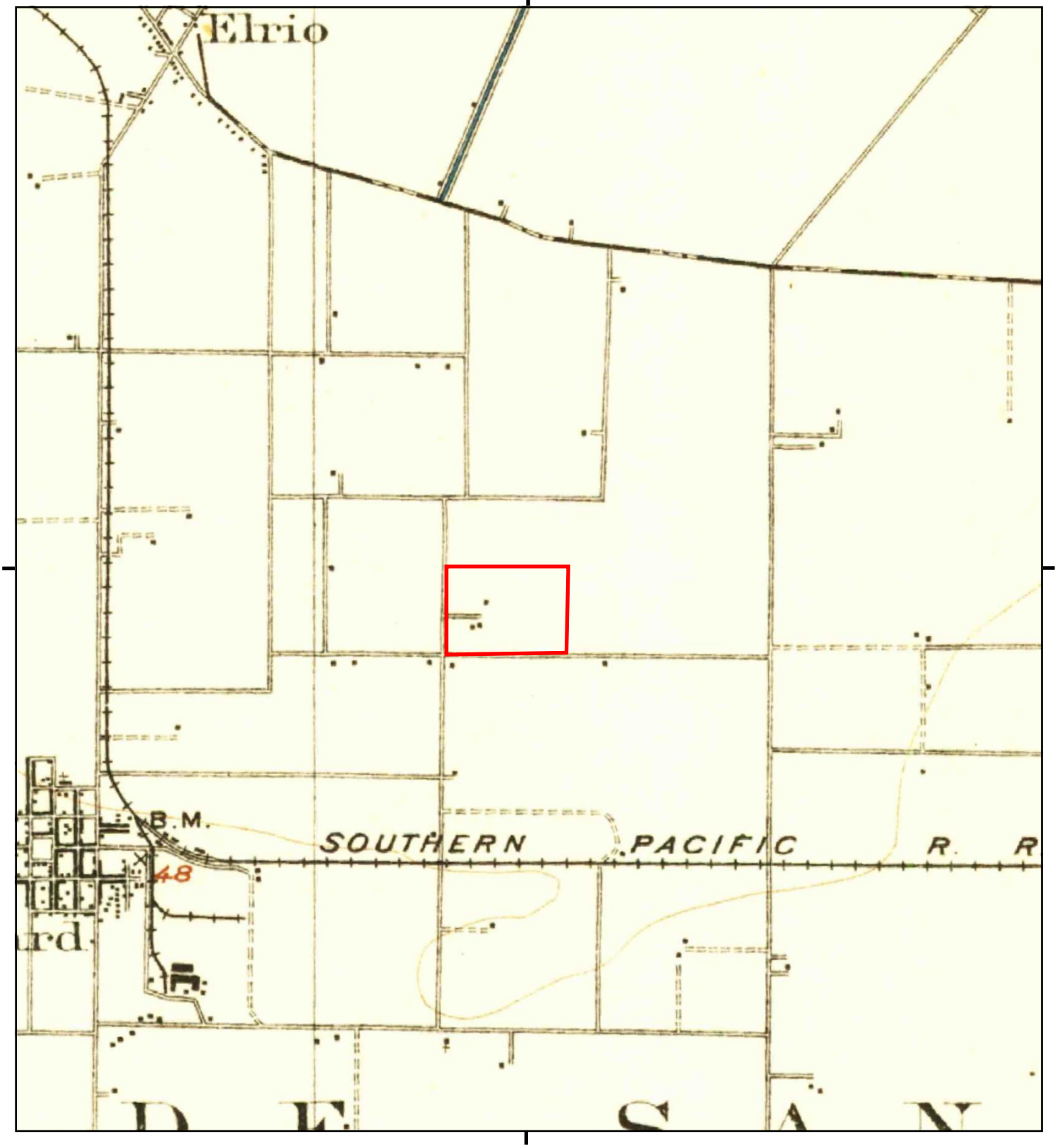
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SW S SE

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ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N



This report includes information from the following map sheet(s).

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W E
SW S SE

TP, Hueneme, 1904, 15-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

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C HISTORICAL AERIAL PHOTOGRAPHS

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.9
September 12, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

09/12/17

Site Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.9

Client Name:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1994	1"=500'	Acquisition Date: September 03, 1994	USGS/DOQQ
1985	1"=500'	Flight Date: August 06, 1985	USDA
1978	1"=500'	Flight Date: September 21, 1978	USDA
1967	1"=500'	Flight Date: August 13, 1967	USGS
1959	1"=500'	Flight Date: October 04, 1959	USDA
1947	1"=500'	Flight Date: August 15, 1947	USGS
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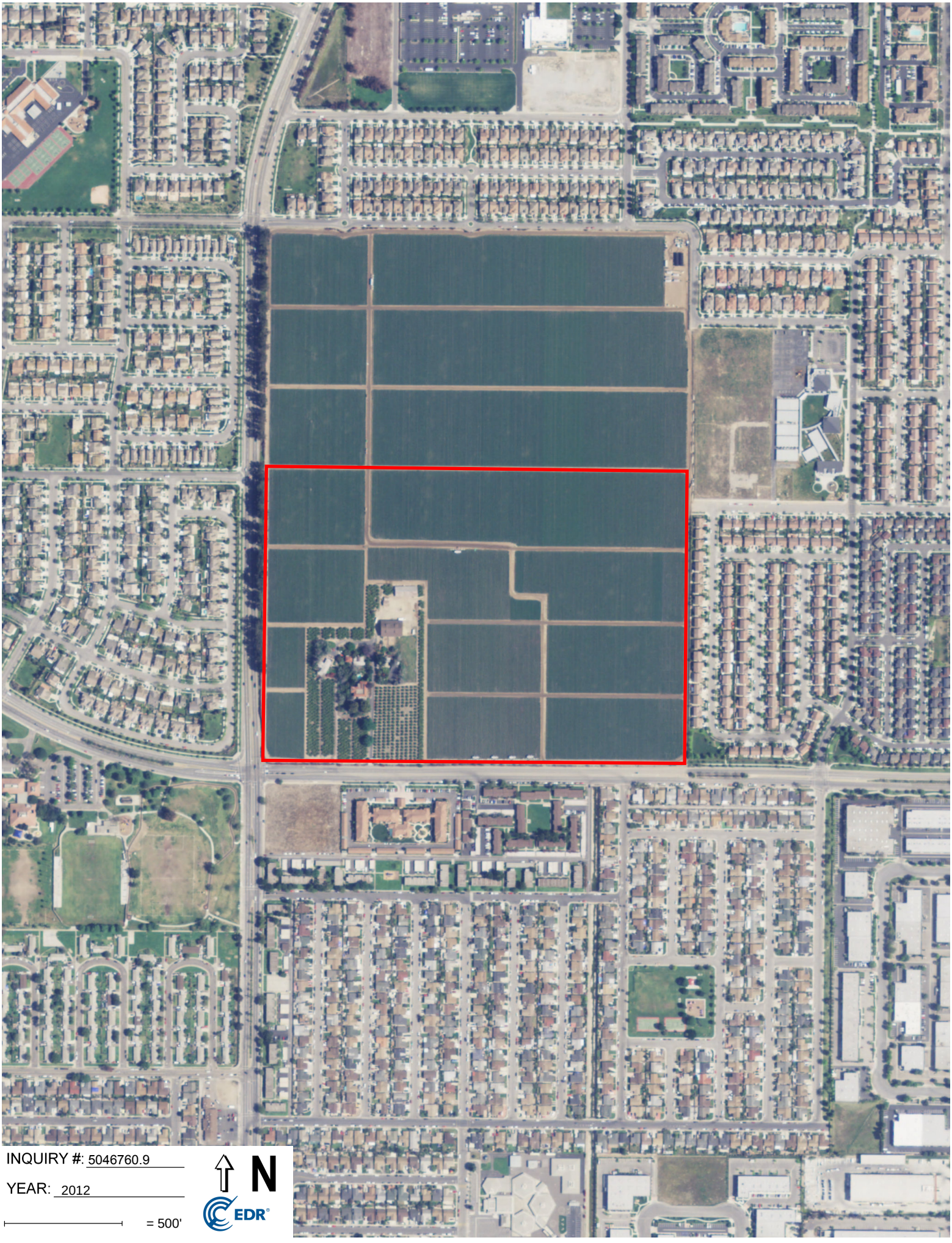
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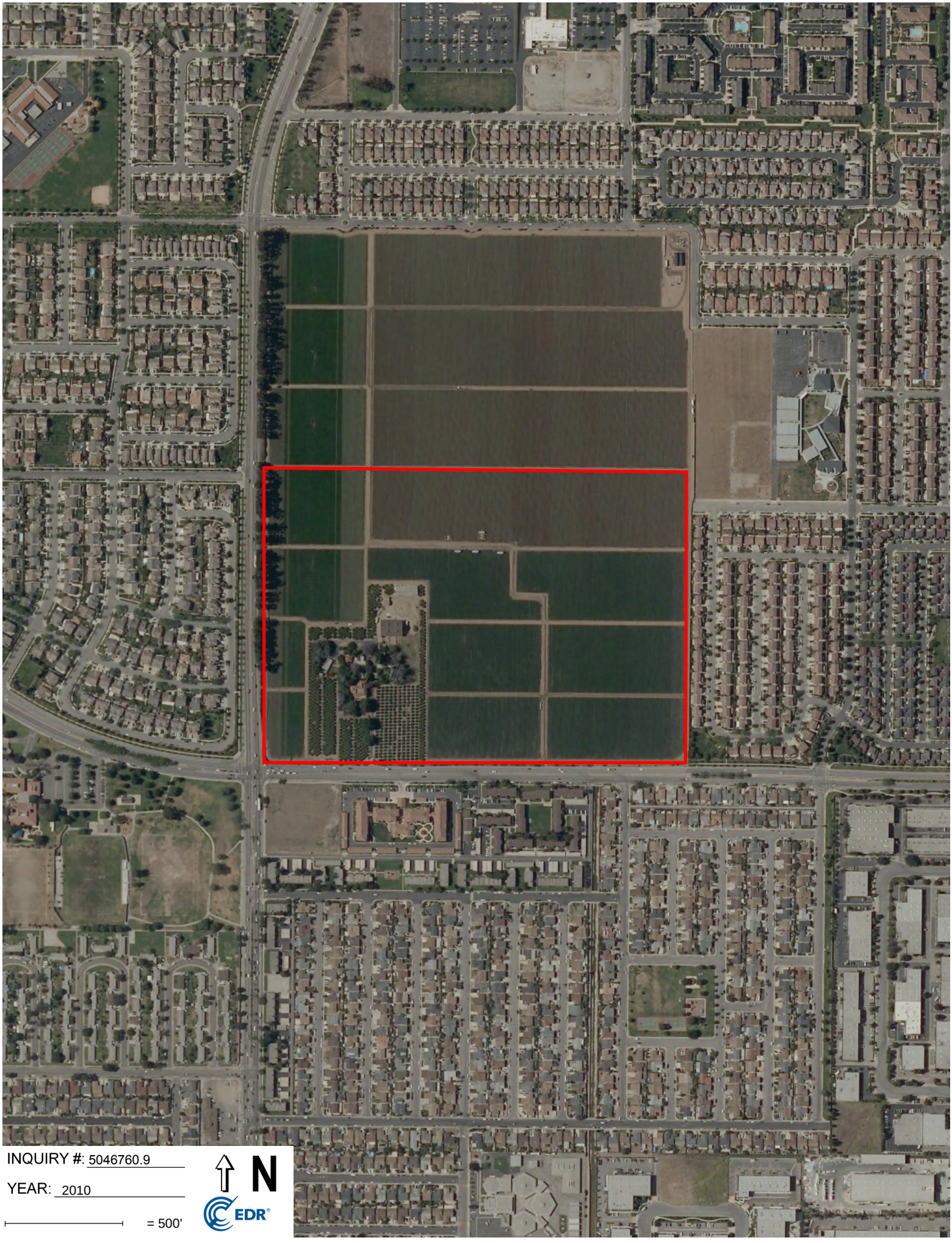
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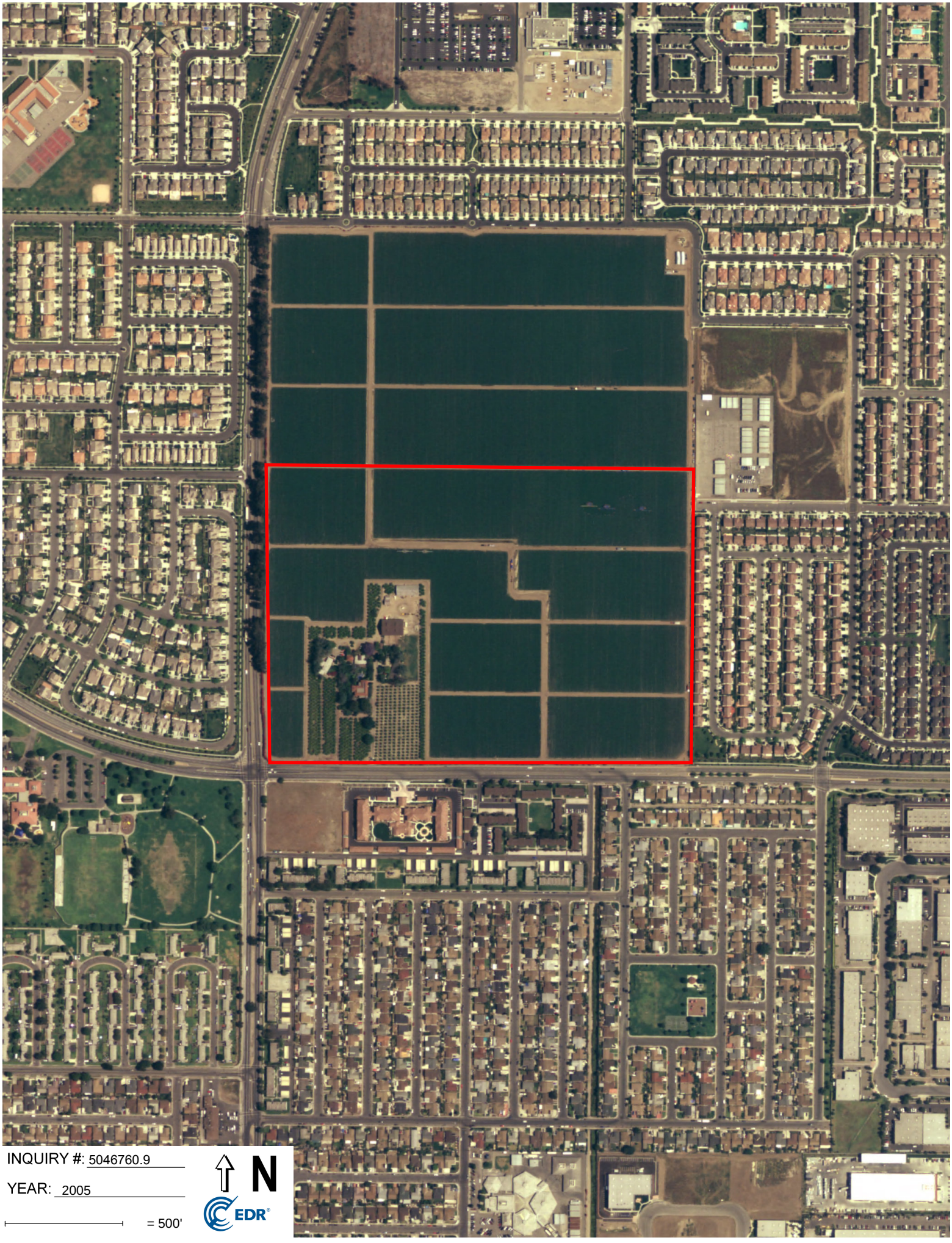
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YEAR: 2012
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EDR


INQUIRY #: 5046760.9
YEAR: 2010
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EDR



INQUIRY #: 5046760.9

YEAR: 1959

= 500'

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EDR



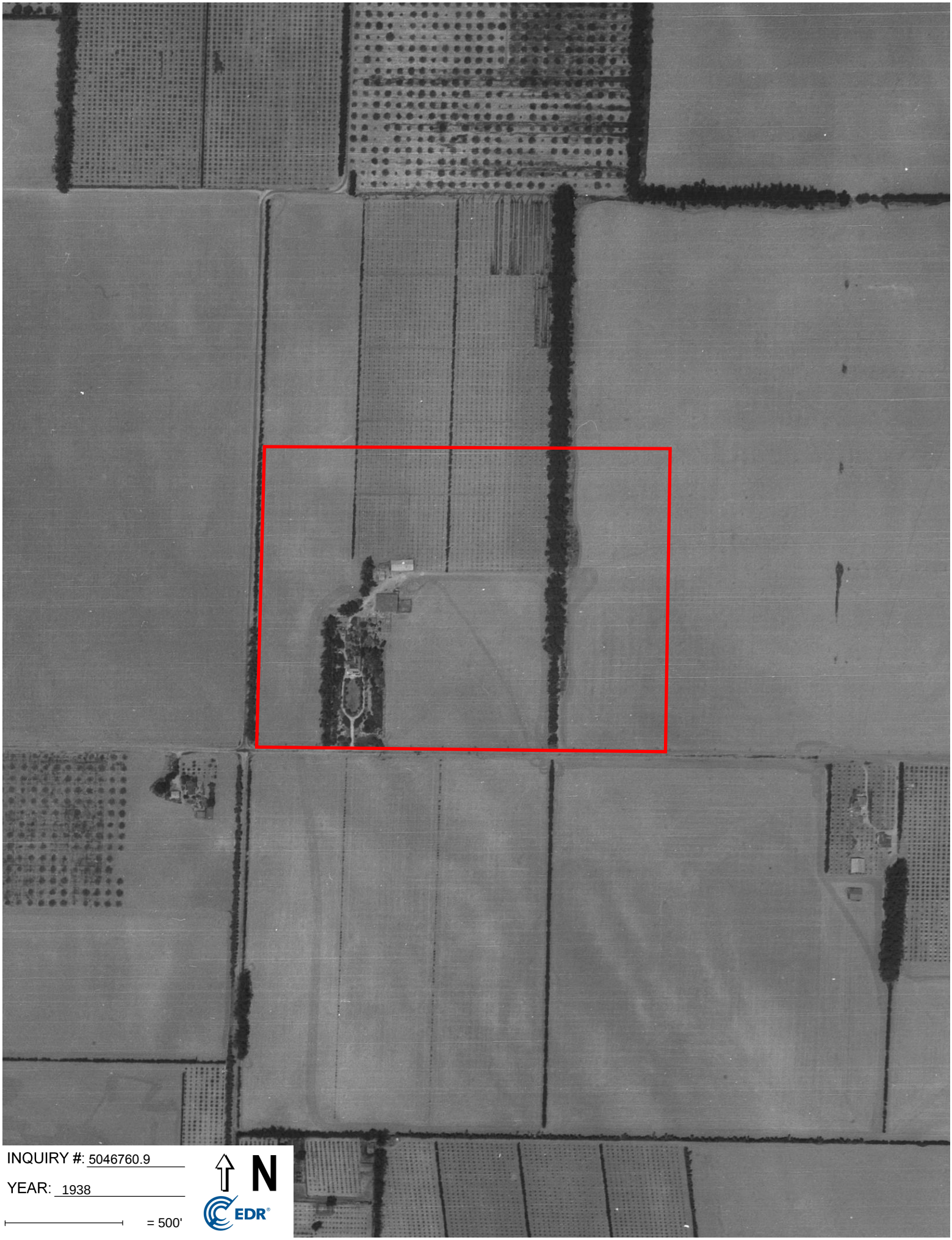
INQUIRY #: 5046760.9

YEAR: 1947

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1938

= 500'

N

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INQUIRY #: 5046760.9

YEAR: 1927

= 500'

N

EDR

D SITE RECONNAISSANCE PHOTOGRAPHS

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Photograph 1. Former gasoline AST location at the southwest corner of the Maulhardt Ranch Garage facing north.



Photograph 2. Inactive fuel lines inside of the Maulhardt Ranch Garage.



Photograph 3. Oil change sump location inside the Maulhardt Ranch Garage beneath covered automobile on right.



Photograph 4. Empty waste oil drum and container inside of the Maulhardt Ranch Garage.



Photograph 5. View of the Maulhardt Ranch Storage Shed where pesticide storage was performed.



Photograph 6. Interior of the Maulhardt Ranch Storage Shed building.



Photograph 7. View of the strawberry fields north of Maulhardt Ranch Farm Yard, facing north.



Photograph 8. View of the interior of the Maulhardt Ranch Tin Shed showing pesticide and fertilizer distribution tanks and other farm equipment.



Photograph 9. View of interior of the Maulhardt Ranch Tin Shed showing a tractor pesticide or fertilizer distribution tank, and other equipment. .



Photograph 10. View of empty trailer mounted fertilizer/pesticide tank in the Maulhardt Ranch Tin Shed.



Photograph 11. View of a tractor on other farm equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 12. View of waste oil tank serviced by Black Gold inside of the Maulhardt Ranch Tin Shed.



Photograph 13. View of an air compressor and other old farm equipment inside of T Maulhardt Ranch in Shed.



Photograph 14. View of pesticide-fertilized distribution tank inside of the Maulhardt Ranch Tin Shed.



Photograph 15. View of pesticide/fertilizer spray equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 16. Stained soils inside of Maulhardt Ranch Tin Shed.



Photograph 17. Miscellaneous portable gasoline storage tanks and other equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 18. Old smudge pot inside of the Maulhardt Ranch Tin Shed.



Photograph 19. Portable gasoline tank and drum inside of the Maulhardt Ranch Tin Shed.



Photograph 20. Storage area inside of the Maulhardt Ranch Tin Shed.



Photograph 21. **"**Weed oil" mixing area south of the Maulhardt Ranch Tin Shed, with visible soil staining.



Photograph 22. View of former gasoline dispenser pump location on the south side of the Apartment.



Photograph 23. Former gasoline UST location on the south side of the Apartment.



Photograph 24 View of strawberry fields and recreational vehicle on east side of the Horse Barn from the second story of the Horse Barn.



Photograph 25. View of storage area inside of first floor of the Horse Barn showing vintage automobile.



Photograph 26. View of the entrance to the second floor of the Horse Barn



Photograph 27. View of storage area inside of second floor of the Horse Barn.



Photograph 28. View of abandoned septic tank on south side of Horse Barn.



Photograph 29. View of the covered livestock pen on the south side of the Horse Barn from the second story of the Horse Barn.

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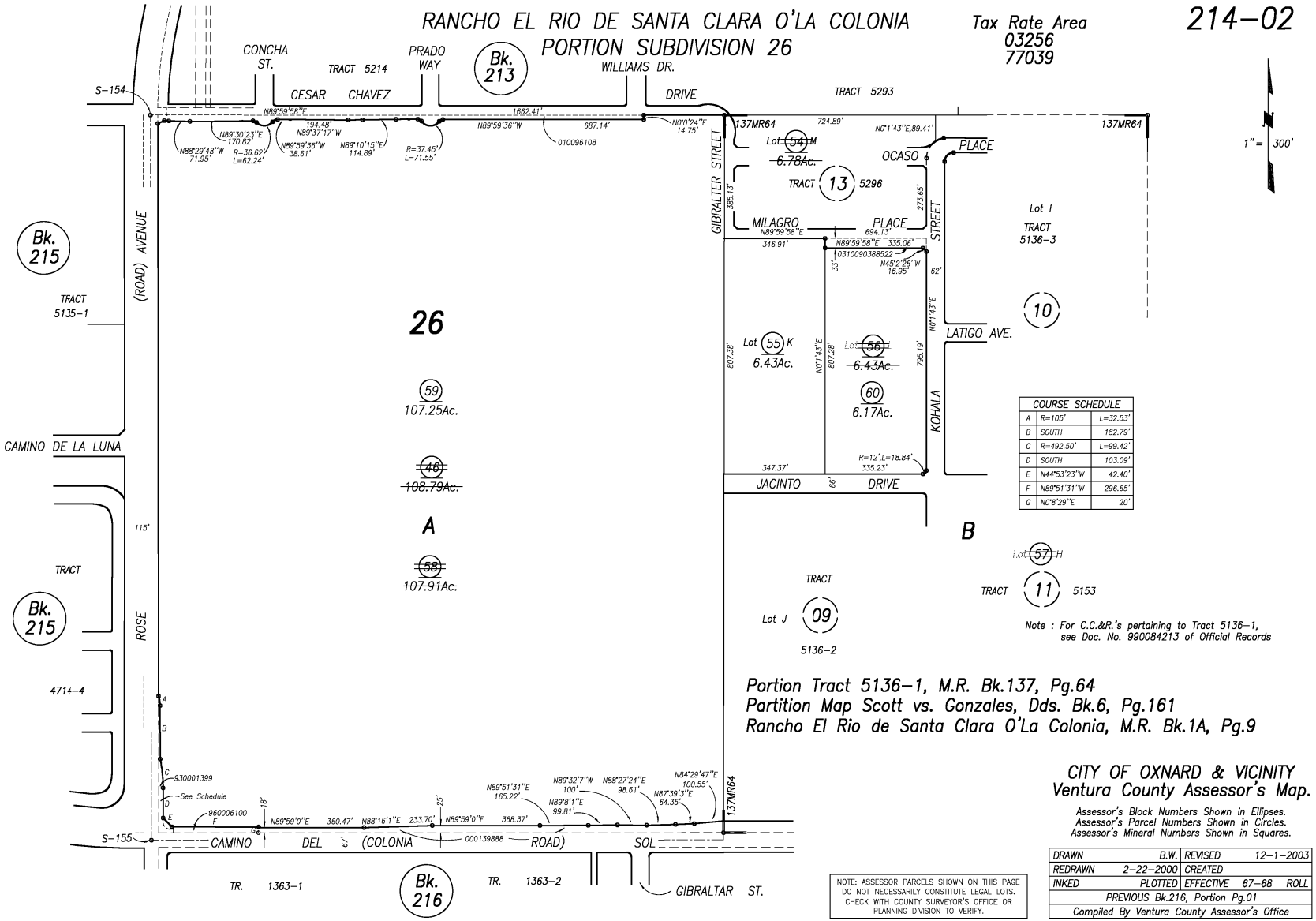
E AGENCY/UTILITY CONTACT DOCUMENTATION

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RANCHO EL RIO DE SANTA CLARA O'LA COLONIA
PORTION SUBDIVISION 26

Tax Rate Area
03256
77039

214–02



COURSE SCHEDULE		
A	R=105'	L=32.53'
B	SOUTH	182.79'
C	R=492.50'	L=99.42'
D	SOUTH	103.09'
E	N44°53'23"W	42.40'
F	N89°51'31"W	296.65'
G	N0°8'29"E	20'

Note : For C.C.&R.'s pertaining to Tract 5136–1, see Doc. No. 990084213 of Official Records

Portion Tract 5136–1, M.R. Bk.137, Pg.64
Partition Map Scott vs. Gonzales, Dds. Bk.6, Pg.161
Rancho El Rio de Santa Clara O'La Colonia, M.R. Bk.1A, Pg.9

CITY OF OXNARD & VICINITY
Ventura County Assessor's Map.

Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.
Assessor's Mineral Numbers Shown in Squares.

DRAWN	B.W.	REVISED	12–1–2003
REDRAWN	2–22–2000	CREATED	
INKED	PLOTTED	EFFECTIVE	67–68 ROLL
PREVIOUS Bk.216, Portion Pg.01			
Compiled By Ventura County Assessor's Office			

NOTE: ASSESSOR PARCELS SHOWN ON THIS PAGE DO NOT NECESSARILY CONSTITUTE LEGAL LOTS. CHECK WITH COUNTY SURVEYOR'S OFFICE OR PLANNING DIVISION TO VERIFY.

1" = 300'

Roll–Year 04–05 BK. 214 , PG. 02 REVISION LOG

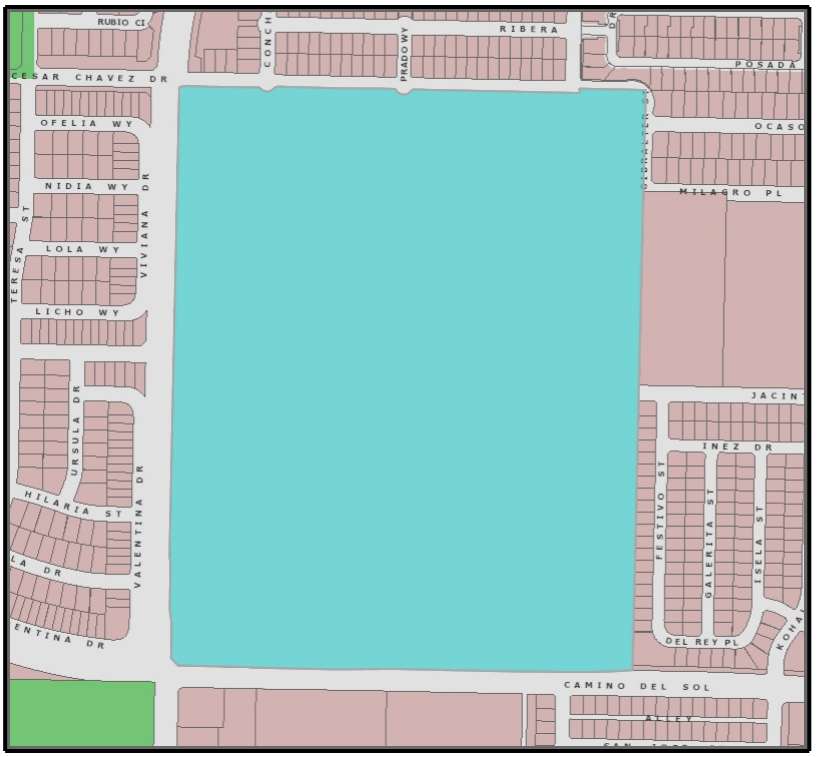
DATE	REFERENCE DOC.	EXPLANATION Code	Description	VOID A.P.N.(s)	RESIDUAL A.P.N.(s)	NEW A.P.N.(s)
6/18/03	147 MR 51	SUBDIVISION	NEW TRACT 5296–00	214–0–020–545		NEW PAGE 13
12/01/03	03100903885 22	SPLIT TO ROAD	PER GRANT DEED	214–0–020–565	214–0–020–605	11526 SQ. FT TO ROAD

County View Parcel Report

Parcel Information

Printed 5/16/2017 4:52:49 PM

APN	214002059
APN Suffix	5
Document Date	20141201
Document Number	140150971
Tract Number	
Map Number	
Situs Number	
Situs Street	
Situs Suffix	
Acreage	107.25



Additional Information

Cities

City Boundary

City Name	Oxnard

Election Precincts

Election Precincts

Precinct Name	OXNARD NO. 557

Political Districts

Assembly Districts

Name	Jacqui Irwin
Ordinal	44TH

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

County View Parcel Report

Senatorial Districts

Name	Jackson
Ordinal	19TH

Congressional Districts

Name	Julia Brownley
Ordinal	26TH

Supervisorial Districts

Name	John C. Zaragoza
Ordinal	5th

School Districts

Elementary School Districts

District Name	RIO

Secondary School Districts

District Name	Oxnard Union

Land Use

Is County SOAR Present?	No

General Plan

GENPLANDES	Urban

Zoning

Zone	Oxnard

Hazards

Earthquake Fault Hazard Zones	No
Liquefaction	Yes

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

County View Parcel Report

Tsunami Inundation	**No**

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

Department of Conservation

Accessibility

Lat: 34.22556, l

Division of Oil, Gas & Geothermal Resources Well Finder

Legend:

Well Types:

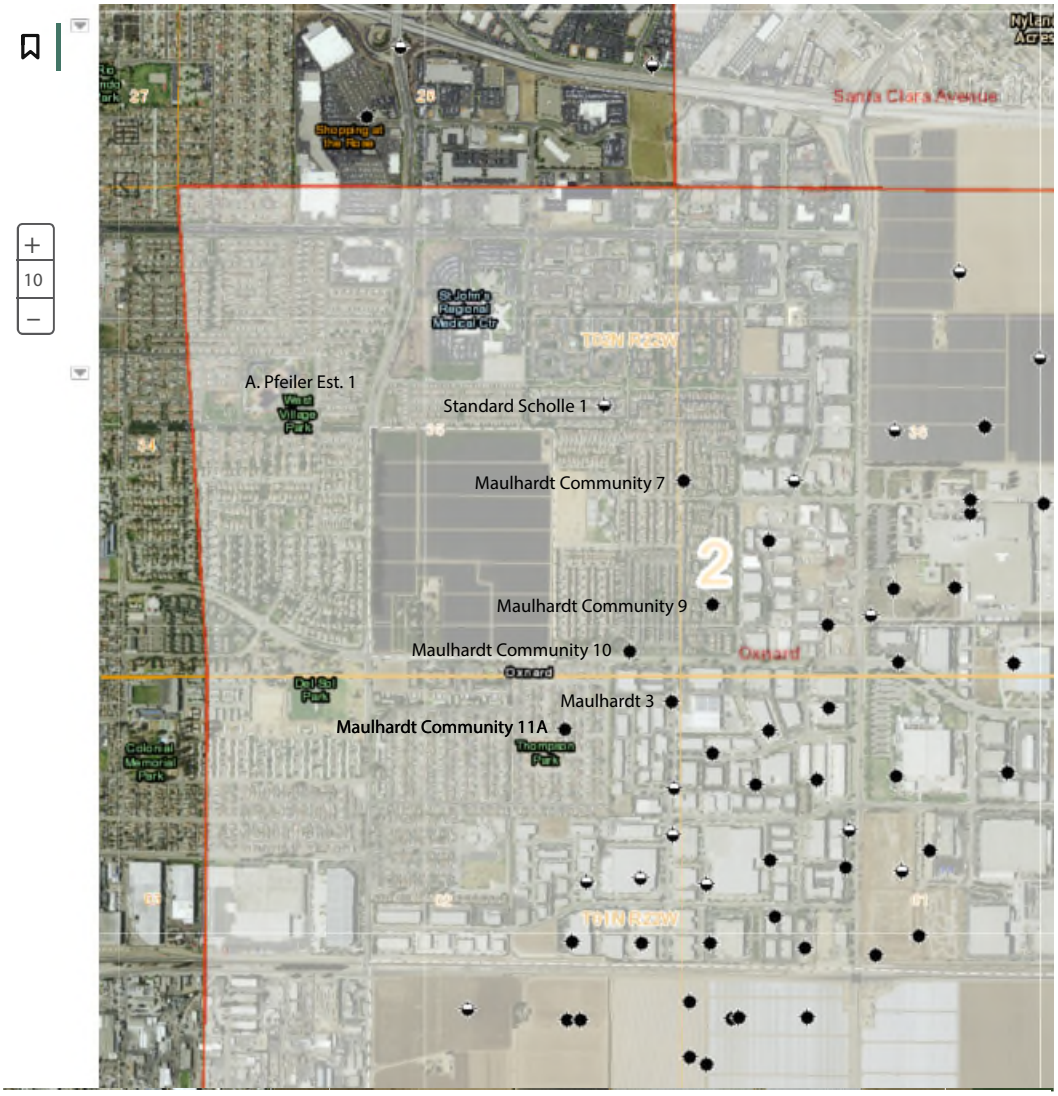
- New
- Active Producer
- Active Injector
- Dry Hole
- Plugged
- Geothermal
- Notice & Permit
- Enhanced Oil Recovery
- Disposal

Geologic Map:

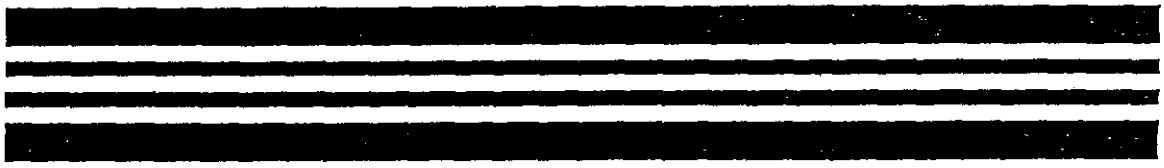
Bookmarks:

Sacramento

Add Bookmark



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Anacapa Imaging Scan Control Sheet

ISDS Site Files

Client: Ventura County Environmental Health Division

Street Address: 1853 Camino Del Sol

Area:

Owner/Builder: Maulharot

Assessor Parcel No.: 214-0-020-450

Initials

Box No 40678

PROJECT DESCRIPTION QUESTIONNAIRE
(Residential/Agricultural)

A. EXISTING PROJECT SITE

1. Assessors Parcel No(s): 214-020-450

2. Location (nearest public road, cross street, community, etc.):
1853 CAMINO DEL SOL
CROSS STREET — ROSE AVE.

3. Existing Land Use(s): AGRICULTURAL ~ AVOCADO TREES AND LEMON TREES

4. LCA Contract No. 49-1,1 Contract-specified agricultural use(s) (illegible)

Assessor Parcel Numbers Within Contract

5. Distinctive Physical Features on the Property (rock outcroppings, barrancas, etc.): LEVEL FARM LAND PLANTED TO ORCHARDS

6. Has the property been surveyed by an archaeologist? Yes___ No✓ Unknown___ If yes, what was the result?

7. Existing Drainage Direction(s): SOUTH

8. Existing Drainage/Flood Control Facilities (culverts, retention basins, etc.): NO DRAINAGE FACILITIES

9. Existing Water Supply (if any): WELL

10. Existing Sanitation (Sewage Disposal) Facilities (if any):
SEPIC TANK WITH LEACH LINE

11. Describe the type and size of all existing signs (if any):
N/A

12. Is your property on the State's list of identified hazardous waste and/or hazardous substance sites? (Copy of list is kept at Planning Division public counter.) NO

B. SURROUNDING PROPERTY

1. Land Uses

North: FARM LAND East: FARM LAND
South: OPEN FIELD/LOW INCOME HOUSING West: ROSE AVE. / FARM LAND

2. Distinctive Physical Features

North: OPEN FIELDS, FARMING
South: OPEN LOT, APARTMENTS
East: STRAWBERRY FIELDS
West: ROSE AVE, STRAWBERRIES

3. Vegetation

North: CELERY East: STRAWBERRIES
South: OPEN LOT West: STRAWBERRIES

C. PROJECT DESCRIPTION

1. Describe in detail the proposed use(s):
EXTENSION OF EXISTING PERMIT

2. Describe access to site from a public road:
PRIVATE GATE ON CAMINO DEL SOL

3. Will project be developed in phases? _____ If so, describe each phase in detail:
N/A

4. Describe type and size of all proposed signs: NONE

5. If applicable, will existing signs be removed? N/A If so, describe:

6. Describe any potential noise sources associated with the project. If applicable, also describe what methods would be used to reduce the noise such that it would not be objectionable to surrounding uses (attach sheets if necessary):
N/A

7. Describe any uses or operations producing significant light or glare. If applicable, describe what methods would be used to shield, enclose or otherwise control light or glare such that it would not be objectionable to surrounding uses (attach sheets if necessary):
N/A

8. Grading

Area to be graded: N/A sq.ft./acres

Total volume to be moved: N/A cu. yds.

Slope ratio of steepest finished slope (horiz. feet/ea. vert. foot):
N/A

Height of highest finished slope (from toe to top): N/A feet

Disposition of excavated material:

9. Number of trees to be removed (count trees with 5" dia. or more at 3' above root crown) by species: N/A

10. Drainage

Describe how increased runoff will be handled both onsite and offsite:
N/A

Will the project require the installation or replacement of storm drains or channels? NO If yes, indicate length _____, size _____ and capacity _____.

D. PROPOSED SERVICES

1. Water Supply

Water Source (check): _____ Well ✓ Water Purveyor

Will the project necessitate the installation or replacement of new water service mains? N/A If yes, indicate length _____, size _____, and capacity _____.

2. Sanitation

Sanitation will be provided by (check):

Private onsite septic system ✓ Public sewers _____

3. Fire Protection

Indicate number and capacity of existing and/or proposed fire hydrants and distance from proposed buildings:
PRIVATE WELL / SWIMMING POOL WITHIN 200 FT.

I certify that the foregoing information is complete and correct to the best of my knowledge.

Richard Wardbrook
Applicant/Representative

1/25/12
Date

GD:mb/H15

COUNTY OF VENTURA

ENVIRONMENTAL HEALTH DIVISION

M E M O R A N D U M

TO: Paul Merrett **DATE:** Aug 29, 1994

FROM: Darrell Siegrist

SUBJECT: CUP 3462 MOD 2 (MAULHARDT)

The Environmental Health Division considers the subject application incomplete:

* Please submit a scaled plot plan which includes the existing septic tanks and leach lines (or seepage pits), water well, and the footprint of the existing structures.

* Please submit a septic tank pumping report for the primary residence.

If you have any questions, please contact me at ex. 2811.

COPY

COUNTY OF VENTURA

ENVIRONMENTAL HEALTH DIVISION

M E M O R A N D U M

TO: Paul Merrett **DATE:** Nov 14, 1994

FROM: Darrell Siegrist

SUBJECT: CUP 3462 MOD 2 (MAULHARDT)

The Environmental Health Division now considers the subject application complete.

PROJECT CONDITION:

* Only domestic waste as defined in the County Building Code Ordinance shall be discharged into the on-site individual sewage disposal systems (septic systems).

If you have any questions, please contact me at ex. 2811.

COUNTY OF VENTURA

SEPTIC TANK PUMPING INSPECTION REPORT

Name of Property Owner: Richard Maulhardt Ranch

Location of Pumping: 1853 Camino Del Sol, Ox.

Assessor's Parcel Number: 214-0-020-4500

Date of Pumping: 8-31-94 Gallons Pumped: ~~1200~~

Type of on-site disposal system (please check one of the following):

- [x] septic tank/absorption field or seepage pit
- [ ] cesspool
- [ ] other (explain): _____

Estimated capacity of septic tank or cesspool: 1250 gallons

Internal dimensions of septic tank (length, width and depth) 8'X4'X5'

Construction of septic tank or cesspool (please check one of the following):

- [x] concrete
- [ ] fiberglass
- [ ] steel
- [ ] wood
- [ ] other (explain): _____

Condition of tank (please answer yes or no for each question):

	Yes	No
Inlet tee present?	[x]	[ ]
Outlet tee present?	[x]	[ ]
Two compartments?	[x]	[ ]
Tank structure deteriorated?*	[ ]	[x]

*If yes, briefly explain: _____

While pumping the tank, did effluent flow back into tank from the absorption system? [ ] Yes [x] No

Prior to pumping, was the liquid level in the tank above the outlet tee? [ ] Yes [x] No

Using the grid on the back of this page, please sketch the location of the septic tank, the house, and if possible, the soil absorption system.

Additional Comments: This septic tank is proper for this house also leach line is in good working order.

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND ACCURATE:

WELCH'S & GENE'S SANITATION
43 AMADOR AVENUE
VENTURA, CA 93004

#2517 Modesto Mata 8-31-94
SIGNATURE OF PUMPER DATE

RESOURCE MANAGEMENT AGENCY
ENVIRONMENTAL HEALTH DIVISION

EH-77-3 (3/82)

COUNTY OF VENTURA

SEPTIC TANK PUMPING INSPECTION REPORT

Name of Property Owner: Richard Mawhardt Ranch.

Location of Pumping: 1853 Camino Del Sol Oxnard Ca. 93030

Assessor's Parcel Number: Same.

Date of Pumping: 7-19-94 Gallons Pumped: 1,000

Type of on-site disposal system (please check one of the following):

- [x] septic tank/absorption field or seepage pit
- [ ] cesspool
- [ ] other (explain): _____

Estimated capacity of septic tank or cesspool: 1000 gallons

Internal dimensions of septic tank (length, width and depth) 8'X4'X4'9"

Construction of septic tank or cesspool (please check one of the following):

- [x] concrete
- [ ] fiberglass
- [ ] steel
- [ ] wood
- [ ] other (explain): _____

Condition of tank (please answer yes or no for each question):

	Yes	No
Inlet tee present?	[x]	[ ]
Outlet tee present?	[x]	[ ]
Two compartments?	[x]	[ ]
Tank structure deteriorated?*	[ ]	[x]

*If yes, briefly explain: _____

While pumping the tank, did effluent flow back into tank from the absorption system? [ ] Yes [x] No

Prior to pumping, was the liquid level in the tank above the outlet tee? [ ] Yes [x] No

Using the grid on the back of this page, please sketch the location of the septic tank, the house, and if possible, the soil absorption system.

Additional Comments: System in good working Condition.

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND ACCURATE:

WELCH'S & GENE'S SANITATION
343 AMADOR AVENUE
VENTURA, CA 93004

Gerardo Mata
SIGNATURE OF PUMPER

#2517

7-19-94
DATE

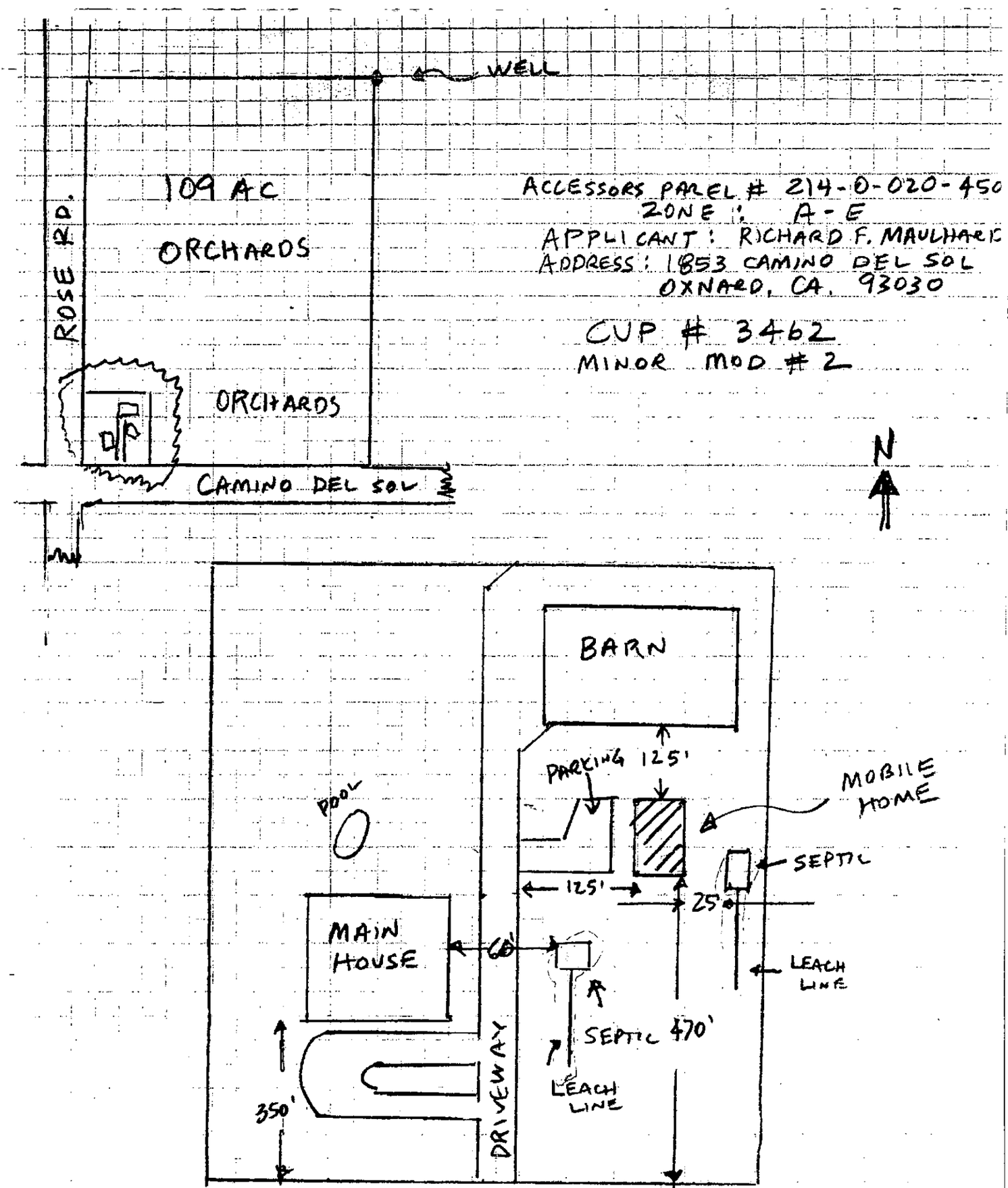
RESOURCE MANAGEMENT AGENCY
ENVIRONMENTAL HEALTH DIVISION

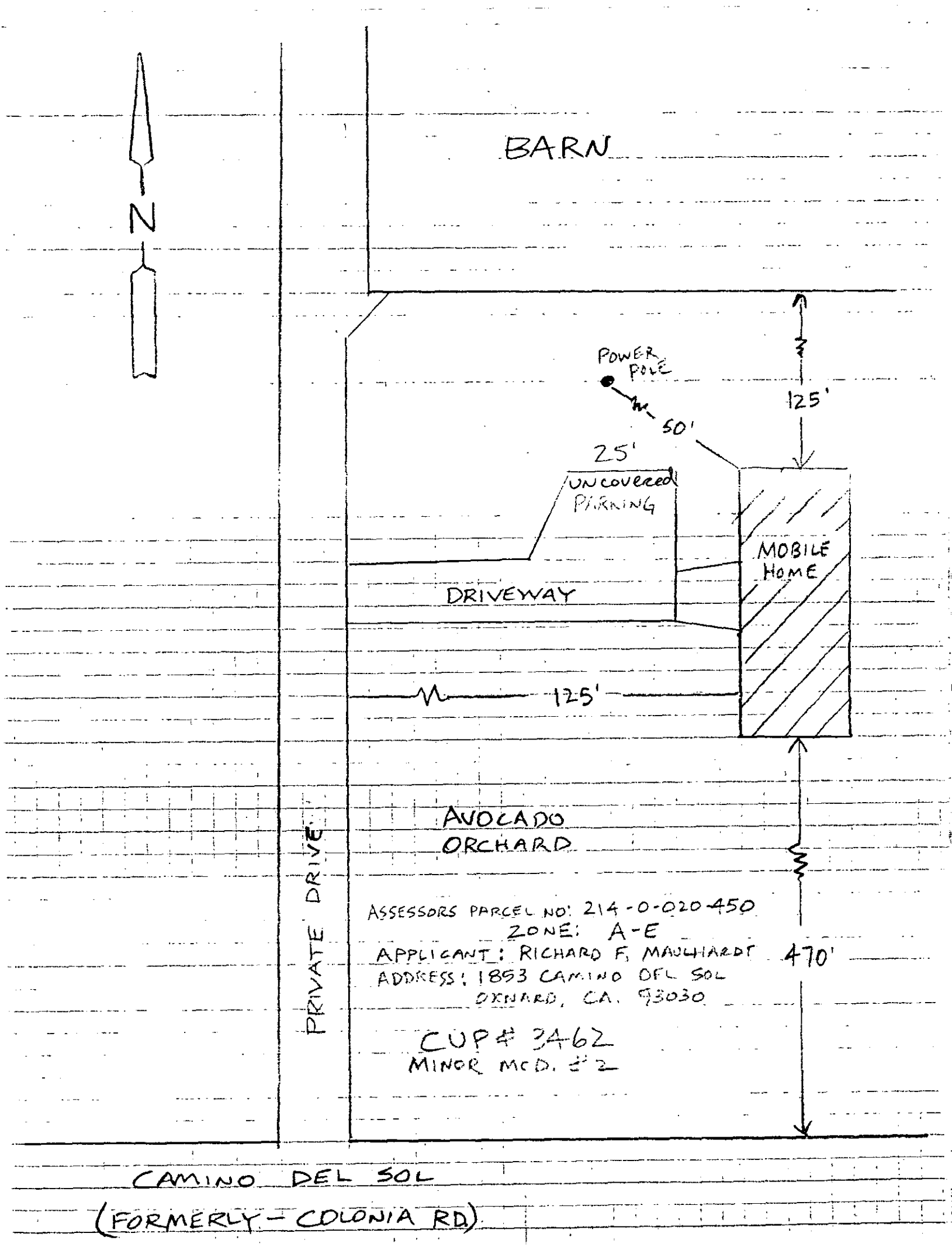
EH-77-3 (3/82)

ATTEN: PAUL MERRIT

FAX # 654-2509

LEACH LINES LOCATED AS REQUESTED BY DARYL SIGREST




N
BARN
POWER POLE
50'
125'
25'
UNCOVERED PARKING
MOBILE HOME
DRIVEWAY
125'
AVOCADO ORCHARD
PRIVATE DRIVE
ASSESSORS PARCEL NO: 214-0-020-450
ZONE: A-E
APPLICANT: RICHARD F. MAULHARDT
ADDRESS: 1853 CAMINO DEL SOL
OXNARD, CA. 93030
470'
CUP # 3462
MINOR MOD. #2
CAMINO DEL SOL
(FORMERLY - COLONIA RD)

ENVIRONMENTAL

Analytical Chemists

July 29, 1994

LAB No: SP 404386-01

Maulhardt Farms
1853 E. Colonia Rd.
Young Avocados
Oxnard, CA 93030

Site : Oxnard
Sampled by : G. Stiles
Sampled : July 26, 1994
Received : July 26, 1994

Started : July 26, 1994
Finished : July 28, 1994

BACTERIOLOGICAL ANALYSIS

Coliform

Sample ID	Sample Reason	Sample Type	Cl_2 Residual Free	Cl_2 Residual Total	Time Sampled	Time Start	Coliform MPN/100 ml	Fecal MPN/100 ml
Oxnard	Routine	Source	----	-----	08:00A	01:58P	< 1.1 ABSENT	

The State Board of Public Health requires that bacteriological results must be "ABSENT" to meet drinking water requirements. This analysis was completed in 24 hours using Access, Colilert Test.

FGL ENVIRONMENTAL

Raquel R. Harvey

RRH:rrh
cc: Nick Medina

orate Offices & Laboratory
Box 272 / 853 Corporation Street
a Paula, CA 93061-0272
(805) 659-0910
(805) 525-4172

Office & Laboratory
2500 Stagecoach Road
Stockton, CA 95215
TEL: (209) 942 0181
FAX: (209) 942-0423

Field Office
Visalia, California
TEL: (209) 734 9473
Mobile: (209) 737 2399
FAX: (209) 734-[illegible]

RESOURCE MANAGEMENT AGENCY
county of ventura

Environmental Health Division
William C. Stratton
Director

September 20, 2017

Jason Dane
Tetra Tech
5383 Hollister Ave. Ste 130
Santa Barbara, CA 93111

RECORDS SEARCH REQUEST #15695

SITE NAME: **MAULHARDT RANCH**
ADDRESS: **1825 CAMINO DEL SOL/1853 CAMINO DEL SOL/1825 COLONIA RD.**
CITY: **OXNARD**

The Environmental Health Division (Division) staff identified records that match your Records Search Request for copies of documents. Your copies are enclosed. Additionally, older records that are "Document Imaged" are online on the Division website. To access those records, please go to:

www.vcenvhealth.org

Click on "Hazardous Materials Program & Underground Tanks (CUPA) Active 1984 - July 2011". In the Address box, type in "1853" or "1825" and click on the Search box to see a listing of records that match your search.

Since the Division does not maintain the information you are requesting, for that area, please contact the responsible agency as shown below:

Oxnard City Fire Department
805/385-8364

Gladys Dobson
Records Search Coordinator
Environmental Health Division

G:\Clerical\Records Search\Dane RSR #15695 Copies, Online Records & Contact Oxnard CUPA 09 20 17.doc

Ventura County Environmental Health Division
800 S. Victoria Ave., Ventura, CA 93009-1730

Community Right to Know
HAZARDOUS MATERIALS INVENTORY REPORT

September 19, 2017

SALVADOR HERNANDEZ
ECLIPSE BERRY RANCH #9
3860 ETTING RD
OXNARD, CA 93033

FACILITY ID: FA0034801 SITE LOCATION: ECLIPSE BERRY RANCH #9
1853 CAMINO DEL SOL
OXNARD, CA

EMERGENCY CONTACTS:

PRIMARY:
SALVADOR HERNANDEZ

SECONDARY:
PEDRO NEVAREZ

UNIT PLAN #: 1 **GENERAL**

ID	COMMON NAME	MAXIMUM DAILY AMOUNT
HZ0028472	CALCIUM NITRATE	500 GALLONS
HZ0028473	DIESEL FUEL	250 GALLONS
HZ0028474	SULFURIC ACID	500 GALLONS

FIRE/CUPA • 360 West Second Street., Oxnard, CA 93030
TELEPHONE: (805) 385-7722 FAX: (805) 385-8009

CUPA FILE REVIEW REQUEST

CUPA is an acronym for Certified Unified Program Agency. CUPA files contain information for: hazardous materials, hazardous wastes, underground storage tanks, aboveground storage tanks and the California Accidental Release Prevention (Cal-ARP) Program. ***There is no fee assessed for reviewing the program files. Allow for 48 hour advanced notice for appointments to review files.***

Site Information
Business name/Property Owner: Maulhardt Ranch
Site Address: 1825 Camino Del Sol Oxnard CA, 93030

Party Requesting File Review
Requestor's Name: Jason Dane
Requestor's Business or Organization Name: Tetra Tech
Requestor's Business, Organization, or Home Address: 5383 Hollister Avenue, Suite 130, Santa Barbara, CA 93111
Requestor's Business, Organization, or Home Phone Number: 805-681-1527
Requestor's Fax Number: 805-681-3108

CUPA Program Files Requested:

- ☑ ***Business Plan***
- ☑ ***Hazardous Waste***
- ☑ ***Underground Storage Tanks***
- ☑ ***Cal-ARP***

Contact Ventura County Environmental Health for Information regarding UST Closures and site cleanups. Electronic files may be found at http://www.vcenvhealth.org or by phone: 805/654-2813.

Instruction for file review:

1. Information or documents must not be removed from the files (except for photocopy purposes).
2. If you would like us to make photocopies of any documents in the files, please request this service from the City of Oxnard Fire Department administrative staff. Please note there is a fee for photocopies.
3. Fax copy of completed file review request to (805) 385-8009, Attention CUPA.

I certify that I will comply with the aforementioned file review procedures and that no documents will be removed from the file(s) reviewed (except for photocopy purposes).

Applicant Signature: Jason Dane Date: 09/13/2017

CUPA Representative Findings: ☑ No CUPA records found. ☐ Records available for review.

CUPA Representative Signature Julie Maulhardt Date: 9/18/17

Steele, James

From: Enriquez-Pratt, Blanca <Blanca.Enriquez-Pratt@ventura.org>
Sent: Wednesday, September 27, 2017 11:55 AM
To: Dane, Jason
Subject: Ventura County Request to Inspect Public Records
Attachments: Maulhardt Ranch.xlsx

Good morning Jason,

Please find the attached information which you requested on September 18, 2017. This is the information that is currently in our Calagpermits system.

If recent paper pesticide use reports have been submitted, those reports may not have been reflected at the time of your request. Also, our county may be possibly a couple of months behind in entering this submitted paper pesticide use reports since that information must be enter manually.

Should you have any questions please do not hesitate to contact me.

Best Regards,
Blanca Enriquez-Pratt
Supervising Agricultural Inspector Biologist Ventura County Agricultural Commissioner's Office
555 Airport Way Suite I
Camarillo, Ca. 93010
Office (805) 388-4222
Fax (805) 388-4209

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	1051042-50001-AA	WESTERN LIME - HIGH CALCIUM HYDRATED LIME	12.0000	Pounds	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	11160-50001-AA	S-K-H AGRICULTURAL ADHESIVE	12.0000	Pounds	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	352-662-ZA	DUPONT KOCIDE 3000 FUNGICIDE/BACTERICIDE	12.0000	Pounds	4.0000	ACRES	Ground			01360
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	62719-442-AA	INTREPID 2F	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	66222-58-AA-51036	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	135.0000	Pounds	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	11.2500	Gallon	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.1100	Gallon	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-503-AA	ACRAMITE 50WS	90.0000	Pounds	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	8.9100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	73049-40-AA	XENTARI BIOLOGICAL INSECTICIDE DRY FLOWABLE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-51036	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	8.9100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.2300	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-503-AA	ACRAMITE 50WS	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.8800	Gallon	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50022-AA	MILLER NU FILM P	4.1300	Gallon	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-199-AA	PRISTINE FUNGICIDE	126.5000	Pounds	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	176.0000	Pounds	88.0000	ACRES	Ground			12195
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	3/22/2011	9:00 AM	2004-0	LEMON	No	5.0000	ACRES	64864-2-AA	DEADLINE BULLETS	50.0000	Pounds	2.5000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-35-ZA-400	RIMON 0.83EC	8.9100	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-545-AA	RADIANT SC	5.9400	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	279-3108-AA	BRIGADE WSB INSECTICIDE/MITICIDE	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.9700	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	279-3108-AA	BRIGADE WSB INSECTICIDE/MITICIDE	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-545-AA	RADIANT SC	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	65.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.0800	Gallon	65.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	65.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	195.0000	Pounds	65.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-187-AA	CABRIO EG FUNGICIDE	48.7500	Pounds	65.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	7/1/2011	11:30 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	28.0000	Gallon	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	7/1/2011	11:30 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	30.0000	Ounce	4.0000	ACRES	Ground			01360
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	7/16/2011	9:00 AM	1016-0	STRAWBERRY	No	65.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	3.7500	Gallon	15.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	7/16/2011	9:00 AM	1016-0	STRAWBERRY	No	65.0000	ACRES	62719-447-ZA	GOALTENDER	1.8800	Gallon	15.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	8/19/2011	2:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	58266-5-AA-11220	TRI-CLOR EC FUMIGANT	16,700.0000	Pounds	83.5000	ACRES	Fumigation	1209		
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	10/20/2011	10:30 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	28.0000	Gallon	4.0000	ACRES	Ground		MAULHARDT FARMS	
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	10/20/2011	10:30 AM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	40.0000	Ounce	4.0000	ACRES	Ground		MAULHARDT FARMS	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	10/21/2011	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	5481-103-AA	DURHAM METALDEHYDE GRANULES 7.5	100.0000	Pounds	5.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	352-729-AA	DUPONT CORAGEN INSECT CONTROL	3.7100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	264-719-AA	OBERON 2SC INSECTICIDE/MITICIDE	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	34704-50035-AA	LI 700	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	62719-410-ZC	RALLY 40 WSP	23.7500	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/29/2011	11:30 AM	1016-0	STRAWBERRY	No	105.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC PROTECTANT	10.3900	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/29/2011	11:30 AM	1016-0	STRAWBERRY	No	105.0000	ACRES	5905-50087-AA	KINETIC	2.2300	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC (013/0	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-442-AA	INTREPID 2F	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	136.5600	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC (CA)	2.2800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	10163-250-AA	SAVEY 50 DF	35.6300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	35.7200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC (CA)	2.2800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-AA	ACRAMITE 50WS (023/0	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-AA	PROCURE 480SC (013/0	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 C

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	8/28/2012	12:45 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	33.6000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	8/28/2012	12:45 PM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-719-AA	OBERON 2 SC INSECTIC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-35-AA	DANITOL(R) 2.4 EC SP	7.0900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2012	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-719-AA	OBERON 2 SC INSECTIC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	1051042-50001-AA	WESTERN LIME - HIGH CALCIUM HYDRATED LIME	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	11160-50001-AA	S-K-H AGRICULTURAL ADHESIVE	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	352-662-ZA	DUPONT KOCIDE 3000 FUNGICIDE/BACTERICIDE	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/9/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL	10.6300	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.0400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	10163-250-AA	SAVEY 50 DF	31.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.0800	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSECT CONTROL	0.9400	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	1.6200	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE FUNGICIDE	49.5900	Pounds	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	69.0000	Pounds	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.2700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.0400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72662-3-ZA	PREV-AM ULTRA (CA)	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.7200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-834-AA	DUPONT FONTELIS FUNG	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (014/09	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	255.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.7200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	2.5000	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	1.2500	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTER	5.0000	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	38167-30012-AA	KINETIC	1.2500	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	5.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	15.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	3.7500	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-211-AA	VENDEX 50WP	240.0000	Pounds	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-211-AA	VENDEX 50WP	255.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	4.5000	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	4.5000	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (014/09	6.7500	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	144.0000	Pounds	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/25/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	9.0700	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAM

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

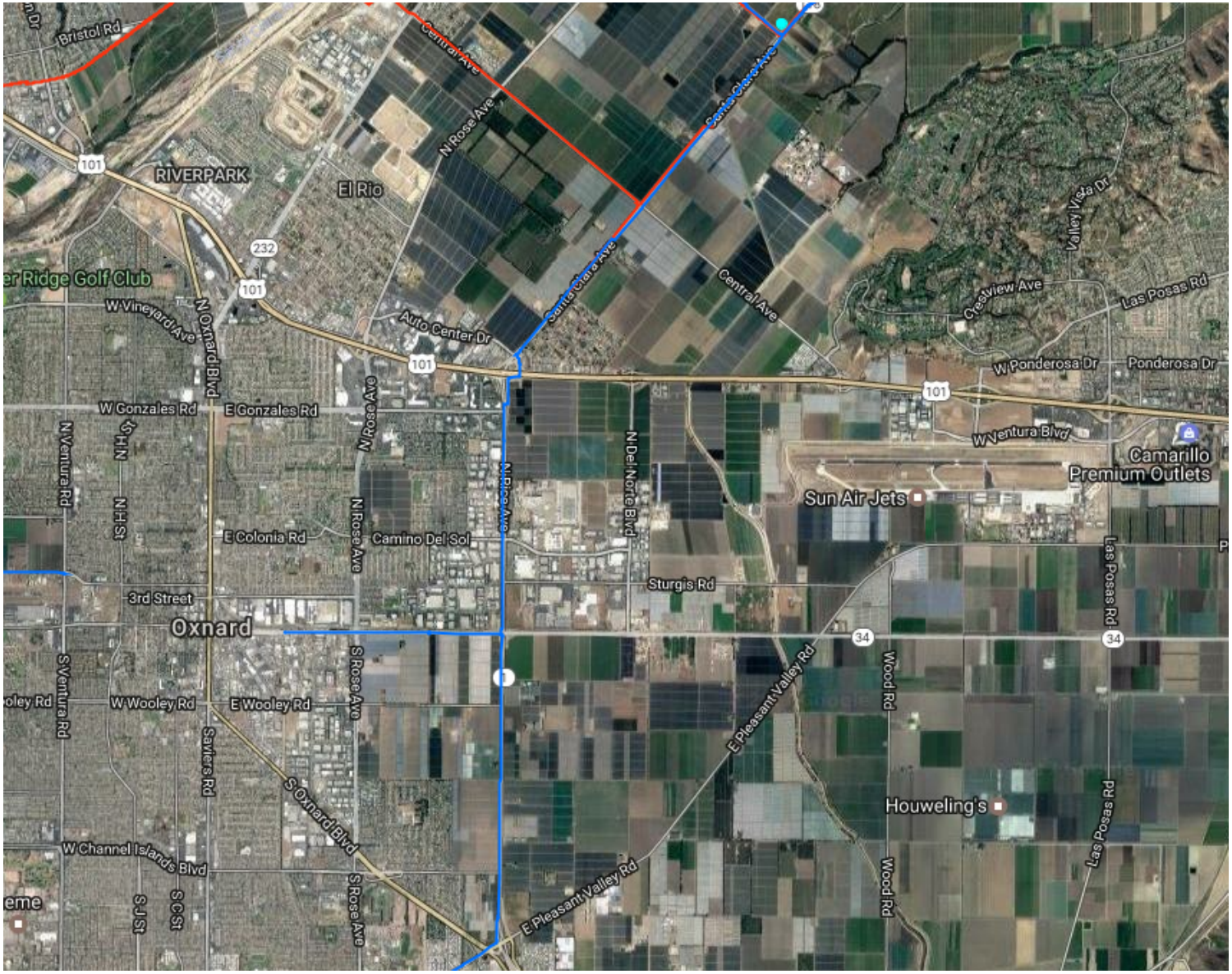
Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/13/2014	8:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/13/2014	8:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70051-2-ZB	TRILOGY	15.9400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA &	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/10/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL (CA	2.1300	Gallon	17.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	0.5000	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.3800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.2800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	0.5000	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.3800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.2800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	0.5000	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.3800	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.6600	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	2.6300	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	1.7000	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	3/28/2014	9:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	28.0000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	3/28/2014	9:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA &	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (01/711	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-227-AA	BIFENTURE 10DF	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	7/27/2014	6:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-2-AA-11220	TRI-CLOR	5,417.0000	Pounds	5.0000	ACRES	Fumigation	1143		
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	33.6000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	36.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/15/2014	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	36.5600	Gallon	97.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/15/2014	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-99-AA	CHATEAU HERBICIDE SW	18.2800	Pounds	97.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/24/2014	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	36.0000	Gallon	96.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/24/2014	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-424-AA	GOAL 2XL	12.0000	Gallon	96.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/29/2014	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.5000	Gallon	5.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/13/2014	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-5-AA-11220	TRI-CLOR EC FUMIGANT	14,596.0000	Pounds	72.9800	ACRES	Fumigation	1259	TRI-CAL INC.	30596
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-ZA	RIDOMIL GOLD SL	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-1025-AA	BELT SC INSECTICIDE	1.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	3.5600	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	9.5000	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	1.1900	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	38.0000	Pounds	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/14/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	4.6000	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	2.1600	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	69.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-788-AA	SCALA BRAND SC FUNGI	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (017/11	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/3/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	2.3800	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/3/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.7800	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/3/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.5900	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (017/11	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.5600	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.6300	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-35-AA	DANITOL(R) 2.4 EC SP	7.0900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.6300	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	279-3108-AA	BRIGADE WSB	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	6/2/2015	2:00 PM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	80.0000	Ounce	4.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	6/2/2015	2:00 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	28.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/3/2015	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/3/2015	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-788-AA	SCALA BRAND SC FUNGI	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	279-3108-AA	BRIGADE WSB	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	4.3100	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	11.5000	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.1600	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	11.5000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-938-ZA	ACTARA	11.5000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/19/2015	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50061-AA	WIDESPREAD MAX	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/19/2015	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	7/2/2015	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	7/28/2015	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-2-AA-11220	TRI-CLOR	27,869.0000	Pounds	92.8000	ACRES	Fumigation	1143	TRI-CAL INC	30596
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/6/2015	1:00 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	44.8000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/6/2015	1:00 PM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.0000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/10/2015	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	44.8000	Gallon	4.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/10/2015	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.0000	Gallon	4.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/18/2015	1:00 AM	1016-0	STRAWBERRY	Yes	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	31.5000	Gallon	84.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/18/2015	1:00 AM	1016-0	STRAWBERRY	Yes	98.0000	ACRES	62719-424-AA	GOAL 2XL	10.5000	Gallon	84.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/30/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1313-ZA	QUADRIS TOP (CA)	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1351-ZA	AGRI-MEK SC	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/12/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-ZA	RIDOMIL GOLD SL (CA)	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/12/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	228-527-AA	NUPRID 4.6F PRO	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	4/26/2016	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.5000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50030-AA	LIBERATE	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA)	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	80289-8-AA	METTLE 125 ME	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-953-AA	SWITCH 62.5WG (CA)	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	5/16/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	30.0000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	5/16/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1351-ZA	AGRI-MEK SC	20.4000	Ounce	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50030-AA	LIBERATE	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA)	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-35-ZD-400	RIMON 0.83EC (022/08	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	7/23/2016	10:00 AM	1016-0	STRAWBERRY	Yes	95.0000	ACRES	58266-2-AA-11220	TRI-CLOR FUMIGANT	27,887.0000	Pounds	92.6000	ACRES	Fumigation	1143	ITO, DARYL M	30597
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/20/2016	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	31.8800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/20/2016	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-424-AA	GOAL 2XL	10.6300	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/22/2016	12:30 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6E	49.5000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/22/2016	12:30 PM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.6900	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/24/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6E	49.5000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/24/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.6900	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2016	5:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL (HI	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2016	5:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-1351-ZA	AGRI-MEK SC (CA, HI,	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50035-AA	LI 700	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	1.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	400-503-ZB	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	10163-250-AA	SAVEY 50 DF	31.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	4.0300	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	72-50022-AA	MILLER NU FILM P	4.0300	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50023-AA	MILLER SPRAY AIDE	5.3800	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	172.0000	Pounds	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-953-AA	SWITCH 62.5WG	75.2500	Pounds	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	1051042-50001-AA	HIGH CALCIUM HYDRATE	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	48813-50001-AA	BRANDT ORGANICS 9KH	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	91411-2-AA-70051	KOCIDE 3000	17.5000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	1051042-50001-AA	HIGH CALCIUM HYDRATE	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	48813-50001-AA	BRANDT ORGANICS 9KH	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	91411-2-AA-70051	KOCIDE 3000	17.5000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	400-518-ZC	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	1/3/2017	9:30 AM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-56-ZA	PH-D WATER DISPERSABLE GRANULES	527.0000	Ounce	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	127.5000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	84876-1-AA-279	FRACTURE FUNGICIDE	16.2000	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2017	8:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	84059-3-AA	REGALIA (CA)	18.0000	Gallon	24.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	45728-26-ZA	THIRAM SC	55.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	48813-50005-AA	BRANDT SUPER 7	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R



Legend

- Accidents (Liquid)
- Incidents (Gas)
- Gas Transmission Pipelines
- Hazardous Liquid Pipelines
- State Boundaries

1000 m
2000 ft

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: May 16, 2017

811 Know what's below. Call before you dig.

Steele, James

From: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Sent: Wednesday, September 20, 2017 4:19 PM
To: Dane, Jason
Subject: FW: 17-P-750 FW: Public Records Request for Phase 1 ESA

Good Afternoon Mr. Dane:

The Department of Forestry and Fire Protection, CAL FIRE, has searched its records and has found no documents in response to your request.

Sincerely,

Anne Henigan
CAL FIRE Legal Office

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:01 AM
To: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Subject: Public Records Request for Phase 1 ESA

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request information on any pipelines that are located near the property listed below within 1,500 feet:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059

Any additional information including distance, direction from the property, direction the pipeline is running, whether the pipeline is active, and pipeline size/ depth would be greatly appreciated. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
tetratech.com

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Please consider the environment before printing. Read more



SEE MAP Q-18

SEE MAP P-19

SEE MAP R-19

LORENA DR

CAMINO DE LA LUNA

LICHO WAY

SARA DR

ROSALINDA DR

TERESA ST

URSULA DR

VALENTINA DR

GABRIELLA DR

HILARIA ST

FLORENTINA DR

PANAL CT

N ROSE AVE

CITY OF OXNARD

99-28A SHT # 44

99-28A SHT # 45

99-28A SHT # 41

99-28A SHT # 40

99-28A SHT # 36

99-28 A SHT # 46

95-06A SHT # 35

97-36A SHT # 12

97-36A SHT # 10

97-36A SHT # 11

95-06A SHT # 28

95-06A SHT # 29

95-06A SHT # 33

95-06A SHT # 31

95-06A SHT # 32

95-06A SHT # 34

91-171 A SHT # 10

91-171A SHT # 10

91-171A SHT # 9

90-57 A SHT # 50

90-57 A SHT # 49

90-57A

H-1 H-2 H-3 H-4 H-5 H-6 H-7 H-8 H-9 H-10 H-11 H-12 H-13 H-14 H-15 H-18 H-19

8" PVC

12" PVC

6" STUB

2" 4" 6"

A/R BO

22 ' 43 ' 34 ' 12 '

0 160 320 FEET

Q-19	City of Oxnard		WATER ATLAS		February 2010		FH: 16 W V: 75	Q-19

SEE MAP Q-20

City of Oxnard DataSheet Grid No Q-19

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	6"	20	19'	OFF +	75"
2	12"	38	20' 3"	OFF +	75"
3	6"	20	11' 9"	OFF +	75"
4	12"	38	12' 6"	OFF +	77"
5	6"	20	11' 6"	OFF +	75"
6	12"	38	21' 6"	OFF +	75"
7	8"	26	35' 3"	29' 9"	75"
8	12"	38	59' 9"	48' 3"	75"
9	8"	26	60'	48' 9"	75"
10	8"	26	25' 7"	24' 6"	75"
11	8"	26	26'	26' 5"	75"
12	8"	26	25'	25' 4"	75"
13	6"	20	5' 9"	OFF F/H	75"
14	8"	26	23' 5"	23' 8"	75"
15	8"	26	9' 6"	13' 6"	75"
16	8"	26	10' 9"	13'	75"
17	8"	26	11' 6"	11' 3"	75"
18	6"	20	5'	OFF F/H	75"
19	8"	26	25' 3"	26' 5"	75"
20	6"	20	6'	OFF F/H	75"
21	8"	26	26' 2"	25' 8"	75"
22	8"	26	25' 6"	25' 8"	80"
23	8"	26	24' 2"	24' 4"	80"
24	8"	26	25' 2"	23' 3"	80"
25	6"	20	5' 6"	OFF F/H	75"
26	6"	20	6'	OFF F/H	80"
27	8"	26	29' 5"	26'	80"
28	8"	26	28'	24' 6"	80"
29	8"	26	30' 5"	25' 3"	80"
30	8"	26	26' 8"	25' 7"	75"
31	8"	26	24' 3"	25' 2"	75"
32					
33	6"	20	5' 9"	OFF F/H	75"
34	8"	26	28' 6"	30' 3"	75"
35	8"	26	30'	31' 7"	75"
36	8"	26	30' 9"	30' 9"	75"
37	8"	26	23' 8"	25'	75"
38	6"	20	6'	OFF F/H	75"
39	8"	26	24' 10"	23' 6"	75"
40	8"	26	23' 9"	24' 6"	75"
41	8"	26	22'	22' 3"	75"
42	8"	26	23' 3"	24' 6"	75"
43	8"	26	20' 8"	11' 2"	75"
44	6"	20	6"	OFF F/H	75"
45	6"	20	5' 6"	OFF F/H	75"
46					
47	8"	26	29' 5"	29' 10"	75"
48	8"	26	27' 4"	29' 6"	75"
49	6"	20	6' 6"	OFF F/H	75"
50	8"	26	26' 3"	26' 10"	75"
51	8"	26	24' 8"	25' 8"	75"
52	6"	20	11'	11'	75"
53	8"	26	12' 6"	12' 6"	75"
54	8"	26	10' 9"	10' 9"	75"
55	6"	20	6'	OFF +	75"

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
56	6"	20	6'	OFF F/H	75"
57	8"	26	23' 4"	11' 5"	75"
58	8"	26	24' 6"	23' 6"	75"
59	8"	26	23' 8"	24' 5"	75"
60	8"	26	24' 10"	23' 6"	75"
61	6"	20	5' 3"	OFF F/H	75"
62	6"	20	6'	OFF F/H	80"
63	8"	26	30' 5"	29' 3"	75"
64	8"	26	28' 10"	28'	75"
65	6"	20	7' 6"	OFF F/H	75"
66	8"	26	26' 9"	OFF +	75"
67	DOES NOT ESIXT				
68	8"	26	26' 6"	24' 10"	80"
69	4"	14	6' 6"	OFF +	80"
70	4"	14	9' 6"	OFF C/F +	75"
71					
72	4"	14	18' 4"	24' 5"	75"
73	1"	0.25	5' 6"	OFF A/V	35"
74	1"	0.25	21'	OFF A/V	35"
75	4"	14	27'	21' 2"	80"
76	6"	20	6'	OFF F/H	80"

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

SEE MAP R-19

SEE MAP Q-20

SEE MAP S-20

CAMINO DEL SOL

CITY OF OXNARD

SAN GORGONIO AVE

SAN JOSE ST

DEL REY PL

SAN LUIS ST

SAN JACINTO ST

BALSAM ST

CORDOVA ST

N DRISKILL ST

EVEREST ST

FEATHERSTONE ST

GIBRALTAR ST

HALCON ST

IMPERIAL ST

JULIAN ST

KOHALA ST

BERNOULLI CIR

4"FIRE LINE

BACKFLOW DEVICE

IRRIG

BURIED OR MISSING

A/R

SEE MAP R-21

R-20	City of Oxnard	0 180 360 FEET	WATER ATLAS	June 2011	FH: 35 W V: 93	R-20

City of Oxnard DataSheet Grid No R-20

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	12"	40	5' 0"	C/F +	19"
2	8"	27	4' 0"	(+) GUTTER	28"
3	6"	21	18' 8"	OFF F.H -1	28"
4	4"	15	3' 4"	(+) GUTTER	40"
5	6"	21	5' 4"	OFF F.H -2	22"
6	4"	15	3' 0"	(+) GUTTER	16"
7	6"	21	20' 2" C/F +	11' 0" C/F +	36"
8	6"	21	5' 9"	OFF F.H -3	16"
9	8"	27	21' 7" + BLOCKWALL	14' 6" + BLOCKWALL	13"
10	12"	39	12' 7" C/F +	33' 2" C/F +	6"
11	8"	27	31' 2" C/F +	18' 0" C/F +	17"
12	6"	21	5' 6"	OFF F.H -4	26"
13	6"	21	12' 8" C/F +	26' 4" C/F +	22"
14	6"	21	29' 0" C/F +	10' 2" C/F +	21"
15	6"	21	5' 8"	OFF F.H -6	20"
16	6"	21	11' 4" C/F +	27' 3" C/F +	21"
17	6"	21	5' 0"	OFF F.H -7	
18	6"	21	27' 0"	11' 9" C/F +	23"
19	6"	21	5' 4"	OFF F.H -8	20"
20	6"		12' 7" C/F +	26' 2" C/F +	17"
21	6"	21	27' 3" C/F +	12' 7" C/F +	18"
22	6"	21	5' 5"	OFF F/H - 9	19"
23	6"	21	13' 0" C/F +	26' 3" C/F +	18"
24	6"	21	4' 8"	OFF F/H - 10	37"
25	12"	39	13' 7" C/F +	32' 2" C/F +	26"
26	12"	39	31' 3" C/F +	16' 0" C/F +	25"
27	12"	39	32' 6" C/F +	56' 6" C/F +	50"
28	6"	21	12' 0" C/F +	26' 4" C/F +	23"
29	12"	39	26' 4" C/F +	11' 2" C/F +	20"
30	6"	21	4' 10"	OFF F/H - 11	31"
31	8"	27	5' 0"	C/F +	17"
32	6"	21	26' 5" C/F +	11' 0" C/F +	18"
33	6"	21	4' 10	OFF F/H - 12	16"
34	6"	21	5' 6"	OFF F/H - 13	13"
35	8"	27	4' 8"	C/F +	20"
36	6"	21	26' 4" C/F +	13' 3" C/F +	22"
37	6"	21	5' 6"	OFF F/H - 14	23"
38	6"	21	5' 6"	OFF F/H - 15	20"
39	8"	27	5' 6"	C/F +	17"
40	6"	21	26' 7" C/F +	12' 8" C/F +	18"
41	6"	21	5' 5"	OFF F/H - 16	19"
42	6"	21	5' 6"	OFF F/H - 17	19"
43	8"	27	4' 6"	C/F +	22"
44	6"	21	26' 9" C/F +	10' 5" C/F +	12"
45	6"	21	5' 5"	OFF F/H - 18	16"
46	6"	21	5' 4"	OFF F/H - 19	17"
47	6"	21	20' 4" C/F +	12' 3" C/F +	24"
48	8"	27	27' 4" C/F +	11' 0" C/F +	25"
49	8"	27	5' 5"	C/F +	22"
50	6"	21	5' 7"	OFF F/H - 5	21"
51	6"	21	5' 3"	OFF F/H - 20	13"
52	8"	27	11' 4" C/F +	26' 10" C/F +	12"
53	6"	21	9' 10" C/F +	26' 10" C/F +	17"
54	6"	21	6' 7"	OFF F/H - 21	21"
55	8"	27	11' 0" C/F +	27' 10" C/F +	17"

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
56	6"	21	9' 3" C/F +	26' 8" C/F +	21"
57	6	21	10' 4" C/F +	27' 0" C/F +	16"
58	6"	21	26' 7"	11' 5" C/F +	24"
59	6"	21	5' 3"	OFF F/H - 22	19"
60	6"	21	11' 3" C/F +	26' 10" C/F +	20"
61	6"	21	5' 0"	C/F +	17"
62	6"	21	5' 7"	OFF F/H - 24	18"
63	6"	21	7' 6" C/F	10' 2" C/F +	16"
64	6"	21	5' 8"	C/F +	16"
65	6"	21	7' 0" C/F +	29' 7" C/F +	17"
66	6"	21	27' 6" C/F +	10' 2" C/F +	19"
67	6"	21	10' 10" C/F +	27' 4" C/F +	19"
68	6"	21	5' 6"	OFF F/H - 23	18"
69	6"	21	8' 7" C/F +	8' 9" C/F +	21"
70	6"	21	5' 6"	OFF F/H - 25	26"
71	6"	21	10' 10" C/F +	27' 4" C/F +	26"
72	6"	21	12' 6" C/F +	25' 10" C/F +	24"
73	6"	21	6' 0" C/F +	12' 3" C/F +	20"
74	6"	21	5' 4"	C/F +	24"
75	6"	21	6' 0"	OFF F/H - 26	22"
76	6"	21	5' 0"	OFF F/H - 27	32"
77	12"	39	10' 2" C/F +	27' 0" C/F +	21"
78	12"	39	27' 0" C/F +	10' 7" C/F +	27"
79	6"	21	5' 3"	OFF F/H -28	33"
80	6"	21	5' 4"	OFF F/H - 29	30"
81	6"	21	6' 0"	OFF F/H - 36	36"
82	8"	27	23' 0" C/F +	9' 10" C/F +	23"
83	8"	27	14' 0" C/F +	18' 4" C/F +	23"
84	6"	21	7' 0"	OFF F/H - 30	30"
85	10"	33	43' 0" C/F +	55' 5" C/F +	50"
86	4"	15	16' 6"	OFF 4" DEVICE	21"
87	6"	21	3' 4"	C/F +	24"
88	6"	21	4' 0"	OFF F/H - 33	31"
89	6"	21	10' 10"	OFF F/H - 37	25"
90	4"	15	15' 4"	C/F +	19"
91	4"	15	24' 4" C/F +	18' 2" C/F +	24"
92	3_4	CURB STOP	2' 6"	C/F +	29"
93	6"	21	3' 2"	(+) GUTTER	28"
94	4"	15	10' 6"	OFF 4" DEVICE	30"
95	6"	21	13' 7"	OFF F/H - 30	30"

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

SEE MAP Q-19

FLORENTINA DR
GLORIA CT
N ROSE AVE
CAMINO DEL SOL
SAN GORGONIO AVE
CARMELITA CT
DOLORES CT
ELIZA CT
ALPINE ST
BALSAM ST
E FIRST ST
CITY OF OXNARD
ABANDONED
4" BLOWOFF VALVE
4"FIRE LINE
4" DEVICE
10" ACP
12" ACP
8" ACP
6" ACP
8" PVC
12" PVC
4" PVC
6" CIP
4" RP
42" UWCD
12"X10" RED.
61-222 B SHT # 2
61-221 B SHT # 1
91-171A SHT # 9
95-06A SHT # 30
95-06A SHT # 36
90-57A SHT # 49
SHT # 34
H-1
H-2
H-3
H-4
H-5
H-6
H-7
H-8
H-9
H-10
H-11
H-12
H-13
H-14
H-15
H-16
H-17
H-18
H-19
H-20
H-21
H-22
SEE MAP P-20
SEE MAP R-20
SEE MAP Q-21

Q-20	City of Oxnard	0 160 320 FEET	WATER ATLAS		February 2010		FH: 21 W V: 44	Q-20

City of Oxnard DataSheet Grid No Q-20

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	6"	20	12"	OFF F/H	19"
2	10"	31	1"	"+" ON C/F	20"
3	DOES NOT EXIST				
4	6"	20	28"	OFF F/H	31"
5	10"	28	37' 3"	61' 9"	19"
6	12"	38	33' 9"	19'	19"
7	12"	40	12' 3"	33'	14"
8	6"	21	6'	OFF F/H	24"
9	6"	21	5' 3"	OFF F/H	27"
10	8"	26	3' 7"	CONC. GUTTER	33"
11	6"	20	27'	OFF F/H	36"
12	6"	20	18' 4"	OFF F/H	26"
13	12"	39	18' 6"	37' 4"	22"
14	8"	27	31' 10"	16' 5"	21"
15	6"	21	10' 6"	OFF F/H	32"
16	8"	26	5'	"+" ON C/F	20"
17	6"	20	27' 7"	12' 9"	21"
18	6"	21	5' 10"	OFF F/H	19"
19	8"	26	5' 5"	"+" ON C/F	20"
20	6"	20	27' 7"	11' 7"	14"
21	6"	21	5' 9"	OFF F/H	13"
22	6"	20	7'	OFF F/H	24"
23	6"	21	10' 8"	OFF F/H	32"
24	6"	21	5' 5"	OFF F/H	14"
25	6"	21	5' 7"	OFF F/H	11"
26	12"	36	36' 5"	24' 7"	40"
27	ABANDONED				
28	12"	36	2' 6"	"+" ON C/F	16"
29	12"	36	3'	"+" ON C/F	24"
30	4"	13	2' 3"	"+" ON C/F	31"
31	4"	13	3' 6"	FROM R.P.D	35"
32	6"	20	5' 8"	OFF F/H	34"
33	4"	14	18' 9"	"+" ON C/F	40"
34	6"	20	4' 2"	"+" ON C/F	40"
35	6"	20	4' 4"	OFF F/H	12"
36	6"	20	21'	OFF F/L	40"
37	4"	14	2' 6"	CONC. GUTTER	26"
38	DOES NOT EXIST				
39	4"	14	11' 3"	OFF F/L	12"
40	6"	20	10' 6"	OFF F/H	24"
41	4"	14	2' 2"	OFF F/L	32"
42	1"		2'	OFF A/V	18"
43	6"	20	2' 6"	CONC. GUTTER	

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

Ventura County
Air Pollution
Control District

Public Records Request Form

Please fill out this form as completely as possible. Please fill out a separate form for each address of interest. The form may be emailed to maree@vcapcd.org or faxed to the District at 805/645-1444. For more information, please contact Maree Penhart at 805/645-1403.

Person Requesting Information

Name:		Date:
Company:		
Mailing Address:		
City:	State:	Zip Code:
Telephone Number:	Fax Number:	
Email address:		

Standard Facility Information Request

Facility Name:		
Facility Address:		
City:	State:	Zip Code:
Facility Number(s):		

Information Requested (Check All That Are Applicable):

- ☐ Copy of Current Facility Permit to Operate with Facility Permitted Emissions
- ☐ Inspection Summary (1996 to Present)
- ☐ Notice of Violation Summary (1996 to Present)
- ☐ Notice to Comply Summary (1996 to Present)
- ☐ Complaint Summary (1996 to Present)
- ☐ Other (Describe Below)

Requests for records must be for clearly identifiable records in the District's possession, and for facilities within the District's jurisdiction. The District is not required by law to create a new record or list from an already existing record.

Copying costs are $0.17 per page for requests that are 10 pages or more in length. If the "Other" box is checked, an additional charge for labor may be added to the invoice for the information requested.

NOW AVAILABLE ONLINE !
Facility Info System
Find information on facilities with APCD Permits at:
http://www.vcapcd.org/FIS.htm

March 4, 2015

Steele, James

From: Maree Penhart <maree@vcapcd.org>
Sent: Wednesday, September 20, 2017 4:43 PM
To: Dane, Jason
Subject: RE: Request for Public information under the Public Records Act
Attachments: Public Records Request Form.pdf

Hello Jason,

Nothing was found for the address:

1853 Camino Del Sol, Oxnard CA 93030.

I have attached our Public Records Request Form which is required for each request for your future use.
Please let me know if you have any questions.
Thank you.

Maree Penhart
Engineering Division
Ventura County Air Pollution Control District
(805) 645-1403
(805) 645-1444 fax
maree@vcapcd.org

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Tuesday, September 19, 2017 4:07 PM
To: Maree Penhart
Subject: RE: Request for Public information under the Public Records Act

Hello Marie,

Thank you for the information. Could you also run a check for the following address?:

1853 Camino Del Sol, Oxnard CA 93030

Thanks.

From: Maree Penhart [mailto:maree@vcapcd.org]
Sent: Tuesday, September 19, 2017 12:37 PM
To: Dane, Jason <Jason.Dane@tetratech.com>
Subject: RE: Request for Public information under the Public Records Act

Hello Jason,

Nothing was found for the address:

1825 Camino Del Sol, Oxnard CA 93030.

Please let me know if you have any questions.
Thank you.

Maree Penhart
Engineering Division
Ventura County Air Pollution Control District
(805) 645-1403
(805) 645-1444 fax
maree@vcapcd.org

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:46 AM
To: Maree Penhart
Subject: Request for Public information under the Public Records Act

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request any records pertaining to the property listed below:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059
Historical and current use of the property is agricultural.

Any and all records on this property would be greatly appreciated. In addition we are only concerned with this property and not surrounding properties. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
tetratech.com

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Please consider the environment before printing. Read more



Steele, James

From: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Sent: Wednesday, September 20, 2017 4:19 PM
To: Dane, Jason
Subject: FW: 17-P-750 FW: Public Records Request for Phase 1 ESA

Good Afternoon Mr. Dane:

The Department of Forestry and Fire Protection, CAL FIRE, has searched its records and has found no documents in response to your request.

Sincerely,

Anne Henigan
CAL FIRE Legal Office

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:01 AM
To: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Subject: Public Records Request for Phase 1 ESA

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request information on any pipelines that are located near the property listed below within 1,500 feet:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059

Any additional information including distance, direction from the property, direction the pipeline is running, whether the pipeline is active, and pipeline size/ depth would be greatly appreciated. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
tetratech.com

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Airports | Navaids | Airspace Fixes | Aviation Fuel | AIRBOSS | iPhone App | My AirNav

Airport Search Results

7 airports found

ID	CITY	AIRPORT NAME	WHERE
2CL6	*OXNARD, CA*	*ST JOHN'S REGIONAL MEDICAL CENTER HELIPORT*	0.6 nm N
OXR	OXNARD, CA	OXNARD AIRPORT	2.4 nm W
CMA	CAMARILLO, CA	CAMARILLO AIRPORT	3.2 nm E
3CL9	*SAN BUENAVENTURA, CA*	*SCE NORTHERN DIVISION HELIPORT*	4.8 nm N
NTD	*OXNARD, CA*	*POINT MUGU NAS (NAVAL BASE VENTURA CO) AIRPORT*	5.6 nm SSE
CA72	*VENTURA, CA*	*COMMUNITY MEMORIAL HOSPITAL HELIPORT*	6.5 nm NW
SZP	SANTA PAULA, CA	SANTA PAULA AIRPORT	9.7 nm NNE

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F ENVIRONMENTAL DATABASE REPORT

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.2s
September 21, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Detail Map	3
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
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Physical Setting Source Map	A-12
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Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1853 CAMINO DEL SOL
OXNARD, CA 93030

COORDINATES

Latitude (North):	34.2064120 - 34° 12' 23.08''
Longitude (West):	119.1587240 - 119° 9' 31.40''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	301108.0
UTM Y (Meters):	3786954.8
Elevation:	63 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619402 OXNARD, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140901
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1853 CAMINO DEL SOL
OXNARD, CA 93030

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	ECLIPSE BERRY RANCH	1853 CAMINO DEL SOL	FINDS		TP
A2	MAULHARDT FARMS	1853 CAMINO DEL SOL	VENTURA CO. BWT, HAZNET		TP
3	VINEYARD PLAZA CLEAN	1944 CAMINO DEL SOL	EDR Hist Cleaner	Higher	60, 0.011, East
4	SUPERIOR CARPET CLEA	633 URSULA DR	EDR Hist Cleaner	Higher	477, 0.090, NW
5	RIO ROSALES	KOHALA/JACINTO STREE	ENVIROSTOR, SCH	Higher	628, 0.119, NE
6	ARENALES/KOHALA PROP	765 KOHALA ST	LUST, SLIC, CDL	Higher	669, 0.127, ENE
7	CONTINENTAL HERITAGE	275 ROSE AVENUE	UST	Lower	954, 0.181, SSW
B8	MC CASLIN OIL CO.	2425 COLONIA RD	SWEEPS UST, CA FID UST	Higher	1250, 0.237, WNW
B9	MCCASLIN OIL COMPANY	2425 COLONIA RD.	ENVIROSTOR, LUST, HIST UST, HIST CORTESE	Higher	1250, 0.237, WNW
B10	MAULHARDT FARM	1953 E COLONIA RD	HIST UST	Higher	1250, 0.237, WNW
11	WILMA PACIFIC INC.	BERNOULLI CIR	LUST	Higher	1478, 0.280, East
12	OXNARD FIRE STATION	1450 COLONIA AVE	LUST	Higher	1493, 0.283, West
C13	EXXON (SANCHEZ)	121 ROSE AVE	LUST	Lower	1531, 0.290, SSW
C14	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C15	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C16	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C17	EXXON (SANCHEZ)	121 ROSE	HIST CORTESE	Lower	1531, 0.290, SSW
D18	OXNARD (CITY) TREATM	PERKINS RD	LUST, HIST CORTESE	Lower	2087, 0.395, West
D19	OXNARD (CITY)	300 MARQUITA N	LUST	Lower	2095, 0.397, West
D20	OXNARD (CITY)	300 MARQUITA N	LUST	Lower	2095, 0.397, West
21	STANDARD PACIFIC OF	1191 COLONIA ROAD	LUST, UST, HIST CORTESE	Higher	2168, 0.411, West
22	NISHIMORI FARMS / CA	SOUTHEAST OF WILLIAM	SLIC	Higher	2281, 0.432, NNE
23	JONES INTERCABLE	721 MAULHARDT AVE	LUST, HIST CORTESE	Higher	2476, 0.469, East
E24	MAUL-GRAVES LEASING	833 MAULHARDT	LUST, HIST UST, HIST CORTESE	Higher	2573, 0.487, ENE
E25	CERTIFIED FREIGHT LI	965 MAULHARDT AVE‘	LUST	Higher	2575, 0.488, ENE
E26	SYSTEM 99	965 MAULHARDT AVE	LUST, HIST UST	Higher	2575, 0.488, ENE
27	MISSION LINEN	505 MAULHARDT AVE	LUST, DRYCLEANERS, HIST CORTESE	Higher	2580, 0.489, East
28	SA RECYCLING	521 N RICE AVE	ENVIROSTOR, SWRCY, NPDES, WDS	Higher	3308, 0.627, East
29	RAMONA SCHOOL SITE	804 COOPER ROAD	ENVIROSTOR, SCH	Lower	3416, 0.647, WSW
30	THE PROCTER & GAMBLE	800 N RICE AVE	RCRA-LQG, ENVIROSTOR, TRIS, ICIS, US AIRS, FINDS,...	Higher	3429, 0.649, ENE
31	TELEFLEX CONTROL SYS	1950 WILLIAMS DRIVE	ENVIROSTOR	Higher	3497, 0.662, NNE
32	MAULHARDT OIL LEASE	N. OF STURGIS ROAD-W	ENVIROSTOR	Lower	3603, 0.682, ESE
33	PACIFICA HIGH SCHOOL	600 EAST GONZALES RO	ENVIROSTOR, SCH, EMI	Higher	4668, 0.884, NW
34	OXNARD METALS INC.	1441 MOUNTAIN VIEW	ENVIROSTOR	Lower	4861, 0.921, SSW
35	SOUTH COAST AREA TRA	301 E THIRD STREET	ENVIROSTOR, HIST UST, NPDES, WDS	Lower	5049, 0.956, WSW
36	COSTCO WHOLESALE NO	2001 E VENTURA BLVD	RCRA-LQG, ENVIROSTOR, FINDS, ECHO, HAZNET, MED...	Higher	5128, 0.971, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
ECLIPSE BERRY RANCH 1853 CAMINO DEL SOL OXNARD, CA 93030	FINDS Registry ID:: 110065529280	N/A
MAULHARDT FARMS 1853 CAMINO DEL SOL OXNARD, CA 93030	VENTURA CO. BWT Facility Id: FA0034801 HAZNET GEPAID: CAC002114376	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-CESQG ---- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System
US ENG CONTROLS ---- Engineering Controls Sites List
US INST CONTROL ---- Sites with Institutional Controls

Federal ERNS list

ERNS ---- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---- Underground Storage Tank Listing
AST ---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing
VCP ---- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database

HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
HIST Cal-Sites Historical Calsites Database
CDL Clandestine Drug Labs
Toxic Pits Toxic Pits Cleanup Act Sites
US CDL National Clandestine Laboratory Register

Local Land Records

LIENS Environmental Liens Listing
LIENS 2 CERCLA Lien Information
DEED Deed Restriction Listing

Records of Emergency Release Reports

HMIRS Hazardous Materials Information Reporting System
CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing
SPILLS 90 SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR RCRA - Non Generators / No Longer Regulated
FUDS Formerly Used Defense Sites
DOD Department of Defense Sites
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR Financial Assurance Information
EPA WATCH LIST EPA WATCH LIST
2020 COR ACTION 2020 Corrective Action Program List
TSCA Toxic Substances Control Act
TRIS Toxic Chemical Release Inventory System
SSTS Section 7 Tracking Systems
ROD Records Of Decision
RMP Risk Management Plans
RAATS RCRA Administrative Action Tracking System
PRP Potentially Responsible Parties
PADS PCB Activity Database System
ICIS Integrated Compliance Information System
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS Material Licensing Tracking System
COAL ASH DOE Steam-Electric Plant Operation Data
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
RADINFO Radiation Information Database
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS Incident and Accident Data

EXECUTIVE SUMMARY

CONSENT Superfund (CERCLA) Consent Decrees
INDIAN RESERV Indian Reservations
FUSRAP Formerly Utilized Sites Remedial Action Program
UMTRA Uranium Mill Tailings Sites
LEAD SMELTERS Lead Smelter Sites
US AIRS Aerometric Information Retrieval System Facility Subsystem
US MINES Mines Master Index File
ABANDONED MINES Abandoned Mines
UXO Unexploded Ordnance Sites
DOCKET HWC Hazardous Waste Compliance Docket Listing
ECHO Enforcement & Compliance History Information
FUELS PROGRAM EPA Fuels Program Registered Listing
CA BOND EXP. PLAN Bond Expenditure Plan
Cortese "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings CUPA Resources List
DRYCLEANERS Cleaner Facilities
EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
ICE ICE
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
MED WASTE VENTURA Medical Waste Program List
MINES Mines Site Location Listing
MWMP Medical Waste Management Program Listing
NPDES NPDES Permits Listing
PEST LIC Pesticide Regulation Licenses Listing
PROC Certified Processors Database
Notify 65 Proposition 65 Records
UIC UIC Listing
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants
EDR Hist Auto EDR Exclusive Historic Gas Stations

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF Recovered Government Archive Solid Waste Facilities List
RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/31/2017 has revealed that there are 11 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIO ROSALES Facility Id: 56010011 Status: No Further Action	***KOHALA/JACINTO STREE***	***NE 0 - 1/8 (0.119 mi.)***	***5***	***10***
MCCASLIN OIL COMPANY Facility Id: 56290158 Status: Refer: Other Agency	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
SA RECYCLING Facility Id: 56730054 Status: Refer: Other Agency	***521 N RICE AVE***	***E 1/2 - 1 (0.627 mi.)***	***28***	***52***
THE PROCTER & GAMBLE Facility Id: 56260002 Status: Refer: Other Agency	***800 N RICE AVE***	***ENE 1/2 - 1 (0.649 mi.)***	***30***	***59***
TELEFLEX CONTROL SYS Facility Id: 60001505 Status: No Action Required	1950 WILLIAMS DRIVE	NNE 1/2 - 1 (0.662 mi.)	31	137
PACIFICA HIGH SCHOOL Facility Id: 56010006 Status: No Further Action	***600 EAST GONZALES RO***	***NW 1/2 - 1 (0.884 mi.)***	***33***	***139***
COSTCO WHOLESALE NO Facility Id: 71003264 Status: Refer: Other Agency	***2001 E VENTURA BLVD***	***NNE 1/2 - 1 (0.971 mi.)***	***36***	***152***

Lower Elevation	Address	Direction / Distance	Map ID	Page
RAMONA SCHOOL SITE	***804 COOPER ROAD***	***WSW 1/2 - 1 (0.647 mi.)***	***29***	***57***

Facility Id: 56820003 Status: No Action Required				
MAULHARDT OIL LEASE Facility Id: 56130041 Status: No Further Action	N. OF STURGIS ROAD-W	ESE 1/2 - 1 (0.682 mi.)	32	138
OXNARD METALS INC. Facility Id: 56500003 Status: No Further Action	1441 MOUNTAIN VIEW	SSW 1/2 - 1 (0.921 mi.)	34	146
SOUTH COAST AREA TRA Facility Id: 71002921 Status: Refer: Other Agency	***301 E THIRD STREET***	***WSW 1/2 - 1 (0.956 mi.)***	***35***	***148***

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 17 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARENALES/KOHALA PROP Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Facility Id: SR030 Status: Case Closed	***765 KOHALA ST***	***ENE 1/8 - 1/4 (0.127 mi.)***	***6***	***14***
MCCASLIN OIL COMPANY Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: C-89133 Status: Case Closed Facility Id: 89133 Status: Case Closed Global Id: T0611100537 Global ID: T0611100537	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
WILMA PACIFIC INC. Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: 930300461 Status: Case Closed Global ID: T0611100064	BERNOULLI CIR	E 1/4 - 1/2 (0.280 mi.)	11	21
OXNARD FIRE STATION Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: 05003 Status: Case Closed Global Id: T0611184371	1450 COLONIA AVE	W 1/4 - 1/2 (0.283 mi.)	12	22
STANDARD PACIFIC OF Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 06/12/2017	***1191 COLONIA ROAD***	***W 1/4 - 1/2 (0.411 mi.)***	***21***	***38***

Status: Completed - Case Closed
Facility Id: 930300343
Status: Case Closed
Global Id: T0611100061
Global ID: T0611100061

JONES INTERCABLE ***721 MAULHARDT AVE*** ***E 1/4 - 1/2 (0.469 mi.)*** ***23*** ***41***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-88111
Status: Case Closed
Facility Id: 88111
Status: Case Closed
Global Id: T0611100351
Global ID: T0611100351

MAUL-GRAVES LEASING ***833 MAULHARDT*** ***ENE 1/4 - 1/2 (0.487 mi.)*** ***E24*** ***43***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-87010
Status: Case Closed
Facility Id: 87010
Status: Case Closed
Global Id: T0611100174
Global ID: T0611100174

CERTIFIED FREIGHT LI 965 MAULHARDT AVE‘ ENE 1/4 - 1/2 (0.488 mi.) E25 46
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Global Id: T0611108154

SYSTEM 99 ***965 MAULHARDT AVE*** ***ENE 1/4 - 1/2 (0.488 mi.)*** ***E26*** ***48***
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Facility Id: 87011
Status: Case Closed

MISSION LINEN ***505 MAULHARDT AVE*** ***E 1/4 - 1/2 (0.489 mi.)*** ***27*** ***49***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-87052
Status: Case Closed
Facility Id: 87052
Status: Case Closed
Global Id: T0611100196
Global ID: T0611100196

Lower Elevation	Address	Direction / Distance	Map ID	Page

EXXON (SANCHEZ) 121 ROSE AVE SSW 1/4 - 1/2 (0.290 mi.) C13 24
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Facility Id: C-87095

Status: Case Closed
Facility Id: 87095
Status: Case Closed
Global ID: T0611100224

MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C14	25
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Facility Id: 01026 Status: Case Closed				
MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C15	25
Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Global Id: T0611195678 Global Id: T0611100224				
MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C16	31
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-01026 Status: Pollution Characterization Global ID: T0611195678				
OXNARD (CITY) TREATM	***PERKINS RD***	***W 1/4 - 1/2 (0.395 mi.)***	***D18***	***33***
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-89075 Facility Id: C-87045 Status: Case Closed Global ID: T0611100484 Global ID: T0611100191				
OXNARD (CITY)	300 MARQUITA N	W 1/4 - 1/2 (0.397 mi.)	D19	35
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: 90007 Status: Case Closed Global Id: T0611100594				
OXNARD (CITY)	300 MARQUITA N	W 1/4 - 1/2 (0.397 mi.)	D20	37
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-90007 Status: Case Closed Global ID: T0611100594				

SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the SLIC list, as provided by EDR, has revealed that there are 2 SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARENALES/KOHALA PROP	***765 KOHALA ST***	***ENE 1/8 - 1/4 (0.127 mi.)***	***6***	***14***
Database: SLIC, Date of Government Version: 06/12/2017 Facility Status: Completed - Case Closed Global Id: T0611182768				
NISHIMORI FARMS / CA	SOUTHEAST OF WILLIAM	NNE 1/4 - 1/2 (0.432 mi.)	22	40
Database: SLIC, Date of Government Version: 06/12/2017				

Facility Status: Completed - Case Closed
Global Id: T10000001010

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CONTINENTAL HERITAGE	275 ROSE AVENUE	SSW 1/8 - 1/4 (0.181 mi.)	7	15
Database: VENTURA CO. UST, Date of Government Version: 02/27/2017 Facility Id: D 532 Facility Status: inactive				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

SCH: This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category. depending on the level of threat to public health and safety or the. environment they pose.

A review of the SCH list, as provided by EDR, and dated 07/31/2017 has revealed that there is 1 SCH site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIO ROSALES	***KOHALA/JACINTO STREE***	***NE 0 - 1/8 (0.119 mi.)***	***5***	***10***
Facility Id: 56010011 Status: No Further Action				

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MC CASLIN OIL CO.	***2425 COLONIA RD***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B8***	***15***

Status: A
Tank Status: A
Comp Number: 1374

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MCCASLIN OIL COMPANY	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
MAULHARDT FARM	1953 E COLONIA RD	WNW 1/8 - 1/4 (0.237 mi.)	B10	20
Facility Id: 00000033070				

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MC CASLIN OIL CO.	***2425 COLONIA RD***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B8***	***15***
Facility Id: 56000456				
Status: A				

Other Ascertainable Records

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 7 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MCCASLIN OIL COMPANY	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
Reg Id: C-89133				
Reg Id: 56290158				
STANDARD PACIFIC OF	***1191 COLONIA ROAD***	***W 1/4 - 1/2 (0.411 mi.)***	***21***	***38***
Reg Id: 930300343				
JONES INTERCABLE	***721 MAULHARDT AVE***	***E 1/4 - 1/2 (0.469 mi.)***	***23***	***41***
Reg Id: C-88111				
MAUL-GRAVES LEASING	***833 MAULHARDT***	***ENE 1/4 - 1/2 (0.487 mi.)***	***E24***	***43***
Reg Id: C-87010				
MISSION LINEN	***505 MAULHARDT AVE***	***E 1/4 - 1/2 (0.489 mi.)***	***27***	***49***
Reg Id: C-87052				

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON (SANCHEZ)	121 ROSE	SSW 1/4 - 1/2 (0.290 mi.)	C17	33

Reg Id: C-87095

OXNARD (CITY) TREATM	***PERKINS RD***	***W 1/4 - 1/2 (0.395 mi.)***	***D18***	***33***

Reg Id: C-90007

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there are 2 EDR Hist Cleaner sites within approximately 0.125 miles of the target property.

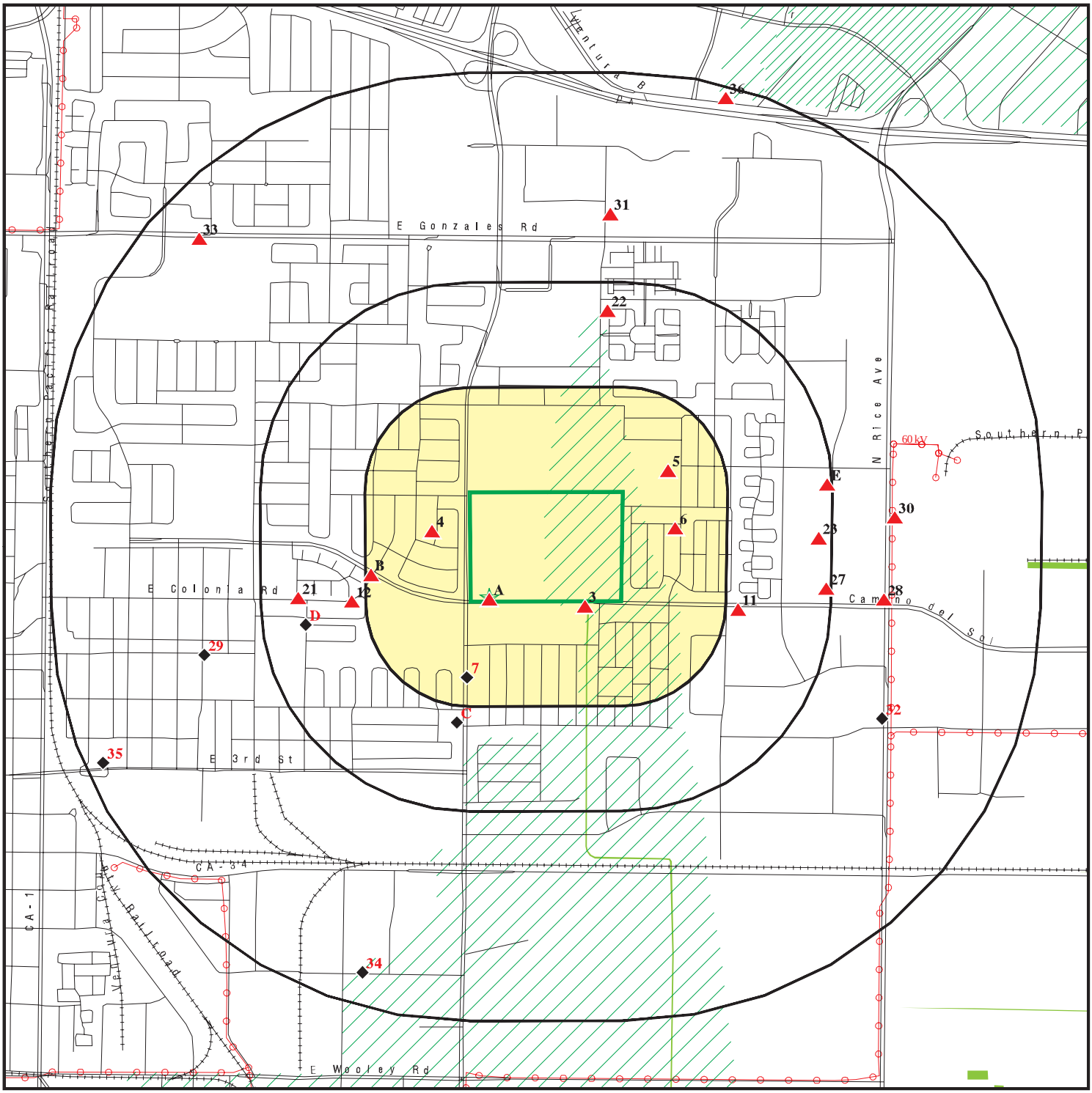
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VINEYARD PLAZA CLEAN	1944 CAMINO DEL SOL	E 0 - 1/8 (0.011 mi.)	3	9
SUPERIOR CARPET CLEA	633 URSULA DR	NW 0 - 1/8 (0.090 mi.)	4	9

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
WILMA PACIFIC INC.	LUST
CITY OF OXNARD	SLIC
NAVARRO SITE	SLIC
SANTA CLARA/MAXWELL SWIFT/CONNOLLY	ENVIROSTOR

OVERVIEW MAP - 5046760.2S



0 1/4 1/2 1 Miles

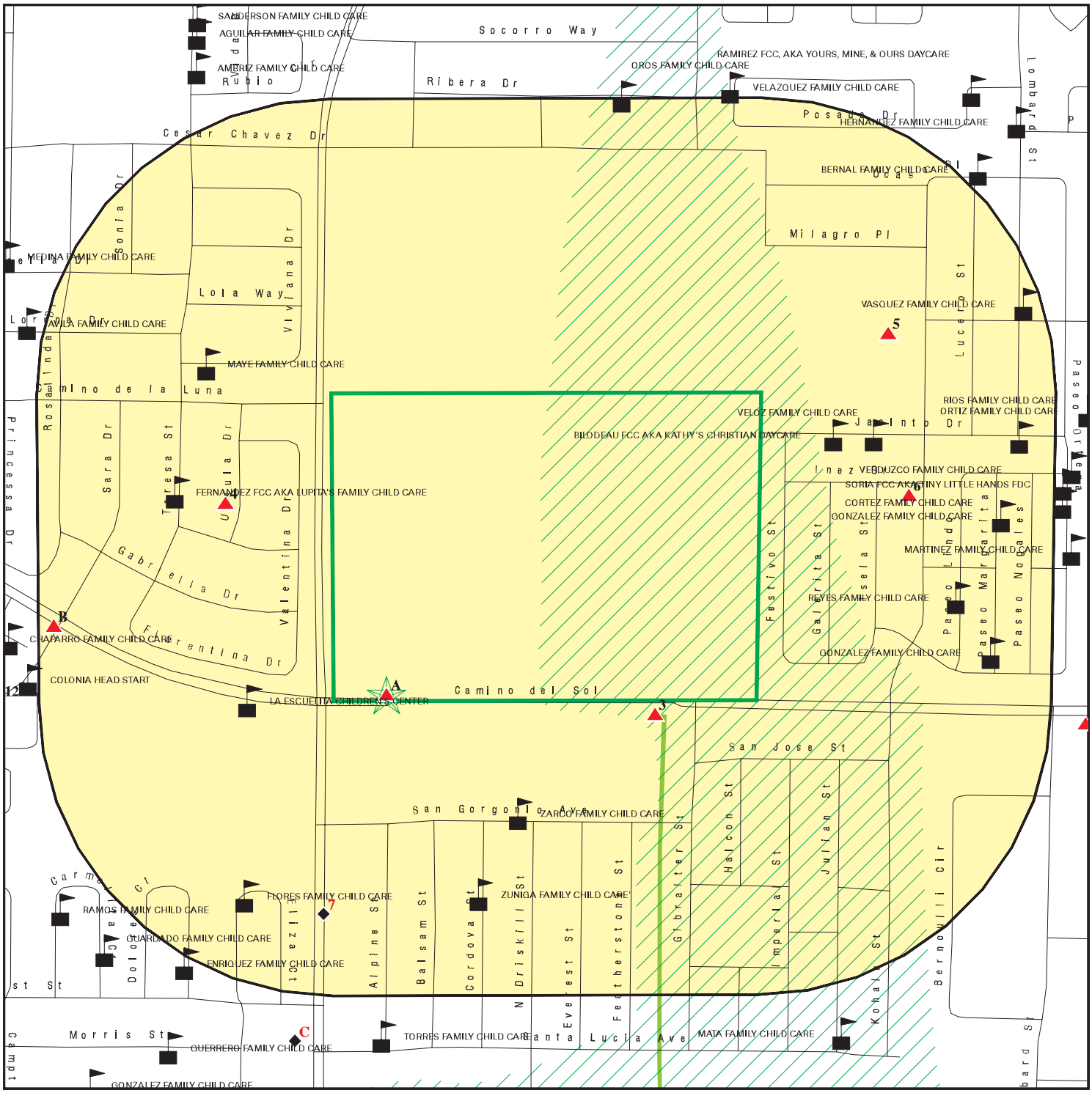
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Oxnard High School #8	CLIENT: Tetra Tech, Inc.
ADDRESS: 1853 Camino Del Sol Oxnard CA 93030	CONTACT: Jason Dane
LAT/LONG: 34.206412 / 119.158724	INQUIRY #: 5046760.2s DATE: September 21, 2017 2:08 pm

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DETAIL MAP - 5046760.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Oxnard High School #8	CLIENT: Tetra Tech, Inc.
ADDRESS: 1853 Camino Del Sol Oxnard CA 93030	CONTACT: Jason Dane
LAT/LONG: 34.206412 / 119.158724	INQUIRY #: 5046760.2s DATE: September 21, 2017 2:09 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	1	0	9	NR	11
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	2	15	NR	NR	17

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	1	1	NR	NR	2
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		1	0	NR	NR	NR	1
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	1	NR	NR	NR	1
HIST UST	0.250		0	2	NR	NR	NR	2
CA FID UST	0.250		0	1	NR	NR	NR	1
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP	1	NR	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
VENTURA CO. BWT	TP	1	NR	NR	NR	NR	NR	1
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
HAZNET	TP	1	NR	NR	NR	NR	NR	1
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	1	6	NR	NR	7
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MED WASTE VENTURA	TP		NR	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		2	NR	NR	NR	NR	2
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		3	4	10	22	9	0	48

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **ECLIPSE BERRY RANCH # 9** **FINDS** **1023263462**
Target **1853 CAMINO DEL SOL** **N/A**
Property **OXNARD, CA 93030**

Site 1 of 2 in cluster A

Actual: 63 ft.

FINDS:

Registry ID: 110065529280

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A2 **MAULHARDT FARMS** **VENTURA CO. BWT** **S112898150**
Target **1853 CAMINO DEL SOL** **HAZNET** **N/A**
Property **OXNARD, CA 93030**

Site 2 of 2 in cluster A

Actual: 63 ft.

VENTURA CO. BWT:
Facility ID: FA0034801
Program: BUSINESS PLAN - FARM

HAZNET:
envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD982444481
TSD County: Not reported
Waste Category: Other organic solids
Disposal Method: Recycler
Tons: .4000
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD028409019
TSD County: Not reported
Waste Category: Unspecified oil-containing waste
Disposal Method: Treatment, Tank

MAULHARDT FARMS (Continued) **S112898150**

Tons: .9382
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD008252405
TSD County: Not reported
Waste Category: Unspecified solvent mixture
Disposal Method: Recycler
Tons: .4587
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

---

3 **VINEYARD PLAZA CLEANERS** **EDR Hist Cleaner** **1020115129**
East **1944 CAMINO DEL SOL** **N/A**
< 1/8 **OXNARD, CA 93030**
0.011 mi.
60 ft.

Relative: Higher

EDR Hist Cleaner

Actual: 63 ft.

Year:	Name:	Type:
2011	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC
2012	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC
2013	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC

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4 **SUPERIOR CARPET CLEANING** **EDR Hist Cleaner** **1018874491**
NW **633 URSULA DR** **N/A**
< 1/8 **OXNARD, CA 93030**
0.090 mi.
477 ft.

Relative: Higher

EDR Hist Cleaner

Actual: 66 ft.

Year:	Name:	Type:
2008	SUPERIOR CARPET CLEANING	Carpet And Upholstery Cleaning

5
NE
< 1/8
0.119 mi.
628 ft.

RIO ROSALES
KOHALA/JACINTO STREET
OXNARD, CA 93030

ENVIROSTOR
SCH

S107737155
N/A

Relative:
Higher

Actual:
70 ft.

ENVIROSTOR:

Facility ID:	56010011
Status:	No Further Action
Status Date:	06/26/2002
Site Code:	304101
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	9.63
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	37
Senate:	19
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	34.2254
Longitude:	-119.1713
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE Silver DDD Toxaphene Thallium and compounds Beryllium and compounds DDT
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL, SV
Alias Name:	RIO ROSALES ELEM. SCH./PLAYGROUND (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEM. SCH./PLYGRD (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEMENTARY SCH. & PLAYGROUND
Alias Type:	Alternate Name
Alias Name:	RIO SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	RIO SD-RIO ROSALES/VCA
Alias Type:	Alternate Name
Alias Name:	304101
Alias Type:	Project Code (Site Code)
Alias Name:	56010011
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	07/06/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	06/26/2002

RIO ROSALES (Continued) **S107737155**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 04/02/2001
Comments: PEA Workplan

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 06/21/1995
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/05/1996
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 12/10/1997
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/20/1998
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 11/30/1999
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/13/2000
Comments: Phase 1 for Northeast Corner of Kohala & Jacinto

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/01/2000
Comments: Phase 1

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 06/26/2002
Comments: Not reported

Future Area Name: Not reported

RIO ROSALES (Continued) **S107737155**

Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	56010011
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	9.63
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	304101
Assembly:	37
Senate:	19
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	06/26/2002
Restricted Use:	NO
Funding:	School District
Latitude:	34.2254
Longitude:	-119.1713
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE, DDE, Silver, DDD, Toxaphene, Thallium and compounds, Beryllium and compounds, DDT
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL, SV
Alias Name:	RIO ROSALES ELEM. SCH./PLAYGROUND (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEM. SCH./PLYGRD (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEMENTARY SCH. & PLAYGROUND
Alias Type:	Alternate Name
Alias Name:	RIO SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	RIO SD-RIO ROSALES/VCA
Alias Type:	Alternate Name
Alias Name:	304101
Alias Type:	Project Code (Site Code)
Alias Name:	56010011
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

RIO ROSALES (Continued) **S107737155**

Completed Document Type: Environmental Oversight Agreement
Completed Date: 07/06/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/26/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 04/02/2001
Comments: PEA Workplan

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 06/21/1995
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/05/1996
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 12/10/1997
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/20/1998
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 11/30/1999
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/13/2000
Comments: Phase 1 for Northeast Corner of Kohala & Jacinto

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/01/2000
Comments: Phase 1

RIO ROSALES (Continued) **S107737155**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	06/26/2002
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

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6 **ARENALES/KOHALA PROPERTY (CLAN/METH LAB)** **LUST** **S108240600**
ENE **765 KOHALA ST** **SLIC** **N/A**
1/8-1/4 **OXNARD, CA 93030** **CDL**
0.127 mi.
669 ft.

Relative:
Higher

Actual:
68 ft.

VENTURA CO. LUST:

Region:	VENTURA
Facility ID:	SR030
Status:	Case Closed

SLIC:

Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	08/13/2007
Global Id:	T0611182768
Lead Agency:	VENTURA COUNTY
Lead Agency Case Number:	SR0003008
Latitude:	34.208868
Longitude:	-119.150998
Case Type:	Cleanup Program Site
Case Worker:	EKO
Local Agency:	VENTURA COUNTY
RB Case Number:	Not reported
File Location:	Local Agency Warehouse
Potential Media Affected:	Under Investigation
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

CDL:

Facility ID:	2006-11-004
Date:	11/10/2006
Labtype:	Illegal Drug lab
Lab Type:	Illegal Drug Lab (L) - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

7
SSW
1/8-1/4
0.181 mi.
954 ft.

CONTINENTAL HERITAGE CORP.
275 ROSE AVENUE
OXNARD, CA

UST **U002244199**
N/A

Relative:
Lower

Actual:
61 ft.

VENTURA CO. UST:
Facility ID: D 532
Facility Status: inactive

B8
WNW
1/8-1/4
0.237 mi.
1250 ft.

MC CASLIN OIL CO.
2425 COLONIA RD
OXNARD, CA

Site 1 of 3 in cluster B

SWEEPS UST
CA FID UST **S101596327**
N/A

Relative:
Higher

Actual:
65 ft.

SWEEPS UST:
Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000002
Tank Status: A
Capacity: 12000
Active Date: Not reported
Tank Use: UNKNOWN
STG: P
Content: Not reported
Number Of Tanks: 4

Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000003
Tank Status: A
Capacity: 12000
Active Date: Not reported
Tank Use: UNKNOWN
STG: P
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000004

MC CASLIN OIL CO. (Continued) **S101596327**

Tank Status:	A
Capacity:	12000
Active Date:	Not reported
Tank Use:	UNKNOWN
STG:	P
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	1374
Number:	9
Board Of Equalization:	44-030808
Referral Date:	09-30-92
Action Date:	09-30-92
Created Date:	02-29-88
Owner Tank Id:	Not reported
SWRCB Tank Id:	56-000-001374-000005
Tank Status:	A
Capacity:	Not reported
Active Date:	Not reported
Tank Use:	UNKNOWN
STG:	P
Content:	Not reported
Number Of Tanks:	Not reported

CA FID UST:

Facility ID:	56000456
Regulated By:	UTNKA
Regulated ID:	6194
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	2425 COLONIA RD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	OXNARD
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

B9 **MCCASLIN OIL COMPANY** **ENVIROSTOR** **S102432868**
WNW **2425 COLONIA RD.** **LUST** **N/A**
1/8-1/4 **OXNARD, CA 93030** **HIST UST**
0.237 mi. **HIST CORTESE**
1250 ft. **Site 2 of 3 in cluster B**

Relative:
Higher

Actual:
65 ft.

ENVIROSTOR:

Facility ID:	56290158
Status:	Refer: Other Agency
Status Date:	08/31/1995
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical

MCCASLIN OIL COMPANY (Continued) **S102432868**

Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 37
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.23333
Longitude: -119.1736
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: * CONTAMINATED SOIL * WASTE OIL & MIXED OIL
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: COLONIA PETROLEUM PRODUCTS
Alias Type: Alternate Name
Alias Name: CAD981413776
Alias Type: EPA Identification Number
Alias Name: 56290158
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/01/1995
Comments: Database Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 03/02/1984
Comments: Facility identified via drive-by. Many rusted & dented drums. Black stains & pools of liquid seen. Drums scatter- ed on unpaved ground, sitting in liquid. Ground photos taken.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0611100537
Latitude: 34.2337844
Longitude: -119.1738569

MCCASLIN OIL COMPANY (Continued) **S102432868**

Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/13/1998
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-89133
LOC Case Number:	89133
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100537
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100537
Status:	Completed - Case Closed
Status Date:	10/13/1998
Global Id:	T0611100537
Status:	Open - Case Begin Date
Status Date:	09/25/1989
Global Id:	T0611100537
Status:	Open - Remediation
Status Date:	11/03/1997
Global Id:	T0611100537
Status:	Open - Site Assessment
Status Date:	09/25/1989

Regulatory Activities:

Global Id:	T0611100537
Action Type:	ENFORCEMENT
Date:	09/25/1989
Action:	* Historical Enforcement
Global Id:	T0611100537
Action Type:	Other
Date:	09/25/1989
Action:	Leak Reported
Global Id:	T0611100537
Action Type:	Other
Date:	09/25/1989
Action:	Leak Discovery

MCCASLIN OIL COMPANY (Continued) **S102432868**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-89133	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	89133	
Case Type:	Groundwater	
Abatement Method Used at the Site:		ETVSCD
Global ID:	T0611100537	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	9/25/1989	
Date Leak First Reported:		9/25/1989
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	9/25/1989	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		10/13/1998
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		3599.436185184064139069221631 4
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		9/25/1989
Preliminary Site Assessment Began:		9/25/1989
Pollution Characterization Began:		9/25/1989
Remediation Plan Submitted:		11/3/1997
Remedial Action Underway:		11/3/1997
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		9/25/1989
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	MACVALLEY OIL CO	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2063318 / -1	
Local Agency Staff:	KCK	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	

MCCASLIN OIL COMPANY (Continued) **S102432868**

Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 89133
Status: Case Closed

HIST UST:
File Number: 0002CABD
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CABD.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-89133

Region: CORTESE
Facility County Code: 56
Reg By: CALSI
Reg Id: 56290158

B10 **MAULHARDT FARM** **HIST UST** **U001579799**
WNW **1953 E COLONIA RD** **N/A**
1/8-1/4 **OXNARD, CA 93030**
0.237 mi.
1250 ft. **Site 3 of 3 in cluster B**

Relative:
Higher

Actual:
65 ft.

HIST UST:
File Number: 0002CD25
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CD25.pdf
Region: STATE
Facility ID: 00000033070
Facility Type: Other

MAULHARDT FARM (Continued) **U001579799**

Other Type:	FARM
Contact Name:	L.E. MAULHARDT
Telephone:	8054858019
Owner Name:	RICHARD F. MAULHARDT
Owner Address:	1853 E. COLONIA RD
Owner City,St,Zip:	OXNARD, CA 93030
Total Tanks:	0002
Tank Num:	001
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	002
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

11
East
1/4-1/2
0.280 mi.
1478 ft.

WILMA PACIFIC INC.
BERNOULLI CIR
OXNARD, CA 93030

LUST **S102441310**
N/A

Relative:
Higher

Actual:
67 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	930300461	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	Not reported	
Case Type:	Soil	
Abatement Method Used at the Site:		Not reported
Global ID:	T0611100064	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	LOMBARD	
Enforcement Type:	Not reported	
Date Leak Discovered:	5/20/1987	
Date Leak First Reported:		5/20/1987
Date Leak Record Entered:	5/27/1987	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	5/20/1987	
Date Case Last Changed on Database:		10/30/1997
Date the Case was Closed:		6/1/1988

WILMA PACIFIC INC. (Continued) **S102441310**

How Leak Discovered:	Tank Closure
How Leak Stopped:	Not reported
Cause of Leak:	UNK
Leak Source:	Tank
Operator:	Not reported
Water System:	Not reported
Well Name:	Not reported
Approx. Dist To Production Well (ft):	3725.1702194793204625533509837
Source of Cleanup Funding:	Tank
Preliminary Site Assessment Workplan Submitted:	Not reported
Preliminary Site Assessment Began:	Not reported
Pollution Characterization Began:	Not reported
Remediation Plan Submitted:	Not reported
Remedial Action Underway:	Not reported
Post Remedial Action Monitoring Began:	Not reported
Enforcement Action Date:	Not reported
Historical Max MTBE Date:	Not reported
Hist Max MTBE Conc in Groundwater:	Not reported
Hist Max MTBE Conc in Soil:	Not reported
Significant Interim Remedial Action Taken:	Not reported
GW Qualifier:	Not reported
Soil Qualifier:	Not reported
Organization:	Not reported
Owner Contact:	Not reported
Responsible Party:	WILMA PACIFIC INC.
RP Address:	2801 TOWNSGATE ROAD, WESTLAKE VILLAGE, CA 94015
Program:	LUST
Lat/Long:	34.2037948 / -1
Local Agency Staff:	EHD
Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	LETTER FROM ALLAN PATTON ASKED THAT THIS SITE BE LISTED AS CLOSED AS VCEH HAS CLOSED THE CASE. VC LUFT HAS NO RECORD OF THIS CASE.

12
West
1/4-1/2
0.283 mi.
1493 ft.

OXNARD FIRE STATION #5 **LUST** **S106874567**
1450 COLONIA AVE **N/A**
OXNARD, CA 93030

Relative:
Higher

Actual:
63 ft.

LUST:

Region:	STATE
Global Id:	T0611184371
Latitude:	34.235355
Longitude:	-119.17253
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/30/2006
Lead Agency:	VENTURA COUNTY
Case Worker:	GLT
Local Agency:	VENTURA COUNTY
RB Case Number:	C05003
LOC Case Number:	05003
File Location:	Local Agency

OXNARD FIRE STATION #5 (Continued) **S106874567**

Potential Media Affect: Soil
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611184371
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Global Id: T0611184371
Contact Type: Local Agency Caseworker
Contact Name: GINA TERESA
Organization Name: VENTURA COUNTY
Address: 800 S. VICTORIA AVENUE
City: VENTURA
Email: gina.teresa@ventura.org
Phone Number: Not reported

Status History:
Global Id: T0611184371
Status: Completed - Case Closed
Status Date: 10/30/2006

Global Id: T0611184371
Status: Open - Case Begin Date
Status Date: 11/24/2004

Regulatory Activities:
Global Id: T0611184371
Action Type: Other
Date: 01/04/2005
Action: Leak Reported

Global Id: T0611184371
Action Type: REMEDIATION
Date: 11/24/2004
Action: Excavation

Global Id: T0611184371
Action Type: ENFORCEMENT
Date: 04/11/2005
Action: Technical Correspondence / Assistance / Other - #2

Global Id: T0611184371
Action Type: Other
Date: 11/24/2004
Action: Leak Discovery

Global Id: T0611184371
Action Type: Other

OXNARD FIRE STATION #5 (Continued) **S106874567**

Date: 11/24/2005
Action: Leak Stopped

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 05003
Status: Case Closed

C13 **EXXON (SANCHEZ)** **LUST** **S103684224**
SSW **121 ROSE AVE** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.290 mi.
1531 ft. **Site 1 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87095	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	87095	
Case Type:	Groundwater	
Abatement Method Used at the Site:		EDFPVE
Global ID:	T0611100224	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	8/12/1987	
Date Leak First Reported:		8/12/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	8/12/1987	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		9/28/1998
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2304.74689473699987982835478931
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		8/12/1987
Preliminary Site Assessment Began:		2/13/1992
Pollution Characterization Began:		2/13/1992
Remediation Plan Submitted:		4/15/1994
Remedial Action Underway:		6/3/1997
Post Remedial Action Monitoring Began:		4/2/1998
Enforcement Action Date:		8/13/1987
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported

EXXON (SANCHEZ) (Continued) **S103684224**

Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: EXXON COMPANY USA
RP Address: Not reported
Program: LUST
Lat/Long: 34.2027208 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87095
Status: Case Closed

C14 **MOBIL OIL SS #18-P7C** **LUST** **S105974873**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA**
0.290 mi.
1531 ft. **Site 2 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 01026
Status: Case Closed

C15 **MOBIL OIL SS #18-P7C** **LUST** **S103625603**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA 93032**
0.290 mi.
1531 ft. **Site 3 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST:
Region: STATE
Global Id: T0611195678
Latitude: 34.2024
Longitude: -119.159865
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 11/27/2007
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: OXNARD, CITY OF
RB Case Number: C01026
LOC Case Number: 01026
File Location: Local Agency Warehouse
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611195678
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611195678
Status: Completed - Case Closed
Status Date: 11/27/2007

Global Id: T0611195678
Status: Open - Case Begin Date
Status Date: 07/30/2001

Global Id: T0611195678
Status: Open - Remediation
Status Date: 12/09/2003

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 12/03/2001

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 12/28/2001

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 11/10/2003

Global Id: T0611195678
Status: Open - Verification Monitoring
Status Date: 02/22/2002

Regulatory Activities:
Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/30/2003
Action: * Historical Enforcement - #L07

Global Id: T0611195678
Action Type: RESPONSE
Date: 05/19/2006
Action: Other Workplan

Global Id: T0611195678
Action Type: RESPONSE
Date: 08/31/2006

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Action: Soil and Water Investigation Report

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/27/2003
Action: * Historical Enforcement - #L06

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 06/17/2003
Action: * Historical Enforcement - #L03

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/25/2003
Action: * Historical Enforcement - #L04

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/16/2003
Action: Technical Correspondence / Assistance / Other

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/07/2004
Action: * Historical Enforcement - #L08

Global Id: T0611195678
Action Type: RESPONSE
Date: 02/12/2007
Action: Unknown

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/02/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 03/21/2005
Action: * Historical Enforcement - #L09

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/28/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 11/04/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/01/2005
Action: * No Action

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/12/2006
Action: Site Visit / Inspection / Sampling

Global Id: T0611195678
Action Type: Other
Date: 08/30/2001
Action: Leak Reported

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/01/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/10/2006
Action: File review - #L11

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 11/21/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 05/22/2006
Action: Technical Correspondence / Assistance / Other - #L12

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 08/02/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/20/2006
Action: LOP Case Closure Summary to RB - #CLR

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/20/2006
Action: Technical Correspondence / Assistance / Other - #L13

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/25/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 01/01/2007
Action: File Review - Closure

Global Id: T0611195678
Action Type: RESPONSE

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Date: 12/16/2003
Action: Other Report / Document

Global Id: T0611195678
Action Type: REMEDIATION
Date: 12/09/2003
Action: Monitored Natural Attenuation

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/18/2006
Action: Technical Correspondence / Assistance / Other - #P&A

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/14/2007
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/11/2006
Action: File review - #CLR2

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/08/2003
Action: * Historical Enforcement - #L05

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/22/2007
Action: Notification - Preclosure - #Inv

Global Id: T0611195678
Action Type: RESPONSE
Date: 04/30/2004
Action: Monitoring Report - Quarterly

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/30/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/15/2005
Action: * Historical Enforcement - #L10

Global Id: T0611195678
Action Type: RESPONSE
Date: 09/02/2003
Action: Soil and Water Investigation Report

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/13/2006
Action: Technical Correspondence / Assistance / Other - #L14

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Global Id: T0611195678
Action Type: Other
Date: 07/30/2001
Action: Leak Discovery

Global Id: T0611195678
Action Type: RESPONSE
Date: 04/30/2005
Action: Monitoring Report - Quarterly

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/24/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 08/12/2009
Action: Staff Letter - #GWM

Global Id: T0611195678
Action Type: Other
Date: 07/30/2001
Action: Leak Stopped

Region: STATE
Global Id: T0611100224
Latitude: 34.2027643
Longitude: -119.1597969
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 09/28/1998
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: C-87095
LOC Case Number: 87095
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611100224
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100224

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Status: Completed - Case Closed
Status Date: 09/28/1998

Global Id: T0611100224
Status: Open - Case Begin Date
Status Date: 08/12/1987

Global Id: T0611100224
Status: Open - Remediation
Status Date: 04/15/1994

Global Id: T0611100224
Status: Open - Remediation
Status Date: 06/03/1997

Global Id: T0611100224
Status: Open - Site Assessment
Status Date: 08/12/1987

Global Id: T0611100224
Status: Open - Site Assessment
Status Date: 02/13/1992

Global Id: T0611100224
Status: Open - Verification Monitoring
Status Date: 04/02/1998

Regulatory Activities:
Global Id: T0611100224
Action Type: Other
Date: 08/12/1987
Action: Leak Reported

Global Id: T0611100224
Action Type: Other
Date: 08/12/1987
Action: Leak Discovery

Global Id: T0611100224
Action Type: ENFORCEMENT
Date: 08/13/1987
Action: * Historical Enforcement

C16 **MOBIL OIL SS #18-P7C** **LUST** **S105693321**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA 93032**
0.290 mi.
1531 ft. **Site 4 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-01026
Status: Pollution Characterization
Substance: Gasoline

MOBIL OIL SS #18-P7C (Continued) **S105693321**

Substance Quantity:	Not reported	
Local Case No:	01026	
Case Type:	Undefined	
Abatement Method Used at the Site:		Not reported
Global ID:	T0611195678	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	FIRST ST.	
Enforcement Type:	None Taken	
Date Leak Discovered:	7/30/2001	
Date Leak First Reported:		8/30/2001
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	7/30/2001	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		Not reported
How Leak Discovered:	Tank Closure	
How Leak Stopped:	Close Tank	
Cause of Leak:	UNK	
Leak Source:	UNK	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2229.126208754776926651380312
Source of Cleanup Funding:		UNK
Preliminary Site Assessment Workplan Submitted:		12/3/2001
Preliminary Site Assessment Began:		12/28/2001
Pollution Characterization Began:		11/10/2003
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		2/22/2002
Enforcement Action Date:		Not reported
Historical Max MTBE Date:		2/22/2002
Hist Max MTBE Conc in Groundwater:		150
Hist Max MTBE Conc in Soil:		420
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	=	
Soil Qualifier:	=	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	LEE HANLEY	
RP Address:	1464 MADERA ROAD, SUITE N., #265	
Program:	LUST	
Lat/Long:	34.2024 / -1	
Local Agency Staff:	DCS	
Beneficial Use:	Not reported	
Priority:	C2	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	
Assigned Name:	Not reported	
Summary:	Not reported	

C17 **EXXON (SANCHEZ)** **HIST CORTESE** **S101305759**
SSW **121 ROSE** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.290 mi.
1531 ft. **Site 5 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	56
Reg By:	LTNKA
Reg Id:	C-87095

D18 **OXNARD (CITY) TREATMENT PLANT** **LUST** **S103684213**
West **PERKINS RD** **HIST CORTESE** **N/A**
1/4-1/2 **OXNARD, CA 93033**
0.395 mi.
2087 ft. **Site 1 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-89075	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	89075	
Case Type:	Soil	
Abatement Method Used at the Site:		ETIT
Global ID:	T0611100484	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	7/5/1989	
Date Leak First Reported:		7/5/1989
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/5/1989	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		2/1/1992
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		742.11176583769876777767199175
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		7/5/1989
Preliminary Site Assessment Began:		Not reported
Pollution Characterization Began:		Not reported
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		7/5/1989
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported

OXNARD (CITY) TREATMENT PLANT (Continued) **S103684213**

Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	OX WW TREATMENT PLNT	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.148056 / -1	
Local Agency Staff:	EHD	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	
Assigned Name:	Not reported	
Summary:	Not reported	
Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87045	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	87045	
Case Type:	Groundwater	
Abatement Method Used at the Site:		ETIT
Global ID:	T0611100191	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	4/30/1987	
Date Leak First Reported:		4/30/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/1/1988	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		7/18/1996
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2848.377086025758041026968079 7
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		7/27/1987
Preliminary Site Assessment Began:		10/15/1989
Pollution Characterization Began:		10/15/1989
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		4/30/1987

OXNARD (CITY) TREATMENT PLANT (Continued) **S103684213**

Historical Max MTBE Date:	Not reported
Hist Max MTBE Conc in Groundwater:	Not reported
Hist Max MTBE Conc in Soil:	Not reported
Significant Interim Remedial Action Taken:	Not reported
GW Qualifier:	Not reported
Soil Qualifier:	Not reported
Organization:	Not reported
Owner Contact:	Not reported
Responsible Party:	OXNARD WASTE WATER TREATMENT P
RP Address:	Not reported
Program:	LUST
Lat/Long:	34.1422103 / -1
Local Agency Staff:	EHD
Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	Not reported

HIST CORTESE:

Region:	CORTESE
Facility County Code:	56
Reg By:	LTNKA
Reg Id:	C-90007

D19 **OXNARD (CITY)** **LUST** **S106568384**
West **300 MARQUITA N** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.397 mi.
2095 ft. **Site 2 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST:

Region:	STATE
Global Id:	T0611100594
Latitude:	34.2056897
Longitude:	-119.1663208
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/01/1994
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-90007
LOC Case Number:	90007
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100594
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported

OXNARD (CITY) (Continued) **S106568384**

City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100594
Status: Completed - Case Closed
Status Date: 03/01/1994

Global Id: T0611100594
Status: Open - Case Begin Date
Status Date: 01/16/1990

Global Id: T0611100594
Status: Open - Remediation
Status Date: 12/16/1992

Global Id: T0611100594
Status: Open - Site Assessment
Status Date: 01/16/1990

Global Id: T0611100594
Status: Open - Site Assessment
Status Date: 09/01/1992

Regulatory Activities:
Global Id: T0611100594
Action Type: ENFORCEMENT
Date: 01/16/1990
Action: * Historical Enforcement

Global Id: T0611100594
Action Type: Other
Date: 01/16/1990
Action: Leak Reported

Global Id: T0611100594
Action Type: Other
Date: 01/16/1990
Action: Leak Discovery

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 90007
Status: Case Closed

D20 **OXNARD (CITY)** **LUST** **S106517299**
West **300 MARQUITA N** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.397 mi.
2095 ft. **Site 3 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-90007	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	90007	
Case Type:	Soil	
Abatement Method Used at the Site:		Excavate and Dispose
Global ID:	T0611100594	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	1/16/1990	
Date Leak First Reported:		1/16/1990
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	1/16/1990	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		3/1/1994
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		1954.178225116558897196838059 4
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		1/16/1990
Preliminary Site Assessment Began:		9/1/1992
Pollution Characterization Began:		9/1/1992
Remediation Plan Submitted:		12/16/1992
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		1/16/1990
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	CITY OF OXNARD	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2053407 / -1	
Local Agency Staff:	EHD	

OXNARD (CITY) (Continued) **S106517299**

Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	Not reported

21
West
1/4-1/2
0.411 mi.
2168 ft.

STANDARD PACIFIC OF VENTURA **LUST** **U003187597**
1191 COLONIA ROAD **UST** **N/A**
OXNARD, CA **HIST CORTESE**

Relative:
Higher

Actual:
63 ft.

LUST:

Region:	STATE
Global Id:	T0611100061
Latitude:	34.2064444
Longitude:	-119.1664331
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	11/17/1993
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Worker:	YR
Local Agency:	Not reported
RB Case Number:	930300343
LOC Case Number:	Not reported
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100061
Contact Type:	Regional Board Caseworker
Contact Name:	YUE RONG
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	320 W. 4TH ST., SUITE 200
City:	Los Angeles
Email:	yrong@waterboards.ca.gov
Phone Number:	Not reported

Status History:

Global Id:	T0611100061
Status:	Completed - Case Closed
Status Date:	11/17/1993
Global Id:	T0611100061
Status:	Open - Case Begin Date
Status Date:	09/01/1992
Global Id:	T0611100061
Status:	Open - Site Assessment
Status Date:	11/05/1992

Regulatory Activities:

STANDARD PACIFIC OF VENTURA (Continued) **U003187597**

Global Id: T0611100061
Action Type: Other
Date: 11/05/1992
Action: Leak Reported

Global Id: T0611100061
Action Type: Other
Date: 09/01/1992
Action: Leak Discovery

Global Id: T0611100061
Action Type: Other
Date: 09/01/1992
Action: Leak Stopped

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: 930300343
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: Not reported
Case Type: Soil
Abatement Method Used at the Site: Excavate and Dispose
Global ID: T0611100061
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: ROSE AVE
Enforcement Type: Not reported
Date Leak Discovered: 9/1/1992
Date Leak First Reported: 11/5/1992
Date Leak Record Entered: 11/4/1992
Date Confirmation Began: Not reported
Date Leak Stopped: 9/1/1992
Date Case Last Changed on Database: 11/17/1993
Date the Case was Closed: 11/17/1993
How Leak Discovered: Tank Closure
How Leak Stopped: Not reported
Cause of Leak: UNK
Leak Source: UNK
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 2356.60203293682347202479791
Source of Cleanup Funding: UNK
Preliminary Site Assessment Workplan Submitted: Not reported
Preliminary Site Assessment Began: 11/5/1992
Pollution Characterization Began: Not reported
Remediation Plan Submitted: Not reported
Remedial Action Underway: Not reported
Post Remedial Action Monitoring Began: Not reported
Enforcement Action Date: Not reported
Historical Max MTBE Date: Not reported

STANDARD PACIFIC OF VENTURA (Continued) **U003187597**

Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: STANDARD PACIFIC OF VENTURA
RP Address: 32133 LINDERO CYN RD, #105, WESTLAKE VILLAGE, 92361
Program: LUST
Lat/Long: 34.2064587 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. UST:
Facility ID: D 1039
Facility Status: inactive

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: 930300343

22
NNE
1/4-1/2
0.432 mi.
2281 ft.

Relative:
Higher

Actual:
78 ft.

NISHIMORI FARMS / CAMBRIDGE DEVELOPMENT CO. **SLIC** **S109604724**
SOUTHEAST OF WILLIAMS DRIVE/SOCORRO WAY, AND WANKEL WAY **N/A**
OXNARD, CA 93003

SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 06/02/1999
Global Id: T10000001010
Lead Agency: VENTURA COUNTY
Lead Agency Case Number: SR3146622
Latitude: 34.216396
Longitude: -119.153809
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: Not reported
File Location: Not reported
Potential Media Affected: Not reported
Potential Contaminants of Concern: DDD / DDE / DDT, Other Insecticides / Pesticide / Fumigants / Herbicides
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

23
East
1/4-1/2
0.469 mi.
2476 ft.

JONES INTERCABLE
721 MAULHARDT AVE
OXNARD, CA 93030

LUST
HIST CORTESE

S104164823
N/A

Relative:
Higher

Actual:
67 ft.

LUST:

Region:	STATE
Global Id:	T0611100351
Latitude:	34.208523
Longitude:	-119.145016
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	05/18/1995
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-88111
LOC Case Number:	88111
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100351
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100351
Status:	Completed - Case Closed
Status Date:	05/18/1995
Global Id:	T0611100351
Status:	Open - Case Begin Date
Status Date:	08/22/1988
Global Id:	T0611100351
Status:	Open - Remediation
Status Date:	02/15/1991
Global Id:	T0611100351
Status:	Open - Remediation
Status Date:	12/15/1993
Global Id:	T0611100351
Status:	Open - Site Assessment
Status Date:	08/22/1988
Global Id:	T0611100351
Status:	Open - Site Assessment

JONES INTERCABLE (Continued) **S104164823**

Status Date: 01/15/1990

Global Id: T0611100351
Status: Open - Verification Monitoring
Status Date: 12/05/1994

Regulatory Activities:
Global Id: T0611100351
Action Type: ENFORCEMENT
Date: 08/22/1988
Action: * Historical Enforcement

Global Id: T0611100351
Action Type: Other
Date: 08/22/1988
Action: Leak Reported

Global Id: T0611100351
Action Type: Other
Date: 08/22/1988
Action: Leak Discovery

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-88111
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: 88111
Case Type: Groundwater
Abatement Method Used at the Site: EDVS
Global ID: T0611100351
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: Not reported
Enforcement Type: EF
Date Leak Discovered: 8/22/1988
Date Leak First Reported: 8/22/1988
Date Leak Record Entered: Not reported
Date Confirmation Began: 8/22/1988
Date Leak Stopped: Not reported
Date Case Last Changed on Database: Not reported
Date the Case was Closed: 5/18/1995
How Leak Discovered: Not reported
How Leak Stopped: Not reported
Cause of Leak: Not reported
Leak Source: Not reported
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 4352.062371287670504799488554 2
Source of Cleanup Funding: F

JONES INTERCABLE (Continued) **S104164823**

Preliminary Site Assessment Workplan Submitted: 8/22/1988
Preliminary Site Assessment Began: 1/15/1990
Pollution Characterization Began: 1/15/1990
Remediation Plan Submitted: 2/15/1991
Remedial Action Underway: 12/15/1993
Post Remedial Action Monitoring Began: 12/5/1994
Enforcement Action Date: 8/22/1988
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: JONES INTERCABLE INC
RP Address: Not reported
Program: LUST
Lat/Long: 34.2082347 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 88111
Status: Case Closed

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-88111

E24 **MAUL-GRAVES LEASING CO.** **LUST** **S102433106**
ENE **833 MAULHARDT** **HIST UST** **N/A**
1/4-1/2 **OXNARD, CA 93030** **HIST CORTESE**
0.487 mi.
2573 ft. **Site 1 of 3 in cluster E**

Relative:
Higher

Actual:
68 ft.

LUST:
Region: STATE
Global Id: T0611100174
Latitude: 34.2093981
Longitude: -119.1444516
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 02/01/1994
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: C-87010
LOC Case Number: 87010

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611100174
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100174
Status: Completed - Case Closed
Status Date: 02/01/1994

Global Id: T0611100174
Status: Open - Case Begin Date
Status Date: 01/23/1987

Global Id: T0611100174
Status: Open - Remediation
Status Date: 06/15/1993

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 02/05/1987

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 07/01/1988

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 12/14/1992

Regulatory Activities:
Global Id: T0611100174
Action Type: Other
Date: 01/23/1987
Action: Leak Reported

Global Id: T0611100174
Action Type: Other
Date: 01/23/1987
Action: Leak Discovery

Global Id: T0611100174
Action Type: ENFORCEMENT
Date: 01/23/1987
Action: * Historical Enforcement

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87010	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	87010	
Case Type:	Groundwater	
Abatement Method Used at the Site:		VSET
Global ID:	T0611100174	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	1/23/1987	
Date Leak First Reported:		1/23/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/1/1988	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		2/1/1994
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		4743.1482577817948404837919514
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		2/5/1987
Preliminary Site Assessment Began:		12/14/1992
Pollution Characterization Began:		12/14/1992
Remediation Plan Submitted:		6/15/1993
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		1/23/1987
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	DR. PEPPER	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2093307 / -1	
Local Agency Staff:	EHD	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87010
Status: Case Closed

HIST UST:
File Number: 0002CAAF
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CAAF.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-87010

E25 **CERTIFIED FREIGHT LINES** **LUST** **S106716448**
ENE **965 MAULHARDT AVE'** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.488 mi.
2575 ft. **Site 2 of 3 in cluster E**

Relative:
Higher

Actual:
68 ft.

LUST:
Region: STATE
Global Id: T0611108154
Latitude: 34.210398
Longitude: -119.144981
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 06/03/1987
Lead Agency: VENTURA COUNTY
Case Worker: EKO
Local Agency: VENTURA COUNTY

CERTIFIED FREIGHT LINES (Continued) **S106716448**

RB Case Number: C87011
LOC Case Number: 87011
File Location: Not reported
Potential Media Affect: Under Investigation
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611108154
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Global Id: T0611108154
Contact Type: Local Agency Caseworker
Contact Name: ERIN K. O'CONNELL
Organization Name: VENTURA COUNTY
Address: 800 S. VICTORIA AVE
City: VENTURA
Email: erin.oconnell@ventura.org
Phone Number: Not reported

Status History:
Global Id: T0611108154
Status: Completed - Case Closed
Status Date: 06/03/1987

Global Id: T0611108154
Status: Open - Case Begin Date
Status Date: 01/26/1987

Regulatory Activities:
Global Id: T0611108154
Action Type: ENFORCEMENT
Date: 06/03/1987
Action: Closure/No Further Action Letter

Global Id: T0611108154
Action Type: Other
Date: 01/27/1987
Action: Leak Reported

Global Id: T0611108154
Action Type: Other
Date: 01/26/1987
Action: Leak Discovery

E26
ENE
1/4-1/2
0.488 mi.
2575 ft.

SYSTEM 99
965 MAULHARDT AVE
OXNARD, CA 93030

Site 3 of 3 in cluster E

LUST **U001579872**
HIST UST **N/A**

Relative:
Higher

Actual:
68 ft.

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87011
Status: Case Closed

HIST UST:

File Number:	0002CAA9
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CAA9.pdf
Region:	STATE
Facility ID:	00000007121
Facility Type:	Other
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	8054853123
Owner Name:	MAUL GRAVE LEASING
Owner Address:	500 MAULHARDT AVE
Owner City,St,Zip:	OXNARD, CA 93030
Total Tanks:	0003
Tank Num:	001
Container Num:	1
Year Installed:	1974
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	002
Container Num:	2
Year Installed:	1974
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	003
Container Num:	3
Year Installed:	1974
Tank Capacity:	00001000
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	12
Leak Detection:	Visual

Click here for Geo Tracker PDF:

27
East
1/4-1/2
0.489 mi.
2580 ft.

MISSION LINEN
505 MAULHARDT AVE
OXNARD, CA 93030

LUST
DRYCLEANERS
HIST CORTESE

1001262532
N/A

Relative:
Higher

Actual:
67 ft.

LUST:

Region:	STATE
Global Id:	T0611100196
Latitude:	34.206783
Longitude:	-119.145039
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	08/07/1995
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-87052
LOC Case Number:	87052
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100196
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100196
Status:	Completed - Case Closed
Status Date:	08/07/1995
Global Id:	T0611100196
Status:	Open - Case Begin Date
Status Date:	05/20/1987
Global Id:	T0611100196
Status:	Open - Remediation
Status Date:	01/06/1992
Global Id:	T0611100196
Status:	Open - Site Assessment
Status Date:	05/20/1987
Global Id:	T0611100196
Status:	Open - Site Assessment
Status Date:	07/01/1988
Global Id:	T0611100196
Status:	Open - Site Assessment

MISSION LINEN (Continued) **1001262532**

Status Date: 01/06/1992

Global Id: T0611100196
Status: Open - Verification Monitoring
Status Date: 01/06/1992

Regulatory Activities:
Global Id: T0611100196
Action Type: Other
Date: 05/20/1987
Action: Leak Reported

Global Id: T0611100196
Action Type: Other
Date: 05/20/1987
Action: Leak Discovery

Global Id: T0611100196
Action Type: ENFORCEMENT
Date: 05/20/1987
Action: * Historical Enforcement

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-87052
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: 87052
Case Type: Soil
Abatement Method Used at the Site: Not reported
Global ID: T0611100196
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: Not reported
Enforcement Type: EF
Date Leak Discovered: 5/20/1987
Date Leak First Reported: 5/20/1987
Date Leak Record Entered: Not reported
Date Confirmation Began: 7/1/1988
Date Leak Stopped: Not reported
Date Case Last Changed on Database: Not reported
Date the Case was Closed: 8/7/1995
How Leak Discovered: Not reported
How Leak Stopped: Not reported
Cause of Leak: Not reported
Leak Source: Not reported
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 3602.859251821587291219888336 9
Source of Cleanup Funding: F

MISSION LINEN (Continued) **1001262532**

Preliminary Site Assessment Workplan Submitted: 5/20/1987
Preliminary Site Assessment Began: 1/6/1992
Pollution Characterization Began: 1/6/1992
Remediation Plan Submitted: 1/6/1992
Remedial Action Underway: 1/6/1992
Post Remedial Action Monitoring Began: 1/6/1992
Enforcement Action Date: 5/20/1987
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: MISSION INDUSTRIES
RP Address: Not reported
Program: LUST
Lat/Long: 34.2061208 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87052
Status: Case Closed

DRYCLEANERS:
EPA Id: CAL000070058
NAICS Code: 812331
NAICS Description: Linen Supply
SIC Code: 7213
SIC Description: Linen Supply
Create Date: 03/11/1992
Facility Active: No
Inactive Date: 06/30/2006
Facility Addr2: Not reported
Owner Name: MISSION LINEN SUPPLY
Owner Address: PO BOX 1299
Owner Address 2: Not reported
Owner Telephone: 8056828588
Contact Name: SAUL RACKAUSKAS
Contact Address: PO BOX 1299
Contact Address 2: Not reported
Contact Telephone: 8057303605
Mailing Name: Not reported
Mailing Address 1: 505 MAULHARDT AVE
Mailing Address 2: Not reported
Mailing City: OXNARD
Mailing State: CA
Mailing Zip: 93030

MISSION LINEN (Continued) **1001262532**

Owner Fax: Not reported
Region Code: 3

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-87052

28
East
1/2-1
0.627 mi.
3308 ft.

SA RECYCLING
521 N RICE AVE
OXNARD, CA 93030

ENVIROSTOR
SWRCY
NPDES
WDS

S101482916
N/A

Relative:
Higher

Actual:
65 ft.

ENVIROSTOR:
Facility ID: 56730054
Status: Refer: Other Agency
Status Date: 08/31/1995
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20735
Longitude: -119.1428
APN: 214001214
Past Use: NONE SPECIFIED
Potential COC: * Pesticides - Wastes From Production * EMPTY PESTICIDE CONTAINERS, 30 GALLONS OR MORE
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: PACIFIC PATIO
Alias Type: Alternate Name
Alias Name: 214001214
Alias Type: APN
Alias Name: CAD980636799
Alias Type: EPA Identification Number
Alias Name: 56730054
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 11/15/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

SA RECYCLING (Continued) **S101482916**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	10/12/1983
Comments:	Facility identified from ERRIS; Records Search: 1964 Pac Tel Directory - insecticides.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SWRCY:

Reg Id:	146992
Cert Id:	RC146992.001
Mailing Address:	2411 N Glassell
Mailing City:	Orange
Mailing State:	CA
Mailing Zip Code:	92865
Website:	Not reported
Email:	tjohnson@sarecycling.com
Phone Number:	(805) 483-0512
Grand Father:	N
Rural:	N
Operation Begin Date:	10/11/2011
Aluminium:	Y
Glass:	Y
Plastic:	Y
Bimetal:	Y
Agency:	N/A
Monday Hours Of Operation:	8:00 am - 5:00 pm
Tuesday Hours Of Operation:	8:00 am - 5:00 pm
Wednesday Hours Of Operation:	8:00 am - 5:00 pm
Thursday Hours Of Operation:	8:00 am - 5:00 pm
Friday Hours Of Operation:	8:00 am - 5:00 pm
Saturday Hours Of Operation:	8:00 am - 2:00 pm
Sunday Hours Of Operation:	CLOSED
Organization ID:	18968
Organization Name:	SA Recycling LLC

NPDES:

Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	421296
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 56I023382
Program Type:	Industrial

SA RECYCLING (Continued) **S101482916**

Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/21/2011
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	SA Recycling LLC
Discharge Address:	2411 N Glassell Street
Discharge City:	Orange
Discharge State:	California
Discharge Zip:	92865
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported

SA RECYCLING (Continued) **S101482916**

DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	421296
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	4 56I023382
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	10/21/2011
PROCESSED DATE:	10/21/2011
STATUS CODE NAME:	Active
STATUS DATE:	10/21/2011
PLACE SIZE:	0.98
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Todd Peterson
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	714-632-2000
FACILITY CONTACT PHONE EXT:	2041
FACILITY CONTACT EMAIL:	tpeterson@sarecycling.com
OPERATOR NAME:	SA Recycling LLC
OPERATOR ADDRESS:	2411 N Glassell Street
OPERATOR CITY:	Orange
OPERATOR STATE:	California
OPERATOR ZIP:	92865
OPERATOR CONTACT NAME:	Todd Peterson
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	714-632-2000
OPERATOR CONTACT PHONE EXT:	2041
OPERATOR CONTACT EMAIL:	tpeterson@sarecycling.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported

SA RECYCLING (Continued) **S101482916**

CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Pacific Ocean
CERTIFIER NAME:	Tesha Johnson
CERTIFIER TITLE:	Corporate Permits Manager
CERTIFICATION DATE:	30-APR-15
PRIMARY SIC:	5093-Scrap and Waste Materials
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

WDS:

Facility ID:	4 56I017180
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	4
Facility Telephone:	8059811133
Facility Contact:	Steve Helvik
Agency Name:	CALIFORNIA PUBLIC RECYCLING
Agency Address:	521 North Rice Ave
Agency City,St,Zip:	Oxnard 93030
Agency Contact:	Steve Helvik
Agency Telephone:	8059811133
Agency Type:	Private
SIC Code:	5093
SIC Code 2:	Not reported
Primary Waste Type:	Inert/Influent or Solid Wastes that do not contain soluble pollutants or organic wastes and have little adverse impact on water quality. Such wastes could cause turbidity and siltation. Uncontaminated soils, rubble and concrete are examples of this category.
Primary Waste:	STORMS
Waste Type2:	Not reported
Waste2:	Stormwater Runoff
Primary Waste Type:	Inert/Influent or Solid Wastes that do not contain soluble pollutants or organic wastes and have little adverse impact on water quality. Such wastes could cause turbidity and siltation. Uncontaminated soils,

SA RECYCLING (Continued) **S101482916**

rubble and concrete are examples of this category.
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: No reclamation requirements associated with this facility.
POTW: The facility is not a POTW.
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

29
WSW
1/2-1
0.647 mi.
3416 ft.

RAMONA SCHOOL SITE **ENVIROSTOR** **S118757030**
804 COOPER ROAD **SCH** **N/A**
OXNARD, CA 93030

Relative:
Lower

Actual:
60 ft.

ENVIROSTOR:
Facility ID: 56820003
Status: No Action Required
Status Date: 03/24/2000
Site Code: 304084
Site Type: School Investigation
Site Type Detailed: School
Acres: Not reported
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Mark Malinowski
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.20444
Longitude: -119.1702
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: OXNARD UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: OXNARD USD-RAMONA SCHOOL/CDE
Alias Type: Alternate Name
Alias Name: RAMONA SCHOOL SITE

RAMONA SCHOOL SITE (Continued) **S118757030**

Alias Type:	Alternate Name
Alias Name:	110021974915
Alias Type:	EPA (FRS #)
Alias Name:	304084
Alias Type:	Project Code (Site Code)
Alias Name:	56820003
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/24/2000
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	56820003
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	Not reported
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Mark Malinowski
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	304084
Assembly:	44
Senate:	19
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	03/24/2000
Restricted Use:	NO
Funding:	School District
Latitude:	34.20444
Longitude:	-119.1702
APN:	NONE SPECIFIED
Past Use:	NONE

RAMONA SCHOOL SITE (Continued) **S118757030**

Potential COC: NONE SPECIFIED, No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: OXNARD UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: OXNARD USD-RAMONA SCHOOL/CDE
Alias Type: Alternate Name
Alias Name: RAMONA SCHOOL SITE
Alias Type: Alternate Name
Alias Name: 110021974915
Alias Type: EPA (FRS #)
Alias Name: 304084
Alias Type: Project Code (Site Code)
Alias Name: 56820003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 04/18/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 03/24/2000
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

30
ENE
1/2-1
0.649 mi.
3429 ft.

Relative:
Higher

Actual:
69 ft.

THE PROCTER & GAMBLE PAPER PRODUCT CO
800 N RICE AVE
OXNARD, CA 93030

RCRA-LQG **1000181055**
ENVIROSTOR **93030PRCTR800NO**
TRIS
ICIS
US AIRS
FINDS
EMI
HAZNET
MED WASTE VENTURA
NPDES

RCRA-LQG:
Date form received by agency: 05/23/2016
Facility name: THE PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Facility address: 800 N RICE AVE
OXNARD, CA 93030
EPA ID: CAD072263494
Mailing address: N RICE AVE
OXNARD, CA 93030

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Contact: KYLE A FIELD
Contact address: N RICE AVE
OXNARD, CA 93030
Contact country: US
Contact telephone: (805) 485-8871
Telephone ext.: 2408
Contact email: FIELD.KA@PG.COM
EPA Region: 09
Land type: Private
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: THE PROCTER & GAMBLE COMPANY
Owner/operator address: PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45201
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 10/18/1973
Owner/Op end date: Not reported

Owner/operator name: PROCTOR & GAMBLE PAPER PRODUCTS COMPANY
Owner/operator address: PO BOX 866
CITY NOT REPORTED, CA 99999
Owner/operator country: Not reported
Owner/operator telephone: (805) 485-8871
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: THE PROCTER & GAMBLE PAPER PROD. CO
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 10/18/1973
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 141
. Waste name: 141

. Waste code: 181
. Waste name: 181

. Waste code: 212
. Waste name: 212

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 351
. Waste name: 351

. Waste code: 352
. Waste name: 352

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Historical Generators:
Date form received by agency: 09/28/2010
Site name: PROCTER AND GAMBLE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

Date form received by agency: 09/01/1996
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Large Quantity Generator

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Date form received by agency: 09/01/1996
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Small Quantity Generator

Date form received by agency: 03/22/1996
Site name: PROCTER AND GAMBLE PAPER PRODUCTS,OXNARD
Classification: Large Quantity Generator

Date form received by agency: 03/31/1994
Site name: PROCTER & GAMBLE PAPER PRODUCTS CO.
Classification: Large Quantity Generator

Date form received by agency: 04/04/1990
Site name: PROCTER & GAMBLE PAPER PRODUCTS CO
Classification: Large Quantity Generator

Date form received by agency: 08/15/1980
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Large Quantity Generator

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 05/11/2005
Date achieved compliance: 05/16/2005
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/11/2005
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 02/25/1986
Date achieved compliance: 04/17/1986
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 02/25/1986
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 02/25/1986
Date achieved compliance: 04/17/1986
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/31/1986
Enf. disposition status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 08/22/1984
Date achieved compliance: 05/20/1985
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 09/04/1984
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 08/06/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/11/2005
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 05/16/2005
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 07/05/1994
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 05/29/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 06/25/1986
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/25/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/17/1986
Evaluation lead agency: State

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Evaluation date: 08/22/1984
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 05/20/1985
Evaluation lead agency: State

ENVIROSTOR:
Facility ID: 56260002
Status: Refer: Other Agency
Status Date: 08/31/1995
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20961
Longitude: -119.1387
APN: 216015136
Past Use: NONE SPECIFIED
Potential COC: * HALOGENATED SOLVENTS * ORGANIC MONOMER WASTE, INCLUDING UNREACTED RESINS * OTHER STILL BOTTOM WASTE * DETERGENT & SOAP * UNSPECIFIED ACID SOLUTION * UNSPECIFIED ALKALINE SOLUTIONS * UNSPECIFIED SOLVENT MIXTURES * WASTE OIL & MIXED OIL * ADHESIVES * PAPER SLUDGE/PULP
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CHARMIN PAPER PRODUCTS (1973-PRESENT)
Alias Type: Alternate Name
Alias Name: PROCTOR & GAMBLE PAPER PRODUCTS
Alias Type: Alternate Name
Alias Name: STANDARD OIL CO OF CA(1956-69)
Alias Type: Alternate Name
Alias Name: 216015136
Alias Type: APN
Alias Name: CAD980636807
Alias Type: EPA Identification Number
Alias Name: 56260002
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 11/15/1994
Comments: CALSITES VALIDATION PROGRAM CONFIRMS NFA FOR DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Completed Document Type: * Discovery
Completed Date: 12/31/1910
Comments: FACILITY IDENTIFIED ID FROM ERRIS

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

TRIS:

Click this hyperlink while viewing on your computer to access
2 additional US_TRIS: record(s) in the EDR Site Report.

ICIS:

Enforcement Action ID: CAVCAA0000061110001500188
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500188
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500187
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500187
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500178
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500178
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500176
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500176
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500146
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500146
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500145
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500145
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500098
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500098
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500093
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500093
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000073
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500073
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000072
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500072
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000051
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500051
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000050
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500050
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000047
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500047
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000046
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500046
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

	OXNARD, CA 93030
Enforcement Action Type:	Notice of Violation
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Informal
EA Type Code:	NOV
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

Enforcement Action ID:	CAVCAA0000061110001500043
FRS ID:	110000481274
Action Name:	PROCTER & GAMBLE PAPER PRODUCTS 061110001500043
Facility Name:	PROCTER & GAMBLE PAPER PRODUCTS
Facility Address:	800 NORTH RICE AVENUE
	OXNARD, CA 93030
Enforcement Action Type:	Administrative Order
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Formal
EA Type Code:	SCAAAO
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

Enforcement Action ID:	CAVCAA0000061110001500042
FRS ID:	110000481274
Action Name:	PROCTER & GAMBLE PAPER PRODUCTS 061110001500042
Facility Name:	PROCTER & GAMBLE PAPER PRODUCTS
Facility Address:	800 NORTH RICE AVENUE
	OXNARD, CA 93030
Enforcement Action Type:	Notice of Violation
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Informal
EA Type Code:	NOV
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

US AIRS (AFS):
Envid: 1000181055
Region Code: 09
County Code: CA111
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
D and B Number: Not reported
Facility Site Name: PROCTER & GAMBLE PAPER PRODUCTS
Primary SIC Code: 2676
NAICS Code: 322291
Default Air Classification Code: MAJ
Facility Type of Ownership Code: POF
Air CMS Category Code: TVM
HPV Status: Not reported

US AIRS (AFS):
Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1982-03-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1985-09-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1985-09-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Program: New Source Performance Standards
Activity Date: 1986-01-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-02-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-05-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-12-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1989-12-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1991-12-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-03-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-11-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-12-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1993-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1994-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1995-10-31 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1996-10-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1997-10-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1999-11-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2001-02-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-09-10 00:00:00
Activity Status Date: 2015-01-21 18:11:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-05-19 00:00:00
Activity Status Date: 2015-08-06 16:36:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-08-05 00:00:00
Activity Status Date: 2015-08-18 13:21:43
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-08-04 00:00:00
Activity Status Date: 2016-08-04 17:01:09
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-06-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2003-12-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-04-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-04-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-09-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-05-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2007-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-03-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-05-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-05-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2012-05-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-11-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-03-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-05-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-04-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-02-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-03-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-05-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-13 00:00:00
Activity Status Date: 2010-08-17 00:00:00
Activity Group: Case File

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: 2013-06-06 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: 2014-05-30 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 1992-09-02 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 1992-11-19 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: Not reported
Activity Status Date: 1993-06-21 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2004-08-09 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2005-11-11 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-09-10 00:00:00
Activity Status Date: 2015-01-21 18:11:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-05-19 00:00:00
Activity Status Date: 2015-08-06 16:36:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-08-05 00:00:00
Activity Status Date: 2015-08-18 13:21:43
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-02-12 00:00:00
Activity Status Date: 2016-07-14 19:25:41
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-08-04 00:00:00
Activity Status Date: 2016-08-04 17:01:09
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2000-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2001-02-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-04-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-06-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-07-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-06-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-06-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2003-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-12-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-11-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-06-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-04-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-04-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2006-09-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-04-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-05-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-03-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-04-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-03-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-05-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2011-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-05-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-05-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-11-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-03-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2013-05-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-04-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-02-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-03-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-03-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-05-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-09-02 00:00:00
Activity Status Date: 1992-09-02 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-11-19 00:00:00
Activity Status Date: 1992-11-19 00:00:00
Activity Group: Enforcement Action

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1993-06-21 00:00:00
Activity Status Date: 1993-06-21 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-07-19 00:00:00
Activity Status Date: 2004-07-19 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-10-04 00:00:00
Activity Status Date: 2005-10-04 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-21 00:00:00
Activity Status Date: 2010-07-21 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2013-06-06 00:00:00
Activity Status Date: 2013-06-06 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-14 00:00:00
Activity Status Date: 2014-05-14 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-08-12 00:00:00
Activity Status Date: 1992-08-12 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-11-11 00:00:00
Activity Status Date: 1992-11-11 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1993-06-10 00:00:00
Activity Status Date: 1993-06-10 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-30 00:00:00
Activity Status Date: 2004-04-30 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-05-23 00:00:00
Activity Status Date: 2005-05-23 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-13 00:00:00
Activity Status Date: 2010-07-13 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: 2013-05-15 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: 2014-05-06 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

FINDS:

Registry ID: 110055870062

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

EMI:

Year:	1987
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	37
Reactive Organic Gases Tons/Yr:	5
Carbon Monoxide Emissions Tons/Yr:	80
NOX - Oxides of Nitrogen Tons/Yr:	255
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	81
Part. Matter 10 Micrometers and Smllr Tons/Yr:	60

Year:	1987
County Code:	56
Air Basin:	SCC
Facility ID:	215
Air District Name:	VEN
SIC Code:	2033
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	56
Air Basin:	SCC
Facility ID:	215
Air District Name:	VEN
SIC Code:	2033
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	75
Reactive Organic Gases Tons/Yr:	43
Carbon Monoxide Emissions Tons/Yr:	80
NOX - Oxides of Nitrogen Tons/Yr:	212
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	105
Part. Matter 10 Micrometers and Smllr Tons/Yr:	76

Year:	1995
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	93
Reactive Organic Gases Tons/Yr:	59
Carbon Monoxide Emissions Tons/Yr:	178
NOX - Oxides of Nitrogen Tons/Yr:	319
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	151
Part. Matter 10 Micrometers and Smllr Tons/Yr:	111

Year:	1996
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	87
Reactive Organic Gases Tons/Yr:	52
Carbon Monoxide Emissions Tons/Yr:	277
NOX - Oxides of Nitrogen Tons/Yr:	178
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	60
Part. Matter 10 Micrometers and Smllr Tons/Yr:	47

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Year:	1997
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	224
Reactive Organic Gases Tons/Yr:	58
Carbon Monoxide Emissions Tons/Yr:	185
NOX - Oxides of Nitrogen Tons/Yr:	153
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	60
Part. Matter 10 Micrometers and Smllr Tons/Yr:	47

Year:	1998
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	250
Reactive Organic Gases Tons/Yr:	78
Carbon Monoxide Emissions Tons/Yr:	128
NOX - Oxides of Nitrogen Tons/Yr:	151
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	38
Part. Matter 10 Micrometers and Smllr Tons/Yr:	32

Year:	1999
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	252
Reactive Organic Gases Tons/Yr:	78
Carbon Monoxide Emissions Tons/Yr:	114
NOX - Oxides of Nitrogen Tons/Yr:	168
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	39
Part. Matter 10 Micrometers and Smllr Tons/Yr:	33

Year:	2000
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	235
Reactive Organic Gases Tons/Yr:	77
Carbon Monoxide Emissions Tons/Yr:	106
NOX - Oxides of Nitrogen Tons/Yr:	150
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	38
Part. Matter 10 Micrometers and Smllr Tons/Yr:	32

Year:	2001
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	B
Total Organic Hydrocarbon Gases Tons/Yr:	183
Reactive Organic Gases Tons/Yr:	55
Carbon Monoxide Emissions Tons/Yr:	122
NOX - Oxides of Nitrogen Tons/Yr:	152
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	36
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30

Year:	2002
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	185
Reactive Organic Gases Tons/Yr:	53
Carbon Monoxide Emissions Tons/Yr:	123
NOX - Oxides of Nitrogen Tons/Yr:	146
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	35
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30

Year:	2003
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	179
Reactive Organic Gases Tons/Yr:	58
Carbon Monoxide Emissions Tons/Yr:	158

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

NOX - Oxides of Nitrogen Tons/Yr:	133
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	34
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29

Year:	2004
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	137.383
Reactive Organic Gases Tons/Yr:	46.08
Carbon Monoxide Emissions Tons/Yr:	173.235
NOX - Oxides of Nitrogen Tons/Yr:	86.725
SOX - Oxides of Sulphur Tons/Yr:	1.514
Particulate Matter Tons/Yr:	33.17
Part. Matter 10 Micrometers and Smllr Tons/Yr:	28.15

Year:	2005
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	171.929
Reactive Organic Gases Tons/Yr:	59.7330397
Carbon Monoxide Emissions Tons/Yr:	102.105
NOX - Oxides of Nitrogen Tons/Yr:	89.23
SOX - Oxides of Sulphur Tons/Yr:	1.513
Particulate Matter Tons/Yr:	32.161
Part. Matter 10 Micrometers and Smllr Tons/Yr:	27.124608

Year:	2006
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	148.674943
Reactive Organic Gases Tons/Yr:	47.598834294
Carbon Monoxide Emissions Tons/Yr:	41.98888
NOX - Oxides of Nitrogen Tons/Yr:	72.17863
SOX - Oxides of Sulphur Tons/Yr:	1.46058
Particulate Matter Tons/Yr:	28.936085
Part. Matter 10 Micrometers and Smllr Tons/Yr:	25.76558434

Year:	2007

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	136.8816758
Reactive Organic Gases Tons/Yr:	49.05490852
Carbon Monoxide Emissions Tons/Yr:	55.82806
NOX - Oxides of Nitrogen Tons/Yr:	92.02524
SOX - Oxides of Sulphur Tons/Yr:	1.69014
Particulate Matter Tons/Yr:	34.233315
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29.258987324

Year:	2008
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	118.35693
Reactive Organic Gases Tons/Yr:	43.00705
Carbon Monoxide Emissions Tons/Yr:	41.25977
NOX - Oxides of Nitrogen Tons/Yr:	48.1715
SOX - Oxides of Sulphur Tons/Yr:	1.5775
Particulate Matter Tons/Yr:	32.03677
Part. Matter 10 Micrometers and Smllr Tons/Yr:	27.04915684

Year:	2009
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	130.7330345
Reactive Organic Gases Tons/Yr:	43.962728599999998
Carbon Monoxide Emissions Tons/Yr:	67.051689999999994
NOX - Oxides of Nitrogen Tons/Yr:	92.220619999999997
SOX - Oxides of Sulphur Tons/Yr:	1.7492319999999999
Particulate Matter Tons/Yr:	33.926262000000001
Part. Matter 10 Micrometers and Smllr Tons/Yr:	26.981721031999999

Year:	2010
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	139.08766199999999
Reactive Organic Gases Tons/Yr:	48.789369999999998
Carbon Monoxide Emissions Tons/Yr:	70.135310000000004
NOX - Oxides of Nitrogen Tons/Yr:	97.474199999999996
SOX - Oxides of Sulphur Tons/Yr:	1.79593
Particulate Matter Tons/Yr:	36.117787
Part. Matter 10 Micrometers and Smllr Tons/Yr:	28.085668911999999

Year:	2011
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	132.092659
Reactive Organic Gases Tons/Yr:	45.609359
Carbon Monoxide Emissions Tons/Yr:	65.82376
NOX - Oxides of Nitrogen Tons/Yr:	97.039575
SOX - Oxides of Sulphur Tons/Yr:	1.83171
Particulate Matter Tons/Yr:	35.41572
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29.83878732

Year:	2012
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	136.11723425
Reactive Organic Gases Tons/Yr:	46.10633127
Carbon Monoxide Emissions Tons/Yr:	45.557135
NOX - Oxides of Nitrogen Tons/Yr:	98.877415
SOX - Oxides of Sulphur Tons/Yr:	1.81059675
Particulate Matter Tons/Yr:	35.18934925
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30.143505092

Year:	2013
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	140.90758
Reactive Organic Gases Tons/Yr:	50.407229332
Carbon Monoxide Emissions Tons/Yr:	57.36006
NOX - Oxides of Nitrogen Tons/Yr:	99.7762

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

SOX - Oxides of Sulphur Tons/Yr: 1.767634
Particulate Matter Tons/Yr: 36.195665
Part. Matter 10 Micrometers and Smllr Tons/Yr: 30.651573792

Year: 2014
County Code: 56
Air Basin: SCC
Facility ID: 15
Air District Name: VEN
SIC Code: 2676
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 188.8761
Reactive Organic Gases Tons/Yr: 58.37146122
Carbon Monoxide Emissions Tons/Yr: 48.94074
NOX - Oxides of Nitrogen Tons/Yr: 92.8515
SOX - Oxides of Sulphur Tons/Yr: 1.7104
Particulate Matter Tons/Yr: 33.28398
Part. Matter 10 Micrometers and Smllr Tons/Yr: 28.26918584

Year: 2015
County Code: 56
Air Basin: SCC
Facility ID: 15
Air District Name: VEN
SIC Code: 2676
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 142.4271
Reactive Organic Gases Tons/Yr: 62.45876
Carbon Monoxide Emissions Tons/Yr: 38.85
NOX - Oxides of Nitrogen Tons/Yr: 93.0646
SOX - Oxides of Sulphur Tons/Yr: 1.65795
Particulate Matter Tons/Yr: 32.90746
Part. Matter 10 Micrometers and Smllr Tons/Yr: 27.7513168

HAZNET:
envid: 1000181055
Year: 2015
GEPAID: CAC002813492
Contact: JACK LEMAIRE
Telephone: 8054858871
Mailing Name: Not reported
Mailing Address: 800 N RICE AVE
Mailing City,St,Zip: OXNARD, CA 930308910
Gen County: Ventura
TSD EPA ID: AZC950823111
TSD County: 99
Waste Category: Asbestos containing waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.69
Cat Decode: Asbestos containing waste
Method Decode: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility County:	Ventura
envid:	1000181055
Year:	2015
GEPAID:	CAC002796242
Contact:	LINH K. NGUYEN
Telephone:	2132366444
Mailing Name:	Not reported
Mailing Address:	445 S FIGUEROA ST STE 1400
Mailing City,St,Zip:	LOS ANGELES, CA 900711602
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Other inorganic solid waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.5
Cat Decode:	Other inorganic solid waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura
envid:	1000181055
Year:	2013
GEPAID:	CAC002727615
Contact:	PAUL SHATKYVICH
Telephone:	8563824319
Mailing Name:	Not reported
Mailing Address:	600 CLIPPER DR
Mailing City,St,Zip:	BELMONT, CA 940024119
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	6.6
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported
envid:	1000181055
Year:	2013
GEPAID:	CAC002727615
Contact:	PAUL SHATKYVICH
Telephone:	8563824319
Mailing Name:	Not reported
Mailing Address:	600 CLIPPER DR
Mailing City,St,Zip:	BELMONT, CA 940024119
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	105.95
Cat Decode:	Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Method Decode: Not reported
Facility County: Not reported

MED WASTE VENTURA:
File Id: FA0019975
Permits: - MEDICAL WASTE SMALL QTY GENERATOR RECORDS

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	416664
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 56C361931
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	11/16/2012
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	9/2/2011
PROCESSED DATE:	9/12/2011
STATUS CODE NAME:	Terminated
STATUS DATE:	1/10/2013
PLACE SIZE:	2.55
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Marco Moretti
FACILITY CONTACT TITLE:	Project Manager
FACILITY CONTACT PHONE:	805-983-8995
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	moretti.m.1@pg.com
OPERATOR NAME:	The P&G Paper Products Co
OPERATOR ADDRESS:	800 North Rice Ave
OPERATOR CITY:	Oxnard
OPERATOR STATE:	California
OPERATOR ZIP:	93030
OPERATOR CONTACT NAME:	Marco Moretti
OPERATOR CONTACT TITLE:	Project Manager
OPERATOR CONTACT PHONE:	805-983-8995
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	moretti.m.1@pg.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	The P&G Paper Products Co
DEVELOPER ADDRESS:	800 North Rice Ave
DEVELOPER CITY:	Oxnard
DEVELOPER STATE:	California
DEVELOPER ZIP:	93030
DEVELOPER CONTACT NAME:	Marco Moretti
DEVELOPER CONTACT TITLE:	Project Manager

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Y
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Mugu Lagoon
CERTIFIER NAME:	Marco Moretti
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	02-SEP-11
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

31
NNE
1/2-1
0.662 mi.
3497 ft.

TELEFLEX CONTROL SYSTEMS **ENVIROSTOR** **S118757241**
1950 WILLIAMS DRIVE **N/A**
OXNARD, CA 93030

Relative:
Higher

Actual:
83 ft.

ENVIROSTOR:

Facility ID:	60001505
Status:	No Action Required
Status Date:	06/27/2013
Site Code:	301514
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	12.5
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Manjul Bose
Supervisor:	Javier Hinojosa
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	EPA - PASI
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	EPA Grant
Latitude:	34.21998
Longitude:	-119.1522
APN:	213003120
Past Use:	ABOVE GROUND STORAGE TANKS

TELEFLEX CONTROL SYSTEMS (Continued) **S118757241**

Potential COC: Under Investigation
Confirmed COC: 31000-NO 31001-NO
Potential Description: AQUI, OTH, SOIL
Alias Name: 213003120
Alias Type: APN
Alias Name: 301514
Alias Type: Project Code (Site Code)
Alias Name: 60001505
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 10/07/2013
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

32
ESE
1/2-1
0.682 mi.
3603 ft.

MAULHARDT OIL LEASE **ENVIROSTOR** **S100204269**
N. OF STURGIS ROAD-W. OF RICE ROAD **N/A**
OXNARD, CA 93030

Relative:
Lower

Actual:
60 ft.

ENVIROSTOR:
Facility ID: 56130041
Status: No Further Action
Status Date: 06/28/1991
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: 0
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20277
Longitude: -119.145
APN: NONE SPECIFIED
Past Use: OIL FIELD
Potential COC: TPH-diesel TPH-gas

MAULHARDT OIL LEASE (Continued) **S100204269**

Confirmed COC: 30024-NO 30025-NO
Potential Description: NMA
Alias Name: SEAGATE BUSINESS PARK
Alias Type: Alternate Name
Alias Name: 56130041
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 10/27/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/26/1991
Comments: Based on the information provided in the PEA report, the site shows no evidence of contamination that constitutes a threat to public health and/or the environment. No further action needed at this site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/08/1991
Comments: Crude oil was stored in above-ground tanks onsite until 1989. Soil contaminated with petroleum hydrocarbons. PEA recommended.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

33
NW
1/2-1
0.884 mi.
4668 ft.

PACIFICA HIGH SCHOOL
600 EAST GONZALES ROAD
OXNARD, CA 93030

ENVIROSTOR
SCH
EMI

S103883835
N/A

Relative:
Higher

Actual:
77 ft.

ENVIROSTOR:
Facility ID: 56010006
Status: No Further Action
Status Date: 07/02/1999
Site Code: 300752
Site Type: School Investigation
Site Type Detailed: School
Acres: 53
NPL: NO
Regulatory Agencies: DTSC
Lead Agency: DTSC
Program Manager: Shahir Haddad
Supervisor: Thomas Cota

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.20528
Longitude: -119.1914
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic DDD DDE DDT Polychlorinated biphenyls (PCBs
Confirmed COC: 30018-NO 30001-NO 30006-NO 30007-NO 30008-NO
Potential Description: SOIL
Alias Name: OXNARD UNION HIGH SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: 300752
Alias Type: Project Code (Site Code)
Alias Name: 56010006
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 07/25/1999
Comments: Apprved Phase One report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 04/23/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/23/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 06/11/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 07/02/1999
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 56010006
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 53
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Shahir Haddad
Supervisor: Thomas Cota
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 300752
Assembly: 44
Senate: 19
Special Program Status: Not reported
Status: No Further Action
Status Date: 07/02/1999
Restricted Use: NO
Funding: School District
Latitude: 34.20528
Longitude: -119.1914
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic, DDD, DDE, DDT, Polychlorinated biphenyls (PCBs
Confirmed COC: 30018-NO, 30001-NO, 30006-NO, 30007-NO, 30008-NO
Potential Description: SOIL
Alias Name: OXNARD UNION HIGH SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: 300752
Alias Type: Project Code (Site Code)
Alias Name: 56010006
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 07/25/1999
Comments: Apprved Phase One report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 04/23/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/23/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 06/11/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 07/02/1999
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

EMI:
Year: 2003
County Code: 56
Air Basin: SCC
Facility ID: 7349
Air District Name: VEN
SIC Code: 8211
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 1
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2004
County Code: 56
Air Basin: SCC
Facility ID: 7349
Air District Name: VEN
SIC Code: 8211
Air District Name: VENTURA COUNTY APCD

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.07
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.1

Year:	2005
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2006
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2007
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469

PACIFICA HIGH SCHOOL (Continued) **S103883835**

SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2008
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2009
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.16289999999999999
Reactive Organic Gases Tons/Yr:	6.8776379999999998E-2
Carbon Monoxide Emissions Tons/Yr:	1.0512600000000001
NOX - Oxides of Nitrogen Tons/Yr:	0.46899999999999997
SOX - Oxides of Sulphur Tons/Yr:	7.5100000000000002E-3
Particulate Matter Tons/Yr:	9.5114000000000004E-2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.5114000000000004E-2

Year:	2010
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.16289999999999999
Reactive Organic Gases Tons/Yr:	6.8776379999999998E-2
Carbon Monoxide Emissions Tons/Yr:	1.0512600000000001
NOX - Oxides of Nitrogen Tons/Yr:	0.46899999999999997
SOX - Oxides of Sulphur Tons/Yr:	7.5100000000000002E-3
Particulate Matter Tons/Yr:	9.5114000000000004E-2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.5114000000000004E-2

Year:	2011
County Code:	56

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2012
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2013
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2014
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2015
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

34
SSW
1/2-1
0.921 mi.
4861 ft.

OXNARD METALS INC.
1441 MOUNTAIN VIEW
OXNARD, CA 93030

ENVIROSTOR **S111842214**
N/A

Relative:
Lower

Actual:
52 ft.

ENVIROSTOR:

Facility ID:	56500003
Status:	No Further Action
Status Date:	12/09/1987
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	0
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	* Mmonroy
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	* Site Char & Assess Grant (CERCLA 104)
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	34.19396
Longitude:	-119.1631
APN:	201026022
Past Use:	BATTERY RECLAMATION, METAL RECLAMATION
Potential COC:	* HOUSEHOLD WASTES * OTHER ORGANIC SOLIDS * Pesticides - Rinse Waters * CONTAMINATED SOIL * UNSPECIFIED SLUDGE WASTE * WASTE OIL &

OXNARD METALS INC. (Continued) **S111842214**

MIXED OIL
Confirmed COC: NONE SPECIFIED
Potential Description: SOIL, SV
Alias Name: WEST COAST AUTO RECYCLERS
Alias Type: Alternate Name
Alias Name: 201026022
Alias Type: APN
Alias Name: CAD053859393
Alias Type: EPA Identification Number
Alias Name: 56500003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 10/25/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 12/08/1987
Comments: Site Screening done to check EPA's actions since the DHS Preliminary Assessment.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 08/18/1987
Comments: Preliminary Assessment Done: EPA Federal Investigation Team reports no hazardous material use of hazardous waste generated; EPA recommendation is no further action.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 06/21/1982
Comments: Facility identified from DHS DMI file listing 1982.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

35
WSW
1/2-1
0.956 mi.
5049 ft.

SOUTH COAST AREA TRANSIT
301 E THIRD STREET
OXNARD, CA 93030

ENVIROSTOR
HIST UST
NPDES
WDS

1004443156
N/A

Relative:
Lower

Actual:
56 ft.

ENVIROSTOR:

Facility ID:	71002921
Status:	Refer: Other Agency
Status Date:	Not reported
Site Code:	Not reported
Site Type:	Tiered Permit
Site Type Detailed:	Tiered Permit
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Not reported
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	34.20062
Longitude:	-119.1737
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CAD981693153
Alias Type:	EPA Identification Number
Alias Name:	71002921
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

HIST UST:

File Number:	0002CE3D
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CE3D.pdf
Region:	Not reported

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

Facility ID:	Not reported
Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported

Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	192572
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	4 56I002477
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	5/9/2008
PROCESSED DATE:	3/31/1992
STATUS CODE NAME:	Active
STATUS DATE:	3/31/1992
PLACE SIZE:	3
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Reed Caldwell
FACILITY CONTACT TITLE:	Director of Engineering & Construction
FACILITY CONTACT PHONE:	805-483-3959
FACILITY CONTACT PHONE EXT:	117
FACILITY CONTACT EMAIL:	rcaldwell@gctd.org
OPERATOR NAME:	Gold Coast Transit
OPERATOR ADDRESS:	301 E Third St
OPERATOR CITY:	Oxnard
OPERATOR STATE:	California
OPERATOR ZIP:	93030

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

OPERATOR CONTACT NAME:	Reed Caldwell
OPERATOR CONTACT TITLE:	Director of Engineering & Construction
OPERATOR CONTACT PHONE:	805-487-5336
OPERATOR CONTACT PHONE EXT:	117
OPERATOR CONTACT EMAIL:	rcaldwell@gctd.org
OPERATOR TYPE:	Other
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	805-483-3959
EMERGENCY PHONE EXT:	117
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Pacific Ocean
CERTIFIER NAME:	Reed Caldwell
CERTIFIER TITLE:	Director of Fleet and Facilities
CERTIFICATION DATE:	09-JAN-17
PRIMARY SIC:	4131-Intercity and Rural Bus Transportation
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	192572
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 56I002477
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/31/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Gold Coast Transit
Discharge Address:	301 E Third St

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

Discharge City:	Oxnard
Discharge State:	California
Discharge Zip:	93030
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

SECONDARY SIC: Not reported
TERTIARY SIC: Not reported

WDS:

Facility ID:	4 56I002477
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	4
Facility Telephone:	Not reported
Facility Contact:	Not reported
Agency Name:	SOUTH COAST AREA TRANSIT
Agency Address:	Not reported
Agency City,St,Zip:	0
Agency Contact:	Not reported
Agency Telephone:	Not reported
Agency Type:	Not reported
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	Not reported
POTW:	Not reported
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

36
NNE
1/2-1
0.971 mi.
5128 ft.

Relative:
Higher

Actual:
84 ft.

COSTCO WHOLESALE NO 420
2001 E VENTURA BLVD
OXNARD, CA 93036

RCRA-LQG **1004677950**
ENVIROSTOR **CAR000103333**
FINDS
ECHO
HAZNET
MED WASTE VENTURA

RCRA-LQG:
Date form received by agency: 03/03/2016
Facility name: COSTCO WHOLESALE # 420
Facility address: 2001 EAST VENTURA BOULEVARD

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

OXNARD, CA 93030
EPA ID: CAR000103333
Mailing address: GREY HAWK CT
STE 200
CARLSBAD, CA 92010
Contact: ERIC D ENSMINGER
Contact address: GREY HAWK CT STE 200
CARLSBAD, CA 92010
Contact country: US
Contact telephone: (760) 602-8616
Contact email: EENSMINGER@3ECOMPANY.COM
EPA Region: 09
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: COSTCO WHOLESALE CORPORATION
Owner/operator address: LAKE DR
ISSAQUAH, WA 98027
Owner/operator country: US
Owner/operator telephone: (425) 313-8100
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Owner/operator name: COSTCO WHOLESALE CORP
Owner/operator address: 999 LAKE DR
ISSAQUAH, WA 98027
Owner/operator country: US
Owner/operator telephone: 425-313-8100
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Owner/operator name: COSTCO WHOLESALE CORP
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Owner/operator name: COSTCO WHOLESALE CORPORATION
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 122
. Waste name: 122

. Waste code: 214
. Waste name: 214

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 351
. Waste name: 351

. Waste code: 352
. Waste name: 352

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D010
. Waste name: SELENIUM

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Historical Generators:
Date form received by agency: 07/11/2014
Site name: COSTCO WHOLESALE NO 420
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: 122

. Waste code: 131
. Waste name: 131

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 135
. Waste name: 135

. Waste code: 141
. Waste name: 141

. Waste code: 151
. Waste name: 151

. Waste code: 172
. Waste name: 172

. Waste code: 181
. Waste name: 181

. Waste code: 211

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: 211

. Waste code: 212
. Waste name: 212

. Waste code: 213
. Waste name: 213

. Waste code: 214
. Waste name: 214

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 232
. Waste name: 232

. Waste code: 271
. Waste name: 271

. Waste code: 272
. Waste name: 272

. Waste code: 281
. Waste name: 281

. Waste code: 291
. Waste name: 291

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 541
. Waste name: 541

. Waste code: 561
. Waste name: 561

. Waste code: 611
. Waste name: 611

. Waste code: 791
. Waste name: 791

. Waste code: D001

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, &

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

SALTS

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

Date form received by agency: 03/01/2014
Site name: COSTCO WHOLESALE #420
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: 122

. Waste code: 131
. Waste name: 131

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 135
. Waste name: 135

. Waste code: 141
. Waste name: 141

. Waste code: 151
. Waste name: 151

. Waste code: 172
. Waste name: 172

. Waste code: 181
. Waste name: 181

. Waste code: 211
. Waste name: 211

. Waste code: 212
. Waste name: 212

. Waste code: 213
. Waste name: 213

. Waste code: 214
. Waste name: 214

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 232
. Waste name: 232

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: 271
. Waste name: 271

. Waste code: 272
. Waste name: 272

. Waste code: 281
. Waste name: 281

. Waste code: 291
. Waste name: 291

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 561
. Waste name: 561

. Waste code: 611
. Waste name: 611

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D029
. Waste name: 1,1-DICHLOROETHYLENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P001

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: U019
. Waste name: BENZENE (I,T)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U037
. Waste name: BENZENE, CHLORO- (OR) CHLOROBENZENE

. Waste code: U228
. Waste name: ETHENE, TRICHLORO- (OR) TRICHLOROETHYLENE

Date form received by agency: 07/09/2002
Site name: COSTCO WHOLESALE NO 420
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

ENVIROSTOR:
Facility ID: 71003264
Status: Refer: Other Agency
Status Date: Not reported
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.22526
Longitude: -119.1479
APN: NONE SPECIFIED

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAL000060250
Alias Type: EPA Identification Number
Alias Name: 71003264
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

FINDS:

Registry ID: 110012221513

Environmental Interest/Information System

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS AIR POLLUTANT MAJOR

HAZARDOUS WASTE BIENNIAL REPORTER

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1004677950
Registry ID: 110012221513
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110012221513

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

HAZNET:

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Pharmaceutical waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0015
Cat Decode:	Pharmaceutical waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Unspecified solvent mixture
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.1025
Cat Decode:	Unspecified solvent mixture
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Alkaline solution without metals pH >= 12.5
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0145
Cat Decode:	Alkaline solution without metals pH >= 12.5

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Ventura

envid: 1004677950
Year: 2015
GEPAID: CAR000103333
Contact: LISA SIMPSON
Telephone: 4253136275
Mailing Name: Not reported
Mailing Address: 3207 GREY HAWK CT STE 200
Mailing City,St,Zip: CARLSBAD, CA 92010
Gen County: Ventura
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons: 0.3612
Cat Decode: Aqueous solution with total organic residues less than 10 percent
Method Decode: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Ventura

envid: 1004677950
Year: 2015
GEPAID: CAR000103333
Contact: LISA SIMPSON
Telephone: 4253136275
Mailing Name: Not reported
Mailing Address: 3207 GREY HAWK CT STE 200
Mailing City,St,Zip: CARLSBAD, CA 92010
Gen County: Ventura
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.1995
Cat Decode: Off-specification, aged or surplus organics
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Ventura

Click this hyperlink while viewing on your computer to access
71 additional CA_HAZNET: record(s) in the EDR Site Report.

MED WASTE VENTURA:
File Id: FA0033643
Permits: - MEDICAL WASTE SMALL QTY GENERATOR RECORDS

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
OXNARD	S110655856	WILMA PACIFIC INC.	BERNOULLI CIR	93030	LUST
OXNARD	S109521349	CITY OF OXNARD	ROSE AVENUE HWY 101	93030	SLIC
OXNARD	S103878599	NAVARRO SITE	STURGIS	93030	SLIC
OXNARD	S100539068	SANTA CLARA/MAXWELL SWIFT/CONNOLLY	VENTURA RD.	93030	ENVIROSTOR

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/08/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 99

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69
Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 01/03/2017
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/20/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 05/31/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 76

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/29/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 54

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 65

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 105

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 65

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/25/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 121

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/23/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57
Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35
Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/25/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/23/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 9

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 29

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 64

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 42

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/23/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/03/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 104

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 67

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/16/2017
Date Data Arrived at EDR: 05/19/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 88

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 10/12/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 64

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/11/2017
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 04/26/2017
Number of Days to Update: 13
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/25/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 78
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/15/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 107
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/22/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 70
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 31

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/07/2017
Date Data Arrived at EDR: 07/11/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 43

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 49

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 104

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 77

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/26/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 58

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 05/04/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 92

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 50

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 30

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 03/20/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 57

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/09/2017
Date Data Arrived at EDR: 05/11/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 90

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/13/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 115
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/17/2017
Date Data Arrived at EDR: 04/18/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 14
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/18/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/17/2017
Date Data Arrived at EDR: 01/18/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 112
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/10/2017
Date Data Arrived at EDR: 01/13/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 110

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 63

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 76

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/22/2017
Date Data Arrived at EDR: 06/23/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 47

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 05/31/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/08/2017
Date Data Arrived at EDR: 05/09/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 92

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 05/11/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 99

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/04/2016
Date Data Arrived at EDR: 11/11/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 85
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/09/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 35
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/20/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 1
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/19/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 98
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 04/04/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 127

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 105

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 69

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 109
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/23/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 47
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 08/28/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 54
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 33
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 89
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/04/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 80

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 63

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/29/2017
Number of Days to Update: 69

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 06/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 43

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/05/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 85

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 93

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 104

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 09/05/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/27/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 105

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 103

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 10/27/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 89

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2017
Date Data Arrived at EDR: 03/15/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/29/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 51
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/10/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/11/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

OXNARD HIGH SCHOOL #8
1853 CAMINO DEL SOL
OXNARD, CA 93030

TARGET PROPERTY COORDINATES

Latitude (North):	34.206412 - 34° 12' 23.08''
Longitude (West):	119.158724 - 119° 9' 31.41''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	301108.0
UTM Y (Meters):	3786954.8
Elevation:	63 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619402 OXNARD, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

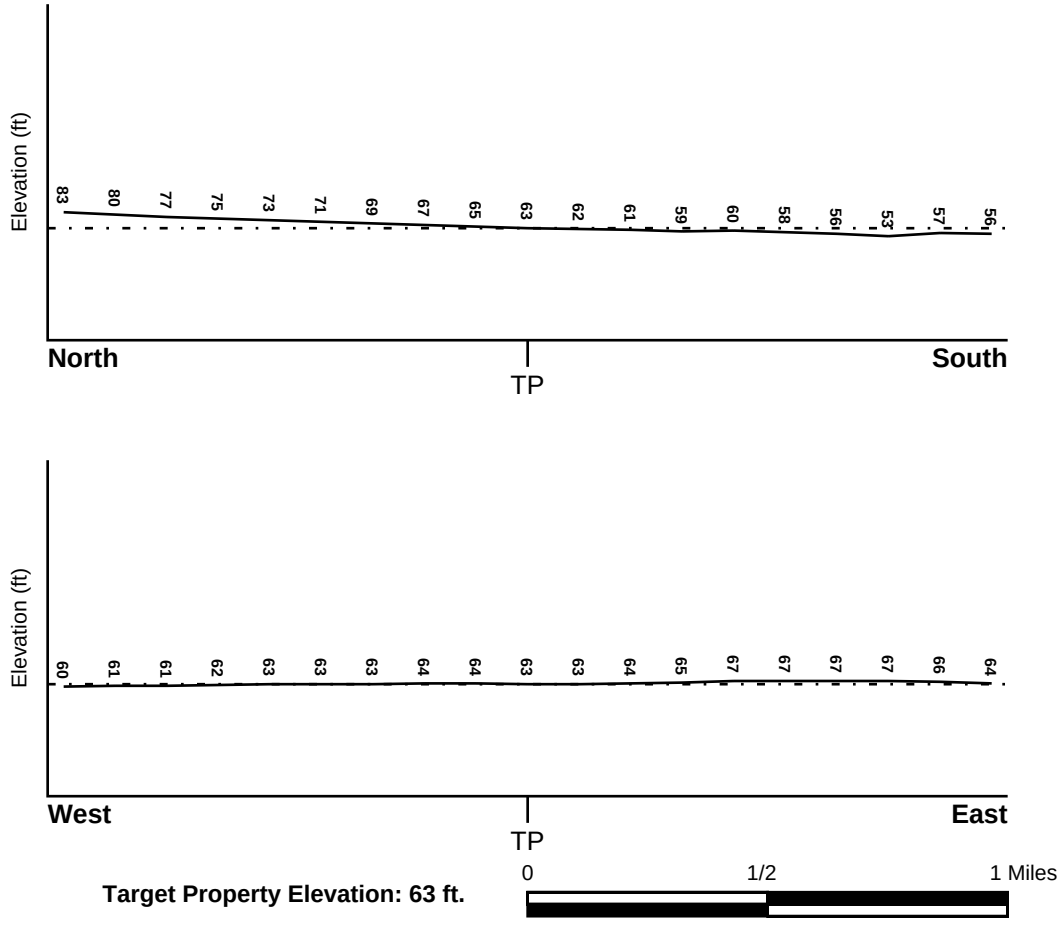
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06111C0910E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
OXNARD	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

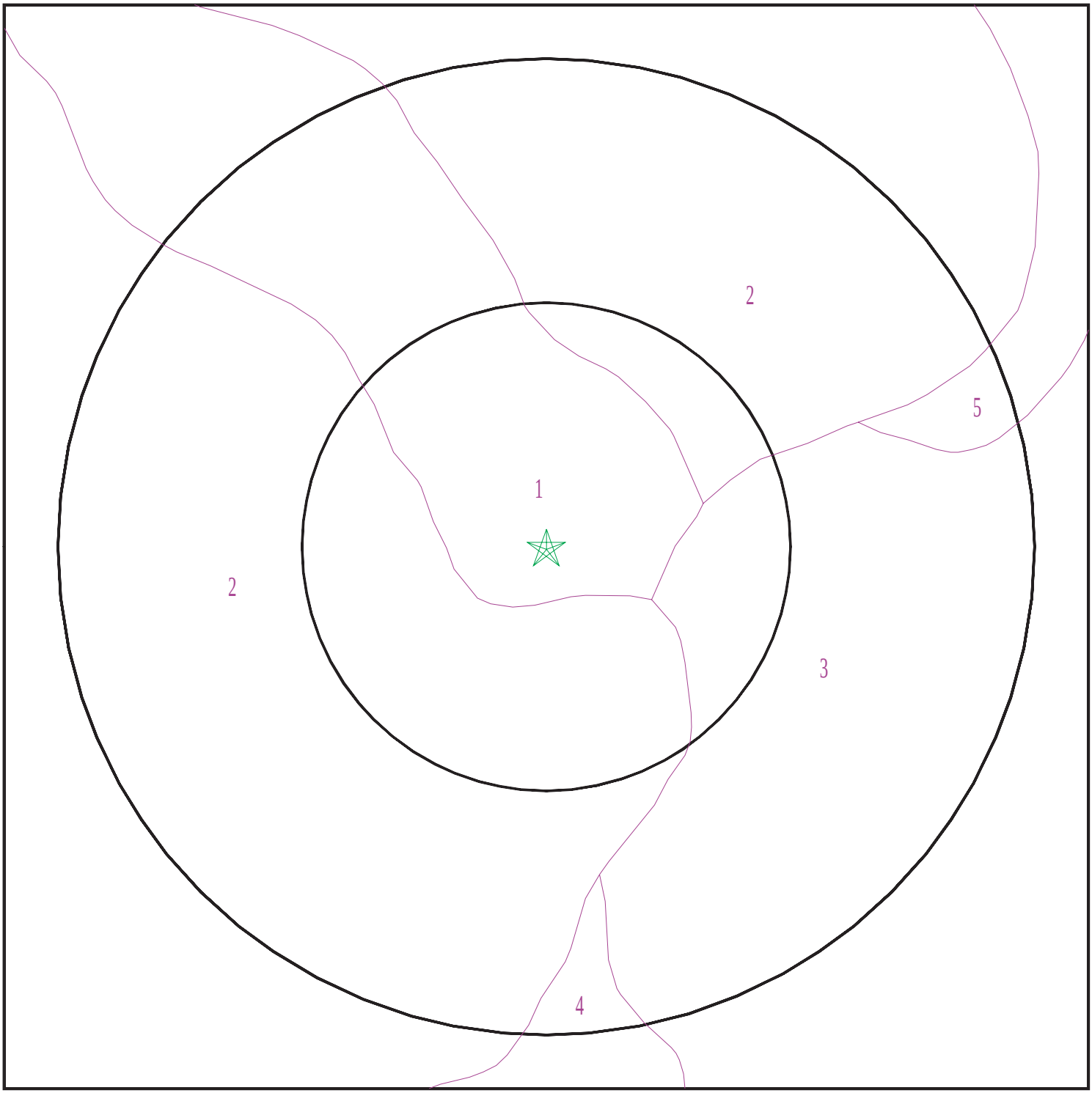
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5046760.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Oxnard High School #8	CLIENT:	Tetra Tech, Inc.
ADDRESS:	1853 Camino Del Sol Oxnard CA 93030	CONTACT:	Jason Dane
LAT/LONG:	34.206412 / 119.158724	INQUIRY #:	5046760.2s
		DATE:	September 21, 2017 2:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: PICO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	14 inches	29 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	29 inches	59 inches	stratified gravelly sand to stony sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: MOCHO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	16 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 3

Soil Component Name: HUENEME

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	16 inches	64 inches	stratified sand to silt loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

Soil Map ID: 4

Soil Component Name: METZ

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4
2	7 inches	59 inches	stratified sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4

Soil Map ID: 5

Soil Component Name: PICO

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	14 inches	53 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	53 inches	59 inches	stratified gravelly sand to gravelly loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A4	USGS40000142503	1/2 - 1 Mile East
5	USGS40000142520	1/2 - 1 Mile NW
C16	USGS40000142540	1/2 - 1 Mile North

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	686	1/4 - 1/2 Mile South
2	CADW60000018137	1/4 - 1/2 Mile SSW
A3	CADW60000015131	1/2 - 1 Mile East
B6	697	1/2 - 1 Mile SW
B7	698	1/2 - 1 Mile SW
B8	681	1/2 - 1 Mile SW
B9	680	1/2 - 1 Mile SW
B10	679	1/2 - 1 Mile SW
B11	682	1/2 - 1 Mile SW
B12	696	1/2 - 1 Mile SW
B13	688	1/2 - 1 Mile SW
B14	687	1/2 - 1 Mile SW
C15	CADW60000019759	1/2 - 1 Mile North
17	683	1/2 - 1 Mile West

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

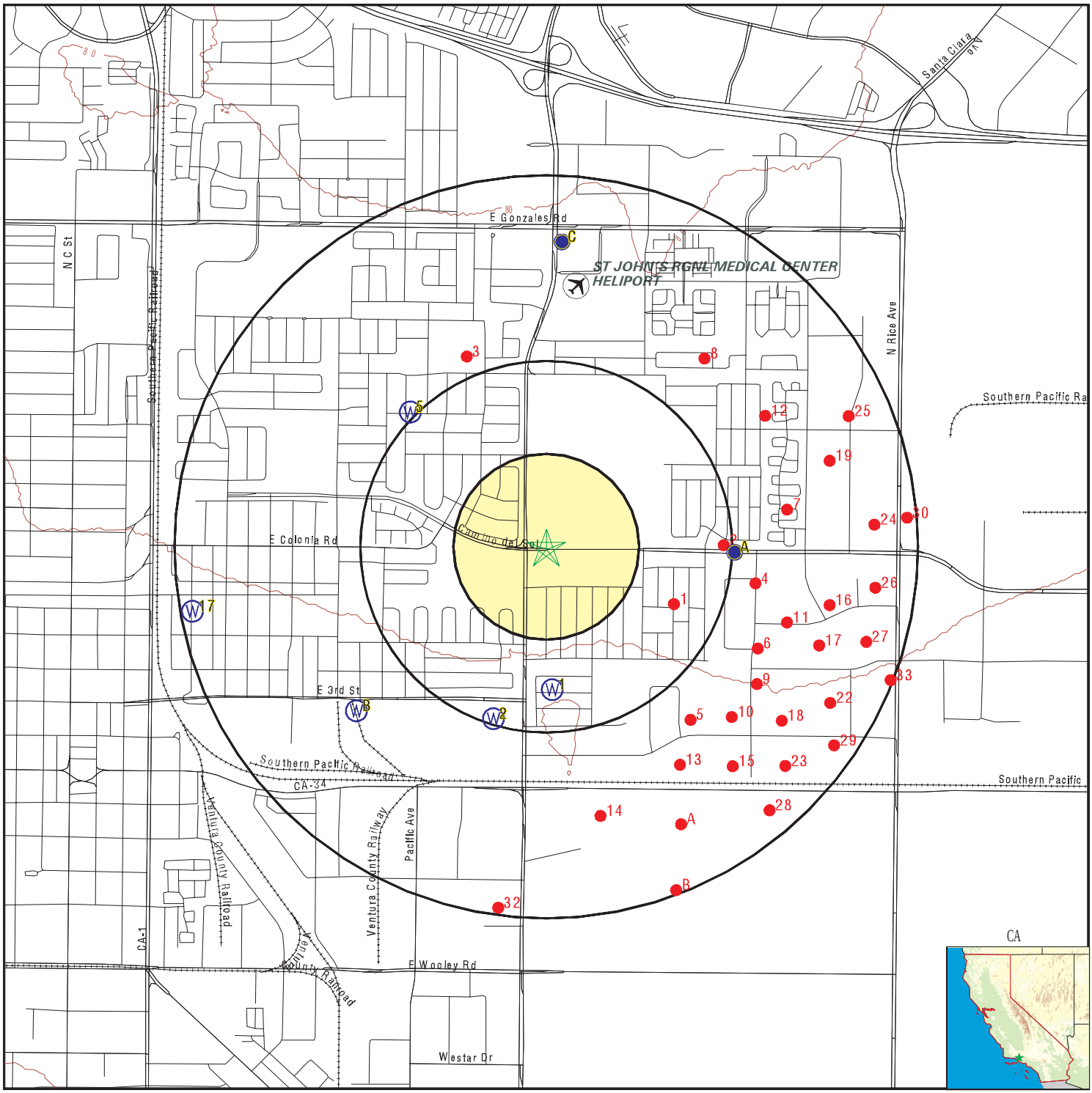
MAP ID	WELL ID	LOCATION FROM TP
1	CAOG11000285756	1/4 - 1/2 Mile ESE
2	CAOG11000285755	1/4 - 1/2 Mile East
3	CAOG11000285615	1/2 - 1 Mile NNW
4	CAOG11000285624	1/2 - 1 Mile East
5	CAOG11000285623	1/2 - 1 Mile SE
6	CAOG11000290446	1/2 - 1 Mile ESE
7	CAOG11000285754	1/2 - 1 Mile East
8	CAOG11000285600	1/2 - 1 Mile NE
9	CAOG11000285617	1/2 - 1 Mile ESE
10	CAOG11000285622	1/2 - 1 Mile SE
11	CAOG11000285753	1/2 - 1 Mile ESE
12	CAOG11000285752	1/2 - 1 Mile ENE
13	CAOG11000285775	1/2 - 1 Mile SSE
14	CAOG11000285804	1/2 - 1 Mile SSE
15	CAOG11000285774	1/2 - 1 Mile SE
16	CAOG11000285750	1/2 - 1 Mile ESE
17	CAOG11000285749	1/2 - 1 Mile ESE
18	CAOG11000285621	1/2 - 1 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
19	CAOG11000285751	1/2 - 1 Mile ENE
A20	CAOG11000285637	1/2 - 1 Mile SSE
A21	CAOG11000285642	1/2 - 1 Mile SSE
22	CAOG11000285776	1/2 - 1 Mile ESE
23	CAOG11000285773	1/2 - 1 Mile SE
24	CAOG11000285748	1/2 - 1 Mile East
25	CAOG11000285616	1/2 - 1 Mile ENE
26	CAOG11000285747	1/2 - 1 Mile East
27	CAOG11000285757	1/2 - 1 Mile ESE
28	CAOG11000285731	1/2 - 1 Mile SE
29	CAOG11000285777	1/2 - 1 Mile SE
30	CAOG11000285630	1/2 - 1 Mile East
B31	CAOG11000284724	1/2 - 1 Mile SSE
32	CAOG11000285626	1/2 - 1 Mile South
33	CAOG11000285597	1/2 - 1 Mile ESE
B34	CAOG11000285639	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 5046760.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Oxnard High School #8	CLIENT:	Tetra Tech, Inc.
ADDRESS:	1853 Camino Del Sol Oxnard CA 93030	CONTACT:	Jason Dane
LAT/LONG:	34.206412 / 119.158724	INQUIRY #:	5046760.2s
		DATE:	September 21, 2017 2:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
South
1/4 - 1/2 Mile
Lower | **CA WELLS** | **686**

Water System Information:

Prime Station Code:	01N/22W-03F08 S	User ID:	TAP
FRDS Number:	5610007021	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	341203.8 1190927.5	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 23 (1990)		
System Number:	5610007		
System Name:	OXNARD WATER DEPT		
Organization That Operates System:			
	251 SOUTH HAYES AVE. OXNARD, CA 93030		
Pop Served:	151500	Connections:	30588
Area Served:	OXNARD CITY		
Sample Collected:	05-JAN-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-JAN-11	Findings:	660. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JAN-11	Findings:	58. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JAN-11	Findings:	560. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JAN-11	Findings:	0.51 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JAN-11	Findings:	95. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JAN-11	Findings:	1200. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-FEB-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-FEB-11	Findings:	630. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	03-FEB-11	Findings:	160. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-11	Findings:	54. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-11	Findings:	540. MG/L
Chemical:	SULFATE		
Sample Collected:	03-FEB-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-11	Findings:	54. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-FEB-11	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAR-11	Findings:	260. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	260. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAR-11	Findings:	660. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAR-11	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-MAR-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-11	Findings:	20. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-APR-11	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-APR-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-APR-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	06-APR-11	Findings:	600. MG/L
Chemical:	SULFATE		
Sample Collected:	06-APR-11	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-APR-11	Findings:	54. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-APR-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-APR-11	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-MAY-11	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-MAY-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-11	Findings:	670. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-11	Findings:	55. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-MAY-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-11	Findings:	26. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-JUN-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-JUN-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-11	Findings:	61. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-11	Findings:	650. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-11	Findings:	0.49 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	01-JUN-11	Findings:	68. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-JUN-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-11	Findings:	24. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-JUL-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-JUL-11	Findings:	670. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-JUL-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-JUL-11	Findings:	530. MG/L
Chemical:	SULFATE		
Sample Collected:	06-JUL-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-JUL-11	Findings:	67. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-JUL-11	Findings:	1200. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-JUL-11	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-AUG-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-AUG-11	Findings:	690. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-AUG-11	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-11	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-11	Findings:	63. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-AUG-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	03-AUG-11	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-SEP-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-SEP-11	Findings:	730. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-11	Findings:	620. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-SEP-11	Findings:	81. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-SEP-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-SEP-11	Findings:	26. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-OCT-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-OCT-11	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-OCT-11	Findings:	71. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-OCT-11	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	12-OCT-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-OCT-11	Findings:	83. UG/L
Chemical:	MANGANESE		
Sample Collected:	12-OCT-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-OCT-11	Findings:	32. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-NOV-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	03-NOV-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-NOV-11	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-NOV-11	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-NOV-11	Findings:	610. MG/L
Chemical:	SULFATE		
Sample Collected:	03-NOV-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-NOV-11	Findings:	78. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-NOV-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-NOV-11	Findings:	45. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	14-DEC-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	14-DEC-11	Findings:	700. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	14-DEC-11	Findings:	60. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	14-DEC-11	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	14-DEC-11	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	14-DEC-11	Findings:	77. UG/L
Chemical:	MANGANESE		
Sample Collected:	14-DEC-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	14-DEC-11	Findings:	34. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-JAN-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-JAN-12	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-JAN-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-JAN-12	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	04-JAN-12	Findings:	0.61 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-JAN-12	Findings:	71. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-JAN-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-JAN-12	Findings:	46. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-FEB-12	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-FEB-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-FEB-12	Findings:	600. MG/L
Chemical:	SULFATE		
Sample Collected:	01-FEB-12	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-FEB-12	Findings:	68. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-FEB-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-FEB-12	Findings:	28. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-MAR-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-MAR-12	Findings:	810. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-MAR-12	Findings:	70. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	07-MAR-12	Findings:	680. MG/L
Chemical:	SULFATE		
Sample Collected:	07-MAR-12	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-MAR-12	Findings:	70. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-MAR-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-MAR-12	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-APR-12	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-APR-12	Findings:	690. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-APR-12	Findings:	60. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-APR-12	Findings:	1000. MG/L
Chemical:	SULFATE		
Sample Collected:	04-APR-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-APR-12	Findings:	62. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-APR-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-APR-12	Findings:	38. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAY-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAY-12	Findings:	850. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAY-12	Findings:	73. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAY-12	Findings:	640. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAY-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	02-MAY-12	Findings:	79. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-MAY-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAY-12	Findings:	41. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	13-JUN-12	Findings:	180. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	13-JUN-12	Findings:	760. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	13-JUN-12	Findings:	66. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	13-JUN-12	Findings:	760. MG/L
Chemical:	SULFATE		
Sample Collected:	13-JUN-12	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	13-JUN-12	Findings:	53. UG/L
Chemical:	MANGANESE		
Sample Collected:	13-JUN-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	13-JUN-12	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUL-12	Findings:	300. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	370. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-JUL-12	Findings:	790. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUL-12	Findings:	70. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUL-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUL-12	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-JUL-12	Findings:	61. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUL-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	03-JUL-12	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-AUG-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-AUG-12	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-AUG-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-AUG-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	01-AUG-12	Findings:	0.61 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-AUG-12	Findings:	66. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-AUG-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-AUG-12	Findings:	39. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-SEP-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-SEP-12	Findings:	730. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-SEP-12	Findings:	64. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-SEP-12	Findings:	670. MG/L
Chemical:	SULFATE		
Sample Collected:	05-SEP-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-SEP-12	Findings:	55. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-SEP-12	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-SEP-12	Findings:	31. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-OCT-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	03-OCT-12	Findings:	300. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-OCT-12	Findings:	740. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-OCT-12	Findings:	64. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-OCT-12	Findings:	680. MG/L
Chemical:	SULFATE		
Sample Collected:	03-OCT-12	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-OCT-12	Findings:	67. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-OCT-12	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-OCT-12	Findings:	35. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-NOV-12	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-NOV-12	Findings:	830. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-NOV-12	Findings:	76. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-NOV-12	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	07-NOV-12	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-NOV-12	Findings:	92. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-NOV-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-NOV-12	Findings:	33. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-DEC-12	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-DEC-12	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	05-DEC-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-DEC-12	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-DEC-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	05-DEC-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-DEC-12	Findings:	60. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-DEC-12	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-DEC-12	Findings:	37. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-JAN-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-JAN-13	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-JAN-13	Findings:	65. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-JAN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	02-JAN-13	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-JAN-13	Findings:	60. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-JAN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-JAN-13	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-FEB-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-FEB-13	Findings:	780. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-FEB-13	Findings:	67. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	06-FEB-13	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	06-FEB-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-FEB-13	Findings:	76. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-FEB-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-FEB-13	Findings:	50. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAR-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-MAR-13	Findings:	880. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAR-13	Findings:	77. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAR-13	Findings:	750. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAR-13	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-MAR-13	Findings:	88. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-MAR-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAR-13	Findings:	34. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-APR-13	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-APR-13	Findings:	850. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-APR-13	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-APR-13	Findings:	710. MG/L
Chemical:	SULFATE		
Sample Collected:	03-APR-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	03-APR-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-APR-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-APR-13	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-MAY-13	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	300. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-MAY-13	Findings:	840. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-MAY-13	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-MAY-13	Findings:	760. MG/L
Chemical:	SULFATE		
Sample Collected:	01-MAY-13	Findings:	0.69 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-MAY-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-MAY-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-MAY-13	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-JUN-13	Findings:	270. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	895. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	226. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JUN-13	Findings:	80.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JUN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JUN-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JUN-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JUN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JUN-13	Findings:	8.7 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	12-JUN-13	Findings:	2100. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12-JUN-13	Findings:	7.65
Chemical:	PH, LABORATORY		
Sample Collected:	12-JUN-13	Findings:	270. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	330. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-JUN-13	Findings:	880. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	224. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-JUN-13	Findings:	78.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-JUN-13	Findings:	120. MG/L
Chemical:	SODIUM		
Sample Collected:	12-JUN-13	Findings:	6.2 MG/L
Chemical:	POTASSIUM		
Sample Collected:	12-JUN-13	Findings:	67. MG/L
Chemical:	CHLORIDE		
Sample Collected:	12-JUN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	12-JUN-13	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-JUN-13	Findings:	3.6 UG/L
Chemical:	ARSENIC		
Sample Collected:	12-JUN-13	Findings:	76. UG/L
Chemical:	MANGANESE		
Sample Collected:	12-JUN-13	Findings:	19. UG/L
Chemical:	SELENIUM		
Sample Collected:	12-JUN-13	Findings:	4.14 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12-JUN-13	Findings:	0.329 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12-JUN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-JUN-13	Findings:	1.33
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	12-JUN-13	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	9000. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	12-JUN-13	Findings:	1.6e-002 PCI/L
Chemical:	GROSS ALPHA MDA95		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

2
SSW
1/4 - 1/2 Mile
Lower

CA WELLS **CADW60000018137**

Objectid:	18137
Latitude:	34.1997
Longitude:	-119.1612
Site code:	341997N1191612W001
State well numbe:	01N22W02E001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000018137

A3
East
1/2 - 1 Mile
Higher

CA WELLS **CADW60000015131**

Objectid:	15131
Latitude:	34.206009
Longitude:	-119.149916
Site code:	342058N1191490W001
State well numbe:	01N22W02A002S
Local well name:	'01N22W02A02S'
Well use id:	3
Well use descrip:	Irrigation
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000015131

A4
East
1/2 - 1 Mile
Higher

FED USGS **USGS40000142503**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341223119085601		
Monloc name:	001N022W02A002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2063936
Longitude:	-119.1498285	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	394
Welldepth units:	ft	Wellholedepth:	394
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

5
NW **FED USGS** **USGS40000142520**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341242119095101		
Monloc name:	002N022W34H001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2116713
Longitude:	-119.1651068	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	254
Welldepth units:	ft	Wellholedepth:	254
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B6
SW **CA WELLS** **697**
1/2 - 1 Mile
Lower

Water System Information:

Prime Station Code:	01N/22W-10B02 S	User ID:	TAP
FRDS Number:	5610007017	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Inactive Raw
Source Lat/Long:	341200.0 1191000.0	Precision:	Undefined
Source Name:	WELL 17 - INACTIVE		

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B7
SW **CA WELLS** **698**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-10B03 S User ID: TAP
FRDS Number: 5610007016 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Inactive Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 16 - INACTIVE
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B8
SW **CA WELLS** **681**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F03 S User ID: TAP
FRDS Number: 5610007002 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 02
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B9
SW **CA WELLS** **680**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F02 S User ID: TAP
FRDS Number: 5610007003 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 03

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B10
SW **CA WELLS** **679**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F01 S User ID: TAP
FRDS Number: 5610007004 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 04
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B11
SW **CA WELLS** **682**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F04 S User ID: TAP
FRDS Number: 5610007001 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 01
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B12
SW **CA WELLS** **696**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-10B01 S User ID: TAP
FRDS Number: 5610007010 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 10 - ABANDONED

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B13
SW **CA WELLS** **688**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03K14 S User ID: TAP
FRDS Number: 5610007012 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 12 - ABANDONED
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B14
SW **CA WELLS** **687**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03K11 S User ID: TAP
FRDS Number: 5610007011 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 11 - ABANDONED
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

C15
North **CA WELLS** **CADW60000019759**
1/2 - 1 Mile
Higher

Objectid:	19759
Latitude:	34.2183
Longitude:	-119.1578
Site code:	342183N1191578W001
State well numbe:	02N22W35C001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000019759

C16
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000142540**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341306119092601		
Monloc name:	002N022W35C001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2183379
Longitude:	-119.1581622	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	198
Welldepth units:	ft	Wellholedepth:	198
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

17
West
1/2 - 1 Mile
Lower

CA WELLS **683**

Water System Information:

Prime Station Code:	01N/22W-03F05 S	User ID:	TAP
FRDS Number:	5610007018	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	341214.0 1191028.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 20		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

Sample Collected:	01-FEB-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-FEB-12	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-FEB-12	Findings:	410. MG/L
Chemical:	SULFATE		
Sample Collected:	01-FEB-12	Findings:	0.51 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-FEB-12	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-FEB-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-FEB-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-MAR-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-MAR-12	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	150. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-MAR-12	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-MAR-12	Findings:	520. MG/L
Chemical:	SULFATE		
Sample Collected:	07-MAR-12	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-MAR-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-MAR-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-MAR-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-APR-12	Findings:	190. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	04-APR-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-APR-12	Findings:	42. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-APR-12	Findings:	660. MG/L
Chemical:	SULFATE		
Sample Collected:	04-APR-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-APR-12	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-APR-12	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAY-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAY-12	Findings:	600. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	160. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAY-12	Findings:	49. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAY-12	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAY-12	Findings:	0.66 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAY-12	Findings:	970. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAY-12	Findings:	11. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	13-JUN-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	13-JUN-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	13-JUN-12	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	13-JUN-12	Findings:	500. MG/L
Chemical:	SULFATE		

Sample Collected:	13-JUN-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	13-JUN-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	13-JUN-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUL-12	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	310. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-JUL-12	Findings:	510. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUL-12	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUL-12	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUL-12	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-JUL-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUL-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-JUL-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-AUG-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-AUG-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-AUG-12	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-AUG-12	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	01-AUG-12	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-AUG-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-AUG-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	01-AUG-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-SEP-12	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-SEP-12	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-SEP-12	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-SEP-12	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	05-SEP-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-SEP-12	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-SEP-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-OCT-12	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-OCT-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-OCT-12	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-OCT-12	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	03-OCT-12	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-OCT-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-OCT-12	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-NOV-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-NOV-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	07-NOV-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-NOV-12	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-NOV-12	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-NOV-12	Findings:	0.68 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-NOV-12	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-NOV-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-NOV-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-DEC-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-DEC-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-DEC-12	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-DEC-12	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	05-DEC-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-DEC-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-DEC-12	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-DEC-12	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-JAN-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-JAN-13	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-JAN-13	Findings:	43. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	02-JAN-13	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	02-JAN-13	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-JAN-13	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-JAN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-JAN-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-FEB-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-FEB-13	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-FEB-13	Findings:	43. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-FEB-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	06-FEB-13	Findings:	0.55 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-FEB-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-FEB-13	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-FEB-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAR-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-MAR-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAR-13	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAR-13	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAR-13	Findings:	0.66 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	06-MAR-13	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-MAR-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAR-13	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-APR-13	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-APR-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-APR-13	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-APR-13	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	03-APR-13	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-APR-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-APR-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-APR-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-MAY-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-MAY-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-MAY-13	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-MAY-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	01-MAY-13	Findings:	0.75 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-MAY-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-MAY-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	01-MAY-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-JUN-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	554. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	142. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JUN-13	Findings:	48.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JUN-13	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JUN-13	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JUN-13	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JUN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JUN-13	Findings:	3.6 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	1400. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12-JUN-13	Findings:	7.69
Chemical:	PH, LABORATORY		
Sample Collected:	12-JUN-13	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-JUN-13	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	142. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-JUN-13	Findings:	48.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-JUN-13	Findings:	100. MG/L
Chemical:	SODIUM		
Sample Collected:	12-JUN-13	Findings:	5. MG/L
Chemical:	POTASSIUM		
Sample Collected:	12-JUN-13	Findings:	45. MG/L
Chemical:	CHLORIDE		
Sample Collected:	12-JUN-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	12-JUN-13	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	12-JUN-13	Findings:	12. UG/L
Chemical:	SELENIUM		
Sample Collected:	12-JUN-13	Findings:	6.02 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12-JUN-13	Findings:	0.397 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12-JUN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-JUN-13	Findings:	1.14
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	12-JUN-13	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	3700. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	12-JUN-13	Findings:	1.6e-002 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	19-NOV-14	Findings:	8.02
Chemical:	PH, LABORATORY		
Sample Collected:	19-NOV-14	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	19-NOV-14	Findings:	146. MG/L
Chemical:	CALCIUM		
Sample Collected:	19-NOV-14	Findings:	5. PCI/L
Chemical:	URANIUM (PCI/L)		
Sample Collected:	19-NOV-14	Findings:	12.9
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	07-JAN-15	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-JAN-15	Findings:	538. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-JAN-15	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-JAN-15	Findings:	45.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-JAN-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	07-JAN-15	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-JAN-15	Findings:	22. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-JAN-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-JAN-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	01-APR-15	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-APR-15	Findings:	548. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-APR-15	Findings:	144. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-APR-15	Findings:	45.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-APR-15	Findings:	510. MG/L
Chemical:	SULFATE		
Sample Collected:	01-APR-15	Findings:	0.74 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-APR-15	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-APR-15	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAY-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAY-15	Findings:	547. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAY-15	Findings:	144. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAY-15	Findings:	45.4 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAY-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAY-15	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-MAY-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAY-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUN-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUN-15	Findings:	535. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUN-15	Findings:	139. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUN-15	Findings:	45.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUN-15	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUN-15	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	03-JUN-15	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUN-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-JUN-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08-JUL-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08-JUL-15	Findings:	541. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	08-JUL-15	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	08-JUL-15	Findings:	45.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08-JUL-15	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	08-JUL-15	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	08-JUL-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	08-JUL-15	Findings:	19. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-AUG-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-AUG-15	Findings:	555. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-AUG-15	Findings:	143. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-AUG-15	Findings:	47.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-AUG-15	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	05-AUG-15	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-AUG-15	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-AUG-15	Findings:	20. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-SEP-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-SEP-15	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	02-SEP-15	Findings:	526. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	02-SEP-15	Findings:	135. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-SEP-15	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-SEP-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	02-SEP-15	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-SEP-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-NOV-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-NOV-15	Findings:	4.1 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	04-NOV-15	Findings:	514. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-NOV-15	Findings:	134. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-NOV-15	Findings:	43.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-NOV-15	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	04-NOV-15	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-NOV-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09-DEC-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09-DEC-15	Findings:	4.1 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	09-DEC-15	Findings:	572. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09-DEC-15	Findings:	149. MG/L
Chemical:	CALCIUM		
Sample Collected:	09-DEC-15	Findings:	48.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09-DEC-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	09-DEC-15	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	09-DEC-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-JAN-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	07-JAN-16	Findings:	4.3 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	07-JAN-16	Findings:	534. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-JAN-16	Findings:	136. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-JAN-16	Findings:	46.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-JAN-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	07-JAN-16	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-JAN-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-16	Findings:	8.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	03-FEB-16	Findings:	556. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-FEB-16	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-16	Findings:	49.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-16	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	03-FEB-16	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-16	Findings:	4.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	02-MAR-16	Findings:	529. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-16	Findings:	137. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-16	Findings:	45.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-16	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	02-MAR-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-16	Findings:	3.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	04-MAY-16	Findings:	502. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-16	Findings:	128. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-16	Findings:	44.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-16	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-16	Findings:	0.53 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-16	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	01-JUN-16	Findings:	568. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-16	Findings:	143. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-16	Findings:	51.4 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-16	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-16	Findings:	0.46 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-JUN-16	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-AUG-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-16	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	03-AUG-16	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-16	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-16	Findings:	50.7 MG/L
Chemical:	MAGNESIUM		

Sample Collected:	03-AUG-16	Findings:	390. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-16	Findings:	0.47 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	31-AUG-16	Findings:	1400. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	31-AUG-16	Findings:	7.7
Chemical:	PH, LABORATORY		
Sample Collected:	31-AUG-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	31-AUG-16	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	31-AUG-16	Findings:	3.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	31-AUG-16	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	31-AUG-16	Findings:	132. MG/L
Chemical:	CALCIUM		
Sample Collected:	31-AUG-16	Findings:	48.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	31-AUG-16	Findings:	95. MG/L
Chemical:	SODIUM		
Sample Collected:	31-AUG-16	Findings:	5. MG/L
Chemical:	POTASSIUM		
Sample Collected:	31-AUG-16	Findings:	50. MG/L
Chemical:	CHLORIDE		
Sample Collected:	31-AUG-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	31-AUG-16	Findings:	0.48 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	31-AUG-16	Findings:	11. UG/L
Chemical:	SELENIUM		
Sample Collected:	31-AUG-16	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	31-AUG-16	Findings:	1.11
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	31-AUG-16	Findings:	3.7 MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	07-SEP-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-16	Findings:	3.6 MG/L
Chemical:	NITRATE (AS N)		

Sample Collected:	07-SEP-16	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-16	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-16	Findings:	47.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-16	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-16	Findings:	0.46 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-SEP-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-JAN-11	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JAN-11	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JAN-11	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JAN-11	Findings:	0.53 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JAN-11	Findings:	22. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JAN-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-FEB-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-FEB-11	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-11	Findings:	41. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-11	Findings:	490. MG/L
Chemical:	SULFATE		

Sample Collected:	03-FEB-11	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-11	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAR-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAR-11	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-11	Findings:	400. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-11	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAR-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-APR-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-APR-11	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-APR-11	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-APR-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	06-APR-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-APR-11	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-APR-11	Findings:	910. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-APR-11	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	04-MAY-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-MAY-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-11	Findings:	490. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-JUN-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-JUN-11	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-11	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-11	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-11	Findings:	0.69 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-JUN-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-JUL-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-JUL-11	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	140. MG/L
Chemical:	CALCIUM		

Sample Collected:	06-JUL-11	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-JUL-11	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	06-JUL-11	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-JUL-11	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-JUL-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-JUL-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-AUG-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-AUG-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-AUG-11	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-11	Findings:	0.64 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-AUG-11	Findings:	14. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-SEP-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-SEP-11	Findings:	510. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-11	Findings:	42. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-11	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-11	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	07-SEP-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-SEP-11	Findings:	12. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-OCT-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-OCT-11	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-OCT-11	Findings:	420. MG/L
Chemical:	SULFATE		
Sample Collected:	12-OCT-11	Findings:	0.64 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-OCT-11	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-OCT-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-NOV-11	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-NOV-11	Findings:	49. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-NOV-11	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	03-NOV-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-NOV-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-NOV-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	14-DEC-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	14-DEC-11	Findings:	480. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	120. MG/L
Chemical:	CALCIUM		
Sample Collected:	14-DEC-11	Findings:	40. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	14-DEC-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	14-DEC-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	14-DEC-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	14-DEC-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-JAN-12	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-JAN-12	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-JAN-12	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	04-JAN-12	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-JAN-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-JAN-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-JAN-12	Findings:	14. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-FEB-12	Findings:	180. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	180. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-FEB-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
ESE **OIL_GAS** **CAOG11000285756**
1/4 - 1/2 Mile

District nun:	2	Api number:	11101287
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	11A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285756		

2
East **OIL_GAS** **CAOG11000285755**
1/4 - 1/2 Mile

District nun:	2	Api number:	11101286
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	10
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285755		

3
NNW **OIL_GAS** **CAOG11000285615**
1/2 - 1 Mile

District nun:	2	Api number:	11101144
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Petan Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	A. Pfeiler Est.	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285615		

4
East **OIL_GAS** **CAOG11000285624**
1/2 - 1 Mile

District nun:	2	Api number:	11101153
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285624		

5
SE **OIL_GAS** **CAOG11000285623**
1/2 - 1 Mile

District nun:	2	Api number:	11101152
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285623		

6
ESE **OIL_GAS** **CAOG11000290446**
1/2 - 1 Mile

District nun:	2	Api number:	11105527
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Applegate & Owens		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000290446		

7
East **OIL_GAS** **CAOG11000285754**
1/2 - 1 Mile

District nun:	2	Api number:	11101285
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	9
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285754		

Map ID
Direction
Distance

Database EDR ID Number

8
NE **OIL_GAS** **CAOG11000285600**
1/2 - 1 Mile

District nun:	2	Api number:	11101136
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Mobil Oil Corporation		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	FR NORTH LINE OF COLONIA AND WEST LINE OF RICE 2796N AND 2846W		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Standard Scholle	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285600		

9
ESE **OIL_GAS** **CAOG11000285617**
1/2 - 1 Mile

District nun:	2	Api number:	11101146
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Plains Oil Co. No. 4		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285617		

10
SE **OIL_GAS** **CAOG11000285622**
1/2 - 1 Mile

District nun:	2	Api number:	11101151
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285622		

11
ESE **OIL_GAS** **CAOG11000285753**
1/2 - 1 Mile

District nun:	2	Api number:	11101284
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	8
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285753		

12
ENE **OIL_GAS** **CAOG11000285752**
1/2 - 1 Mile

District nun:	2	Api number:	11101283
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	7
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285752		

13
SSE **OIL_GAS** **CAOG11000285775**
1/2 - 1 Mile

District nun:	2	Api number:	11101306
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	7
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285775		

14
SSE **OIL_GAS** **CAOG11000285804**
1/2 - 1 Mile

District nun:	2	Api number:	11101332
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Engine Oil & Gas Corp.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Diedrich	Wellnumber:	4
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285804		

Map ID
Direction
Distance

Database EDR ID Number

15
SE **OIL_GAS** **CAOG11000285774**
1/2 - 1 Mile

District nun:	2	Api number:	11101305
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	6
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285774		

16
ESE **OIL_GAS** **CAOG11000285750**
1/2 - 1 Mile

District nun:	2	Api number:	11101281
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	5
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285750		

17
ESE **OIL_GAS** **CAOG11000285749**
1/2 - 1 Mile

District nun:	2	Api number:	11101280
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	4
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285749		

18
SE **OIL_GAS** **CAOG11000285621**
1/2 - 1 Mile

District nun:	2	Api number:	11101150
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Chevron U.S.A. Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285621		

19
ENE **OIL_GAS** **CAOG11000285751**
1/2 - 1 Mile

District nun:	2	Api number:	11101282
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	6
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285751		

A20
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000285637**

District nun:	2	Api number:	11101166
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285637		

A21
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000285642**

District nun:	2	Api number:	11101171
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Diedrich-Gordon	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285642		

Map ID
Direction
Distance

Database EDR ID Number

22
ESE
1/2 - 1 Mile

OIL_GAS **CAOG11000285776**

District nun:	2	Api number:	11101307
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	8
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285776		

23
SE
1/2 - 1 Mile

OIL_GAS **CAOG11000285773**

District nun:	2	Api number:	11101304
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	5A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285773		

24
East
1/2 - 1 Mile

OIL_GAS **CAOG11000285748**

District nun:	2	Api number:	11101279
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285748		

25
ENE **OIL_GAS** **CAOG11000285616**
1/2 - 1 Mile

District nun:	2	Api number:	11101145
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Plains Oil Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285616		

26
East **OIL_GAS** **CAOG11000285747**
1/2 - 1 Mile

District nun:	2	Api number:	11101278
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285747		

27
ESE **OIL_GAS** **CAOG11000285757**
1/2 - 1 Mile

District nun:	2	Api number:	11101288
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	101A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285757		

28
SE **OIL_GAS** **CAOG11000285731**
1/2 - 1 Mile

District nun:	2	Api number:	11101262
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Chevron U.S.A. Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Gordon-Pfeiler Line Well	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285731		

Map ID
Direction
Distance

Database EDR ID Number

29
SE
1/2 - 1 Mile

OIL_GAS **CAOG11000285777**

District nun:	2	Api number:	11101308
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	9
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285777		

30
East
1/2 - 1 Mile

OIL_GAS **CAOG11000285630**

District nun:	2	Api number:	11101160
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Thatcher	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285630		

B31
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000284724**

District nun:	2	Api number:	11100299
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	08-DEC-56
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000284724		

32
South **OIL_GAS** **CAOG11000285626**
1/2 - 1 Mile

District nun:	2	Api number:	11101155
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Roscoe Oil Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Ecoff	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	03-AUG-57
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285626		

33
ESE **OIL_GAS** **CAOG11000285597**
1/2 - 1 Mile

District nun:	2	Api number:	11101133
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	John W Lucas Jr		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285597		

B34
SSE **OIL_GAS** **CAOG11000285639**
1/2 - 1 Mile

District nun:	2	Api number:	11101168
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	5
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285639		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93030	38	1

Federal EPA Radon Zone for VENTURA County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93030

Number of sites tested: 9

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.478 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.5
September 11, 2017

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

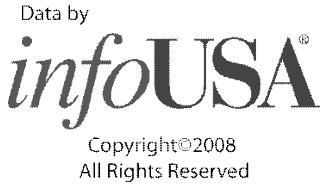
Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1926 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2010	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2005	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2002	Haines & Company, Inc.	-	X	X	-
2000	Pacific Bell Telephone Co	-	-	-	-
1996	Pacific Bell	-	X	X	-
1993	GTE	-	X	X	-
1986	Pacific Bell	-	X	X	-
1985	Pacific Telephone Co	-	X	X	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1980	Polk	-	X	X	-
1976	R. L. Polk & Co.	-	X	X	-
1975	General Telephone Company of California	-	X	X	-
	Pacific Telephone Co	-	X	X	-
1971	B&G Publications	-	-	-	-
1970	General Telephone Company of California	-	X	X	-
1968	B&G Publications	-	-	-	-
1965	R. L. Polk & Co.	-	X	X	-
1964	Pacific Telephone Co	-	X	X	-
1961	R. L. Polk & Co.	-	-	-	-
1957	R. L. Polk & Co.	-	-	-	-
1953	R. L. Polk & Co. of California	-	-	-	-
1949	Los Angeles Directory Co.	-	-	-	-
1940	Southern California	-	-	-	-
1930	Los Angeles Directory Co.	-	-	-	-
1926	Los Angeles Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	*Type*	*Findings*
440 Rose Avenue	Client Entered	
480 Rose Avenue	Client Entered	
1900 Camino Del Sol	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

1853 Camino Del Sol
Oxnard, CA 93030

FINDINGS DETAIL

Target Property research detail.

Camino del Sol

1853 Camino del Sol

Year	*Uses*	*Source*
2014	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2010	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2005	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

ALPINE ST

366 ALPINE ST

Year	*Uses*	*Source*
1975	Timmons Michael D	General Telephone Company of California

367 ALPINE ST

Year	*Uses*	*Source*
1975	Horton Edw H	General Telephone Company of California
1970	Horton Edw H	General Telephone Company of California

374 ALPINE ST

Year	*Uses*	*Source*
1975	Fryer Dick	General Telephone Company of California
1970	Fryer S	General Telephone Company of California
	Fryer Dick	General Telephone Company of California

375 ALPINE ST

Year	*Uses*	*Source*
1975	Baril Normand A	General Telephone Company of California
1970	Phinney Lynn	General Telephone Company of California

382 ALPINE ST

Year	*Uses*	*Source*
1975	Frantom Jas G	General Telephone Company of California
1970	Frantom Jas G	General Telephone Company of California

383 ALPINE ST

Year	*Uses*	*Source*
1975	Bower John K	General Telephone Company of California
1970	Bower John K	General Telephone Company of California

390 ALPINE ST

Year	*Uses*	*Source*
1970	Hubbard Robt A	General Telephone Company of California

FINDINGS

BALSAM ST

399 BALSAM ST

Year	Uses	Source
2002	FERNANDEZJohn	Haines & Company, Inc.

Camino del Sol

1500 Camino del Sol

Year	Uses	Source
2014	OXNARD CITY OF	EDR Digital Archive
	OXNARD FRNDS OF LIB FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD FRNDS OF LIB FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
2010	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
2005	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	CHILD DEVELOPMENT INC	EDR Digital Archive
	NATIONAL ASSOC FOR HISPANIC EL	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	CHILD DEVELOPMENT INC	EDR Digital Archive
	NATIONAL ASSOC FOR HISPANIC EL	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive

FINDINGS

Year	Uses	Source
2005	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive

1825 Camino del Sol

Year	Uses	Source
2010	DEL SOL WIRELESS LLC	EDR Digital Archive
	DEL SOL WIRELESS LLC	EDR Digital Archive

1853 Camino del Sol

Year	Uses	Source
2014	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2010	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2005	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive

1910 Camino del Sol

Year	Uses	Source
2014	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
2010	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
2005	CAMINO DEL SOL APARTMENT	EDR Digital Archive
	CAMINO DEL SOL APARTMENT	EDR Digital Archive

CAMINO DEL SOL

1928 CAMINO DEL SOL

Year	Uses	Source
2002	CONTRERASFEDEBRICO	Haines & Company, Inc.
	FERNANDZ	Haines & Company, Inc.
	JUAREZSaul	Haines & Company, Inc.
	MENDOZLas ROCHA	Haines & Company, Inc.
	R 0 CHA Mania S SAUCEDOM	Haines & Company, Inc.
1996	A artment	Pacific Bell

1932 CAMINO DEL SOL

Year	Uses	Source
2002	APARTMENTS	Haines & Company, Inc.
	BACELISMickey	Haines & Company, Inc.
	REYESRosnlva	Haines & Company, Inc.
	Neves	Haines & Company, Inc.
	RAMi REZHernandez	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	ORNELASSeima ORTEGAEvan	Haines & Company, Inc.
	HERNANDEZ Pedro U B M 0 EJ 8 A 2 Ee	Haines & Company, Inc.
	HERNANDEZHiiduvena	Haines & Company, Inc.
	GUTIEREZJoaqaun	Haines & Company, Inc.
	ENRIOUEZFernando	Haines & Company, Inc.
	LUDARDOErck	Haines & Company, Inc.
	MARTINEZEsther	Haines & Company, Inc.
	PINAJaime A	Haines & Company, Inc.
	ROSALES Jovta	Haines & Company, Inc.
	GALES Mary J	Haines & Company, Inc.
	LOPEZ Rube	Haines & Company, Inc.
	SERRANORomelra	Haines & Company, Inc.
	DURAN Mana Ce	Haines & Company, Inc.
	GUTIERREZBemtha Alcia HERNANDEZCl	Haines & Company, Inc.
	LAREAAleiandro	Haines & Company, Inc.
1996	Apartment	Pacific Bell

1936 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1940 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1944 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1948 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1952 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1956 CAMINO DEL SOL

Year	Uses	Source
2002	ALUSWIZA	Haines & Company, Inc.

Year	Uses	Source
2002	CAMNO DEOL S 3 BSOC 01 T	Haines & Company, Inc.
	APARTMENTS	Haines & Company, Inc.
1996	Apartment	Pacific Bell

CORDOVA ST

399 CORDOVA ST

Year	Uses	Source
2002	GONZALESEsltea	Haines & Company, Inc.
	8 LES oaud Oe	Haines & Company, Inc.

FLORENTINA DR

1731 FLORENTINA DR

Year	Uses	Source
2002	OKONICOLBemari	Haines & Company, Inc.

1741 FLORENTINA DR

Year	Uses	Source
2002	CSNEROS Victor	Haines & Company, Inc.

1751 FLORENTINA DR

Year	Uses	Source
2002	ORAMZIRArt BO	Haines & Company, Inc.

Florentina Dr

1761 Florentina Dr

Year	Uses	Source
2014	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
2010	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
2005	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive

FLORENTINA DR

1761 FLORENTINA DR

Year	Uses	Source
2002	OWI TE 49a 8hew	Haines & Company, Inc.

FINDINGS

Florentina Dr

1771 Florentina Dr

Year	Uses	Source
2014	RTM CARPET SERVICE	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
2010	CHAVEZ ERICK J	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
	CHAVEZ ERICK J	EDR Digital Archive

FLORENTINA DR

1773 FLORENTINA DR

Year	Uses	Source
2002	ALf BAJeoe	Haines & Company, Inc.

GABRIELLA DR

1732 GABRIELLA DR

Year	Uses	Source
2002	MOORE Da Vud	Haines & Company, Inc.

1733 GABRIELLA DR

Year	Uses	Source
2002	PADILLALu ZA B 05 M	Haines & Company, Inc.
	RUBIOFred	Haines & Company, Inc.

N RICE AVE

526 N RICE AVE

Year	Uses	Source
2002	XXXX	Haines & Company, Inc.
1980	Workman Loren A	Polk
1975	Workman Loren A	Pacific Telephone Co

N ROSE AVE

420 N ROSE AVE

Year	Uses	Source
2002	YENCOHMTLGY	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	ONCLGYSPCLSTS	Haines & Company, Inc.
	VEN CO PULMONARY	Haines & Company, Inc.
	MEDICAL GROUP	Haines & Company, Inc.
	VENCORDTh ONCLGY	Haines & Company, Inc.
	MED GORP	Haines & Company, Inc.
	VEN COUNTY	Haines & Company, Inc.
	FERTUITY CENTER	Haines & Company, Inc.
	CERNIL 1 AJAMESJMD	Haines & Company, Inc.
	e CHANGSTEVENDM	Haines & Company, Inc.
	CHIANG JULIAN MD COASTAL EYE	Haines & Company, Inc.
	SPECIALISTS	Haines & Company, Inc.
	ROSEAV 5 N	Haines & Company, Inc.
	CONWISAR PHIl P H B	Haines & Company, Inc.
	COSGIETC&LASER M	Haines & Company, Inc.
	HEALTH CENTER	Haines & Company, Inc.
	DEFOREST IMELDA MO DECLUSIN RICHD J MD	Haines & Company, Inc.
	APROCORP	Haines & Company, Inc.
	DTMARS MICHAEL L MD ENOBOUEZTTH	Haines & Company, Inc.
	MOCL CLNC INC	Haines & Company, Inc.
	EVVAZZAOEH BENICA	Haines & Company, Inc.
	FLYNN ARTHUR MD FORD JOHN MD	Haines & Company, Inc.
	GENLSURGERYMEG	Haines & Company, Inc.
	GRPVEN CO	Haines & Company, Inc.
	HANAAANT 01 ETMD HERNANDEZMANUEL 805 988 1443 S IHUANG THOMAS MO	Haines & Company, Inc.
	JACOBSON GRETCHEN	Haines & Company, Inc.
	KELLEYANNSMD	Haines & Company, Inc.
	KONG LYNN R MO t LEEJAES	Haines & Company, Inc.
	UAOYUCHE	Haines & Company, Inc.
	NTEDSN 1D	Haines & Company, Inc.
	LOH KELVIN MD	Haines & Company, Inc.
	LOIGNONLUCILLE MD LOWE 1 SAAC	Haines & Company, Inc.
	LUM ROBERT P MD	Haines & Company, Inc.
	LUNDEENUE OALID	Haines & Company, Inc.
	MCCALL LAURIE C MO	Haines & Company, Inc.
	MCi NTYRE ROSEMARY	Haines & Company, Inc.
	MEDICAL PLAZA	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	PHARMACY	Haines & Company, Inc.
	MESCIER DAVID MD MIUIGANCA	Haines & Company, Inc.
	MUMMANENIPRASAO	Haines & Company, Inc.
	NEIRASERGIOOMO 805 983 2355 t	Haines & Company, Inc.
	NGUYENTIMOPM	Haines & Company, Inc.
	NESLUCHOWSKI WITOLDS MD NISHIKAWAWA	Haines & Company, Inc.
	Y MG t NSHIKAWA&LOWE	Haines & Company, Inc.
	SRGCL SERVICES OCONNORi Ti IM	Haines & Company, Inc.
	MO OX 0 ARDHLEN 4 EME	Haines & Company, Inc.
	OBEGYN GRP	Haines & Company, Inc.
	XNROERNSET 4 RT	Haines & Company, Inc.
	HDO&HCXSRGCL	Haines & Company, Inc.
	PACCARDIOTHORACC	Haines & Company, Inc.
	SURGERY GRP	Haines & Company, Inc.
	PANAGOTIDES	Haines & Company, Inc.
	GEORGE PMD	Haines & Company, Inc.
	PARSAKOOBOSMD	Haines & Company, Inc.
	PAYNE DALENNDIPHD	Haines & Company, Inc.
	RADIATION ONCLOY	Haines & Company, Inc.
	CTRS VNTRA CO	Haines & Company, Inc.
	ROSEAVENUE FAMILY	Haines & Company, Inc.
	MEDICAL GRP	Haines & Company, Inc.
	SANTANGELOSALC	Haines & Company, Inc.
	MDFACS	Haines & Company, Inc.
	SHIAH ROSHAN MD	Haines & Company, Inc.
	SODERBEB 6 HARRIS BETh FNP SOUZJOSEPM	Haines & Company, Inc.
	SPAUISH 86 LLS MEDICALGROUP ST JOHN REG	Haines & Company, Inc.
	IMAGING CENTER	Haines & Company, Inc.
	STEINBERG JEFFREY	Haines & Company, Inc.
	SUPPLE BRIAN LUD	Haines & Company, Inc.
	TULATHIUUTTE	Haines & Company, Inc.
	SUCKCHAI MD	Haines & Company, Inc.
	UNIVRSL FAMILY	Haines & Company, Inc.
	HEALTH CARE CTR	Haines & Company, Inc.

FINDINGS

625 N ROSE AVE

Year	Uses	Source
1980	VENTURA COUNTY FARM LABOR ASSN	Polk
	BUENA VISTA LABOR CAMP labor contrs	Polk

ROSE AVE

491 ROSE AVE

Year	Uses	Source
1976	Og Daniels & Moore	R. L. Polk & Co.

SAN GORGNIO AVE

1845 SAN GORGNIO AVE

Year	Uses	Source
1970	Romero Yolanda	General Telephone Company of California

SAN GORGONIO AVE

1840 SAN GORGONIO AVE

Year	Uses	Source
1965	VACANT	R. L. Polk & Co.

1860 SAN GORGONIO AVE

Year	Uses	Source
1965	GARCIA JOSE C	R. L. Polk & Co.

SAN GORGONIO ST

1805 SAN GORGONIO ST

Year	Uses	Source
1996	Apartment	Pacific Bell
1993	Rodriguez Manuel Mendoza	GTE
	Barrera Nora	GTE
	Juarez Roberto Tenorio	GTE
	Redondo Francisco P	GTE
	Barrera Nora	GTE
	Juarez Roberto Tenorio	GTE
	Redondo Francisco P	GTE
	Redondo Judith	GTE

FINDINGS

Year	Uses	Source
1993	Rodriguez Manuel Mendoza	GTE
1986	Gonzales Concepcion	Pacific Bell
	Gonzalez Ruben P	Pacific Bell
	Magana Silvia	Pacific Bell
	Martinez Antonio	Pacific Bell
	Rodriguez Manuel Mendoza	Pacific Bell
1985	Gonzales Concepcion	Pacific Telephone Co
	Magana Silvia	Pacific Telephone Co
	Martinez Antonio	Pacific Telephone Co
	Mendoza Dan I Ayala	Pacific Telephone Co
	Rodriguez Manuel Mendoza	Pacific Telephone Co
1980	Ceja Hermila Maciel	Polk
	Diaz Manuel	Polk
	Maldonado Juan Ramon	Polk
	Martinez Antonio	Polk
	Quezada Paul	Polk
1976	Hunandez Ildefonso	R. L. Polk & Co.
	Maldonado Juan R	R. L. Polk & Co.
	Deloera Jose	R. L. Polk & Co.
	Quezada Jose	R. L. Polk & Co.
	Quintiro Simon	R. L. Polk & Co.
	Diaz D	R. L. Polk & Co.
	Rose Garden Apartments lMonte James	R. L. Polk & Co.
	Gonzales Marcelino	R. L. Polk & Co.
1975	Brighton Park Apartments	Pacific Telephone Co
	Lopez Francisco	Pacific Telephone Co
	Rose Garden Apartments	Pacific Telephone Co
	Brighton Park Apartments	General Telephone Company of California
	Lopez Francisco	General Telephone Company of California
	Rose Garden Apartments	General Telephone Company of California
1970	Braden Lawrence	General Telephone Company of California
	Gonzales Michael F	General Telephone Company of California
	Jackson Lee Arthur	General Telephone Company of California

1815 SAN GORGONIO ST

Year	Uses	Source
2002	APARTMENTS	Haines & Company, Inc.
	CERVANTES Emnesto	Haines & Company, Inc.
1996	Apartment	Pacific Bell

FINDINGS

Year	Uses	Source
1993	Hernandez Idefonso	GTE
	Hernandez Idefonso	GTE
1986	Galvan M	Pacific Bell
	Gonzales Maximino M	Pacific Bell
	Hernandez Idefonso	Pacific Bell
	Sanchez Jesus	Pacific Bell
1985	Galvan M	Pacific Telephone Co
	Gonzales Maximino M	Pacific Telephone Co
	Hernandez lldefonso	Pacific Telephone Co
	Sanchez Jesus	Pacific Telephone Co
1980	Galvan M	Polk
	Gongora Gaspar	Polk
	Hernandez lldefonso	Polk
	Morales Rosa	Polk
	Sanchez Jesus	Polk
1976	Morales Enrique	R. L. Polk & Co.
	Soto Christina	R. L. Polk & Co.
	Martinez C	R. L. Polk & Co.
	Castillo J	R. L. Polk & Co.
	Ortega C	R. L. Polk & Co.
	Espinosa Frank	R. L. Polk & Co.
	Monte James	R. L. Polk & Co.
	Apartments	R. L. Polk & Co.
	Hernandez Congona	R. L. Polk & Co.
1975	Espinoza Frank	Pacific Telephone Co
	Martinez Gracia	Pacific Telephone Co
	Reyes Efren L	Pacific Telephone Co
	Espinoza Frank	General Telephone Company of California
	Martinez Gracia	General Telephone Company of California
	i Reyes Efren L	General Telephone Company of California
1970	Hacker Donald F I	General Telephone Company of California
	Olechnicki John	General Telephone Company of California
	Rose Garden Apts	General Telephone Company of California

1825 SAN GORGONIO ST

Year	Uses	Source
2002	AKEJose	Haines & Company, Inc.
	LOPEZGuadalupe	Haines & Company, Inc.
1996	Apartment	Pacific Bell

FINDINGS

Year	Uses	Source
1993	Galaviz Javier	GTE
	Galavlz R L @Camarillo	GTE
	Lopez Guadalupe	GTE
	Pantoja Miguel	GTE
	Galaviz Javier	GTE
	Lopez Guadalupe	GTE
	Pantoja Miguel	GTE
1986	Esqueda Fausto	Pacific Bell
	Esparza Barajas Rosa M	Pacific Bell
	Bravo Gloria	Pacific Bell
	Esqueda Gildardo	Pacific Bell
	Galaviz Javier	Pacific Bell
	Panto a Miguel	Pacific Bell
1985	Bravo Gloria	Pacific Telephone Co
	Esqueda Fausto	Pacific Telephone Co
	Esqueda Gildardo	Pacific Telephone Co
	Galaviz Javier	Pacific Telephone Co
	Panto a Miguel	Pacific Telephone Co
1980	Bravo Gloria	Polk
	Esparza Barajas Rosa M	Polk
	Esqueda Fausto	Polk
	Esqueda Gildardo	Polk
	Pantoja Miguel	Polk
1976	Apartments	R. L. Polk & Co.
	Rornan Rodrigo	R. L. Polk & Co.
	Esqueda Fauisto	R. L. Polk & Co.
	No Return	R. L. Polk & Co.
	Heredia Bravo	R. L. Polk & Co.
	Hernandez Jose	R. L. Polk & Co.
	Robeldo Mary D	R. L. Polk & Co.
1975	Bravo Gloria	General Telephone Company of California
	Moncayo Francisco	General Telephone Company of California
	Brav Q Gloria	Pacific Telephone Co
	Moncayo Francisco	Pacific Telephone Co
1970	Delgado Edgar	General Telephone Company of California
	Espinoza Frank	General Telephone Company of California
	Moncayo Francisco	General Telephone Company of California
	Nickson Robt	General Telephone Company of California

FINDINGS

1835 SAN GORGONIO ST

Year	*Uses*	*Source*
2002	ORTIZHenibe	Haines & Company, Inc.
	RODR 0 GUEZLuz Mana	Haines & Company, Inc.
1996	Apartment	Pacific Bell
1993	Rodriguez Artemio F	GTE
	Rodriguez Erato	GTE
	Rodriguez Erato	GTE
	Rodriguez Artemio F	GTE
	Rodriguez Augustine	GTE
1986	Martinez Ramon	Pacific Bell
	Orosco Jose	Pacific Bell
	Parra Landy	Pacific Bell
	Saldana Rosendo	Pacific Bell
	Saldia Brando @Newbury Park	Pacific Bell
	Saldin B & D @Newbury Park	Pacific Bell
	Sadino Betty	Pacific Bell
	Saldino Margaret	Pacific Bell
1985	Martinez Ramon	Pacific Telephone Co
	Orosco Jose	Pacific Telephone Co
	Parra Landy	Pacific Telephone Co
	Saldana Rosendo	Pacific Telephone Co
1980	Parra Landy	Polk
	Quintono Carlos	Polk
	Rivas Jorge	Polk
	Sandoval Felipe	Polk
1976	Apartments	R. L. Polk & Co.
	Robles Olague	R. L. Polk & Co.
	Valenzuela Josefta	R. L. Polk & Co.
	Me Laughlin Mable	R. L. Polk & Co.
	Pantoja Jimerez	R. L. Polk & Co.
	Ruiz Pabba	R. L. Polk & Co.
	Mora Miguel	R. L. Polk & Co.
1975	Pantoja Alicia	General Telephone Company of California
	Valenzuela Fellciano R	General Telephone Company of California
1970	Aguilera Milton	General Telephone Company of California
	Garcia Juan V	General Telephone Company of California
	Hernandez John	General Telephone Company of California

FINDINGS

1840 SAN GORGONIO ST

Year	Uses	Source
2002	6 MATAC 6lso M	Haines & Company, Inc.
	MATAMargarya	Haines & Company, Inc.
1996	Mata Celao M	Pacific Bell
	Mats Margarita	Pacific Bell
1993	Mata Celso M	GTE
	Mata Margarita	GTE
	Mata Celso M	GTE
	Mata D @Oxnard	GTE
	Mata E Z @Camarillo	GTE
	Mata Estela @Oxnard	GTE
	Mata Margarita	GTE
	Mata Peter @Santa Paula	GTE
1986	Mata Celso M	Pacific Bell
1985	ata Celso M	Pacific Telephone Co
1980	Mata Celso M	Polk
1976	Mata Celso M	R. L. Polk & Co.
1970	Mata Celso M	General Telephone Company of California

1845 SAN GORGONIO ST

Year	Uses	Source
2002	CERVANTES 5ar 4n	Haines & Company, Inc.
	C 5 AVEZJuan	Haines & Company, Inc.
	MAOANAAarora	Haines & Company, Inc.
	NUNEZBeniamin	Haines & Company, Inc.
	SANT 1 AGOPEDRO	Haines & Company, Inc.
	MARCEUNO	Haines & Company, Inc.
1996	Apartment	Pacific Bell
1993	Anaya Maria E	GTE
	Castellon Maria	GTE
	Magana Eleazar	GTE
	Navarro Jose	GTE
	Anaya Maria E	GTE
	Castellon Maria	GTE
	Magana Eleazar	GTE
	Navarro Jose	GTE
1986	Ambriz Rogelio	Pacific Bell
	Anaya Maria E	Pacific Bell

FINDINGS

Year	Uses	Source
1986	Anaya Michael 11873 Nightingale @Moorpark	Pacific Bell
	Anaya Rodolfo F	Pacific Bell
	Anaya Uvence Cortes @Oxnard	Pacific Bell
	Ayala Francisco	Pacific Bell
	Gonzales Jose	Pacific Bell
	Palencia Roberto	Pacific Bell
1985	Ambriz Rogelio	Pacific Telephone Co
	Ayala Francisco	Pacific Telephone Co
	Gonzales Jose	Pacific Telephone Co
	Palencia Roberto	Pacific Telephone Co
1980	Ambriz Rogelio	Polk
	Ayala Francisco	Polk
	Gonzales Jose	Polk
	Palencia Roberto	Polk
1976	Apartments	R. L. Polk & Co.
	Ibarra Juan	R. L. Polk & Co.
	Rocha Jaime	R. L. Polk & Co.
	Adams Castorii	R. L. Polk & Co.
	Gonzalez Vicente	R. L. Polk & Co.
	Palencia Roberto	R. L. Polk & Co.
	Ybarra Miguel	R. L. Polk & Co.
	Medrmno Geo	R. L. Polk & Co.
	Pierrdia Gilbert	R. L. Polk & Co.
1975	Aalls Josephine	Pacific Telephone Co
	A i	Pacific Telephone Co
	Gonzales Vincent	Pacific Telephone Co
	Ibarra Miguel	Pacific Telephone Co
	Avalos Josephine	General Telephone Company of California
	Gonzales Lupe	General Telephone Company of California
	Gonzales Vincent	General Telephone Company of California
	Gonzales Virginia J ill OColonia Rd @Oxnard	General Telephone Company of California
	Ibarra Miguel	General Telephone Company of California
	Rocha Jaime	General Telephone Company of California
	Gonzales Lupe	Pacific Telephone Co
	Rocha Jaime	Pacific Telephone Co
1970	Land Carlton	General Telephone Company of California
	Luis Armando	General Telephone Company of California

FINDINGS

1860 SAN GORGONIO ST

Year	Uses	Source
2002	OGARCIAJose	Haines & Company, Inc.
1985	Sanchez Irene G	Pacific Telephone Co
1976	Lemon Ocar	R. L. Polk & Co.
1975	Maerid Gilbert	Pacific Telephone Co
	Maerid Gilbert	General Telephone Company of California

SAN GORGONLA AVE

1860 SAN GORGONLA AVE

Year	Uses	Source
1964	Garcia Jose C	Pacific Telephone Co

VALENTINA DR

525 VALENTINA DR

Year	Uses	Source
2002	CAVAZOSA	Haines & Company, Inc.
	CAVAAZOSAngel	Haines & Company, Inc.

535 VALENTINA DR

Year	Uses	Source
2002	SANCHEZ Rabert	Haines & Company, Inc.

545 VALENTINA DR

Year	Uses	Source
2002	ESCUi EBOJoae	Haines & Company, Inc.
	GALAV 12 Richard	Haines & Company, Inc.

555 VALENTINA DR

Year	Uses	Source
2002	0p Ry 0 R Willam	Haines & Company, Inc.

Valentina Dr

565 Valentina Dr

Year	Uses	Source
2010	SHAILENDRA BHAWNAN	EDR Digital Archive
	SHAILENDRA BHAWNAN	EDR Digital Archive
2005	SHAILENDRA BHAWNAN	EDR Digital Archive
	SHAILENDRA BHAWNAN	EDR Digital Archive

FINDINGS

VALENTINA DR

565 VALENTINA DR

Year	*Uses*	*Source*
2002	TORRESGerman	Haines & Company, Inc.

575 VALENTINA DR

Year	*Uses*	*Source*
2002	GONZALEZA 4fredo	Haines & Company, Inc.

585 VALENTINA DR

Year	*Uses*	*Source*
2002	0 PAS 2 UA 4 Monn Btte 805 4865 404 O	Haines & Company, Inc.

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
1853 Camino Del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
1500 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1500 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1731 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1732 GABRIELLA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1733 GABRIELLA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1741 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1751 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 Florentina Dr	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 Florentina Dr	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1771 Florentina Dr	2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1771 Florentina Dr	2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1773 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1805 SAN GORGONIO ST	2014, 2010, 2005, 2002, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1815 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1825 Camino del Sol	2014, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

FINDINGS

Address Researched	Address Not Identified in Research Source
1825 Camino del Sol	2014, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1825 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1835 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1840 SAN GORGONIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1840 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1845 SAN GORGNIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1845 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1853 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1980, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONLA AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1900 Camino Del Sol	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1910 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1910 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1928 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1932 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1936 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1940 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1944 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1948 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1952 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1956 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
366 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
367 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

FINDINGS

Address Researched	Address Not Identified in Research Source
374 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
375 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
382 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
383 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
390 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
399 BALSAM ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
399 CORDOVA ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
420 N ROSE AVE	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
440 Rose Avenue	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
480 Rose Avenue	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
491 ROSE AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
525 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
526 N RICE AVE	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1976, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
535 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
545 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
555 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 Valentina Dr	2014, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 Valentina Dr	2014, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
575 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
585 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
625 N ROSE AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

Oxnard High School #8

1853 Camino Del Sol

Oxnard, CA 93030

Inquiry Number: 5046760.3

September 11, 2017

Certified Sanborn® Map Report

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Shelton, CT 06484
Toll Free: 800.352.0050
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Certified Sanborn® Map Report

09/11/17

Site Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.3

Client Name:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

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Certified Sanborn Results:

Certification # 435C-48F7-8633

PO # NA

Project Oxnard High School #8

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 435C-48F7-8633

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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G PROPERTY OWNNER DISCLOSURE OF EXISTING CONDITIONS

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MEMORANDUM

To: Joel Kirschenstein

From: Ken High

Re: Disclosure of existing conditions affecting Phase 1 Environmental Report.

Dated: October 5, 2017

Joel- The questionnaire your supplied from your Phase 1 consultant, which you asked the owners to fill out, is for OUHSD to prepare and sign as the "person who will use the Phase 1" as stated in the first paragraph and as the buyer, not the landowner/seller. It is intended to meet the due diligence standard for OUHSD claiming "innocent land owner protection" under CERCLA. Therefore, the landowners will not be providing it to you.

However, to provide full disclosure of the relevant facts concerning both existent and previously removed or abandoned improvements, facilities, and operations that could have created conditions needing investigation, the owners have authorized me to provide the following summary. They also are willing to meet and confer with you and/or your Phase 1 consultant to point out the exact location of all the facilities which are discussed below, provided an acceptable Access Agreement has been executed. Please be advised, that in no case will the owners permit coring's, without a plan showing exactly where they will be done, the depth, which is acceptable to them.

1. Farming Operations. Since the property was acquired by the Maulhardt Family ancestors about 1869, it has been used for farming operations with various crops over the years, including various dry farming crops in the early days, lemons and avocadoes, row crops and currently strawberries. Those operations involved the application of all the pesticides, herbicides, fertilizers, and other chemicals customarily used and/or permitted in such operations over the decades. No known sites of any spills or tanks or pits, or other locations where any particular concentration of chemicals existed or exists, except the metal building along the northern edge of the home site was historically used to store tractors and farm equipment and it has a hard packed dirt and/or concrete floor not evenly distributed, which could have absorbed gas, diesel fuel, oil or other chemicals resulting from such use.

2. Gas, Diesel, and Herbicide Tanks. The following tanks exist or existed over the years.

    a. Existing heating oil tank above ground adjacent to the west side of the big Ruth Maulhardt house.
    b. Underground gas tank removed about 20-30 years plus ago without any removal permit, although it is believed none was then required. It was at the south east corner of the apartment/2 car garage building. No known leak occurred.
    c. Above ground gas tank adjacent to the "gas house" which is the small building near the north end of the home site, adjacent to the large metal building adjacent to the northern edge of the home site. It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. No known leak occurred.
    d. Underground diesel fuel tank adjacent to the "gas house". It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. No known leak occurred.
    e. Above ground weed oil tank along north west corner of the gas house. It was removed about 30 plus years ago, without any removal permit, although it is believed that none was required. It is believed to have leaked and the last memory of it is that the dirt was stained before the hole was filled in.
    f. Inside the gas house in the concrete floor there exists a concrete pit, like those in oil change facilities, used to change the oil and/or do mechanical work on tractors, farm equipment and vehicles.
    g. Existing above ground propane gas tanks near the various buildings, which are plainly visible. They are owned and filled periodically by AAA Propane Gas, Oxnard, CA.

3. Septic Systems. There are the following septic systems which have been removed or still exist:

a. Existing septic tank at N/E corner of the big house just outside the kitchen window. The top is visible on the surface of the ground and is still in operation. The leach field for this 100 year old system is to the east in the road and/or in the orchard. It is still in service.
b. Existing septic tank in the road east of the big house S/E of the kitchen window. It was abandoned in place and not filled about 30 plus years ago, without a permit, which is believed not to have been necessary.
c. Existing prefabricated concrete septic tank near the N/E corner of the big house and east of the driveway into the home site. . It is still in service. Leach field is south of the tank.
d. Septic tank adjacent to office north of the big house and east of the apartment/garage building right at the front porch. Abandoned in place and filled with dirt and scrap concrete about 20 plus years ago.
e. Wooden septic tank adjacent to the office mentioned in d. located in the lawn about 10' from the front door and 8' west. It was abandoned and filled with dirt about 30 years ago.
f. Septic tank outside kitchen window of the office for kitchen discharge water, was abandoned and filled with dirt about 30 years ago.
g. Cesspool north 3-4' from the apartment building was abandoned and filled with dirt about 15 plus years ago, without any removal permit, although it is believed that none was required.
h. Existing septic tank about 8' north of the apartment building, which is still in service. It was installed about 20 years ago. The leach field is south of the tank. Whether there was a permit obtained is unknown.
i. Existing septic tank about 16' behind and about the middle of the double wide mobile home, which is in service. One leach field extends due east, which was abandoned about 20-25 years ago, and another, which is in service, extends south into the orchard.
j. Existing septic tank about 15-20' from the front of the T shaped house west of the other structures, which is in service. It was installed in 1973. The leach field extends south, with an offshoot added later to either the east or west.
k. West of the gas house, there used to be a bunk house for farm workers where the lemons are now. There was a cesspool crushed in place when the house was removed about 30 plus years ago.
l. Existing 4' diameter vertical concrete irrigation pipe at the S/E corner of the barn which was used for sewage from a trailer located there for 1 year and removed 43 years ago. It is capped now. No leach field existed.
m. There may be an abandoned washing machine septic tank east of the jacaranda tree by the back porch of the big house. If so it is believed to have been filled in about 25 plus years ago.
n. There may be an abandoned septic tank west of power pole to the east of the N/E corner of the big house. If so it is believed to have been filled in about 25 plus years ago.
o. There may be an abandoned septic tank west of the apartment building. If so it is believed to have been filled in about 25 plus years ago.
p. There was a hole in the floor of the apartment building garage that may have had oil deposited in it. It was plugged with concrete over 40 years ago to level the floor.

4. <u>Water Wells, Pipes and Wind Machines.</u>
   a. Existing above ground horizontal water tank located east of the driveway into the home site before it reaches the garage. South of that tank, there was a water well at the same location which was abandoned and properly backfilled, with a county permit about 25 plus years ago.
   b. There are is an existing 12" PVC water pipeline going west from the water well along the northern boundary. It then splits into 2 PVC pipes a few feet apart and goes south near or in the farm road leading to the road west of the gas house. Any excavation or coring nearby should be done only after precisely locating those pipes and their depths.
   c. There is also a separate irrigation pipeline system running from the well at the N?E corner throughout the fields. The locations must be precisely identified prior to conducting an coring's or grading by meeting with the agricultural tenant who knows the locations and approximate depths.
   d. There are no existing wind machines and all previously removed wind machines were electric.

CC All Maulhardt Ranch Owners, and Mike Penrod.

H CHECKLIST FOR PHASE I SITE VISIT

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PHASE I ENVIRONMENTAL SITE ASSESSMENT CHECKLIST

Project Name: Oxnard High School No. 8

Address: 1853 Camino Del Sol, Oxnard, CA 93030

General Site Description: Residential Property surrounded by private orchards, farm building and compound surrounded by strawberry fields

I. Pre-arrival Background Information

1. **Current Owner(s):** Maulhardt Family
   Owner Since: 1869

2. **Current Occupants:** Ruth Maulhardt, Sean Maulhardt
   Occupant Since: 1952

3. **Year Buildings Constructed :** Main Residence (1917), Barn (~~1908~~ 1908), Pesticide Storage shed (1890), Mobile homes (1970's)

4. **Site Zoning:** Residential Planned Development/General Commercial Planned Development /Community Resource

5. **Land Use(s):** Residential / Agricultural

II. Site Observations:

A. Lot/Property Observations:

1. **Current Groundcover (%):** Estimated from aerial photograph review.

Orchards	9 %	Buildings	2 %		
Strawberry Fields	83 %	Dirt	6 %		

Any concrete staining, soil staining or stressed vegetation? yes shown in Figure

2. **Is there any evidence of pesticide/herbicide use, storage or disposal on the property?** Yes
   If yes, describe: Agricultural Areas, Pesticide use and Storage shed
   Have any pesticides/herbicides been used on the property at any time?* Yes, Pesticide and herbicides used historically for agricultural activities

3. **Are there any electrical transformers or capacitors on the property?** Yes
   If yes, location: 2 identified at property, 3 have been removed
   Evidence of leaks? No
   Have they been tested for PCBs*? No
   Transformers owned by utility company, owner, or tenant?* Utility, So Cal Edison

* Indicates question that requires follow-up during site owner/occupant interview.

4a. Are there any visible aboveground or underground storage tanks on the property? Yes

If yes, location: 2 propane storage tanks, Abandoned heating oil tank

Currently in use? Propane tanks in use, heating oil tank no longer used

Contents: Propane, heating oil

Size (gallons): ~500 gallons

Evidence of leaks? No

When was the tank installed?* NA

Is there a permit for the tank? If so, who is the listed owner?* NA, AAA

Have any leak tests been performed?* N/A

If not in use, has the tank been "abandoned"? Documentation?* No

4b. Is there any evidence that an AST or UST has been removed from the site? Yes

If yes, describe: Property owners disclosed several former ASTs and UST that have been removed

When was the tank removed?* 25-30+ years ago

Documentation?* None

5. Are there any visible storage drums on the property? If yes, how many? Yes

If yes, location: One drum in pesticide use area, Drum in shed

Describe size and contents (if known): 25 gallons unknown contents, 25 gallons unknown contents

Evidence of spills/leaks? Stained areas in shed

Are they stored in a bermed area (any secondary containment)? No

6. Any evidence of solid waste disposal on the property? Yes

If yes, location: Miscellaneous solid waste present across site, shed and barn

Describe: old cars stored, miscellaneous trash

Evidence of any hazardous materials? Yes

7. Are there any ponds, pits, sumps, or ditches on the property? Yes

If yes, location: Sump inside garage / gas house

Describe: used historically for auto repair and oil changes

Evidence of any hazardous materials? Yes strong petroleum odors, abandoned gas tank piping

8. Describe the general air quality at the site: Good Air Quality

Are there activities on the site which produce air emissions (painting, printing, venting, exhaust): No

If yes, describe:

Are the emissions monitored or permitted?*

Documentation?*

9. Are there any curb cuts, footings, or other signs of former buildings on the property? Yes

If yes, location: Former bunkhouse west of the Farm yard

When was the former building built/demolished?* 1970's

* Indicates question that requires follow-up during site owner/occupant interview.

B. Buildings

1. **Is a building(s) present on site?** Yes
   If yes, when was it built?* 1880's - 1970's

2. **Are there any cracks or openings (drains or sumps) on the first floor?** N/A
   If yes, location: NA
   Are they connected to storm drains, sewer lines or discharged into the ground? NA

   Is there any evidence of spills or stains on the ground? NA

   Is there a possibility of hazardous waste spills or leaks?* NA

3. **Are there painted surfaces on the exterior or interior of the building?** Yes
   Evidence of lead based paint? Yes
   If yes, location: exteriors of building have chipped paint
   When were the walls painted?* Unknown painted multiple times, multiple layers
   Have they been tested for lead?* No

4. **Are there any electrical transformers or capacitors inside the building?** NA
   If yes, location:
   Evidence of leaks?
   Have they been tested for PCBs?*
   Transformers owned by utility company, owner, or tenant?*

5. **Is there any evidence of the presence of asbestos?** Unknown
   If yes, location:
   Friable?
   If no evidence of asbestos, but the building was built before 1979, has an asbestos survey been completed?*

6. **Are there any chemicals or drums stored or used in the building?** Yes
   If yes, location: sheds
   Evidence of leaks/spills? Yes, stained areas in shed
   If drums, secondary containment? No
   Have there been any documented leaks or spills of hazardous materials*? No
   If yes, describe and list documentation:

* Indicates question that requires follow-up during site owner/occupant interview.

III. Surrounding Properties

1. Describe generally the current use(s) of the adjacent properties (%):

Residential: 75 %, Agricultural: 25 %, Industrial: ____

Office: ____ Commercial: ____ Manufacturing: ____

Other (specify) ____

Describe any adjacent propertied used for industrial, manufacturing, or refining purposes: NA

Do they pose a possible threat to groundwater or air quality at the site? NO

If yes, explain: ____

Checklist completed by: Jason Dane

Date: 10/23/2017

Checked by: ____

Date: ____

* Indicates question that requires follow-up during site owner/occupant interview.

I USER QUESTIONNAIRE

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URGENT and CONFIDENTIAL

USER QUESTIONNAIRE for PHASE I ESA

AS REQUIRED by ASTM Standard E1527-05

Site Name: Portion of Maulhardt Ranch (approximately ~~45~~ 55 acres) proposed to be developed as Oxnard High School No. 8. (MTN)

Address: 1853 Camino Del Sol, Oxnard, CA 93030

Completed By: MR. SID ALBAUGH, ASST SUPT

The person who will use the Phase One should provide the following information. Please fill in this form to the best of your ability, explaining any Yes answers on a separate sheet of paper. Without these answers, our report would have to note that the Phase One is incomplete, and your Landowner Liability Protections could be at risk. We need these answers before we conduct the site visit.

* 1. **Environmental Cleanup Liens.** ASTM requires the User to check for environmental liens that may be filed or recorded against the subject property under federal, tribal, state or local law. Such liens might be listed in the "exceptions to coverage" in the property's title insurance commitment or policy. Failure to check for these liens could put your Landowner Liability Protections at risk.

Have you checked for these environmental cleanup liens? ☐ Yes ☑ No

Are you aware of any such liens against the subject property? ☐ Yes ☑ No

* 2. **Activity and Use Limitations (AULs).** These include engineering controls (e.g., slurry walls, caps) and land use restrictions or institutional controls (e.g., deed restrictions, covenants) that may be in place at the site or filed under federal, tribal, state or local law. The title commitment or policy might also list AULs.

Are you aware of any possible AULs involving the subject site? ☐ Yes ☑ No

3. **Specialized Knowledge.** This involves personal knowledge or experience related to the subject property or nearby properties. For example, if you are involved in the same line of business as the current or former occupants of the property or an adjoining property, you would probably know of any chemicals, oil, degreasers, gasoline, or other hazardous substances commonly used in that type of business.

Do you have any specialized knowledge that might indicate the past or present use or release of such substances on the subject or nearby properties? ☐ Yes ☑ No

4. **Fair Market Value (FMV).** A purchase price significantly below FMV may indicate an environmental problem. Please note that this question does not require an appraisal of the property. If the price is significantly below FMV, the User should consider whether it might be because contamination may be present at the property.

Is the purchase price significantly below fair market value? ☐ Yes ☑ No

5. **Obvious Indicators.** This involves past or present spills, stains, releases, cleanups, etc. on or near the site.

Do you know of any obvious indicators of possible contamination on or near the site? ☐ Yes ☑ No

6. **Common Knowledge.** Please use a separate sheet if necessary.

Describe the past uses of the property: RESIDENT, AGRICULTURE, BARN

Describe any specific chemicals that may have been present at the property: TBD

Describe any other information that may help us identify possible contamination:

# of separate sheets attached: ____

Your Signature [signature] **Date** 10-19-17

Explain Yes answers on a separate sheet.

* TO BE REVIEWED UPON OPENING OF ESCROW AND REVIEW OF PRELIMINARY TITLE REPORTS (MTN)

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G PRELIMINARY ENVIRONMENTAL ASSESSMENT

Job No. 38186

Draft
Preliminary Environmental Site Assessment, High School No. 8
APN 214-002-059 on North Rose Avenue
Oxnard, California

Prepared for:

Jeff Weinstein
Assistant Superintendent Business Services
Oxnard Union High School District
309 South K Street
Oxnard, California 93030

Prepared by:

Tetra Tech
5383 Hollister Avenue, Suite 130
Santa Barbara, California 93111

November 9, 2018

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1.0 INTRODUCTION

This report presents the results of the Preliminary Environmental Assessment (PEA) for the proposed High School No, 8 in Oxnard, California (hereinafter referred to as the Site). The Oxnard Union High School District (School District) proposes to acquire a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California to construct the High School No. 8 campus (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 48 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the city of Oxnard. The geographic coordinates of the Site are approximately Latitude 34° 12' 27.76" North, Longitude 119° 9' 19.44" West. Surface elevations at the Site are approximately 63 feet above mean sea level (EDR 2017). Currently, the Site is used for the cultivation of strawberries. Historical aerial photographs, Google Earth images, and information from the Site owners indicate that the Site has been used for cultivation of row crops from as early as 1869 to the present. This PEA Report has been prepared by Tetra Tech and is being submitted to the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), School Property Evaluation and Cleanup Division on behalf of the School District.

The PEA field investigation and laboratory analysis program were conducted in accordance with the *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-089 on North Rose Avenue, Oxnard, California 93030* (FSP) dated July 27, 2018 (Tetra Tech 2018b). This PEA Report was prepared, and work at the Site was conducted, in accordance with the guidelines of the DTSC, as detailed in the *Preliminary Endangerment Assessment Guidance Manual* (DTSC 2015). Project-specific direction on the scope of the FSP and the PEA was provided by the DTSC during a project scoping teleconference attended by representatives of the DTSC, the School District, and Tetra Tech on July 25, 2018. Additional discussions were conducted via electronic mail and telephone during the course of the PEA.

1.1 PEA OBJECTIVES

In accordance with Senate Bill 162 and the California Education Code (CEC), the State of California has adopted an environmental policy requiring that all new school sites obtain "No Further Action" designation before proceeding with acquisition and/or construction. The DTSC has agreed to work cooperatively with the School District to provide environmental reviews of proposed sites for new schools. The review process requires completion of a Phase I Environmental Site Assessment (ESA) and/or a PEA for each proposed school site. The School District opted to proceed with a Phase I ESA (Tetra Tech 2018a) in advance of preparing the PEA.

The overall objectives of the PEA include:

- Evaluating historical information for indications of potential contamination due to past use, storage, disposal, or release of hazardous wastes/substances at the Site;
- Assessing the types, concentrations, and extent of contamination in Site media through a field sampling and analysis program; and
- Assessing the potential threat to public health (including potential future students and staff) and/or the environment posed by anthropogenic and naturally occurring hazardous

constituents at the Site via a human health screening evaluation using a residential land-use scenario.

1.2 SCOPE OF WORK

The scope of work to prepare this PEA Report included:

- Researching available Site background information regarding former and current land use;
- Scoping meetings and discussions with DTSC and School District representatives;
- Preparing the FSP;
- Collecting field and laboratory data and evaluating to assess environmental conditions at the Site;
- Preparing a human health screening evaluation;
- Preparing an ecological screening evaluation; and
- Preparing this PEA Report.

Numerous sources of information were reviewed as part of the background research for the Phase I ESA (Tetra Tech 2018a) and PEA. These sources were reviewed to develop an understanding of current and past land uses and practices that may have involved the handling, use, storage, and/or disposal of hazardous substances or wastes. Sources of information reviewed and activities performed in conducting the background research included:

- Site zoning, land-use maps, and assessor's maps;
- Current and historical U.S. Geological Survey (USGS) 7½-minute topographic maps;
- Historical aerial photographs;
- Geologic and hydrogeologic reports and maps;
- Building department records;
- Historical chain-of-title records;
- Environmental database record searches per American Society for Testing and Materials (ASTM) method E 1527-15;
- Agency files at federal, state, and local regulatory agencies;
- Agency files for listed facilities within one-quarter mile of the Site that were identified as having a potential to have impacted the Site;

- Site reconnaissance and observations of the area within one-quarter mile of the Site;
- Interviews with persons knowledgeable of Site history and operations;
- Reports of prior investigations and remedial activities performed at the Site; and
- Available information from School District files.

Results and findings of the background research are presented in Section 3.0.

The FSP (Tetra Tech 2018b) consisted of two parts: a soil gas sampling assessment and a soil and groundwater sampling assessment. For the FSP, the Site was divided into six areas of Recognized Environmental Concerns (RECs):

1. Potential toxic soil gas from potential formation leakage from the Oxnard Oil Field;

2. Potential residual organochlorine pesticides (OCPs), arsenic, semivolatile organic compounds (SVOCs), polyaromatic hydrocarbons (PAHs), and diesel (C_{13}-C_{22} carbon range) (TPHd) and heavy oil range total petroleum hydrocarbons (C_{23}-C_{40} carbon range) (TPHmo) collectively known as diesel extended range TPH (TPHde) (C_{13}-C_{40} carbon range) in soil from fuel oil in smudge pots that were formerly used for frost abatement as part of the agricultural production activities at the Site;

3. Potential impacts to shallow soil, soil gas, and groundwater in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas from above ground storage tanks (ASTs) and underground storage tanks (USTs) formerly used for the storage of motor fuel (Figure 3);

4. Potentially hazardous substances and petroleum products that contained volatile organic compounds (VOCs) and C_4-C_{12} carbon range gasoline range total petroleum hydrocarbons (TPHg) have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area (Figure 3);

5. Potential polychlorinated biphenyl (PCB) soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol (Figure 2); and

6. The following hazardous pipelines identified within 1,500 feet of the Site (Figure 2):

    - The City of Oxnard maintains a 12-inch diameter polyvinyl chloride (PVC) water pipeline routed north-south beneath North Rose Avenue immediately west of the Site;
    - The City of Oxnard maintains a 12-inch diameter asbestos concrete pipe (ACP) water pipeline routed east-west beneath Camino Del Sol immediately south of the Site;
    - The United Water Conservation District (UWCD) maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site; and
    - The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt

Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch. The Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8.

The scope of field sampling and laboratory analysis was presented in the FSP and included:

- Collection and laboratory analyses of soil gas samples from 25 locations to assess methane, hydrogen sulfide, and fixed gases (carbon dioxide, carbon monoxide, oxygen, and nitrogen), related to the underlying Oxnard Oil Field, and the collection of and laboratory analyses of soil gas samples from five locations to assess potential VOCs and TPHg from former ASTs and USTs in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas;

- Collection and laboratory analyses of surface soil samples from 60 locations for assessment of potential OCP residue and 15 locations for assessment of related arsenic, PAHs, SVOCs. TPHd, and TPHmo in surface and near surface soil due to former row crop production activities;

- Collection and laboratory analyses of surface soil samples from one location to assess potential PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary; and

- Collection and laboratory analyses of soil and groundwater samples from five locations to assess for potential VOCs and TPHg from former ASTs and USTs in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas.

Using the data collected during the field and analytical program, a human health screening evaluation was performed following the PEA Guidance Manual (DTSC 2015).

1.3 PEA REPORT FORMAT

This PEA Report is organized in general accordance with the format presented in Chapter 3 of the PEA Guidance Manual (DTSC 2015). The PEA Report contains the following sections:

- Section 1 presents an introduction and summary of PEA Objectives and the PEA Report Format;

- Section 2 presents a Site Description;

- Section 3 includes Site History and Background Information;

- Section 4 identifies Potential Site Contamination;

- Section 5 contains a description of the Site Environmental Setting;

- Section 6 presents a discussion of Sampling Activities and Results;

- Section 7 presents the Human Health Screening Evaluation;
- Section 8 presents the Ecological Screening Evaluation;
- Section 9 presents Community Profile information;
- Section 10 includes a summary of Quality Assurance Project Plan (QAPP) implementation;
- Section 11 describes Health and Safety Plan implementation;
- Section 12 summarizes Field Variances from the FSP;
- Section 13 presents a discussion of Applicable or Relevant Laws and Regulations Pertaining to School Sites;
- Section 14 presents Conclusions of the PEA;
- Section 15 presents Recommendations;
- Section 16 presents a Disclaimer for this PEA Report; and
- Section 17 lists References cited in the document.

The PEA report also includes 14 appendices:

- Appendix A: Quality Assurance Project Plan;
- Appendix B: Health and Safety Plan;
- Appendix C: Environmental Data Resources Report;
- Appendix D: Historical Aerial Photographs;
- Appendix E: Historical Topographic Maps;
- Appendix F: Site Reconnaissance Photographs;
- Appendix G: Agency/Utility Contact Documentation;
- Appendix H: *Northeast Community Specific Plan, Maulhardt Property Urban Village Site Plan* (Jensen Design and Survey, Inc. [Jensen] 2018);
- Appendix I: Checklist for Phase I Site Visit;
- Appendix J: User Questionnaire;
- Appendix K: Boring Logs;

- Appendix L: Soil Gas Laboratory Reports and Chain-of-Custody Forms;
- Appendix M: Soil and Groundwater Laboratory Reports and Chain-of-Custody Forms; and
- Appendix N: Data Validation Memorandum.

2.0 SITE DESCRIPTION AND LOCATION

2.1 SITE NAME

The Site has been identified by the School District as the High School No. 8, located a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California.

2.2 SITE ADDRESS

The Site address is 1853 Camino del Sol in the City of Oxnard, California in the 93030 zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 45 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the City of Oxnard.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2). The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the south, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

2.3 PROPOSED SCHOOL DEVELOPMENT

Tetra Tech's knowledge of the proposed project improvements is limited as of this time and is based on the Overall Site Plan Oxnard High School District High School No. 8 prepared by WLC Architects (WLC Architects 2018). The Site Plan is summarized in Table 1.

The proposed buildings will be of wood or metal frame construction or cast in place concrete tilt up construction with concrete slab-on-grade foundations. No other structures are planned. The proposed grading plan for the project and finish floor elevations were not provided to Tetra Tech for the preparation of this report. It is anticipated that the final grade will be similar to the existing grade and that the grading required to achieve the building pad subgrade will be minor and necessary only to provide adequate foundation and slab support and positive drainage away from the structures.

It is assumed that surface and subsurface improvements will also be constructed. Surface improvements will include concrete flat work for pedestrian use. Subsurface improvements will include underground utility conduits.

2.4 SITE OWNER

The current owner of the Site is the Maulhardt family. The Maulhardts are the current occupants on the Site. Eclipse Berry Farms is leasing the Site from the Maulhardt Ranch for strawberry cultivation.

2.5 DESIGNATED CONTACT PERSON

The designated contact person for the School District is Mr. Jeff Weinstein, Assistant Superintendent for Business Services, Oxnard Union High School District.

2.5.1 Mailing Address

The mailing address for Mr. Weinstein is:

Oxnard Union High School District
309 South K Street
Oxnard, California 93030

2.5.2 Telephone Number

The telephone number for Mr. Weinstein is 805-834-1461.

2.6 OTHER SITE NAMES

The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2) as indicated on the *Northeast Community Specific Plan, Maulhardt Property Urban Village Site Plan* (Appendix H).

2.7 U.S. EPA IDENTIFICATION NUMBER

Based on a review of the regulatory agency database report (Environmental Data Resources, Inc. [EDR] 2017) and contacts with regulatory agencies, the Site has not been issued a U.S. Environmental Protection Agency (U.S. EPA) identification number.

2.8 CALSITES DATABASE NUMBER

Based on a review of the regulatory agency database report and contacts with regulatory agencies, the Site is not identified in the CalSites database.

2.9 ASSESSOR'S PARCEL NUMBER AND MAP

The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 45 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the City of Oxnard.

2.10 TOWNSHIP, RANGE, SECTION, AND MERIDIAN

Based on the Oxnard Quadrangle USGS topographic map, the Site is located in the south half of the of Section 35 Township 2 North, Range 22 West of the San Bernardino Baseline and Meridian (USGS

2015). The geographic coordinates of the Site are approximately Latitude 34° 12’ 27.76” North, Longitude 119° 9’ 19.44” West.

2.11 SITE ZONING

Information available from the City of Oxnard Development Services Planning Division (COPD) for the Site indicates the property is zoned for Residential Planned Development (RPD) (COPD 2017).

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3.0 SITE HISTORY AND BACKGROUND INFORMATION

3.1 BACKGROUND RESEARCH METHODOLOGY

The sources of information reviewed as part of the background research for this PEA are summarized below. These sources were reviewed to develop an understanding of current and past land uses and practices that may have involved the handling, use, storage, and/or disposal of hazardous substances or wastes. Information regarding site-specific waste handling and/or disposal was obtained and reviewed to develop a general Site history in an attempt to identify potential sources of environmental contamination. Sources reviewed in performing the background research for this PEA include:

Sanborn Map Search. Environmental Data Resources, Inc. maintains comprehensive environmental data sources including Sanborn Maps and City Directories, and specializes in providing such data for use in real estate and environmental documents. EDR reviewed their Sanborn Map collection for coverage in the site area. The EDR report (EDR 2017) is provided as Appendix C.

Environmental Lien Search. A specific search for environmental liens and activity use limitations (AULs) was not performed for the Site parcels; however, the EDR RadiusMap™ Report with Geocheck® (EDR 2017) (which contains regulatory agency database listings for environmental liens) was reviewed for such information. The EDR Report is provided in Appendix C.

Aerial Photograph Survey. Historical aerial photographs of the Site obtained from EDR were reviewed (EDR 2017). This review consisted of examining the photographs for evidence of previous activities, which may have contributed to onsite contamination. Copies of the aerial photographs are provided in Appendix D.

Topographic Map Review. Historical topographic maps obtained through EDR (EDR 2017) were reviewed to evaluate past land use and site development. The historical topographic maps are provided in Appendix E.

Agency Contacts. During the course of this assessment, the following agencies were contacted via telephone, personal interview, and/or internet-based records searches for information relating to the Site and surrounding areas:

- The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR);
- Cal/EPA DTSC;
- Cal/EPA State Water Resources Control Board (SWRCB) Geotracker database (SWRCB 2017);
- Ventura County Environmental Health Division (VCEHD);
- Ventura County Agricultural Commissioner (VCOAC);
- Ventura County Air Pollution Control District;
- City of Oxnard Fire Department Certified Unified Program Agency (CUPA);

- City of Oxnard Development Services Planning Division (COPD);
- United Water Conservation District (UWCD);
- City of Oxnard Public Works Water Division:
- Office of the California State Fire Marshal; and
- Oxnard Union High School District.

Regulatory Agency Database. EDR maintains comprehensive environmental information databases and historical information and specializes in providing such data for use in real estate and environmental documents. EDR performed a database search of specific government records within a prescribed radius of the Site in accordance with ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (Designation E 1527-15) (ASTM 2015). The EDR report (EDR 2017) is provided in Appendix C.

Site Reconnaissance. The reconnaissance consisted of a walk-through visit of the Site and surrounding area with Sage Realty (the School District representative) and Lynn and Richard Maulhardt, representatives of the Site property owner (Maulhardt Ranch). During the reconnaissance, hazardous substance use, storage, and disposal practices were evaluated at the Site and adjacent areas. Site photographs taken during the reconnaissance are provided in Appendix F.

Interviews. Interviews were conducted by telephone or in person with School District representatives, Lynn and Richard Maulhardt, representatives of the Site property owner (Maulhardt Ranch), and regulatory agency representatives for information on site history, land use, surrounding land use, and regulatory agency data.

Literature Review. Available published and unpublished geologic, hydrogeologic, and environmental reports were reviewed. A list of these reports is presented in Section 17.0.

3.2 SITE STATUS AND HISTORICAL SITE INFORMATION

3.2.1 Property Ownership

The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California, which is owned by Maulhardt family.

3.2.2 Facility Ownership/Operators

Currently, the Site is used for the cultivation of strawberries (Figure 2) by Eclipse Berry farms.

3.2.3 Business Type and Years of Operation

The Maulhardt family has owned the Site since 1869 and used the land for crop production. Historical aerial photographs and Google Earth images indicate that the Site was previously used for cultivation of row crops from as early as 1927 to the present.

3.2.4 Sanborn Map Review

While the geographic coverage of Sanborn maps is comprehensive for most major cities, many rural areas and small towns may not be covered. No Sanborn maps were available for the Site area.

3.2.5 Aerial Photograph Review

A review of historical aerial photographs obtained from EDR included photographs dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2009, 2010, and 2012 (EDR 2017). The photographs are included in Appendix D. A summary of the data from the aerial photography is provided below.

The 1927 photograph is a negative impression black and white photograph at a scale of one inch equals 500 feet with blurred imagery. The majority of the Site and surrounding areas appear graded and developed for agricultural land use. The land to the south, west, and north of the Site appears to be open fields planted in grain or row crops and areas north-northeast and east of the Site are planted in orchards. Colonia Road (the future site of Camino Del Sol) is visible directly south of the Site, and Rose Road (the future site of North Rose Avenue) is visible immediately west of the Site. The Main Residence, Apartment, Carriage House, Horse Barn, Tin Shed, Garage, and Storage structures are visible on the residential and farmyard areas of the Maulhardt Ranch property. A row of eucalyptus trees is visible along the east side of Rose Road extending approximately 550 feet to the north of Colonia Road. There are five unpaved roads entering the Maulhardt Ranch property. Four roads enter the residence-farmyard area. One road enters the Maulhardt Ranch property from the west along Rose Road approximately 550 feet north of Colonia Road and extends approximately 400 feet east into the farm yard area at the north end of the residential area and turns north for 200 along the west edge of the farm yard. Eucalyptus trees are located along the western edge of the farm yard. Three roads enter the residential and farmyard areas of the Maulhardt Ranch property from Colonia Road at approximately 300, 400, and 550 feet east of Rose Road extending into the residential area. The residential area is defined by the western and eastern roads that are lined with eucalyptus trees and extend approximately 550 and 400 feet north from Colonia Road, respectively. The central road entering the residential/farmyard areas from Colonia Road bifurcates into an oval loop approximately 100 feet north of Colonia Road that extends 150 feet to the main residence. Another road is located just east of a row of eucalyptus trees trending north to south approximately 700 feet east of the Horse Barn that extends across the entire length of current Maulhardt Ranch property and the Site. The cultivated area of the Site appears to be planted in grain or row crops on the west side of the row of eucalyptus trees and a citrus orchard east of them. Another farmhouse compound with surrounding trees is visible approximately 400 feet southwest of the Site across the intersection of Rose Road and Colonia Road. A second farmhouse compound is visible approximately 700 feet southeast of the Site across Colonia Road.

The 1938 photograph is a black and white photograph at a scale of one inch equals 500 feet with slightly blurred imagery. The Site and surrounding area appear similar to the 1927 photograph, developed in agricultural land use. The road entering the residential and farmyard areas of the Maulhardt Ranch property from Rose Road shown in the 1927 photograph is gone and is planted in row crops. The same structures at the residential and farmyard areas of the Maulhardt Ranch property and surrounding areas noted in the 1927 photograph are clearly visible. The western and eastern quarter of the Site and current Maulhardt Ranch property, and the area of the Site between the residential-farmyard areas and the row of eucalyptus trees approximately 700 feet east of the residential-farmyard areas are planted in row crops. Orchards are no longer present in the eastern portion of the Site. New rows of young eucalyptus trees have been planted along the east side of Rose Road along the entire western boundary of the current Maulhardt Ranch property and the Site. New rows of young eucalyptus trees have also been planted within the Maulhardt Ranch and Site at 400 and 800 feet east of Rose Road extending approximately

1,550 and 1,600 feet south from the current northern boundary of the Maulhardt Ranch. Young orchard trees are visible on the Maulhardt Ranch and Site in the area between the new rows of young eucalyptus trees located 400 and 800 feet east of Rose Road. No other significant changes were seen on the Site or surrounding areas.

The 1947 photograph is a black and white photograph at a scale of one inch equals 500 feet with slightly blurred imagery. The Site and surrounding area appear similar to the 1938 photograph except that entire eastern quarter of Maulhardt Ranch and Site are now developed in orchards. Two new structures approximately 350 square feet in size are visible just east of the Carriage House in the farmyard area of the Maulhardt Ranch. One of the Site owners, Richard Maulhardt, indicated that chicken coops were formerly located here. No other significant changes from the 1938 photograph were noted.

The 1959 photograph is a black and white photograph at a scale of one inch equals 500 feet with clear imagery. The Site and surrounding area appear generally similar to the 1947 photograph except for the changes noted below. The residential area of the Maulhardt Ranch has been reconfigured and reduced with a single entrance road off of Colonia Road at its current location. The eucalyptus tree-lined roads entering the Site from Colonia Road are gone and the eucalyptus trees formerly along the western edge of the farm yard are gone with orchards now occupying the area south of the main residence. The row of eucalyptus trees formerly located approximately 700 feet east of the Horse Barn is gone. Pole mounted power lines are visible trending east-west along the south side of Colonia Road with a north-south trending trunk line entering the residential and farmyard area of the Maulhardt Ranch approximately 550 feet east of Rose Road and extending approximately 375 into the Site. Two additional structures of approximately 350 square feet each are visible along the western edge of the farm yard. One of the Site owners, Richard Maulhardt, indicated that two worker bunk houses were formerly located here as long ago as the 1930s into the early 1980s. They were not observed in earlier photographs because they were obscured by the eucalyptus trees formerly located here. A small circular structure approximately 15 feet in diameter is visible in the open area between the Horse Barn and Tin Shed structures. This was noted to be the location of a recreational fire pit by the Site owner, Richard Maulhardt. New residential development is visible approximately 700 feet south of the Site along the west side of Rose Road. No other significant changes from the 1947 photograph were noted.

The 1967 photograph is a black and white photograph at a scale of one inch equals 500 feet, with slightly blurred imagery. The Site and area north of Colonia Road appear similar to the 1959 photograph except for the changes noted below. The Site and surrounding area is developed in agricultural (orchards) and residential use. The farmhouse compound formerly located southwest the intersection of Rose Road and Colonia Road is gone. New residential development is visible immediately south of Colonia Road to the south of the Site along newly constructed Gibralter Street, San Gorgonio Avenue, and San Jose Street. The 15-acre lot immediately south of the Site southeast of the intersection of Rose Road and Colonia Road was vacant and undeveloped. Rose Road has been realigned between 0.2 and 0.5 mile north of the Site eliminating two 90 degree turns with an s-curve. No other significant changes are seen on the Site or adjacent area since 1959.

The 1978 photograph is a black and white photograph at a scale of one inch equals 500 feet with clear imagery. The Site and surrounding area appear generally similar to the 1967 photograph except for the changes noted below. Two Mobile Homes, the Work Shop, and adjacent Shed next to the eastern Mobile Home have been erected in the residential area of the Maulhardt Ranch. The three chicken coop structures to the east of the Carriage House have been replaced by a single structure. The entire cultivated area of the Site and Maulhardt Ranch is now planted in orchards. It is assumed that the name of Rose Road has been changed to North Rose Avenue and Colonia Road to Camino Del Sol. Colonia Road has been realigned on the west side of North Rose Avenue to its current configuration as Camino Del Sol,

curving north then west. The eastern portion of the previously undeveloped parcel south of the site across Camino Del Sol has been developed into an apartment complex and the southern portion along the north side of San Gorgonio Avenue into single family homes. A six-acre lot immediately south of the Site southeast of the intersection of Rose Road and Colonia Road was vacant and undeveloped. No other significant changes are seen on the Site or adjacent areas since 1967.

The 1985 photograph is a thermal infrared image. It is at a scale of one inch equals 500 feet and features are somewhat blurred. The Site and surrounding area appear generally similar to the 1978 photograph except for the changes noted below. A swimming pool is visible to the north of the Main Residence in the residential area of the Maulhardt Ranch. The two bunk houses formerly located at the western edge of the farm yard are gone. The rows of eucalyptus trees formerly located 400 and 800 feet east of North Rose Avenue that extended approximately 1,550 and 1,600 feet south from the current northern boundary of the Maulhardt Ranch have been removed. The orchards have been cleared from a 2.3-acre area immediately east of the farm yard and a 9.9-acre area of the eastern Maulhardt Reach, including the 3.2-acre area in the northeast portion of the Site. An agricultural compound and number of associated buildings are visible approximately 625 feet northeast of the Site. Del Sol Park is visible southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. No other significant changes are seen on the Site or adjacent areas since 1978.

The 1994 photograph is a black and white photograph at a scale of one inch equals 500 feet and features are relatively clear. The Site and surrounding area appear generally similar to the 1985 photograph except for the changes noted below. Agricultural use changes are visible at the Site with the conversion of orchards to row crops notably in the eastern portion of the site. Vacant land to the north of parcel APN 214-002-059 has been developed into the St. John's Regional Hospital. Additional commercial buildings are present southwest of the Site along the south side of Camino Del Sol. No other significant changes are seen on the Site or adjacent areas since 1985.

The 2005 photograph is color photograph at a scale of one inch equals 500 feet and features are relatively clear. Significant changes have occurred to the Site and surrounding areas since 1994. The development of the Site and surrounding areas appear similar to the present. Most of the cultivated areas of the Maulhardt Ranch and Site have been converted to row crop cultivation of strawberries with the internal roads and drainages that are presently on the Site. Orchards are still present in the area surrounding the residences. The driveway accessing the Maulhardt Ranch from the south has been paved and the unpaved roads have been established within the Site that currently dissect strawberry fields. New residential development is present immediately to the north, south, west, and east of the Maulhardt Ranch property (APN 214-002-059) except along the eastern boundary at the future site of the Rio Rosales Elementary School and park where vacant land and a paved area with portable structures are visible adjacent to the northeast corner of the Site. Two large canvas roofed structures and various associated small circular storage tanks can be seen at the northeast corner of the Maulhardt Ranch where a water production well has been constructed.

The 2009 photograph is a color photograph at a scale of one inch equals 500 feet and features are slightly blurry. The conditions of the Site and surrounding areas are similar to those observed in the 2005 photograph. The paved area with portable structures that were adjacent to the northeast corner of the Site have been removed and the structures of the Rio Rosales Elementary School that currently occupies the site are visible.

The 2010, and 2012 images are color photographs at a scale of one inch equals 500 feet. The features on each of the photographs are relatively clear. The appearance of the Site and surrounding areas has not changed from the 2009 photograph.

3.2.6 Topographic Map Review

The following historical USGS topographic maps were obtained from EDR (EDR 2017): 15-Minute Topographic Series, Hueneme map dated 1904, 1943, and 1947; and 7.5 Minute Topographic Series, Oxnard map dated 1949, 1951, 1967, and 2012. Copies of the maps are provided in Appendix E. The maps were reviewed to evaluate previous development of the Site, adjoining properties, and surrounding areas.

The 1904 Hueneme map shows the Site located northeast of the intersection of Colonia Road and Rose Road. Three structures are seen on the residential and farmyard areas of the Maulhardt Ranch property that is adjacent to the Site with road entering the west side of the Site from Rose Road. The area surrounding the Site appears to be developed in large land holdings typical of areas of agricultural development with largely vacant land and individual farm houses and other structures spaced approximately one half to one mile apart within a network of roads also spaced approximately one half to one mile apart. The Southern Pacific Railway tracks are visible approximately six tenths of a mile south of the Site trending east-west, curving around to a north-south alignment approximately one mile southwest of the Site, then trending north-south one mile west of the Site with Oxnard Boulevard immediately west of the railroad tracks. Ventura Boulevard is present approximately one mile north of the Site trending northwest-southeast and Rice Avenue is present approximately six tenths of a mile east of the Site in a north-south alignment. The town of Oxnard is adjacent to the curve in the railway south-west of the Site and the town of El Rio is located at the intersection of Oxnard Boulevard and Ventura Boulevard approximately one and three quarters miles northwest of the Site.

On the 1943 and 1947 Hueneme maps minimal changes are seen at the Site and surrounding area. A single structure is present in the residential and farmyard areas of the Maulhardt Ranch property at the location of the current Main Residence with orchards in the northwest area of the Site and clear areas devoted to row crops in the remainder of the Site. The general road and railroad networks are similar to the 1904 map with "Alt Highway 101" (Oxnard Boulevard) depicted one mile west and Ventura Boulevard one mile north of the Site, and the Southern Pacific Railroad south and west of the Site. Fifth Street is now present just south of the south railroad tracks. To the southwest of the Site, the road network in the City of Oxnard has expanded to the north and south with residential/commercial development. The road network in El Rio has also expanded eastward with three additional roads. New residential development is present approximately one-mile northeast of the Site at Nyland, northeast of the intersection of Rice Road, Ventura Boulevard, and Santa Clara Avenue.

On the 1949 and 1951 Oxnard maps, structures are seen in residential and farmyard areas of the Maulhardt Ranch property at the current locations of the Main Residence, Apartment, Carriage House, Horse Barn, and Tin Shed. Orchards are present on the Site to the west and north of the residence-farm yard areas with open areas devoted to row crops in the remainder of the Site. The general road and railroad networks, and development of the Site area is similar to the 1943 and 1947 maps. One oil well is depicted within 0.25 mile of the Site, the Standard Schoelle No. 1 oil well, located approximately 1,000 feet north of the Site. The area surrounding the Site is developed in agricultural land use with orchards and open areas devoted to row crops. Development in the City of Oxnard has expanded further to the south and east with the city limit depicted approximately two tenths of a mile west of the Site.

The 1967 Oxnard map shows no changes at the Site and the areas to the west, north, and east of the Site from the 1949 and 1951 Oxnard maps. Residential development has expanded to the east from the City of Oxnard in a three tenths of a mile to four tenths of a mile wide area along the south side of Colonia Road to one tenth of a mile east of the Site. The 101 Freeway has been constructed just south of Ventura Boulevard approximately 1 mile north of the Site and Rose Road has been realigned between two tenths

of a mile and one half mile north of the Site eliminating two ninety degree turns with an s-curve. The Standard Schoelle No. 1 oil well is shown approximately 1,000 feet north of the Site and the Maulhardt No. 3 oil well is shown approximately 1,300 feet east of the Site.

On the 2012 Oxnard map no structures are shown on the Site or residential and farmyard areas of the Maulhardt Ranch property. The area comprising the 107.25-acre Maulhardt Ranch (APN 214-002-059) and the current site of Rio Rosales Elementary School and associated park to the east of the Site are shown as vacant land. The road networks and general development of the surrounding area is similar to the present with residential development present in the areas to the north, east, and west of the Maulhardt Ranch and the Site. Colonia Road has been renamed Camino Del Sol and Rose Road has been renamed North and South Rose Avenue. The two oil wells shown on the 1967 map are not present.

3.3 SURROUNDING PROPERTY LAND USES

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2). The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

3.4 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION

3.4.1 Business/Manufacturing Activities

Based on the records of past Site land uses and on review of historical maps and aerial photographs, no manufacturing activities were conducted on the Site. Agricultural production is the only business type known to have been conducted at the Site.

3.4.2 Historical Records Review

3.4.2.1 Department of Oil, Gas, and Geothermal Resources Data Review

Tetra Tech reviewed DOGGR Map 214 (DOGGR 2001), the online DOGGR Well Finder (DOGGR 2017), and associated well history documents to evaluate potential presence of oil fields or wells within the Site vicinity. Records indicate that the site is located within the Oxnard Oil Field; however, no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on 107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. Several plugged abandoned oil wells are located within one quarter mile of the Site. The nearest plugged and abandoned well is Maulhardt Community No. 11A, located approximately 850 feet south southwest of the Site on Imperial

Street near the intersection of San Luis Street. Plugged and abandoned well Maulhardt Community No. 10 is located approximately 870 feet west of the Site just north of Camino Del Sol. Plugged and abandoned well Maulhardt Community No. 3 is located approximately 1,350 feet west southwest of the Site on North Lombard Street. Plugged and abandoned well Maulhardt Community No. 7 is located approximately 1,500 feet west-northwest of the Site. Plugged and dry well Standard Schoelle No. 1 is located approximately 1,570 feet northeast of the Site on Ribera Place. Plugged dry well A. Pfeiler Est. No. 1 is located approximately 1,600 feet northwest of the Site in West Village Park. Plugged and abandoned well Maulhardt No. 9 is located approximately 1,750 feet east of the Site. Numerous other abandoned wells are present further south and east of the site but were not described in this report.

3.4.2.2 California State Water Resources Control Board

Tetra Tech reviewed online resources at the California Environmental Protection Agency (Cal EPA) State Water Resources Control Board (SWRCB) Geotracker database (SWRCB 2017) for any records pertaining to the Site. No records for the Site or other portions of the 107.25-acre property where the Site is located were found in the Geotracker database. According to the Geotracker database, a closed Leaking Underground Storage Tank (LUST) Cleanup Site GTE (T0611100137) is located adjacent to the Site at 751 N Rose Avenue. However, further research using the Ventura County Environmental Health Department database indicate that the actual address for GTE (T0611100137) LUST cleanup site is 751 S Rose Avenue such that the listing is outside of the relevant search radius and does not pose any risk to the Site. In addition, the Geotracker database search identified a completed case-closed voluntary cleanup program site, Arenales/Kohala Property (clan/meth lab) (T0611182768), located approximately 700 feet west of the site in a nearby residential neighborhood. Five other complete case closed LUST sites are also located within one quarter to one half mile downgradient of the site. These records are discussed further in Section 5.3.

3.4.2.3 Department of Toxic Substances Control

Tetra Tech reviewed the DTSC EnviroStor database for any records pertaining to the Site. The Site is identified as HS #8 (60002683) with an Inactive – Withdrawn as of 6/25/18 Cleanup Status (DTSC 2018c).

3.4.2.4 County of Ventura Environmental Health Division

A request was submitted by email to the VCEHD for the research and review of all the records pertaining to the Site. According to the response received there was one prior record of septic activity at the Site and one record of hazardous materials inventories pertaining to the Eclipse Berry Ranch No. 9 that cultivates strawberries at the Maulhardt Ranch, which includes the Site (Appendix G).

There were VCEHD records dating from July through November 1994 documenting the permitting of two residential septic systems present in the residential area of the Maulhardt Ranch, one located 60 feet east of the main residence, and a second one located 25 feet east of a second mobile home structure. The records include a questionnaire dated July 25, 1994 on the property condition that was completed by Richard Maulhardt, a memorandum dated August 29, 1994 from the VCEHD indicating the application was incomplete and requesting a scaled plot plan showing the septic systems and a septic pumping tank report, a memorandum dated November 14, 1994 from the VCEHD indicating that the application was complete, a VCEHD septic tank pumping inspection report dated August 31, 1994, indicating the system was in good condition, a scaled plot plan showing the septic systems, and an analytical report for water from FGL Environmental Laboratory for coliform bacteria that indicated they were not present.

A Hazardous Materials Inventory Report provided by VCEHD dated September 19, 2017 provided the following information for materials by the Eclipse Berry Farm at Ranch No. 9 (the Maulhardt Ranch, including the Site):

Common Name	Maximum Daily Amount Stored
calcium nitrate	500 gallons
diesel fuel	250 gallons
sulfuric acid	500 gallons

These materials are currently stored for use at the northeast corner of the Maulhardt Ranch (APN 214-002-059) approximately 1,050 feet north of the Site. No additional records for the Site were located using VCEHD online records database.

3.4.2.5 Ventura County Agricultural Commissioner

Pesticide use records on file with the VCOAC indicate that the Site and 107.25-acre APN 214-002-059 lot which the Site is located within was actively farmed between January 2011 and February 2016 (Appendix G). The VCOAC does not generally maintain records for longer than approximately 4 to 5 years; however, records for the Site were available through 2011 (Enriquez-Pratt 2017). However, due to evidence of ongoing agricultural activities from historical aerial photographs and information contained in the disclosure provided by the property owners (High 2017), it can be assumed that there was pesticide use prior to January 2011.

3.4.2.6 City of Oxnard Fire Department Certified Unified Program Agency

A request was submitted by email to the City of Oxnard Fire Department CUPA for the research and review of all records pertaining to the Site. According to the response received there have been no prior records of CUPA cases associated with the Site (Mattern 2017) (Appendix G).

3.4.3 Environmental Records Review

As part of this assessment, Tetra Tech retained the services of EDR, a Connecticut-based company that maintains comprehensive environmental information databases and specializes in providing such data for use in real estate and environmental documents, such as this Phase I ESA. EDR performed a database search of the target property in accordance with current ASTM standards. A copy of this report is included as Appendix C.

Among the environmental databases searched were National Priorities List (NPL) sites; Resource Conservation and Recovery Information System (RCRIS) facilities; Superfund Enterprise Management System (SEMS) sites; Cal-Sites; California Hazardous Materials Incident Report System (CHMIRS); Spills, Leaks, Investigation and Cleanup Cost Recovery System (SLIC); Facility Index System/Facility Identification Initiative Program Summary Report (FINDS); Facility Inventory Database (CA FID UST); Hazardous Substance Storage Container Database (HIST UST); California Environmental Protection Agency/Office of Emergency Information (CORTESE); and California Leaking Underground Storage Tank (LUST) sites. Each of the databases was searched at a radius appropriate for ASTM E1527-15. Sites identified in the databases are listed and plotted in the complete environmental database report provided in Appendix C. The following includes a summary of information regarding the Site itself, properties immediately adjacent to the Site, and/or properties that have the potential to affect the Site based on their proximity to the Site.

3.4.3.1 Onsite EDR Listings

Listings for the target property were in three databases in the EDR-Radius Map report. Eclipse Berry Ranch #9 with the address listed as 1853 Camino Del Sol, Oxnard, CA was listed in the FINDS database. FINDS contains both facility information and references to other sources that contain more detail. EDR included the following FINDS databases in their report: (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System). Further research indicated that Eclipse Berry Ranch #9 was listed on the Cal EPA regulated site portal. According to the Cal EPA site portal the Site is currently in compliance with Hazardous Materials Release Response Plans (HMRRP) requirements; however, one minor citation was listed for June 19, 2017 for failing to meet the annual deadline for business plan submittal. Records reviewed from the Cal-EPA site portal confirmed information documented in The Hazardous Materials Inventory Report provided by VCEHD indicating that hazardous agricultural chemicals and fuels are used and stored on the Maulhardt Ranch property for the Eclipse Berry Ranch #9 (Appendix G). According to the owners of the Maulhardt Ranch, the Eclipse Berry Ranch #9 stores these materials at the northeast corner of the Maulhardt Ranch (APN 214-002-059) approximately 550 feet north of the Site.

3.4.3.2 Site-Adjacent EDR Listings

- Maulhardt Farms with the address, 1853 Camino Del Sol, Oxnard, CA was listed in the Ventura County Business Plan, Hazardous Waste Producers, and Operating Underground Tanks (Ventura Co. BWT) and Facility and Manifest (HAZNET) Databases. The Ventura County BWT list indicates by site address whether the Environmental Health Division has a Business Plan (B), is a Waste Producer (W), and or any Underground Tank (T) information. The EDR findings indicate that a Farm-Business plan is on record with the VCEHD, confirming past and present agricultural use of the Site. A search on the VCEHD online database returned record of two septic tanks associated with residential properties located in the Maulhardt Ranch residential area which are considered low risk and are described in Section 2.5.4.4. The HAZNET database is made up of extracted data from copies of hazardous waste manifests received each year by the DTSC (Department of Toxic Substances Control). The EDR report identified HAZNET waste records from 1999 that indicated several waste streams originating at the site including organic solids, unspecified oil-containing waste, and unspecified solvent mixtures. These records confirm waste generation from historical agricultural activities at the Maulhardt Ranch and likely pesticide use at the Site.

- Vineyard Plaza Cleaners, is listed on the EDR Hist Cleaner database at the address of 1944 Camino Del Sol. This location is in the Holiday Manor apartments that are located south of the Site along Camino Del Sol. EDR searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed include, but were not limited to, dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash and dry, etc. This database falls within a category of information EDR classifies as High Risk Historical Records (HRHR). EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns but may not show up in current government records. The EDR report indicates that Vineyard Plaza Cleaners operated from 2011 through 2013. No additional records were found associated with this listed property indicating the release of hazardous materials, response, or

enforcement actions. 1944 Camino Del Sol is located downgradient from the Site. This listing is not considered to be a REC for the Site.

- Rio Rosales Elementary School is listed on the EDR DTSC EnviroStor database at Kohala and Jacinto streets in Oxnard CA 93030. A Phase 1 Environmental Site Assessment, and PEA were completed for this site during 2002 prior to the construction of the Rio Rosales Elementary School. The current site status is no further action. Relevant findings of the PEA are described in this Section 5.4.1. This is not considered to be a REC for the Site.

- Superior Carpet Cleaning, with the address listed 633 Ursula, Drive, Oxnard, CA 93030, was also listed on the EDR Hist Cleaner database. The listed address is located in a single family home in a residential neighborhood approximately 477 feet west of the Site. The EDR report indicates that this business operated in 2008. No additional records were found associated with this listed property indicating the release of hazardous materials, response, or enforcement actions. In general, this site is expected to be cross gradient from the Site. This listing is not considered to be a REC for the site.

3.4.3.3 EDR Listings in the Site Vicinity

Properties Between 1/8 and 1/4 Mile from the Site

Four listings were identified by the EDR Report database search located one eighth to one quarter mile from the Site.

- Arenales / Kohala Property, located at 765 Kohala Street, 670 feet east of the Site, was listed on the EDR LUST SLIC and CDL databases. The database indicates that this site was an illicit methamphetamine lab. The case was completed through the voluntary cleanup program in 2007. The case is closed. This listing is not considered to be a REC for the Site.

- Continental Heritage Corp, located at 275 Rose Avenue, 0.181 mile south of the site, was listed on the Ventura Co. UST database as an inactive site and is located downgradient from the Site. This listing is not considered to be a REC for the site.

- Maulhardt Farm, located at 1953 E Colonia Road, 0.237 miles west of the Site, was listed on the Hazardous Substance Storage Container database (HIST UST) maintained by the State Water Resource Control Board. The Record indicated that 500 gallons of Diesel fuel used for agricultural activities was stored at the site. Records did not indicate past spills or releases at this property, therefore this listing is not considered to be a REC for the site.

- McCaslin Oil Company, located at 2425 Colonia Road, 0.237 miles west of the Site, was listed on the EnviroStor, LUST, HIST UST, HIST CORTESE, SWEEPS UST, and CA FID UST databases. The site case was closed as of October 13, 1998. Given the distance from the Site, completed remedial actions, and no further action status this listing is unlikely to pose any risk to the Site. This listing is not considered to be a REC for the site.

Properties Between One Quarter and One Half Mile From the Site

Eight State and Tribal Leaking Storage tank listings were listed in the EDR database at elevation equal or higher than the Site at distances from one quarter to one half mile from the Site. All of these listings were completed or case closed sites and not considered to be RECs for the Site. These site listings are summarized as follows.

- Wilma Pacific Inc., located at Bernoulli Circle, 0.280 miles east of the Site, was listed on the LUST database.

- Oxnard Fire Station #5, located at 1450 Colonia Avenue, 0.283 miles west of the Site was listed on the LUST database.

- Standard Pacific of Ventura, located at 1191 Colonia Road, 0.411 miles west of the Site, was listed on the LUST, UST, and HIST CORTESE databases.

- Jones Intercable, located at 721 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST and HIST CORTESE databases.

- Maul-Graves Leasing Co., located at 833 Maulhardt Avenue, 0.487 miles east of the Site, was listed on the LUST, HIST UST, and HIST CORTESE databases.

- Certified Freight Lines, located at 965 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST database.

- System 99, located at 965 Maulhardt Avenue, 0.488 miles east of the Site, was listed on the LUST and HIST UST databases.

- Mission Linen, located at 505 Maulhardt Avenue, 0.489 miles east of the Site, was listed on the LUST, DRYCLEANERS, and HIST CORTESE databases.

Seven State and Tribal Leaking Storage tank records were identified at elevation lower than the Site at distances of one quarter to one half mile from the Site. None of these listings were considered to be RECs for the Site. These site listings are summarized below.

- Four records associated with the address 121 Rose Avenue, 0.291 miles south of the Site were identified. The first was associated with Exxon (Sanchez) and listed on the LUST and HIST CORTESE databases. This site gained regulatory closure in 1996. Three other records associated with Mobile Oil SS#18-P7C were listed on the LUST database. Two of these gained regulatory closure in 1996, and the third one in 2007. Based on the distance from the Site and downgradient location, these sites are not considered to be RECs for the Site.

- Oxnard (City) Treatment Plant, located at Perkins Road, 0.395 miles west of the Site, was listed on the LUST and HIST CORTESE databases. This site gained regulatory closure in 1992. Based on the distance from the Site and downgradient location, this site is not considered to be a REC for the Site.

- Two records associated with Oxnard (City), located at 300 Marquita N, 0.397 miles west of the Site were listed on the LUST database. These sites gained regulatory closure in 1994. Based on the distance from the Site and downgradient location, these sites are not considered to be RECs for the Site.

One SLIC site was identified that is located from one quarter to one half mile of the Site.

- Nishimori Farms / Cambridge Development Co., located Southeast of Williams Drive, Soccorro Way, and Wankel Way, 0.432 miles north of the Site, was listed on the SLIC database. This listing obtained completed – case closed status in 1999 and is not considered to be a REC for the Site.

Several other sites, including "orphan" (i.e., unmappable sites) were listed within ASTM recommended search distances. However, due to the type of listing, distance from the Site, location of the Site with respect to assumed regional groundwater flow, topographical features, and/or status of the listed sites, these nearby sites are not considered to be RECs in connection with the Site.

3.4.4 Site Reconnaissance and Interviews

On October 23, 2017, Tetra Tech performed a visual reconnaissance of the Site property and conducted interviews with the Site owners Lynn and Richard Maulhardt. The purpose of the reconnaissance was to evaluate the Site and neighboring properties for visible indications of potential hazardous substance use, storage, and disposal, including the presence of USTs, ASTs, asbestos-containing materials, PCB-containing transformers or electrical equipment, and/or evidence of soil staining, stressed vegetation, ponds, pits, sumps, suspicious odors, fill and depressions, drums and barrels, or any other condition indicative of potential contamination. A Site reconnaissance checklist is included in Appendix I.

The Site reconnaissance consisted of walking around the Site accompanied by the Site owners Lynn and Richard Maulhardt and interviewing them about the items observed. Photographs were taken to document current conditions. Copies of the Site photographs are included in Appendix F.

3.4.4.1 Buildings and Structures

There are no buildings located on the Site.

3.4.4.2 Storage Tanks and Drum Storage

No evidence for existing or past use of storage tanks (UST or ASTs) or drum storage was observed on the Site during the Site reconnaissance.

3.4.4.3 Hazardous Substances Excluding Petroleum Products

No hazardous substances were observed during the reconnaissance.

3.4.4.4 Petroleum Products

No evidence of petroleum products was observed during the reconnaissance.

No evidence of used oil storage was observed during the reconnaissance of the Site.

3.4.4.5 PCB-Containing Transformers and Equipment

One pole-mounted transformer was observed onsite along the southern Site boundary on the north side of Camino Del Sol (Figures 2 and 3). No evidence of transformers leakage, such as soil staining, was observed during the Site reconnaissance.

3.4.4.6 Stained Soils/Stains/Stressed Vegetation

During the Site reconnaissance, no evidence of stained soils/stains/stressed vegetation was observed.

3.4.4.7 Asbestos-Containing Materials

The environmental professional preparing this report has reviewed the site history and performed a site inspection such that an educated opinion could be rendered. This opinion shall in no means constitute confirmation of the presence or absence of asbestos-containing building materials (ACBM). For confirmation, a complete survey with sampling and analysis would need to be performed. The use of ACBM was generally discontinued after 1980, with certain types of insulation, fireproofing, and acoustical materials banned by 1978.

During the Site reconnaissance, no buildings or structures were identified, thus an asbestos survey was not necessary and was therefore not conducted.

3.4.4.8 Lead-Based Paint

The environmental professional preparing this report has reviewed the site history and performed a site inspection such that an educated opinion could be rendered. This opinion shall in no means constitute confirmation of the presence or absence of lead-based paint (LBP). For confirmation, a complete survey with sampling and analysis would need to be performed. The use of LBP was banned in 1978.

During the Site reconnaissance, no buildings or structures were identified thus a LBP survey was not necessary and therefore not conducted.

3.4.4.9 Pipelines

3.4.4.10 California Code of Regulations Hazardous Pipeline Requirements

California Code of Regulations (CCR) Title 5, Section 14010(h) requires that new school sites shall not be located or within 1,500 feet of the easement of an above ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional. Hazardous pipelines are defined as:

- Pipelines carrying chemical products, natural gas, and other hydrocarbon products that are operating at a pressure of 80 psig or higher; and

- High-volume water lines, which are defined as water lines 12 inches or greater in diameter and include open aqueducts of comparable and greater volume handling capacity.

The National Pipeline Mapping System (NPMS), Office of the California State Fire Marshall, City of Oxnard Utilities-Sewer, Trash, and Water Department, and Maulhardt Ranch were contacted for information on hazardous pipelines located within 1,500 feet of the Site.

National Pipeline Mapping System

The U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration NPMS website is an interactive database that maps the locations of hazardous liquid and gas transmission pipelines under DOT jurisdiction. Tetra Tech reviewed the NPMS website for information on hazardous liquid and gas transmission pipelines in the Site area. The NPMS data base indicated that no hazardous liquid pipelines are located within 1,500 feet of the Site (Appendix G). The nearest natural gas pipeline transmission pipeline under NPMS jurisdiction is located approximately 0.65 miles east and south from the Site along North Rice Avenue and West Fifth Street respectively (NPMS 2017).

Office of the California State Fire Marshal

Tetra Tech contacted the California State Fire Marshal (CSFM) for information concerning potential high-pressure petroleum product or natural gas transmission pipelines in the Site vicinity. According to the response received there have been no prior records of hazardous pipelines within 1,500 feet of the Site (Henigan 2017) (Appendix G).

City Oxnard Public Works

The City of Oxnard Public Works Water Division is the water purveyor for the Site area. Tetra Tech contacted the City of Oxnard Public Works Water Division for information on water pipelines within 1,500 feet of the Site and was provided with the City of Oxnard Water Atlas pages showing water pipelines within 1,500 feet of the Site (City of Oxnard 2010; 2011). The City of Oxnard Water Atlas indicated that there were two water pipelines located within 1,500 feet of the Site that were 12 inches or greater in diameter:

- A 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue directly west of the Site (Figure 2); and

- A 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site (Figure 2)

Copies of the City of Oxnard Public Works Water Division Water Atlas pages for the Site area are included in Appendix G.

Maulhardt Ranch

The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch. The Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8.

Pipeline Risk Assessment

The two hazardous pipelines identified as identified above will be assessed in a separate task in accordance with the *Guidance Protocol for School Site Pipeline Risk Analysis* (California Department of Education [CDE] 2007). The methods, findings, and recommendations of the hazardous pipeline risk analysis will be presented in a High School No. 8 Pipeline Risk Analysis Report that will be summarized in the PEA report and included as an addendum to the PEA report.

3.4.4.11 Electromagnetic Radiation

Title 5 of the California Code of Regulations (CCR) stipulates that a school site shall not be within the following distances from a high power electric transmission line:

- 100 feet from a 50-133 kilovolt (kV) line;

- 150 feet from a 220-230 kV line; or
- 350 feet from a 500-550 kV line.

Pole-mounted electrical power lines located within 350 feet of the Site that are owned and operated by Southern California Edison in the Site area are shown on Figures 2 and 3. These power lines are located as follows:

- Located along the north side of Camino Del Sol at the southern Site boundary; and
- Routed through the Site a north-south alignment approximately 210 feet east of North Rose Avenue.

Southern California Edison indicated that all noted pole-mounted power lines are rated at 16 kV (Wall 2017).

3.4.4.12 Hazardous Air Emitters

Tetra Tech evaluated the neighborhood during the Site reconnaissance for facilities or businesses considered likely to emit hazardous air pollutants; none were observed in the Site vicinity. Based on observations of surrounding properties, review of the EDR Radius Report (EDR 2017) (Appendix C), which tracks the emissions database inventory of the California Air Resources Board, there are no hazardous air emission sources located within 0.25 mile of the Site and it is unlikely that the Site would be impacted by hazardous air emissions.

3.4.4.13 Railways

CCR Title 5 stipulates that a railroad safety study must be completed for any proposed school site located within 1,500 feet of a railway track easement. Based on review of the Santa Maria, California Quadrangle, USGS, 7.5-minute topographic series map (USGS 2015), and a Google Earth Image dated October 2, 2016, the Site is not located within 1,500 feet of a railroad track easement. The railroad track easement located nearest to the Site is approximately 0.6 miles south of the Site.

3.4.4.14 Freeways and Busy Traffic Corridors

Senate Bill 352 created a requirement to determine whether a school site is located within 500 feet of a freeway or busy traffic corridor would create a health hazard from exposure to high levels of criteria pollutants. Freeways and busy traffic corridors are defined as roadways with average daily traffic in excess of 50,000 vehicles in rural areas and 100,000 daily vehicles in urban areas. Based on review of the Oxnard, California Quadrangle, USGS 7.5-minute topographic series map (USGS 2015), and a Google Earth Image dated January 5, 2015, there are no freeways or other busy traffic corridors located within 500 feet of the Site. Highway 101 is located approximately 1 mile north of the Site.

3.4.4.15 Airports

CCR Title 21 requires the State Department of Transportation to review any proposed school site that is located within 2 nautical miles of a runway. There are no airports within 2 nautical miles of the Site. Based on review of a Google Earth Image date January 5, 2015, and AirNav.com (AirNav.com 2017) (Appendix E), no airports are located within two nautical miles of the Site. The closest airport to the Site

is the Oxnard Airport, which is approximately 2.4 nautical miles west of the Site. In addition, the Camarillo Airport is located approximately 3.2 nautical miles east of the Site.

Based on review of data from AirNav.com, the Site is located within 2 nautical miles of a heliport. The St John's Regional Medical Center Heliport is located approximately 0.6 nautical miles north of the Site (AirNav.com 2016) (Appendix G).

3.4.4.16 Pesticides/Herbicides/Fertilizers

During the site visit the property owners disclosed that agricultural chemicals associated with the current strawberry cultivation activities performed on the Maulhardt Ranch and the Site are stored offsite at the northern end of the parcel. The VCOAC was contacted regarding past pesticide use for the Site, their response is discussed in Section 3.4.2.5. Discussion with the site owners and review of historical aerial photographs and Google Earth images dating from 1943 through 2015 indicate that the Site was used for crop production throughout the time period, that organochlorine pesticides (OCPs) were in use, and that OCPs were used at the Site.

3.4.4.17 Electronic Waste

During Site reconnaissance, no evidence of electronic waste was observed.

3.4.4.18 Rodents

During Site reconnaissance, no evidence of rodents was observed.

3.4.4.19 Potable Water Supply/Wells

No wells were observed during Site reconnaissance. The Site property owners indicated that the Maulhardt Ranch owns and operates an active water well offsite at the northeast corner of the Maulhardt Ranch property (Maulhardt 2017).

3.4.4.20 Wastewater

During Site reconnaissance, no industrial wastewater generation was observed.

3.4.4.21 Storm Water

Storm water runoff on the Maulhardt Ranch and Site drains to the south in furrows between the raised strawberry beds to shallow east west trending drainage channels along the east-west trending farm roads where it is routed to central drainage ditch located along the east side of the main north-south farm road in the eastern area of the Site (Figure 2). The central drainage ditch flow to the south and empties into the storm drain beneath Camino Del Sol through an inlet at the south boundary of the Site.

3.4.4.22 Wetlands/Intertidal Lagoon

The EDR report indicates that the Site is covered in the National Wetlands Inventory prepared by the U.S. Fish and Wildlife Service (USFWS) (EDR 2017) (Appendix C). Based on the information provided in the EDR report and by the USFWS, the nearest delineated wetland is located within approximately 1.3 miles southeast of the Site (EDR 2017; USFWS 2015).

3.4.4.23 Sewage Disposal System/Septic Systems

No evidence of septic systems was noted on the Site property during Site reconnaissance. Septic systems are located in the farmyard and residential areas of the adjacent Maulhardt Ranch property.

3.4.4.24 Drains/Sumps/Vaults/Pools

No drains, sumps, vaults, pools or similar receptacles where liquids drain, collect, or are stored were observed during the Site reconnaissance.

3.4.4.25 Solid Waste

No evidence of solid waste disposal was observed at the Site. Domestic trash collection and disposal is managed by the City of Oxnard.

3.4.4.26 Other Site-Specific Environmental Conditions

There were no other Site specific environmental conditions noted during the site reconnaissance.

3.4.5 Vicinity Reconnaissance

The land use of the area surrounding Site is depicted on Figures 2 and 3. The Maulhardt Ranch residential and farmyard areas are adjacent to the Site on the south and west (Figure 3). Areas of residential development are present to the west, south, and east of the Site. A strip mall is located south of the Site across Camino Del Sol at the southeast corner of Camino Del Sol and North Rose Avenue. Del Sol Park is located at the southeast corner of Camino Del Sol and North Rose Avenue and a park and Rio Rosales Elementary School are located across Jacinto Drive from the northeast corner of the Site. The area immediately north of the Site on Maulhardt Ranch is developed for strawberry cultivation. The Maulhardt Ranch farmyard and residential areas are immediately south and west of the Site.

A search of the Geotracker database identified two adjacent properties having previous remediation cases (SWRCB 2017). Eleven other previous remediation cases were identified within a 1-mile radius of the site in the EDR report (EDR 2017). These cases are discussed in Sections 3.4.2.2 and 3.4.2.4.

3.4.5.1 Maulhardt Ranch Residential and Farmyard Areas

The Maulhardt Ranch residential and farmyard areas that are adjacent to the Site on the south and west are described in detail in this section due to their close proximity to the Site (Figure 3). Table 2 lists the numbered items identified on Figure 3.

Tin Shed

The Tin Shed is a single-story warehouse-like structure that occupies approximately 5,140 square feet. It was reportedly originally constructed in the early 1900s (Maulhardt 2017) (Figure 3). It is of gable-roofed wood frame construction covered in sheet metal, with walls approximately 8.5 feet high and an open beam ceiling approximately 20 feet high at the roof ridge line. The Maulhardts indicated that the floor was partially paved with concrete; however, it was covered in soil at the time of the reconnaissance. Shelves, workbenches, cupboards full of various pieces of equipment and supplies are located along the north, west, and southwest walls of the building. The Tin Shed is used to store various pieces of farming equipment and farming equipment maintenance items and supplies. The general housekeeping was of

random organization. Items observed in this building included two tractors, a lima bean planting device fabricated by the Maulhardts, acetylene welding equipment and supplies (gas cylinders), a steel anvil, PVC irrigation pipe, aluminum ladders, three poly pesticide-fertilizer distribution tanks (approximately 100 to 300 gallon capacity), various pieces of aluminum greenhouse framework, several plastic portable fuel containers (approximately 5 to 20 gallon capacity), an old smudge pot, various lengths of rubber and plastic hose, an air compressor, mountain bike, various smaller gasoline and diesel fuel powered farm equipment, hand tool (shovels, rakes, etc.), a drill press, grinding wheel, a used automobile battery, automotive maintenance equipment (jacks, engine hoist, a 150-gallon (approximate) waste oil drum with a "Back Gold" label, two empty 20-gallon (approximate) oil drums, and other items. Stained soil was observed in the central area of the Tin Shed, and more may be present beneath the equipment and materials stored in the building. The Tin Shed is depicted in Photographs 18 through 31 in Appendix F.

Horse Barn

The Horse Barn is a two-story warehouse-like structure that occupies approximately 7,740 square feet. It was reportedly originally constructed in 1908 (Maulhardt 2017) (Figure 3). It is of gable-roofed wood frame construction covered in wood siding. The first story floor walls are approximately 8.5 feet high and an open beam-joist construction. The Maulhardts indicated that the first story floor was partially paved with concrete; however, it was covered in soil at the time of the Site reconnaissance. Horses are housed in the southern half of the first floor. The northern half is used for storage of various items, including three vintage nonoperational automobiles and a small (10-foot-long) fishing boat. The second story is accessed by a 10-foot-wide wooden ramp that can be accessed by automobiles. The second story has a wood floor with an open ceiling and exposed post and beam construction with walls approximately 8 feet high on the north and south and 20 feet high on the gable ends. Three bales of hay, a motorcycle, and a 12-foot-long boat were observed in this area. The general housekeeping was reasonably organized. The Horse Barn area is depicted in Photographs 45 through 50 in Appendix F.

Garage

The Garage is a single-story structure that occupies approximately 700 square feet (Figure 3). It was reportedly originally constructed in the early 1900s (Maulhardt 2017). It is of gable-roofed wood frame construction covered in sheet metal, with walls approximately 7 feet high and an open beam ceiling approximately 12 feet high at the roof ridge line. It has a concrete floor with a concrete-lined mechanic's pit on the south side that was used for automotive repair and maintenance. Two vintage automobiles and a motorcycle were parked inside the garage during the Site reconnaissance and various automotive equipment and maintenance items were also stored inside. The general housekeeping was of random organization. A fuel storage AST and UST were formerly located adjacent to this building and the fuel dispenser equipment associated with them is still present in the eastern wall of the building interior. The Garage is depicted in Photographs 10 through 14 in Appendix F.

Storage Shed

The Storage Shed is a single-story structure that occupies approximately 400 square feet (Figure 3). It was reportedly originally constructed in the early 1900s (Maulhardt 2017). It is of gable-roofed wood frame construction covered in wood siding, with walls approximately 8.5 feet high and an open beam ceiling approximately 10 feet high at the roof ridge line and has a concrete floor. Various farming equipment and supplies were observed in the Storage Shed during the Site reconnaissance. The Maulhardts indicated that pesticides were formerly stored in this building. The Storage Shed is depicted in Photographs 15 and 16 in Appendix F.

Carriage House and Shed

The Carriage House is a single-story structure that occupies approximately 500 square feet (Figure 3). It was reportedly originally constructed in 1880 (Maulhardt 2017). It is of gable-roofed wood frame construction covered in wood siding, with walls approximately 8.5 feet high and an open beam ceiling approximately 10 feet high at the roof ridge line and has a concrete floor. This structure was empty during the Site reconnaissance. The Maulhardts indicated that horse carriages and automobiles were formerly stored in this building. The shed on the east side of the Carriage House is a former chicken coop originally constructed in the 1930s. It is single-story, occupies approximately 100 square feet of shed-roofed wood frame construction, and is covered in wood siding with a dirt floor. It was reportedly used as a chicken coop and for storage of various farm supplies.

Covered Livestock Pen

The Covered Livestock Pen is a single-story structure that occupies approximately 450 square feet. Review of historical aerial photographs indicates it was originally constructed between 2012 and the present (Figure 3). It is of gable-roofed, of wood frame construction, with open sides, with a dirt floor. It has been reportedly used to house pigs (Maulhardt 2017). The Covered Livestock Pen is depicted in Photograph 50 in Appendix F.

Workshop and Shed

The Workshop and adjacent Shed are single-story structures that occupies approximately 200 and 440 square feet, respectively (Figure 3). Review of historical aerial photographs indicates they were originally constructed between 1967 and 1978. They are roofed, of wood frame construction, covered in wood siding, with concrete floors. The general housekeeping of the Workshop was well-organized. Various woodworking tools and supplies were observed in the Workshop during the Site reconnaissance. The Workshop is depicted in Photograph 19 in Appendix F. The interior of the Shed was not observed during the reconnaissance. It is reportedly used for storage of various farm supplies.

Office

The Office is a single-story structure that occupies approximately 2,300 square feet (Figure 3). The north central portion was reportedly originally constructed in in the early 1900s with four additions gradually added (Maulhardt 2017). It is of gable-shed roofed wood frame construction covered in stucco and wood siding with a raised foundation. It was originally a laundry and has been used as a residence and the main office for the Maulhardt Ranch. The interior was divided into a back utility room, two bedrooms, a kitchen, and a sitting-parlor room area. During the reconnaissance, numerous old computers, printers, and various office related electronic equipment and supplies were stored throughout the building. The general housekeeping was of random organization. The Office is depicted in Photograph 33 in Appendix F.

Residential Structures

The residential structures adjacent to the Site are the Main Residence (approximately 4,420 square feet), Apartment (approximately 780 square feet), and two Mobile Homes (approximately 3,040 square feet each) (Figure 3). The Main Residence and Apartment were constructed in 1917 (Maulhardt 2017). The Main Residence and Apartment are two-story structures. The Main Residence is constructed with concrete walls and a stucco exterior with a roof that is hip-framed and covered with tile around the exterior of the building with a flat roofed interior area covered with asphaltic roofing material. The

Apartment is constructed with either concrete walls or wood framed walls and a stucco exterior. The roof is hip-framed and covered with tile. The Apartment has a garage on the first floor with living quarters on the second floor. The two Mobile Homes were constructed between 1967 and 1978 and are of wood frame construction with flat roofs. Tetra Tech did not access the interior of the residential structures during the Site reconnaissance because they were occupied.

Storage Tanks and Drum Storage

Based on information provided by the Maulhardts, two fuel storage USTs and one fuel storage AST were formerly located within the residential and farmyard areas of the Maulhardt Ranch and removed in the 1970s or 1980s. The USTs and AST were operated and removed without permits from the County of Ventura that the Maulhardts believed were not required at that time. A 500-gallon (approximate) AST formerly used to store gasoline and 500-gallon UST (approximate) formerly used to store diesel fuel were located adjacent to the Garage or "gas house" and were removed approximately 30 years ago (Figure 3; Table 2, Item 11). A gasoline 250-gallon (approximate) UST was formerly located adjacent to the southeast corner of the two-story Apartment and was removed 20-30 years ago (Figure 3; Table 2, Item 24). According to the Maulhardts, no known fuel releases occurred from either the AST or USTs. No evidence for spills or stained soils were observed at the former AST or UST locations during the reconnaissance (Appendix F, Photographs 10, 11, 36, and 37).

Four existing 500-gallon (approximate) propane ASTs owned and operated by AAA Propane Services, Inc. (AAA) were observed near to the Main Residence, Apartment, eastern Mobile Home, and western Mobile Home (Figure 3; Table 2, Items 25, 27, 30, and 32) (Appendix F, Photograph 35, and 41).

An existing abandoned 500-gallon (approximate) heating oil AST is present immediately west of the Main Residence (Figure 3; Table 2, Item 28); Appendix F, Photograph 40). The heating oil AST was formerly used to provide heating oil for an oil furnace to heat the Main Residence. The Main Residence is now heated with a natural gas furnace.

According to the property owners, a 500-gallon (approximate) weed oil AST was formerly located adjacent to the northwest corner of the Garage that was removed over 30 years ago. This AST was operated and removed without permits from the County of Ventura that the Maulhardts believed were not required at that time. The Maulhardts indicated that the AST likely leaked in the past and that stained soils were observed during removal (Figure 3; Table 2, Item 15).

One 30-gallon storage drum (approximate) was observed partially covered with debris near the southern wall inside of the Storage Shed (Appendix F, Photograph 16). Several trailer mounted pesticide and fertilizer distribution tanks of various sizes were observed inside of the Tin Shed building (Appendix F, Photographs 18-24). A heavily stained waste oil tank with a "Black Gold" label on it was observed within the Tin Shed (Appendix F, Photograph 22). Several small 5-gallon plastic portable fuel containers and an empty 25-gallon (approximate) waste oil drum were observed at the western end of the Tin Shed (Appendix F, Photograph 14). The drum was labeled however it was not legible due to age and condition.

3.4.5.2 Hazardous Substances and Petroleum Products

Small quantities of household hazardous chemicals, agricultural chemicals, petroleum products, and waste oil were observed within the Tin Shed, Garage, and Storage Shed (Appendix F, Photographs 14, 16, 18-20, 22, 24, 25 and 27-30). Lynn Maulhardt indicated that waste oil was discovered in the soil underlying the Apartment garage floor, and that this area was filled with concrete slurry over 40 years ago (Figure 3; Table 2, Item 23).

Records reviewed for this report indicate that hazardous substances including pesticides, herbicides, and various petroleum products, may have been stored in the Maulhardt Ranch farmyard area. According to the property owners, the current chemical storage area for the Maulhardt Ranch strawberry farm is located at the northern end of the parcel, which is not within the boundary of the Site.

3.4.6 Interviews

3.4.6.1 Interview with Owner

Two of the current owners of the property, Lynn and Richard Maulhardt, were interviewed by Tetra Tech during the October 23, 2017 Site reconnaissance. The Maulhardt brothers indicated that the Site is part of the 107.25-acre property located at the southeast corner of North Rose Avenue and Camino Del Sol that is currently being considered for sale and redevelopment. The past and current use of the Site was for agricultural purposes. The Maulhardt brothers indicated that their family has owned and occupied the property since 1869. The Maulhardt brothers indicated that various septic tanks, ASTs, and USTs are present or have been removed at the residential and farmyard areas of the Maulhardt Ranch over the years. These items were discussed during the Site reconnaissance and are included in the disclosure memorandum discussed in Section 5.7 of the 2018 Phase I ESA (Tetra Tech 2018a; High 2017). The approximate locations and descriptions of these items provided during the onsite interview are shown in Figure 3 and Table 2.

3.4.6.2 Interview with Site Manager

The Site is managed by the Maulhardt family as represented by Lynn and Richard Maulhardt. The interview with Lynn and Richard Maulhardt is discussed in Section 3.4.6.1.

3.4.6.3 Interview with Occupants

The interview was conducted with the Maulhardt family, who has owned the Site since 1869.

3.4.6.4 Interview with Past Owners and Occupants

The Maulhardt family has owned the Site since 1869. Therefore, there are no other past owner-occupants to interview.

3.4.6.5 Interview with Local Government Officials

Tetra Tech contacted local government officials at agencies where records for the Site were available and reviewed by Tetra Tech. Additional information from interviewed government officials, if any, is included in the discussion in previous sections of this report.

3.4.6.6 Interview with Others

No other interviews were conducted with individuals other than those cited above in this section of the report.

3.4.7 Prior Assessments

Tetra Tech completed a Phase I ESA for the Site in March 2018 (Tetra Tech 2018a). Relevant sections of the March 2018 Phase I ESA are cited in this PEA report.

3.4.8 Natural Hazards

3.4.8.1 Seismic Hazards

Regional Earthquake Fault Analysis

The high rate of seismic activity in California and the Site area is the result of large-scale earth processes in which the Pacific plate slides northwestward relative to the North American plate at about 2 inches/year. This plate motion results in horizontal slip (primarily on the San Andreas "strike-slip" fault) and crustal block rotation and compression within a restraining bend of the San Andreas Fault, that has created the series of the prominent mountain ranges and intervening valleys situated between Santa Monica and Santa Barbara and associated thrust and reverse faults (CGS 2002a). Although slower moving than the strike-slip faults of the San Andreas system, these numerous thrust and reverse faults account for over half of the significant earthquakes that have occurred in Southern California during the past century, including the damaging 1971 M 6.6 San Fernando, 1994 M 6.7 Northridge, and 2003 M 6.5 San Simeon earthquakes (Ross *et al.* 2004).

Active and potentially active faults in the Site area were evaluated by reviewing the *Fault Activity Map of California and Adjacent Areas* (Jennings 1994), *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California* (Jennings, *et* al. 2010), *Draft Background Report, City of Oxnard General Plan* (City of Oxnard 2006), Figures 2.2.1b, 2.2.2 and 2.2.3b of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), and Earthquake Zones of Required Investigation Maps for the Saticoy Quadrangle (CDMG 1978), Camarillo Quadrangle (CDMG 1998b; CGS 2002a), and Santa Paula Quadrangle (CDMG 1998a; CGS 2002a). Active faults are defined as those faults with evidence of displacement within the last 11,000 years and potentially active faults are defined as those with evidence of displacement within the last 1.6 million years (CGS 2007). The terms active and inactive faults have been interpreted differently by geologists, seismologists, and agencies. For this report, active faults are defined as having evidence of surface displacement within the last 11,000 years and potentially active faults are defined as having evidence of surface displacement in the last 1.6 million years (CGS 2007).

The earthquake faults located nearest to the Site are the Springville Fault, located approximately 5.4 km (3.3 miles) east of the Site, the Wright Road Fault, located approximately 6.1 km (3.7 miles) north of the Site, the Oak Ridge Fault, located approximately 7.3 km (4.5 miles) north of the Site, the Camarillo Fault located approximately 8.3 km (5.1 miles) east of the Site, and the Ventura-Pitas Point Fault, located approximately 8.9 km (5.5 miles) north of the Site.

The Oak Ridge Fault System is a Late Quaternary dip slip fault dipping at approximately 65 degrees to the south that extends from the Santa Susana Mountains where it has been overridden by the north-dipping Santa Susana Thrust Fault, westward along the southerly side of the Santa Clara River Valley and thence into the Oxnard Plain. The Oak Ridge Fault System is an active reverse fault with a slip rate of 3.0 mm/year, a maximum moment magnitude of 6.9 and a recurrence interval of 299 years. It does not have a surface expression nor have any been shown to cut near-surface sediments (alluvium). It is conceivable that past movement of this fault system in the Oxnard Plain area has not resulted in surface displacements but, instead, has resulted in only broad warping or tilting of the near-surface alluvial sediments. The lack of surface evidence of fault displacement in the Oxnard Plain is not necessarily indicative of activity in the recent geologic past as surface features could easily have been obscured by fluvial processes (erosion or deposition of alluvium). Several recorded earthquake epicenters in the offshore as well as mainland area during historic time may have been associated with the Oak Ridge Fault System or within close proximity and associated with it (County of Ventura 2013).

The Ventura-Pitas Point Fault is a Holocene, oblique left lateral reverse fault, dipping at approximately 64 degrees to the north that extends along the base of the foothills on the north side of the Santa Clara River from Santa Paula westerly to the mouth of the Ventura River, thence westerly into the Santa Barbara Channel area. Evidence for the existence of the Ventura-Pitas Point Fault is based mainly upon minor faulting of terrace deposits north of San Buenaventura and evidence of faulting from the Tidewater Oil Company corehole #5. It has slip rate of 1.0 mm/yr, a maximum moment magnitude of 6.8 and a recurrence interval of 1,112 years (County of Ventura 2013).

The Wright Road Fault is considered to be an active "tear" fault, terminating the west end of the Camarillo and Springville anticlines. It may be interpreted as a structural boundary between the Ventura Anticline on the west and South Mountain to the east (Treiman 1997). This fault was not included in the Appendix A CFP, or discussed in the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013), so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Springville Fault Zone marks the southern edge of the Camarillo Hills, which are largely the expression of the Camarillo Anticline. This fold is relatively young, having developed within the last few hundred thousand years above young, concealed thrust faults of the Springville Fault Zone, which may be a back thrust off of the Oakridge Fault Zone. The Springville Fault Zone is approximately 5.5 miles long. The southern trace is largely concealed, extending approximately 2.5 miles east from the west end of the Camarillo Hills, and is considered to be an active, Holocene fault, with an estimated an average earthquake recurrence interval of 900 years with a displacement of 0.6 to 11 meters per event. The northern trace lies along the main body of the Camarillo Hills, extending approximately 5.5 miles east from the west end of the Camarillo Hills, and is considered to be an active fault, and marks the southern margin of the Camarillo Anticline (Treiman 1997). This fault was not included in the Appendix A CFP, so characteristics such as the configuration, slip rate, and maximum moment magnitude were not reviewed for this report.

The Camarillo Fault is expressed by an east-west anticlinal ridge approximately 5.5 miles long located southwest of Camarillo. This fault extends in an east-west direction immediately south of Camarillo from Calleguas Creek to Camarillo Airport. The present of the fault is based primarily upon the abrupt uplifted sediments along the north side of the fault that resulted in the long linear hill of the southern portion of Camarillo just south of the 101 Freeway (County of Ventura 2013). Limited trenching has not revealed a surface trace for this fault; however, the straight planar nature of most of the escarpment and the steepening of bedding near the base of the slope strongly suggests a surface fault. Although there is no hard evidence for Holocene activity on this fault, the step in the Calleguas Creek flood plain across the fault trace appears to be Holocene. Therefore, this fault is considered to be active (Treiman 1997). This fault was not included in the Appendix A CFP, so characteristics such as the configuration slip rate and maximum moment magnitude were not reviewed for this report.

Analysis of Historical Earthquakes

The rate of seismic activity for the Site areas was estimated from the USGS Earthquake Hazards Program Search Earthquake Catalogue website for the Site area from 1900 through 2018 (USGS 2018).

According to the USGS database, 119 earthquakes with magnitudes exceeding 4.5 have occurred within 63 miles (100 kilometers) of the Site since 1900. Significant historical earthquakes of the Oxnard region include the 1812 earthquake that effected most of Southern California (Richter Magnitude [M_L] 7.0), the 1827 Ventura Earthquake (M_L 7.0), the 1857 Fort Tejon Earthquake (M_L 7.1), the 1952 Tehachapi Earthquake (M_L 7.7), and the 2004 Northridge Earthquake (M_L 6.7). While all of these earthquakes were

felt in the Site area, no historical earthquakes have caused a great amount of property damage or loss of human life in the Site area. However, the historical earthquake record of California spans a little over 200 years and provides only a partial indication of seismic hazards. The absence of earthquakes on many recognized active faults and fault-related folds in California probably reflects recurrence intervals greater than the historical record.

3.4.8.2 Flooding Potential

Flood Zoning

FEMA Flood Insurance Rate Map No. 06111C0910E indicates that the Western half of the Site is located in Zone X (Other Areas) and is defined as areas determined to be outside the 0.2 percent (%) (500-yr) annual chance floodplain , while the eastern portion of the site is located in Zone X (Other Flood Areas) and is defined as areas of 0.2% (500-yr) annual chance of flood; areas of 1% (100-yr) annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% (100-yr) annual chance flood (FEMA 2010).

Reservoir Failure

A review of Section 2.11 and Figures 2.11.1 and 2.11.2 of the *Ventura County General Plan, Hazards Appendix* (County of Ventura 2013) and Section 4.3.3.1; Tables 4-5, 4-6, and 4-7; and Figure 4-3 of the *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California* (County of Ventura 2005) indicates that there are four major reservoirs in the Santa Clara River watershed upstream of the Site that are FEMA high hazard dams that would inundate the Site area in the event of a reservoir failure.

3.4.8.3 Radon

Radon is a naturally occurring, odorless, colorless gas produced by certain geologic materials. It is known to be a human carcinogen and can pose a cancer risk greater than one in one million in humans at concentrations equal to or greater than 4 picoCuries per liter (pCi/L).

The EDR environmental database search indicated that Ventura County is in a Radon Zone 1 area. Zone 1 areas have a predicted average indoor screening level greater than 4 pCi/L. The EDR database search reported that of 38 sites listed in the California Radon database that have been tested for the zip code of 93030, one had radon at levels greater than 4 pCi/L. The Federal Area Radon Information database reported 9 sites tested for radon in the 93454 zip code. The average concentration of tested sites was 0.478 pCi/L in first floor living areas (EDR 2017).

The EDR report gives a passing result for the Site with no further action required. These findings suggest there are no health concerns related to radon at the Site.

3.4.8.4 Asbestos-Containing Rocks

Based on review of available topographic and geologic maps for the Site area and *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDMG 2000) the risk for naturally occurring asbestos (NOA) in the soils of the proposed High School No. 8 site is low.

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4.0 POTENTIAL SITE CONTAMINATION

Based on Tetra Tech's background research for the Site in the High School No. 8 Phase I ESA (Tetra Tech 2018a) and the discussion during the July 25, 2018 PEA scoping meeting between DTSC, Oxnard Union High School District (OUHSD) and Tetra Tech, the following six RECs require assessment:

1. Potential toxic soil gas from potential formation leakage from the Oxnard Oil Field;

2. Potential residual OCPs, arsenic, SVOCs, PAHs, TPHd and TPHmo collectively known as TPHde in soil from fuel oil in smudge pots that were formerly used for frost abatement as part of the agricultural production activities at the Site;

3. Potential impacts to shallow soil, soil gas, and groundwater in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas ASTs and USTs formerly used for the storage of motor fuel and equipment maintenance activities (Figure 3);

4. Potentially hazardous substances and petroleum products that contained VOCs and TPHg have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area (Figure 3);

5. PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol (Figure 2); and

6. The following hazardous pipelines identified within 1,500 feet of the Site (Figure 2):

    - The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site;

    - The City of Oxnard maintains a 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site;

    - The United Water Conservation District (UWCD) maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site; and

    - The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch. The Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8.

The FSP describes the procedures for performing the assessment of RECs 1 through 5.

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5.0 ENVIRONMENTAL SETTING

5.1 FACTORS RELATED TO SOIL PATHWAYS

5.1.1 Site Topography

The ground surface elevations at the Site range from approximately 60 to 65 feet above mean sea level (msl). In general, the Site surface slopes very gently toward the south-southwest (Jensen 2018).

5.1.2 Proximity to Surface Water Bodies

There are no perennial surface water bodies on or close to the Site.

5.1.3 Evidence of Releases to the Environment

5.1.3.1 Potential Releases to Soil Gas

The underlying Oxnard Oil Field could potentially release toxic vapors to soil gas beneath the Site.

Potential contamination of Site soil gas was assessed with the sampling program discussed in Section 6.0.

5.1.3.2 Potential Releases to Soil

- Known use of pesticides and smudge pots for agricultural production at the Site;
- Potential impacts to shallow soil in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas from ASTs and USTs formerly used for the storage of motor fuel; and
- Potential PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol.

Potential contamination of Site soils was assessed with the sampling program discussed in Section 6.0.

5.1.3.3 Potential Releases to Groundwater

Potential impacts to groundwater in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas from ASTs and USTs formerly used for the storage of motor fuel.

Potential contamination of Site groundwater was assessed with the sampling program discussed in Section 6.0.

5.1.4 Site Geology and Soil Types

5.1.4.1 Regional Geology

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the

Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass, which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa, and Pine Mountains to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (CGS 2002a).

5.1.4.2 Local Geology

The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al. 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

Stratigraphy

The Site is underlain at the ground surface by Holocene deltaic alluvium and wash fan deposits to approximately 70 feet below ground surface (bgs). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non-marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs (Earth Systems Pacific [ESP] 2018; Gutierrez, et al. 2008; Turner, et al. 1975).

U.S. Department of Agriculture, Soil Conservation Service Data

The U.S. Department of Agriculture(USDA), Soil Conservation Service data identifies the native soil types at the Site to be Mocho loam, Pico sandy loam and sandy loam substratum, Hueneme sandy loam, and Camarillo sandy loam. These soils are nearly level and occur on alluvial fans and flood plains. Permeability is rapid and surface runoff is very slow, such that there is no hazard of erosion by water (USDA 1970).

Tetra Tech September 2018 Soil Boring Data

Tetra Tech completed 25 soil borings (borings SV-1 through SV-25) to 15.5 feet bgs and five borings (borings SV-26 through SV-30) to 25 feet bgs at the Site for the PEA on September 18-20, 2018. The boring locations are shown on Figures 4 and 5. The borings were drilled using a truck mounted direct push drill rig with continuous core drilling to collect soil samples, document soil conditions in boring logs, and install soil gas wells. In addition, soil and groundwater samples were collected from borings SV-26 through SV-30. A lithologic description of the materials encountered and collected was maintained on boring logs compiled by the field geologist, under the supervision of a California Registered Geologist. Soils were classified in accordance with the Unified Soils Classification System

(USCS) (ASTM 1990a, b), and descriptions included soil type, particle size and distribution, color (using the Munsell soil color chart), moisture content, and evidence of contamination (discoloration, unusual odors). The soils were screened for the presence of elevated organic vapor concentrations using a photoionization detector (PID), and the measurements were recorded on the boring logs (Appendix K).

The soil boring log data indicate that the Site is generally underlain by of silty sand at the ground surface extending to approximately 3 to 8 feet bgs, underlain by interbedded poorly to well graded sand to at least 25 feet bgs. Groundwater was encountered in at approximately 21 feet bgs in borings SV-26 through SV-30. The boring logs are provided in Appendix K.

Earth Systems Pacific April and July 2018 Soil Boring Data

ESP completed 53 geotechnical soil borings to depths ranging from 10 feet bgs to 51.5 feet bgs during April and July 2018 to collect soil samples and soil blow-count density data for the High School No. 8 Geotechnical Report (ESP 2018) that was completed as part of Tetra Tech's Geohazard Assessment/Geotechnical Investigation of the Site (Tetra Tech 2018c). The borings were completed using a truck mounted Mobile Model B-53 hollow stem auger drilling rig. The general subsurface profile observed in the borings consisted of silty sand at the ground surface extending to approximately 3 to 8 feet bgs, underlain by interbedded poorly to well graded sand and occasional gravel with clay and silt layers that are exposed in the borings completed for this project to 51.5 feet bgs. These alluvium and wash deposits were deposited by the Santa Clara River. Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project. The soils were in a slightly moist to moist condition above the water table and wet below the water table. The sandy soils have a loose to very dense consistency while the silt and clay soils were medium stiff to stiff. Several of these soil layers also had varying amounts of fine to coarse gravel and cobbles.

5.1.5 Site Accessibility and Controls

The Site is accessible from a driveway at 1853 Camino del Sol. The access to the Site is controlled by a six-foot high chain link perimeter fence installed by the Maulhardt Ranch for the security.

5.1.6 Proximity to Receptors

The residents nearest to the Site are located along west side of Festivo Street to the east, on the south side of Camino Del Sol to the south, on the west side of North Rose Avenue to west, and the north side of Cesar Chavez Drive to the North (Figure 2). The PEA sample locations are located approximately 150 feet west of residences on Festivo Street, 150 feet north of the residences on Camino Del Sol, 225 feet east of the residences on North Rose Avenue, and 900 feet south of the residences on Cesar Chavez Drive. A covered 6-foot-high chain link fence surrounds the entire Maulhardt Ranch, including the Site, and prevents the visual examination of the Site by the residents in the neighborhoods surrounding the Maulhardt Ranch. These are the nearest potential human receptors.

5.2 FACTORS RELATED TO WATER PATHWAYS

5.2.1 Groundwater

5.2.1.1 Hydrogeologic Setting

The Site is located in the northern portion of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit (Turner, et al. 1975; Ventura County Public Works Agency [VCPWA] 1975). The

Oxnard Plain Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Basin are grouped into three major units; 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System (UAS), and 3) the Lower Aquifer System (LAS).

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer. In the Site area, the semi-perched aquifer extends to depths of approximately 75 feet bgs and the clay cap from approximately 75 feet bgs to 150 feet bgs (Turner, et al. 1975). The semi-perched aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the deltaic channel complex of the ancestral Santa Clara River and form lenses perpendicular to the channels of the ancestral Santa Clara River (Figure 3). The depth to the historically highest groundwater elevation for the Site area shown on Plate 1.2 of the *Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle. Ventura County, California* (CGS 2002a) is approximately 8 feet bgs. The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Oxnard aquifer of the UAS. This clay cap acts as an aquitard. Based on topographic controls, groundwater in the site vicinity is expected to flow toward the south to south-southwest.

The UAS system consists of the Oxnard and underlying Mugu aquifer zones. These two water bearing units were combined due to their similar, planar structure. Both the Oxnard and Mugu aquifers are composed of sediments deposited largely by the ancestral Santa Clara River during the Upper Pleistocene. The Oxnard aquifer zone extends from approximately 150 to 200 feet bgs in the Site area and is a laterally continuous layer gravel and cobbles and coarse to fine sand, with local fine-grained lenses deposited in non-marine environment. The underlying Mugu aquifer zone extends from approximately 200 to 400 feet bgs in the Site area and consists of laterally continuous sand and gravel deposited in a shallow marine embayment on an erosional unconformity on top of the San Pedro formation that forms the top of the LAS.

The LAS system in the Site area, in descending order, consists of the Hueneme and Fox Canyon aquifer zones. The sediments in the LAS are more structurally complex than the UAS resulting from folding and faulting. Both the Hueneme and Fox Canyon aquifer zones are composed of lower Pleistocene age San Pedro Formation.

5.2.1.2 Site Groundwater Elevations

Tetra Tech September 2018 PEA Field Assessment

Groundwater was encountered in the semi-perched aquifer zone at approximately 21 feet bgs in borings SV-26 through SV-30 completed for the PEA field assessment during September 2018. The boring logs are provided in Appendix K.

Earth Systems Pacific April and July 2018 Soil Boring Data

Groundwater was encountered in the semi-perched aquifer zone at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for ESP geotechnical investigation during April and July 2018.

5.2.1.3 Groundwater Quality

Groundwater in the borings completed for this project in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use (Turner, et al. 1975). The groundwater in the underlying UAS system, the Oxnard and underlying Mugu aquifer zones is generally of good quality and serves as a major source of water for agriculture, municipal, and industrial use in the Oxnard area.

5.2.1.4 Aquifers Impacted by Site Releases

Potential impacts to the groundwater of the semi-perched zone from fuel formerly stored in ASTs and USTs in the Maulhardt Ranch farmyard area was identified in the Phase I ESA report (Tetra Tech 2018a). Potential impacts to soil and groundwater from the former fuel storage ASTs and USTs in being assessed as part of this PEA.

5.2.2 Surface Water

No surface water was observed at the Site during the reconnaissance performed on July 2, 2018. It is likely that during periods of moderate rainfall, free surface water that accumulates on the Site may flow south and southwest and possibly into gutters along Camino Del Sol and North Rose Avenue (Figures 1 and 2). However, the USDA, Soil Conservation Service report indicates that soil permeability at the Site is moderate to rapidly moderate and surface runoff is very slow, such that there is a low hazard of erosion by water (USDA, Soil Conservation Service 1970).

5.3 FACTORS RELATED TO AIR PATHWAYS

5.3.1 Potential Air Pathway Sources

There is no documented evidence of releases of hazardous substances to the atmosphere from the Site. Based on the graded agricultural Site land use documented in aerial photographs and images dating from 1927 to 2012 (Appendix D), there is a potential for releases to the air from fugitive dust emissions of potentially contaminated surface soils.

The Site overlies the Oxnard Oil Field. There is a potential for methane and hydrogen sulfide toxic gas to occur in near surface soil due to the presence of the underlying Oxnard Oil Field.

The prevailing wind direction for the Site area is from the west from April through October and the north from October through April. The average wind speeds are 6.6 miles per hour (mph) from November through May and 4.8 mph from June through October (Weather Spark 2018).

5.3.2 Site Climatologic Setting

The City of Oxnard is situated in a Mediterranean (dry subtropical) climate zone, experiencing mild and relatively wet winters, and warm, dry summers, in a climate called the warm-summer Mediterranean climate. Onshore breezes keep the communities of Oxnard cooler in summer and warmer in winter than those further inland. The average mean temperature is 61 degrees Fahrenheit (F). The average minimum temperature is 52 degrees F and the average maximum temperature is 69 degrees F. Generally, the weather is mild and dry, with 354 days of sunshine annually. The average annual precipitation is 15.62 inches (Wikipedia 2018).

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6.0 SAMPLING ACTIVITIES AND RESULTS

6.1 SUMMARY OF ACTIVITIES

Based on the background data collected for the PEA, the objectives of the sampling program, as detailed in the FSP (Tetra Tech 2018b), were as follows:

- Assess the potential presence and/or migration of methane, hydrogen sulfide, and fixed gases (carbon dioxide, carbon monoxide, oxygen, and nitrogen) in soil gas due to the underlying Oxnard Oil Field;
- Assess the potential presence of OCP residues, arsenic, SVOCs, PAHs, and TPHde in surface soil due to former crop production activities;
- Assess the potential presence of PCBs in surface soil beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol; and
- Assess the potential VOC, SVOC, TPHg, and TPHde impacts to soil gas, shallow subsurface soil, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas.

The field sampling program described in the FSP consisted of two parts: a soil gas sampling assessment and a soil and groundwater sampling assessment. The soil gas, soil, and groundwater sampling were conducted on September 18 through 20, 2018. All field activities were conducted according to the guidelines provided in the QAPP (Appendix A) and Site Health and Safety Plan (Appendix B). Summaries of the soil gas, soil, and groundwater sampling programs are provided in Tables 3, 4, and 5, respectively.

Sixty soil gas samples were collected from 30 locations across the Site at depths of 5 and 15 feet bgs. Samples from each location were used to address one or more of the objectives described above. The soil gas sample analyses and rationale are provided in Table 3.

Surface soil samples were collected from a total of 61 locations (SS-1 through SS-61) (Figure 4). Surface soil samples from each location were used to address one or more of the objectives described above. Surface soil samples and analyses and the rationale for each are provided on Table 4.

Ten subsurface soil samples were collected from a total of five locations (SV-26 through SV-30) (Figure 4). Subsurface soil samples from each location were used to address one or more of the objectives described above. The subsurface soil samples and analyses and the rationale for each are provided on Table 4.

Five groundwater samples were collected from a total of five locations (SV-26 through SV-30) (Figure 4). Groundwater soil samples from each location were used to address one or more of the objectives described above. The groundwater samples and analyses conducted are provided on Table 5.

The following sections describe the sampling strategy, assessment methods and procedures, analytical program, sample handling, decontamination procedures, and management of investigation-derived waste (IDW).

6.2 FIELD DOCUMENTATION

6.2.1 Field Log Book/Health and Safety Documentation

During field activities, a field log book and Health and Safety Documentation Forms were used to document where, when, how, and from whom any vital project information was obtained, and heathy safety practices. Log book and health and safety form entries were complete and accurate enough to permit reconstruction of field activities. Each page was dated and numbered and the time of each entry noted. All entries were legible, written in black permanent ink, and signed by the individual making the entries. At a minimum, the following items were recorded in the field log:

- Site name and address;
- Recorder's name;
- Team members and their responsibilities;
- Time of site arrival/entry onsite and time of site departure;
- Weather characteristics;
- Other personnel onsite;
- A summary of any onsite meetings;
- Health and safety PID monitoring data;
- Deviations from sampling plans and site safety plans; and
- Calibration readings for any equipment used and equipment model.

During sample collection, the following information was recorded in the logbook:

- Sample identification number;
- Sample location and description;
- Sampler's name(s);
- Date and time of sample collection;
- Type of sample (i.e., matrix);
- Type of sampling equipment used;
- Field observations and details important to analysis or integrity of samples (e.g., weather and odors); and
- Instrument readings (e.g., PID).

6.2.2 Boring Logs

The boring logs were prepared under the direct supervision of, and signed by, a California Registered Geologist. A lithologic description of the materials encountered and collected was maintained on boring logs compiled by the field geologist. Soils were classified in accordance with the USCS (ASTM 1990a, 1990b), and descriptions included soil type, particle size and distribution, color (using the Munsell soil color chart), moisture content, and evidence of contamination (discoloration, unusual odors). The soil samples were screened for the presence of elevated organic vapor concentrations using a PID and the measurements were recorded on the boring logs (Appendix K).

6.2.3 Chain-of-Custody

Each shipment of samples sent to the laboratory was accompanied by a chain-of-custody (COC) record. COC records are used to maintain the custodial integrity of the samples. A sample is considered to be in someone's custody if it is either in their physical possession, in their view, locked up, or kept in a secured area that is restricted to authorized personnel. COC records are also used to identify the contents of each sample shipment and the desired analyses to be performed on each sample. Copies of COC records are provided with the laboratory report in Appendices L (soil gas samples) and M (soil samples).

6.3 UTILITY CLEARANCE

Underground Service Alert (USA) was notified for utility clearance at the Site for locations of proposed boreholes.

6.4 SAMPLING RATIONALE

6.4.1 Soil Gas Sampling Locations and Rationale

A soil gas survey was conducted by InterPhase and A&R under subcontract to Tetra Tech to assess potential oil field–related toxic gases in soil gas beneath the Site. The direct push drilling and soil probe installation was performed by InterPhase and the soil gas sample collection and analysis was performed by A&R. The soil gas survey was used to assess potential toxic gas contamination associated with: (1) the underlying Oxnard Oil Field and (2) to assess potential risks from VOC and TPHg impacts to soil gas in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas from former ASTs and USTs formerly used for the storage of motor fuel in these areas. These potential risks were evaluated by collecting soil gas samples from 30 direct-push borings (SV-1 through SV-30) configured in a grid pattern across the Site (Figure 4). Two soil gas samples were collected from each of the borings, one at 5 feet bgs and the second at 15 feet bgs.

Soil gas samples were analyzed onsite at A&R's onsite mobile laboratory for methane, H_2S, VOCs, and TPHg. Soil gas were analyzed for fixed gases (carbon dioxide, oxygen, nitrogen, and carbon monoxide) at A&R's stationary laboratory in Ontario, California. The soil gas samples were analyzed for methane by EPA method 8015B, for H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, VOCs by EPA method 8260B, TPHg by LUFT GCMS, and fixed gases by ASTM Method D-1946 (Table 3). Laboratory detection limits are provided in Table 6. Six field duplicate samples were collected for quality assurance/quality control (QA/QC) purposes (Table 3). The soil gas survey was conducted in accordance with *Advisory – Active Soil Gas Investigations* (DTSC and Los Angeles Regional Water Quality Control Board [LARWQCB] 2015).

6.4.2 Surface Soil Sampling Locations and Rationale

There were three objectives of the surface soil sampling program: (1) to assess potential OCP and arsenic contamination associated with agricultural activities; and (2) to assess potential hydrocarbon contamination from former smudge pot frost abatement activities, and to assess potential PCB contamination in the surface soil beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol.

Surface soil was sampled from a total of 61 locations (SS-1 through SS-61) (Figure 4).

Following guidelines recommended in *Interim Guidance for Sampling Agricultural Fields for School Sites* (Ag Guidance) (DTSC 2008), surface soil samples were collected on an approximate grid pattern at a density of approximately 1.2 sample locations per acre for a total of 60 locations: SS-1 through SS-60 (Figure 4) to assess potential OCP impacts and were analyzed for OCPs using EPA method 8081A. Surface soil samples were collected from 15 locations (SS-1, SS-4, SS-6, SS-9, SS-16, SS-23, SS-29, SS-34, SS-35, SS-38, SS-42, SS-44, SS-47, SS-57, and SS-60) to assess potential impacts to from arsenic following using EPA method 6061B and potential impacts from smudge pot fuel (for SVOCs using EPA method 8270C, PAHs using EPA method 8310, and TPHde using EPA method 8015B). Surface soil sample SS-61 was collected from beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol to assess the potential PCBs impacts using EPA method 8082. The soil sample and analyses and the rationale for each are listed in Table 4. Laboratory detection limits are provided in Table 7. Surface soil samples were collected by Tetra Tech using hand sampling methods.

6.4.2.1 Subsurface Soil Sampling Locations and Rationale

Subsurface soil samples were collected in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas to assess potential VOC, SVOC, TPHg, and TPHde impacts from ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas.

Ten subsurface soil samples were collected at 10 and 20 feet bgs from 5 direct-push borings (SV-26 through SV-30). Soil sample and analyses and the rationale for each are provided in Table 4. Laboratory detection limits are provided in Table 7. Continuous core direct push drilling was performed by InterPhase. The five borings were sampled continuously from the surface to the total depth for lithologic logging and to inspect for visible evidence of potential impacts from the ASTs and USTs formerly used for the storage of motor fuel and herbicides in the Maulhardt Ranch residential and farmyard areas. Soil sample and analyses and the rationale for each are provided in Table 4. The ten subsurface soil samples were analyzed for VOCs via EPA method 8260B, TPHg (C_4-C_{12} carbon range) via EPA method 8015B, and TPHde via EPA method 8015B. The TPHde analysis is broken out as C_{13}-C_{22} carbon range (TPHd), C_{23}-C_{40} carbon range (TPHmo), and C_{13}-C_{40} carbon range (TPHde) as shown on Table 4. Laboratory detection limits are provided in Table 7.

6.4.2.2 Groundwater Sampling Locations and Rationale

Groundwater samples were collected in the areas of the Site adjacent to the Maulhardt Ranch residential and farmyard areas to assess potential VOC, TPHg, and TPHde impacts from ASTs and USTs formerly used for the storage of motor fuel and herbicides in these areas.

Five hydropunch groundwater samples were collected using direct push drilling methods at 20 feet bgs from 5 direct-push borings (SV-26 through SV-30). Groundwater sample and analyses and the rationale for each are provided in Table 5. Laboratory detection limits are provided in Table 8. The groundwater

samples were analyzed for VOCs via EPA method 8260B and TPHg (C_4-C_{12} carbon range) via EPA method 8015B, and TPHde via EPA method 8015B. The TPHde analysis is broken out as C_{13}-C_{22} carbon range (TPHd), C_{23}-C_{40} carbon range (TPHmo), and C_{13}-C_{40} carbon range (TPHde) as shown on Table 5.

6.4.2.3 Rationale for Extractable Petroleum Hydrocarbons Analysis by Massachusetts Department of Environmental Protection Method

If TPHg or TPHde is detected in surface soil samples, subsurface soil samples, or groundwater samples at concentrations greater than the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Tier 1 Environmental Screening Levels (ESLs) for soil (SFRWQCB 2016), they will also be analyzed for extractable petroleum hydrocarbons (EPH) by Massachusetts Department of Environmental Protection Method in accordance with the recommendation in the PEA Guidance Manual (DTSC 2015) for performing simplified risk exposure analysis for TPH. Sample volume will be collected during the mobilization and archived with the laboratory pending review of TPH sample results.

6.5 SAMPLE COLLECTION PROCEDURES

6.5.1 Soil Gas Sampling

Soil gas sample collection was performed by InterPhase in accordance with *Advisory – Active Soil Gas Investigations* (DTSC and LARWQCB 2015). A brief description of the sample collection procedures is provided below. The soil gas sampling contractor's field sampling procedures are included in the FSP QAPP in Appendix A.

The 60 soil gas probes were installed in 30 soil borings completed using a direct push drilling rig. The borings were drilled using a 2.25-inch core sampler lined with acetate sleeves to recover continuous core soil samples for logging purposes. The temporary soil gas sampling probes were constructed by attaching 0.25-inch diameter polyethylene tubing to a gas permeable sampling screen and lowering the screen to the deep target sampling depth (15 feet bgs). Clean sand was poured into the borehole until it covered the sampling screen by at least 6 inches. Bentonite granular chips were then poured into the borehole to fill the annular space to approximately 6 inches below the next target sampling depth. The bentonite chips were then hydrated to seal the sampling probe. This process was repeated to install the shallower sampling point at 5 feet bgs. The sampling points were finished with approximately 1 to 2 feet of the sample tubing extending above the ground surface, and the borehole sealed to ground surface with hydrated bentonite. No purging or sampling was performed for a minimum of 30 minutes after probe completion, so that the bentonite had time to form a seal between sample probes.

Sixty discrete and 6 duplicate soil gas samples were collected from the 60 soil gas probes. A leak test was performed at all locations to ensure a tight seal at the surface. The leak tests were performed by placing a cloth saturated with isopropyl alcohol (IPA) around the above ground sampling system at the surface of each boring during purging and sampling. If the above ground sampling system seal was not intact, IPA would be detected in the soil gas sample. Very low concentrations of IPA were detected in 23 of the 47 soil gas samples at concentrations less than 10 times the laboratory reporting limit. The *Advisory – Active Soil Gas Investigations* (DTSC and LARWQCB 2015) states that:

> "If the concentration of the leak check compound is greater than or equal to 10 times the reporting limit for the target analyte(s), then corrective action is necessary."

IPA was not detected in any of the soil gas samples. Therefore, the test results for the 60 soil gas samples are useable.

Sixty normal soil gas samples and six duplicate samples were collected from the 60 soil gas probes using a sampling system that includes a vacuum pump, vacuum gauge, a calibrated flow indicator, moisture trap, and a metering valve. The sampling system was purged by vacuum pump. Prior to purging or sampling soil gas, a shut-in test was conducted to check for leaks in the above ground fittings. The shut-in test consists of assembling the above-ground apparatus (e.g., valves, lines, fittings, vacuum manifold and pump downstream from the top of the probe) and evacuating the lines to a measured vacuum of about 100 inches of water column (in-H_2O), then shutting the vacuum in with closed valves on opposite ends of the sampling train. The vacuum gauge installed on the vacuum manifold was observed for at least one minute and there was no observable loss of vacuum, therefore, the fittings were tight and not leaking.

Two soil gas sample aliquots were collected from each probe, one was collected in Tedlar bags, one for onsite analysis and one for off-site analysis. The soil gas samples collected for off-site analysis were stored in boxes and were transported by A&R to their laboratory in Ontario, California for analysis.

Soil gas samples were analyzed in A&R's mobile laboratory in the field for methane by EPA method 8015B, H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, VOCs by EPA method 8260B, and TPHg by LUFT GCMS. The soil gas samples analyzed for fixed gases were analyzed offsite at A&R's laboratory in Ontario, California by ASTM Method D-1946.

6.5.2 Surface Soil Sampling

Sixty-one discrete surface soil samples bgs (SS-1 through SS-61; Figure 4) and 11 duplicate surface samples were collected from 61 locations on the Site at depths of 0.0 to 0.5 feet bgs (Table 3). The surface soil samples were collected by hand directly into pre-cleaned glass sample containers fitted with Teflon-lined screw-caps.

6.5.3 Subsurface Soil Sampling

Soil borings were advanced at five locations (SV-26 through SV-30) using a direct-push drilling rig (Figure 4). Ten subsurface soil samples and one duplicate subsurface soil sample were collected at depths of 15 feet to 15.5 feet bgs and 20.0 to 20.5 feet bgs from the five direct-push borings to test for fuel related contaminants (Figure 4 and Table 4). The shallow subsurface soil samples were collected in acetate sleeves, which were sealed with Teflon sheets and end caps.

The original subsurface soil sampling schedule presented in the FSP (Tetra Tech 2018b) indicated that the soil samples would be collected at 5 feet to 5.5 feet bgs and 10.0 to 10.5 feet bgs based on the assumption that groundwater would be encountered at 15 feet bgs. The subsurface soil sample collection schedule was adjusted to 15 feet to 15.5 feet bgs and 20.0 to 20.5 feet bgs because groundwater was encountered at approximately 21 feet bgs.

6.5.4 Groundwater Sampling

Soil borings were advanced at five locations (SV-26 through SV-30) using a direct-push drilling rig (Figure 4). Five discrete and one duplicate groundwater samples were collected at depths of 21.0 to 21.5 feet bgs from the five borings using direct push drilling procedures. The groundwater samples were collected in 40 ml VOA vials and 1-liter amber glass containers (Table 5).

6.5.5 Soil Logging

The borings were logged using the Unified Soil Classification System (USCS) as defined in the ASTM methods D 2487-90 (ASTM 1990a) and D 2488-90 (ASTM 1990b). During sampling, a PID calibrated with isobutylene gas was used to monitor the potential presence and concentrations of organic vapors in the breathing zone for workers at each sample location and to screen soil samples. These organic vapor readings were recorded on field logs prepared by the field geologist/engineer during sampling activities. The drill cuttings and soil samples were evaluated in the field for staining and odor. The labeled samples were placed in an ice chest containing pre-cooled artificial ice pending delivery to the analytical laboratory with COC records.

6.5.6 Field Log

The following sampling information was recorded on the field logs: sample number and location, date and time, sample depth, lithologic description in accordance with the USCS (ASTM 1990a, 1990b), description of any visible evidence of soil contamination (i.e., odor, staining), and PID readings.

6.5.7 Sample Handling

6.5.7.1 Sample Containers and Preservatives

Sample containers utilized for this assessment were glass jars, acetate sleeves, and EPA 5035 kits for soil samples, and Tedlar bags for soil gas samples, and 40 ml glass VOA vials and 1-liter amber glass bottles for groundwater samples. All containers were received pre-cleaned. Preservatives are also not required for soil gas samples, as they are sealed in airtight containers and analyzed within method holding times. EPA 5035 kit chemical preservatives were used for soil samples to be analyzed for VOCs via EPA method 8260B and TPHg via EPA method 8015B. Groundwater samples that were analyzed for VOCs via EPA method 8260B and TPHg via EPA method 8015B were preserved with hydrochloric acid (HCL), All the soil and groundwater samples were placed on ice following collection to ensure sample integrity. Preservatives are not required for soil gas samples, as they are sealed in airtight containers and analyzed within method holding times.

Analytical methods, number of samples, types of containers, and holding times are summarized in Appendix A, Tables 3-5.

6.5.7.2 Soil Sample Packing and Shipping

To identify and manage samples collected in the field, sample labels were affixed to each sample container. The sample labels included the following information:

- Project number;
- Site name;
- Sample identification number;
- Sampler's initials;
- Date and time of collection; and

- Requested analyses.

Following collection and labeling, soil samples were immediately placed in a sample cooler for temporary storage. The following protocol was observed for sample packaging:

- Sample containers were placed in clear, plastic, leak-resistant, resealable bags prior to placement in the ice chest.
- Samples were placed in the ice chest with enough packaging material to minimize the potential for disturbance and/or breakage of the sample containers.
- Ice packs were placed in the coolers to keep samples cold during transport to the analytical laboratory.
- The COC form was placed in a water-resistant plastic bag and taped on the inside of the ice chest lid.

Soil gas samples collected from September 19 and 20, 2018 for analysis onsite in A&R's mobile laboratory for methane by EPA method 8015B, H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, VOCs by EPA method 8260B, and TPHg by LUFT GCMS (Table 3). Soil gas samples analyzed for fixed gases by ASTM Method D-1946 at A&R's stationary laboratory in Ontario, California were retained by A&R personnel on September 20, 2018 and stored in boxes under COC documentation and transported by A&R to their stationary laboratory on September 20, 2018.

The soil samples and groundwater samples were transported to American Environmental Testing Laboratory (AETL) by courier under COC documentation on September 20, 2018.

6.5.8 Field Instrument Calibration

A Landtech GEM 2000 and PID were used for health and safety monitoring and field screening during soil sampling. The data were used as an immediate indicator of methane and H_2S gas, and VOC vapors in Site soils or in the breathing zone of Site workers.

The Landtech GEM 2000 was calibrated at the vendor prior to use. The PID must be calibrated in order to display concentration in units equivalent to parts per million (ppm). A span gas, containing a known concentration of an ionizable gas or vapor, was used to set the sensitivity. Isobutylene at 100 ppm and ambient air were used to calibrate the PID. The PID was calibrated once per day.

6.5.9 Decontamination Procedures

All equipment that came into contact with potentially contaminated soil or water was decontaminated consistently to ensure the quality of samples collected. Disposable equipment intended for one-time use was decontaminated and packaged for appropriate disposal. Equipment was decontaminated prior to and after each use. All drilling and sampling devices used were decontaminated using the following procedures:

- Non-phosphate detergent and tap water wash, using a brush if necessary;
- Tap-water rinse;

- Initial deionized/distilled water rinse; and
- Final deionized/distilled water rinse.

Equipment was decontaminated in a pre-designated area, and clean bulky equipment was stored on plastic sheeting in uncontaminated areas. Cleaned small equipment was stored in plastic bags. Materials stored more than a few hours were also covered.

6.6 SAMPLE ANALYSES AND RESULTS

Summaries of the total number of samples and corresponding analytical methods for soil gas samples are provided in Table 3, soil samples in Tables 4, and groundwater samples in Table 5.

Soil gas samples were analyzed onsite in A&R's mobile laboratory for methane by EPA method 8015B, H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, VOCs by EPA method 8260B, and TPHg by LUFT GCMS (Table 3). Soil gas samples were analyzed for fixed gases by ASTM Method D-1946 at A&R's stationary laboratory in Ontario, California. A&R's analytical procedures and QA/QC measures are detailed in the laboratory's Standard Operating Procedure, provided as Attachment B to the QAPP (Appendix A). The laboratory's detection levels are provided in Table 6. Analytical results for soil gas samples are summarized in Tables 9 and 10. A&R's laboratory's report packages are provided in Appendix L.

The soil and groundwater samples were analyzed at AETL, in Burbank, California. Analytical procedures and QA/QC measures are detailed in the QAPP (Appendix A). Method detection limits (MDLs) and method reporting limits (MRLs) are provided in Tables 7 (soil) and 8 (groundwater). Analytical results for soil samples are summarized in Table 11. Compounds that were detected at concentrations below the MRL (i.e., between the MDL and RL) are reported as estimated concentrations and flagged with a "J" qualifier in data tables. The laboratory report packages are provided in Appendix M.

6.6.1 Field Quality Control Samples

Field duplicate samples were collected to assess the consistency of sampling procedures and precision of laboratory analyses. Field duplicate soil gas samples were collected by filling two Summa canisters at a single location and depth. Duplicate soil samples were obtained by collecting two adjacent sleeves from a single boring probe. For example, if a sample was collected from 5 to 5.5 feet bgs, then its duplicate was collected from 5.5 to 6 feet bgs in the same boring. For the surface soil composite duplicate, a discrete duplicate sample was collected side-by-side with the discrete samples collected for one of the composite groups and submitted to the laboratory to comprise the duplicate composite sample.

Six soil gas duplicate samples (SV Dupe 1 through SV Dupe 6) (Table 3), 12 soil duplicate samples (Soil Dup 1, Soil Dup 2, Soil Dup 2-1, Soil Dup 2-2, Soil Dup 3, Soil Dup 3-1, Soil Dup 3-2, Soil Dup 3-3, Soil Dup 3-4, Soil Dup 5, Soil Dup 6, and Soil Dup 7) (Table 4), and one duplicate groundwater sample (GW Dupe) (Table 5) were collected during fieldwork for the PEA.

6.6.2 Soil Gas Sample Analytical Results

During the soil gas sampling on September 19 and 20, 2018, 66 soil gas samples, including 6 duplicates, were collected from 30 locations (SV-1 through SV-30) to assess potential toxic soil gas related to the underlying Oxnard Oil Field. The 66 soil gas samples were analyzed in A&R's onsite laboratory for

methane by EPA method 8015B and H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument, and at A&R's stationary laboratory in Ontario, California for fixed gases by ASTM Method D-1946. The soil gas sample results for methane, H_2S, and fixed gases are summarized in Table 9. Methane, hydrogen sulfide, carbon monoxide, and carbon dioxide, were not detected in any soil gas samples. In the fixed gas analyses, oxygen content ranged between 22.4 and 10.3%, and the nitrogen content ranged between 66.6 and 90.6%.

During the soil gas sampling on September 19 and 20, 2018, 11 soil gas samples, including 1 duplicate, were collected from 5 locations (SV-26 through SV-30) to assess potential fuel related compounds in soil gas from the former ASTs and USTs in the adjacent Maulhardt Ranch farmyard and residential areas. The soil gas samples were analyzed in A&R's onsite laboratory for VOCs by EPA method 8260B and TPHg by LUFT GCMS. The soil gas sample results for VOCs by EPA method 8260B and TPHg by LUFT GCMS are summarized in Table 10. Toluene was detected at concentrations below the DTSC Screening Level (310 micrograms per liter [µg/L]) ranging from 0.030 µg/L in samples SV-26-15, SV-26-15 Dup, SV-27-15, SV-28-5, SV-29-5, SV-29-15, SV-30-5, and SV-30-15 to 0.070 µg/L in sample SV-26-5. Naphthalene was detected at concentrations below the DTSC Screening Level (11 µg/L) in samples SV-27-15, SV-28-15, and SV-30-5 at 0.020 µg/L.

6.6.3 Soil Sample Analytical Results

The following sections summarize the analytical results for soil samples collected during the PEA.

6.6.3.1 Analytical Results for Organochlorine Pesticides

Sixty discrete surface soil and nine duplicate surface soil samples were collected from 60 locations to assess OCPs in former row crop areas of the Site. The OCP surface soil sample results are summarized in Table 11. The surface soil sample locations are shown on Figure 4 and the surface soil sample locations for samples with OCPs detected at concentrations that exceed DTSC Screening Levels are shown on Figure 5. The discrete soil samples were to be combined into 15 composite samples and two duplicate composite samples by AETL, the analytical laboratory in accordance with the FSP (Tetra Tech 2018b). The 60 discrete soil samples were not combined into 15 composite samples or two duplicate composite and all 60 discrete soil samples and nine duplicate samples were analyzed for OCPs via EPA method SW8081A.

OCPs were detected in all 60 of the discrete surface oil samples and the nine duplicate samples collected for OCP analysis (Table 11). The analytical results for OCPS are summarized below.

- The OCPs 4,4'-DDD (DDD) and 4,4'-DDT (DDT) were detected in all the samples at concentrations below their respective DTSC Screening Levels (1,900 µg/kg and 1,900 µg/kg). 4,4'-DDE (DDE) was detected in 68 out of 69 samples at concentrations below its respective DTSC Screening Level (2,000 µg/kg) and was not detected at a concentration above the laboratory MDL (1.0 µg/kg) in sample SS-35-0 (Table 11).

- Chlordane (total) was detected in 54 samples at concentrations below its respective DTSC Screening Level (1,700 µg/kg) and was not detected at a concentration above the MDL (1.0 µg/kg) in 16 samples (Table 11).

- Chlordane (alpha) was detected in 43 samples and was not detected at a concentration above the MDL (1.0 µg/kg) in 26 samples. There is no DTSC Screening Level for Chlordane (alpha) (Table 11).

- Chlordane (gamma) was detected in 43 samples at concentrations below its respective DTSC Screening Level (1,700 µg/kg) and was not detected at a concentration above the laboratory MDL (1.0 µg/kg) in 26 samples (Table 11).

- Dieldrin was detected in 51 samples at concentrations below its respective DTSC Screening Level (34 µg/kg), in three samples at concentrations above its respective DTSC Screening Level SS-49 (Soil Dupe 3) at 37.20 µg/kg, SS-51 (Soil Dupe 3-3) at 34.70 µg/kg, and SS-59 at 40.40 µg/kg), and was not detected at a concentration above the MDL (1.0 µg/kg) in 17 samples (Figure 5 and Table 11).

- Toxaphene was detected in 20 samples at concentrations below its respective DTSC Screening Level (490 µg/kg), in 33 samples at concentrations above its respective DTSC Screening Level and was not detected at a concentration above the MDL (85.0 µg/kg) in 10 samples. The toxaphene concentrations in the 33 samples with concentrations above its respective DTSC Screening Level ranged from 510 µg/kg in sample SS-32 to 2,600 µg/kg in sample SS-49 (Soil Dupe 3-1) (Figure 5 and Table 11).

No other OCPs were detected at concentrations above their respective MDLs or DTSC Screening Levels.

6.6.3.2 Analytical Results for Arsenic

Fifteen surface soil samples and two duplicate samples were collected from 15 locations (SS-1, SS-4, SS-6, SS-16, SS-9, SS-23, SS-29, SS-34, SS-35, SS-38, SS-42, SS-44, SS-47, SS-57, and SS-60) to assess potential impacts to Site soils from arsenic using EPA method 6061B. Arsenic was detected in one sample (sample SS 42-0) at 2.65 milligrams per kilogram (mg/kg). Arsenic was not detected at concentrations above the laboratory MDL (2.5 mg/kg) or the DTSC arsenic screening value for soil at California School Sites (DTSC-ASL) (DTSC 2008) of 12 mg/kg in any other of the 16 samples (Appendix M).

6.6.3.3 Surface Soil Analytical Results for SVOCs, PAHs, VOCs, and TPHde

Fifteen surface soil samples and two duplicate sample were collected from 15 locations (SS-1, SS-4, SS-6, SS-9, SS-16, SS-23, SS-29, SS-34, SS-35, SS-38, SS-42, SS-44, SS-47, SS-57, and SS-60) to assess potential impacts to Site soils from smudge pot fuel. The samples were analyzed for SVOCs using EPA method 8270C, PAHs using EPA method 8310, and TPHde using EPA method 8015B. SVOCs were not detected at concentrations above their respective laboratory MDLs or DTSC Screening Levels (refer to Table 7) in any of the 17 samples (Appendix M). The PAHs fluoranthene and phenanthrene were detected in sample Soil Dup 3, the duplicate sample for SS-29 at concentrations of 0.0100 mg/kg (0.0117 mg/kg), respectively. The DTSC Screening Level for fluoranthene is 2,400 mg/kg and there is no DTSC Screening Level for phenanthrene (Table 7 and Appendix M). TPH as diesel fuel (C9-C22 carbon range) was detected in surface soil sample SS-35 (8 mg/kg) as compared to the DTSC Screening Level of 230 mg/kg. TPH as heavy hydrocarbons (C22-C40 carbon range) was detected in surface soil samples SS-4 (4.3 mg/kg), SS-29 (9.9 mg/kg), the duplicate sample for SS-29, Soil Dup 3 (11.3 mg/kg), SS-35 (19.1 mg/kg), SS-57 (12.6 mg/kg), and the duplicate sample for SS-57, Soil Dup 5 (5.8 mg/kg) as compared to the DTSC Screening Level of 5,100 mg/kg. TPH as diesel and heavy hydrocarbons (C9-C40 carbon range) was detected in surface soil samples SS-4 (4.3 mg/kg), SS-29 (9.9 mg/kg), the duplicate sample for SS-29, Soil Dup 3 (11.3 mg/kg), SS-35 (27.1 mg/kg), SS-57 (12.6 mg/kg) and the duplicate sample for SS-57, Soil Dup 5 (5.8 mg/kg) as compared to the DTSC Screening Level of 230 mg/kg. TPH was not detected in any other surface soil samples (Table 12 and Appendix M).

6.6.3.4 Subsurface Soil Analytical Results for VOCs, SVOCs, and TPHde

Ten subsurface soil samples and one duplicate sample were collected from the 5 direct push borings SV-26 though SV-30 at depths of 15 and 20 feet bgs to test for potential fuel related soil contamination from the ASTs and USTs formerly located in the adjacent area of the Maulhardt Ranch farmyard and residential areas. The samples were analyzed for VOCs using EPA method 8260B, SVOCs using EPA method 8270C, and TPHg and TPHde using EPA method 8015M. VOCs and SVOCs were not detected in any of the samples at concentrations above their respective MDLs or DTSC Screening Levels (Table 7 and Appendix M). Gasoline (C4-C12 carbon range), diesel (C9-C22 carbon range), and diesel and heavy hydrocarbons range (C9-C40 carbon range) TPH were detected in sample SV-28-20 at concentrations of 0.128 mg/kg, 2.7 mg/kg, and 2.7 mg/kg, respectively (Table 12). TPH was not detected in any other subsurface soil samples.

6.6.4 Groundwater Analytical Results for VOCs, TPHg, and TPHde

Five groundwater samples and one duplicate sample were collected from approximately 21 feet bgs in the 5 direct push borings SV-26 though SV-30 to test for potential fuel related groundwater contamination from the ASTs and USTs formerly located in the adjacent area of the Maulhardt Ranch farmyard and residential areas. The samples were analyzed for VOCs using EPA method 8260B, and TPHg and TPHde using EPA method 8015M. VOCs, TPHg, and TPHde were not detected in any of the groundwater samples at concentrations above their respective MDLs or DTSC Screening Levels (Table 8 and Appendix M).

The original subsurface soil sampling schedule presented in the FSP (Tetra Tech 2018b) indicated that the groundwater samples would be collected at 15.0 to 15.5 feet bgs based on the assumption that groundwater would be encountered at 15 feet bgs. The subsurface soil sample collection schedule was adjusted to 21 feet to 21.5 feet bgs because groundwater was encountered at approximately 21 feet bgs.

6.7 DISPOSAL OF INVESTIGATION DERIVED WASTE

In the process of collecting environmental samples during the field sampling program, different types of potentially contaminated IDW were generated that included the following:

- Used personal protective equipment (PPE);
- Disposable sampling equipment; and
- Decontamination fluids.

The EPA's National Contingency Plan (NCP) requires that management of IDW comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. The sampling plan followed the U.S. EPA *Office of Emergency and Remedial Response (OERR) Directive 9345.3-02* dated May 1991, which provides the guidance for the management of IDW. In addition, other legal and practical considerations that may affect the handling of IDW were considered.

Listed below are the procedures that were followed for handling the IDW:

- Used PPE and disposable equipment were bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal

landfill. Any PPE and disposable equipment that was disposed of which could have been reused was rendered inoperable before disposal in the refuse dumpster.

- Approximately 10 gallons of decontamination water were placed in one 55-gallon DOT drum, and approximately 0.5 cubic yards of soil cuttings were placed on two 55-gallon DOT drums and stored at the Site pending receipt of the analytical results. Based on the concentrations of contaminants detected, the decontamination water and drill cuttings will be properly disposed of offsite though a treatment and disposal facility.

6.8 DISCUSSION OF RESULTS

The analytical results of the soil gas survey are summarized in Tables 9 and 10. The analytical results for soil and groundwater samples are presented in Appendix M. The analytical results OCPS in surface soil are summarized in Table 11 and the analytical TPH in soil are summarized Table 12. A brief summary of the PEA investigation results is presented below.

6.8.1 Soil Gas Survey

The soil gas survey was conducted to assess potential toxic gases related the underlying Oxnard Oil Field and potential VOCs and TPHg in the area of the Site adjacent to the former AST and UST sites in the Maulhardt Ranch farmyard and residential areas. No significant impacts to soil gas from the Oxnard Oil Field or the AST and UST sites in the Maulhardt Ranch farmyard and residential areas was identified.

Methane, hydrogen sulfide, carbon monoxide, and carbon dioxide, were not detected in any soil gas samples. In the fixed gas analyses, oxygen content ranged between 22.4 and 10.3%, and the nitrogen content ranged between 66.6 and 87.1% (Table 9).

Low concentrations of naphthalene and toluene were detected the soil gas samples collected from borings that were located adjacent to the Maulhardt Ranch farmyard and residential areas (SV-26 through SV-30). Toluene was detected in all eleven samples and naphthalene in three (Table 10). For each VOC detected at concentrations above the laboratory MDL, the maximum detected concentration and number of samples it occurred in are listed in Section 6.6.2.

6.8.2 Analytical Results for Organochlorine Pesticides in Surface Soil

OCPs were detected in all 60 of the discrete surface oil samples and the nine duplicate samples collected for OCP analysis (Table 11). The OCPs 4,4'-DDD (DDD), 4,4'-DDT (DDT), 4,4'-DDE (DDE), Chlordane (total), Chlordane (alpha), and Chlordane (gamma) were detected at concentrations below their respective DTSC Screening Levels (Table 11). Dieldrin was detected in three samples at concentrations of 34.70 µg/kg, 37.20 µg/L, and 40.40 µg/kg, slightly above its DTSC Screening Level of 34 µg/kg. Toxaphene was detected in 33 samples at concentrations above its DTSC Screening Level (490 µg/kg) at concentrations ranging from 510 µg/kg to 2,450 µg/kg over an area of approximately 28 acres (Figure 5).

6.8.3 Analytical Results for Arsenic in Surface Soil

Of the 17 surface soil samples analyzed for arsenic, it was detected in one sample (sample SS 42-0) at 2.65 milligram per kilogram (mg/kg). Arsenic was not detected at concentrations above the laboratory MDL (2.5 mg/kg) or the DTSC-ASL of 12 mg/kg (DTSC 2008) in any other of the 16 samples (Appendix M). No significant impacts to the Site from arsenic in surface soil were identified.

6.8.4 Analytical Results for SVOCs, PAHs, TPHde, and TPHg in Surface Soil e

Seventeen surface soil samples analyzed for SVOCs, PAHs, TPHde, and TPHg to assess potential impacts to Site soils from smudge pot fuel. SVOCs were not detected at concentrations above their respective laboratory MDLs or DTSC Screening Levels (refer to Table 7) in any of the 17 samples (Appendix M). The PAHs fluoranthene and phenanthrene were detected in sample Soil Dup 3, the duplicate sample for SS-29 at concentrations well below their respective DTSC Screening Levels (Table 7 and Appendix M). TPH as diesel fuel (C9-C22 carbon range) and as heavy hydrocarbons (C22 -C40 carbon range) were detected in six of the surface soil samples at concentrations well below their respective DTSC Screening Levels (Table 7, Table 12, and Appendix M). TPH was not detected in any other surface soil samples. No significant impacts to Site surface soils from SVOCs, PAHs, TPHde, and TPHg were identified.

6.8.5 Analytical Results for VOCs, SVOCs, and TPHde in Subsurface Soil

Eleven subsurface soil samples were analyzed for VOCs, SVOCs, and TPHde to assess potential fuel related soil contamination from the ASTs and USTs formerly located in the adjacent area of the Maulhardt Ranch farmyard and residential areas. VOCs and SVOCs were not detected in any of the samples at concentrations above their respective MDLs or DTSC Screening Levels (Table 7 and Appendix M). Gasoline (C4-C12 carbon range), diesel (C9-C22 carbon range), and diesel and heavy hydrocarbons range (C9-C40 carbon range) TPH were detected one sample well below then DTSC Screening Level (Table 12). No significant impacts to Site subsurface soils from VOCs, SVOCs, and TPHde were identified.

6.8.6 Analytical Results for VOCs, TPHg, and TPHde in Groundwater

Six groundwater samples were collected from approximately 21 feet bgs in the 5 direct push borings SV-26 though SV-30 to assess potential fuel related VOCs, TPHg, and TPHde groundwater contamination from the ASTs and USTs formerly located in the adjacent area of the Maulhardt Ranch farmyard and residential areas. VOCs, TPHg, and TPHde were not detected in any of the groundwater samples at concentrations above their respective MDLs or DTSC Screening Levels (Table 8 and Appendix M). No significant impacts to Site groundwater from VOCs, TPHg, and TPHde were identified.

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7.0 HUMAN HEALTH SCREENING EVALUATION

7.1 INTRODUCTION

The PEA screening evaluation for human health effects consists of three steps: (1) identifying potentially complete exposure pathways based on the conceptual site model, (2) identifying chemicals of potential concern (COPCs), and (3) estimating exposures to the COPCs and the associated potential health risks. The findings of the human health screening evaluation are summarized in the risk characterization summary.

7.2 EXPOSURE PATHWAYS AND MEDIA OF CONCERN

7.2.1 Conceptual Site Model

A conceptual site model (CSM) provides a description of the links between contaminant sources at a site, the chemicals detected at the Site, the mechanisms by which chemical transport or migration may occur in the environment, and the persons potentially exposed to environmental media at the Site. The CSM (Figure 6) identifies the potential sources, mechanisms of transport, environmental media of concern, and exposure routes for current and future human receptors at this Site.

As discussed in Sections 2.0 and 3.0, the Site is a 48.6-acre (approximate) portion of the 107.25-acre Maulhardt Ranch property in the City of Oxnard, California. The Site is bounded by Camino Del Sol on the south, North Rose Avenue on the west, Cesar Chavez Drive on the north, and a residential neighborhood to the east. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol, and neighborhoods of single family housing are located to the east and west of the Site.

The Site and adjacent areas have been used for agricultural production (row crops) since at least 1869. The Site is currently being used for strawberry cultivation. Records indicate that the Site is located within the Oxnard Oil Field; however, no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on the 107.25-acre Maulhardt Ranch where the Site is located. The oil well located nearest to the site is the Maulhardt Community No. 11A, located approximately 850 feet south of the Site. Formerly, ASTs and USTs were located in the Maulhardt Ranch farm yard and residential area.

Organochlorine pesticides came into wide use in the late 1950s, and prior to that, arsenic-based pesticides were commonly used. Therefore, OCPs and arsenic-based compounds may have been used at the Site during agricultural production activities. Oil production activities and the underlying Oxnard Oil Field may have resulted in the release of contaminants to Site soils and soil gas, including metals, SVOCs, PAHs, PCBs, VOCs, TPHde and TPHg.

As shown in the CSM (Figure 6), five potential sources of chemicals have been identified at this Site: (1) pesticide and fuel oil releases from former agricultural operations (2), soil gas impacts from the underlying Oxnard Oil Field), (3) petroleum fuel releases from the ASTs and USTs formerly located in the adjacent Maulhardt Ranch farmyard and residential areas, (4) , potentially hazardous substances and petroleum products that contained VOCs and TPHg used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area, and (5) PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol. As a result of these findings, soil gas samples were collected at the Site and analyzed

for VOCs, methane, and hydrogen sulfide. Soil samples were collected at the Site and analyzed for OCPs, metals, SVOCs, PAHs, PCBs, VOCs, TPHde, and TPHg, and groundwater samples were collected at the Site and analyzed for VOCs, TPHg, and TPHde.

School children and staff at the proposed High School are the receptor groups most likely to be exposed to any chemicals potentially present at the Site. PEA guidance (DTSC 2015) indicates that sites should be evaluated assuming unrestricted residential land use, regardless of current and future uses. Therefore, the unrestricted land use scenario (i.e., residential land use) was evaluated for this Site, which is protective of future school use since the exposure assumptions for a residential scenario are more conservative than those for a school scenario.

7.2.2 Soil Exposure Pathways

Currently, the Site is unpaved and bare soils may be contacted directly. COPCs have been detected in soils at the Site. Therefore, the potential exists for humans to be exposed to COPCs through direct dermal contact with soil and by incidental soil ingestion. In the future, it is likely buildings will be constructed at the Site. These buildings will act to limit exposures to soils by onsite receptors. However, in accordance with PEA guidance, all soils at the Site were considered available for dermal contact, incidental ingestion, and the generation of dusts (DTSC 2015). Additionally, the school-based exposure guidance (OEHHA 2004) assumes that dusts may be tracked indoors where receptors may incidentally ingest them.

7.2.3 Water Exposure Pathways

Hydrogeologic data from the vicinity of the Site indicate the water table is approximately 21 feet bgs or deeper (Section 5.2.1.2). Groundwater does not come to the surface at this Site and groundwater at the Site will not be used as a potable water source for the planned school. Direct exposure to groundwater beneath the Site is, therefore, not likely to occur. The potential release of petroleum products to groundwater from ASTs and USTs formerly located in the Maulhardt Ranch farmyard and residential areas, and from farm maintenance activities in the farmyard areas was assessed as part of this PEA. No evidence for release of petroleum products to groundwater beneath the Site from the adjacent areas of the Maulhardt Ranch farmyard and residential areas was identified in the samples collected for this PEA. Contamination of groundwater beneath the Site from off-site sources is considered unlikely. Therefore, potential groundwater exposure pathways are considered incomplete and were not evaluated in this human health screening evaluation.

No permanent surface water bodies occur on the Site. Therefore, surface water exposure pathways are likely to be incomplete and were not evaluated.

7.2.4 Air Exposure Pathways

There is no documented evidence of releases of hazardous substances to the atmosphere from the Site. Based on the graded agricultural Site land use documented in aerial photographs and images dating from 1943 to 2015 (Appendix D), there is a potential for releases to the air from fugitive dust emissions of potentially contaminated surface soils (Section 5.3.1). Nonvolatile chemicals may also sorb to soils. Wind erosion and dispersion of soil particulates could potentially result in exposure to these nonvolatile chemicals associated with airborne soil particulates (i.e., dusts). Therefore, it was assumed that receptors could potentially be exposed to COPCs by the inhalation of airborne dusts.

The prevailing wind direction for the Site area is from the west from April through October and the north from October through April. The average wind speeds are 6.6 miles per hour (mph) from November through May and 4.8 mph from June through October (Weather Spark 2018).

The Site overlies the Oxnard Oil Field and oil wells and oil production activities occurred in the vicinity of the Site area. There is a potential for methane and hydrogen sulfide toxic gas to occur in near surface soil due to former oil production activities in the Site area and the presence of the underlying Oxnard Oil Field. Therefore, it was assumed that receptors could potentially be exposed to COPCs in groundwater and/or soil gas migrating into indoor and ambient air.

The Site is adjacent to the Maulhardt Ranch farmyard and residential areas where ASTs and USTs were formerly used for fuel storage. In addition, farm vehicle and equipment maintenance occurred in the farmyard area and various petroleum containing products have been stored there. There is a potential for VOC gas to occur in near surface soil due to the former ASTs and USTs fuel storage, equipment maintenance, and petroleum containing product storage in the Maulhardt Ranch farmyard and residential areas. Therefore, it was assumed that receptors could potentially be exposed to COPCs in groundwater and/or soil gas migrating into indoor and ambient air.

7.2.5 Summary of Selected Exposure Pathways

Although the Site is planned as high school, for the purpose of this PEA screening evaluation, a residential/unrestricted land use scenario was assumed. Receptors were assumed to be potentially exposed to chemicals at the Site by direct dermal contact with soils, incidental ingestion of soils, the inhalation of airborne dusts, and the inhalation of volatiles emitted from soil gas to indoor and outdoor air. These potentially complete exposure pathways are shown in the CSM for planned future Site conditions (Figure 6).

7.3 CHEMICALS AND EXPOSURE POINT CONCENTRATIONS

Tables 9 through 12 present the results of chemical analyses for soil, soil gas, and groundwater samples collected at the Site.

7.3.1 Volatile Organic Compounds and H_2S

Soil gas samples collected at the Site were analyzed for VOCs potentially emitted from the Maulhardt Ranch farmyard and residential areas (Table 10). In accordance with *Advisory – Active Soil Gas Investigations* (DTSC and LARWQCB 2015), soil gas samples were analyzed for VOCs using EPA method 8260B. All chemicals detected in soil gas were selected as COPCs and are summarized in Table 13.

Methane and H_2S were not detected in soil gas and were therefore not selected as COPCs. The methane and H_2S sampling results are presented in Table 9.

Groundwater samples collected at the Site were analyzed for VOCs, TPHg, and TPHde associated with potential fuel and petroleum product releases from the ASTs, USTs, and activities in the adjacent Maulhardt Ranch farmyard and residential areas (Appendix L).

7.3.2 Total Metals

Consistent with the Tetra Tech Field Sampling Plan (Tetra Tech 2018b), only arsenic was analyzed for in soil. This was done based on a review of the Ventura County Agricultural Commissioner's information, which indicated that recently used pesticides are restricted to those with relatively short half-lives (hours to months). Historically, arsenical pesticides may have been used. To determine the presence of arsenic and ensure a health-protective assessment, soil samples were analyzed for arsenic using EPA method 6010B.

Metals present at concentrations equivalent to (or lower than) background concentrations do not need to be considered in the screening evaluation (DTSC 2015). Arsenic was detected at a maximum concentration of 2.65 mg/kg, which is well below the DTSC screening level of 12 mg/kg. As indicated in the DTSC *Interim Guidance for Sampling Agricultural Properties* (DTSC 2008), if all arsenic data are equal to or less than 12 mg/kg, then arsenic does not need to be considered a COPC and this determination does not require collection and comparison to a background data set. Therefore, arsenic was not selected as a COPC and was not evaluated.

7.3.3 Pesticides

The OCP soil sample results are summarized in Table 11. The Site has been used for agricultural production since at least 1869; therefore, it is assumed that OCPs were applied at the Site in the row crop areas.

To determine the presence of pesticides and ensure a health-protective assessment, soil samples collected at the Site were analyzed for OCPs using EPA method 8081A. The following nine organochlorine pesticides were detected in soils at the Site:

- DDD;
- DDE;
- DDT;
- Chlordane (total);
- Chlordane (gamma);
- Chlordane (alpha)
- Dieldrin; and
- Toxaphene.

All of the detected pesticides were selected as COPCs and evaluated. For chlordane, only the chlordane (total) results were evaluated since these results included gamma-chlordane and alpha-chlordane. This was done so that gamma-chlordane and alpha-chlordane were not double counted in the risk evaluation.

7.3.4 Chemicals of Potential Concern Summary

All of the detected organic chemicals at the Site were selected as COPCs and are evaluated in this screening-level evaluation. As previously indicated, only arsenic was analyzed for in soil and was only detected in one sample at a concentration well below the DTSC screening level of 12 mg/kg. Based on this data, arsenic was not selected as a COPC. Soil and soil gas COPCs were identified at the Site as follows:

Soil

- **No Metals**;
- **Six Organochlorine pesticides** (DDD, DDE, DDT, chlordane (total), dieldrin, and toxaphene); and
- **Two PAHs** (fluoranthene and phenanthrene).

Soil Gas

- **Two VOCs** (toluene and naphthalene).

Groundwater

- **None** (VOCs, TPHg, and TPHde reported as not detected).

All of the COPCs were included in the human health risk evaluation.

7.3.5 Exposure Point Concentrations

For this evaluation, the maximum detected concentration was used as the exposure point concentration (EPC) in accordance with DTSC's PEA guidance (DTSC 2015). The EPCs used in this screening assessment are summarized in Tables 13 through 16.

In the event that detected concentrations exceeded the corresponding screening level, risk was also calculated based on the 95% upper confidence limit (95% UCL) of the arithmetic mean. 95% UCLs were calculated for dieldrin and toxaphene. The 95% UCLs used in this screening are summarized in Table 16.

7.4 RISK-BASED SCREENING LEVELS

VOCs found in soil gas may migrate to indoor air. Although the proposed future use of the Site is a school, for this evaluation, the Site is being evaluated assuming residential/unrestricted land use. As such, potential future residents were identified as the potential future receptors that could be exposed to vapors emitted from soil gas. To be protective of potential school receptors, soil gas screening levels were developed to be protective of potential vapor intrusion risks.

For COPCs in soil, potential residential receptors could be exposed via ingestion, dermal contact, and inhalation of dusts and vapors. For this evaluation, soil screening levels were developed to be protective of potential exposures to COPCS in soil through these exposure pathways.

In accordance with the Human and Ecological Risk Office's (HERO's) Human Health Risk Assessment (HHRA) Note 3 (DTSC 2018), DTSC-modified air and soil screening levels and United States Environmental Protection Agency (USEPA) regional screening levels (RSLs) for air and soil were used as the basis for developing soil gas and soil screening levels protective of residential receptors potentially exposed via vapor intrusion into indoor air and contact with soil. DTSC-modified screening levels were used if available, otherwise USEPA RSLs were used.

Target Risk Levels

For this evaluation, target risk levels were determined according to USEPA and Cal/EPA guidance. USEPA's 1990 guidance indicates that a carcinogenic risk probability between 1 in 1,000,000 and 1 in 10,000 (1×10^{-6} to 1×10^{-4}) are generally acceptable. The lower end of the target risk range is typically applied to residential scenarios, whereas the higher range is typically considered appropriate for commercial/industrial situations. Thus, for this evaluation, carcinogenic air and soil screening levels were developed based on a target risk of 1×10^{-6} for residential receptors. For potential non-carcinogenic effects, USEPA (1990) indicates that non-carcinogenic chemicals should not be present at levels expected to cause adverse health effects. Therefore, for this evaluation, potential hazards for school receptors are evaluated based on a target hazard index (HI) of 1. Individual chemical exposures that yield HIs of less than one is not expected to result in adverse non-cancer health effects (USEPA 1989).

Soil Gas Risk-Based Screening Levels (RBSLs)

Soil gas screening levels were derived from the DTSC-modified air screening levels and USEPA air RSLs in accordance with HHRA Note Number 3 (DTSC 2016) using the DTSC default soil gas to indoor air attenuation factor for a future building of 0.001 (DTSC 2011). The soil gas to indoor attenuation factor represents the relationship between soil gas concentrations and the resulting indoor air concentrations. Since the DTSC default soil gas attenuation factor was developed to be applied to soil gas samples collected at a depth of 5 feet bgs, it provides a conservative screening for soil gas samples collected at a depth of 15 feet bgs that would be associated with greater attenuation.

The soil gas RBSLs for this evaluation were derived by dividing the DTSC and USEPA residential air screening levels by the DTSC default soil gas attenuation factor of 0.001. The derivation of the residential soil gas screening levels is summarized in Table 5 of the Tetra Tech Field Sampling Plan (Tetra Tech 2018), which was approved by DTSC.

Soil Risk-Based Screening Levels (RBSLs)

For this evaluation, DTSC-modified soil screening levels and USEPA soil RSLs protective of residential exposures were conservatively used to evaluate potential exposures to soil. The residential screening levels are conservative since they are based on exposure parameters that assume higher levels of exposure than would be associated with a school site. For example, the exposure frequency and exposure time in a residential scenario are 350 days per year and 24 hours per day, respectively. For a school scenario, the maximum exposure frequency and exposure time are 250 days per year and 10.3 hours per day, respectively.

7.5 RISK CHARACTERIZATION

Risks were characterized for potential residential receptors using the ratio of concentrations measured at the Site to the RBSLs identified for each environmental medium. This evaluation consisted of three steps: (1) specifying the target risk and hazard quotient to use in calculating the RBSLs; (2) estimating EPCs for each environmental medium (i.e., the maximum detected concentration); and (3) comparing the

EPCs to the RBSLs to estimate risks and hazards for potential receptors. Each of these steps is described below.

7.5.1 Risk Estimation Procedures

The RBSLs were calculated for a specified target risk (i.e., a carcinogenic risk of 1 x 10^{-6} for residential receptors) and concentrations greater than the RBSLs represent carcinogenic risks proportionally greater than the target risk. Similarly, concentrations less than the RBSLs represent carcinogenic risks proportionally less than the target risk. Risks were calculated as follows, using the ratio of each COPC's EPC and its media-specific RBSL:

Risk for residential receptors:

$$Risk = \frac{\text{EPC}}{\text{carcinogenic RBSL}} \times 10^{-6}$$

Hazard quotient (HQ) for residential receptors:

$$HQ = \frac{\text{EPC}}{\text{non - cancer RBSL}}$$

In accordance with USEPA and DTSC guidance, the risk and hazard ratios for each chemical and potentially complete exposure pathway were summed to determine the multi-pathway cumulative carcinogenic risk estimates and noncarcinogenic HI for potential receptors.

7.5.2 Site-Specific Cancer Risk and Hazard Estimates for Soil Gas

7.5.2.1 Soil Gas Sampling Depth of 5 Feet

As shown in Table 13, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 5 feet bgs, the estimated cancer risk for potential residential receptors exposed to indoor vapors based on the soil gas RBSLs is 5 x 10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school receptors (1 x 10^{-6}). The maximum estimated non-carcinogenic HI is 0.007, which is well below the target HI of 1.

7.5.2.2 Soil Gas Sampling Depth of 15 Feet

As shown in Table 14, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 15 feet bgs, the estimated cancer risk for potential residential receptors exposed to indoor vapors based on the soil gas RBSLs is 5 x 10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school receptors (1 x 10^{-6}). The maximum estimated non-carcinogenic HI is 0.007, which is well below the target HI of 1.

7.5.3 Cancer Risk and Hazard Estimates for Soil

As shown in Table 15, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential school receptors exposed to COPCs in soil based on the residential soil RBSLs is 7 x 10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, but exceeds

the target risk level for residential receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.1, which is below the target HI of 1.

The primary contributors to the estimated risk for residential receptors exposed to soil are toxaphene (71%) and dieldrin (16%). No other chemicals were detected at levels exceeding the corresponding soil screening level. Risks estimated for all other COPCs is 1×10^{-6}, which is equal to the low end of the of the USEPA target risk range of 10^{-4} to 10^{-6} and equal to the target risk of 1×10^{-6} established for residents. Toxaphene was detected at 34 sampling locations at levels that exceeded the corresponding residential screening level of 490 µg/kg. Dieldrin was detected at three sampling locations (SS-49, SS-51, and SS-59) with concentrations ranging from (34.7 µg/kg to 40.4 µg/kg) that exceeded the corresponding residential screening level of 34 µg/kg.

The estimated cancer risks summarized in Table 15 are conservative as they are based on the maximum detected concentrations for each chemical rather than a representative exposure concentration such as the 95% UCL of the arithmetic mean concentration.

Table 16 provides a risk estimate based on the 95% UCLs for all pesticides detected in soil. The pesticides are the primary contributors to risk at the Site. As shown in Table 16, the estimated cancer risk for potential school receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and residential soil RBSLs is 4×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} but exceeds the target risk level for residential receptors (1×10^{-6}). The estimated non-carcinogenic based on the 95% UCLs for pesticides HI is 0.09, which is below the target HI of 1. Only toxaphene is associated with a 95% UCL that exceeds the corresponding screening level. Risks estimated for all other COPCs is 8×10^{-7}, which is below the low end of the of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk of 1×10^{-6} established for residents.

7.5.4 Cumulative Risk and Hazard Estimates for Soil Gas and Soil

The estimated cumulative cancer risk associated with potential exposures to soil gas and soil based on the maximum detected concentrations is 8×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.2, which is below the target HI of 1.

The estimated cumulative cancer risk associated with potential exposures to soil gas and soil based on the 95% UCLs for pesticides maximum detected concentrations for other chemicals is 4×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.09, which is below the target HI of 1.

The results of this conservative evaluation, indicates that toxaphene levels detected in soil result in estimated risk that exceed the residential target risk level (1×10^{-6}). With the exception of toxaphene, it is very unlikely that the other COPCs detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under a residential exposure scenario.

7.6 UNCERTAINTY ANALYSIS

This section presents an evaluation of several potential sources of uncertainty in the risk estimates presented in section 7.5. Uncertainty may have been introduced into the risk calculations as a result of:

- Assumed exposure to maximum detected concentrations; and
- Assumed exposure to all soils at the Site.

7.6.1 Use of Maximum Detected Concentrations

For this evaluation, it was conservatively assumed that potential receptors were exposed to the maximum detected concentration of each chemical detected in soil gas and soil. This is considered conservative since receptors are assumed to move around the site in such manner that they would likely be exposed to levels such as the average concentration for a site. For this reason, risk assessment guidance recommends using the reasonable maximum exposure (RME) point concentration represented by the 95% upper confidence limit (UCL_{95}) on the mean concentration, which is usually significantly lower than the maximum detected concentration. For this reason, risk and hazard estimates based on the UCL_{95} for the primary contributors to risk (i.e., pesticides) were also provided for the soil (refer to Tables 15 [maximum estimated risk] and 16 [estimated risk based on UCL_{95}]).

7.6.2 Exposure to All Soils at the Site

Future development at the Site will likely include several buildings and paved areas. Buildings and paved areas will act to prevent exposure to the soils underneath them, thus reducing soil exposures at the Site. Reduced exposure to the soils at the Site would also result in lower risk estimates for any future receptors at the Site.

7.7 RISK SUMMARY

A screening level human health risk evaluation was conducted for residential exposures to the COPCs identified in soil gas, groundwater, and soils at the proposed High School No. 8 Site. The COPCs identified in soils at the Site include OCPs, TPHs, and VOCs. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. Receptors were evaluated for: (1) carcinogenic risks and (2) noncarcinogenic hazards. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. Noncarcinogenic hazard from assumed exposures to the COPCs in soil and soil gas at the Site (HI = 0.2) is well below the threshold level of 1.

The estimated risk is primarily attributable to toxaphene (71%) and dieldrin (16%). No other chemicals were detected at concentrations that exceeded the corresponding screening levels. Toxaphene was detected at 34 sampling locations at levels that exceeded the corresponding residential screening level of 490 µg/kg. Dieldrin was detected at three sampling locations (SS-49, SS-51, and SS-59) with concentrations ranging from (34.7 µg/kg to 40.4 µg/kg) that slightly exceeded the corresponding residential screening level of 34 µg/kg.

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8.0 ECOLOGICAL SCREENING EVALUATION

The purpose of the ecological screening evaluation is to qualitatively assess the potential for adverse ecological impacts posed by hazardous constituents at the site. The approach is to identify potentially complete exposure pathways between areas of contamination and biota or habitats that occupy, or could occupy, the site or areas affected by the site (DTSC 2015). Results of this ecological screening evaluation may be used to assist decision makers in deciding whether further site characterization, risk assessment, or remediation is necessary.

In accordance with DTSC guidance (DTSC 2015), this ecological screening evaluation consists of the following elements:

- Site characterization;
- Biological characterization;
- Pathway assessment; and
- Qualitative summary.

8.1 SITE CHARACTERIZATION

8.1.1 Site Description

The Site comprises approximately 48.6 acres of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the City of Oxnard. The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas.

The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue.

The entire Maulhardt Ranch (APN 214-002-059) is bounded by Camino Del Sol on the south, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2).

8.1.2 Soils

Based on the Geologic Map of the Oxnard 7.5' Quadrangle, Ventura County, California the Site is underlain at the ground surface by Holocene deltaic alluvial fan deposits composed predominantly of clay with interbeds of sand and occasional gravel that were deposited by the Santa Clara River and extend to approximately 70 feet bgs (Gutierrez, et al. 2008; Turner, et al. 1975). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non-marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

Historic farming activities (1869 to present) have included surface tilling and regrading of surface soils.

8.1.3 Hydrology

8.1.3.1 Surface Water

There is no surface water present at the Site. The nearest surface water bodies are Revolon Slough 2.4 miles to the east of the site, and the Santa Clara River 2.9 miles north-west. The Pacific Ocean is located 5.1 miles to the south and southwest of the Site.

8.1.3.2 Groundwater

Groundwater was encountered at approximately 21 feet bgs at the Site in geotechnical drilling during May and July 2018. Historically groundwater has been as shallow as approximately 8 bgs at the Site (CGS 2002). Based on topographic controls, the groundwater in the semi-perched zone in the Site vicinity is expected to flow toward the south to south-southwest toward the Pacific Ocean.

8.1.4 Chemicals of Potential Concern

Chemicals of potential ecological concern (COPECs) include chemicals detected at the site that may adversely impact plant or wildlife populations. For this ecological screening evaluation, metals detected in accessible soils (i.e., surface soils from 0 to 0.5 feet bgs for surface dwelling wildlife or subsurface soils from 0.5 to 5 feet bgs for burrowing wildlife) that are greater than background levels may be identified as COPECs. In addition, all organic compounds that were detected in accessible soils or soil gas samples between 0 and 5 feet bgs are also considered COPECs. Total petroleum hydrocarbons (TPH) is not considered a COPEC because its constituents (e.g., VOCs and PAHs) are considered the toxic agents for plants and wildlife.

In addition, any organic compound that was detected in the soil gas survey will be included as a COPEC.

Arsenic was the only metal that was analyzed for in the PEA. Of the 17 samples analyzed for arsenic, it was detected only once at a concentration of 2.65 mg/kg. Background metals data were determined during the PEA for the nearby Rio Rosales Elementary School (ENSR 2002). Arsenic concentrations in the eight background samples obtained in the Rio Rosales study ranged from 1.8 to 4 mg/kg.

Given the low frequency of detection (1 of 17 samples) and the fact that the only detected concentration is within the range of background concentrations at the nearby Rio Rosales site, arsenic is considered to be naturally occurring and is not considered a COPEC in soils.

Sixty-eight VOCs were analyzed in 11 soils samples using EPA Method 8260B. No VOCs were detected in any of these samples.

SVOCs were analyzed by EPA Method 8270C in 18 soil samples. None of the 69 SVOCs analyzed for were detected in soils.

Eighteen PAHs were analyzed for in 18 soil samples using EPA Method 8310. Of the 18 PAHs analyzed, fluoranthene was detected in a single soil sample at a concentration of 0.01 mg/kg. Likewise, phenanthrene was detected in a single sample at 0.0117 mg/kg. No other PAHs were detected.

Nine PCB Aroclors were analyzed in two samples by EPA Method 8082. No PCBs were detected in these analyses.

Organochlorine pesticides were the most frequently detected compounds in soil. Twenty-two organochlorine pesticides were analyzed by EPA Method 8081A in 69 soil samples. Of the 22 analytes, 8 organochlorine pesticides were detected in 35 to 69 of the soils samples. DDT and its metabolites were the most frequently detected in between 68 and 69 of the samples. Chlordane (alpha, gamma, and total) was detected in 35 to 42 of the samples. Dieldrin was detected in 51 of the 69 samples, and toxaphene was detected in 58 of the 69 samples.

Therefore, the soil COPECs to be addressed in this assessment include phenanthrene and fluoranthene; and the organochlorine pesticides including DDT/DDE/DDD, chlordane (alpha, gamma, and total), dieldrin, and toxaphene (Table 17). Chemicals identified as COPECs for this ecological screening evaluation are listed in Table 17.

8.1.4.1 Soil Gas

Soil gas sampling was conducted to assess the potential presence of VOCs at the Site in borings SV-26 through SV-30 in soil gas probes set at 5 and 15 feet bgs. Ten regular and one duplicate soil gas samples were collected. VOCs including naphthalene (3 detections) and toluene (11 detections) were identified in the soil gas samples. No other VOCs were detected. Therefore, naphthalene and toluene are included as COPECs in soil gas.

8.1.4.2 Surface Water and Groundwater

No COPECs were identified for surface water and groundwater since no permanent surface water exists at or near the site and groundwater is located at a depth that is inaccessible to plants and wildlife (see Section 8.3, Pathway Assessment).

8.2 BIOLOGICAL CHARACTERIZATION

Ecological receptors are the focus of this screening evaluation:

- Terrestrial and aquatic plants and wildlife that potentially reside or forage in areas potentially affected by chemicals released at the Site; and
- Terrestrial and aquatic plants and wildlife that may potentially be exposed to chemicals transported from the Site to nearby habitats.

Aerial images of the Oxnard High School No. 8 Site were reviewed to evaluate potential habitats that occur at and within 1 mile of the Site. Additionally, the California Department of Fish and Wildlife (CDFW) Natural Diversity Database was queried for the USGS 7.5' quadrangle (Oxnard) containing the Site, supplemented with data from surrounding quadrangles, to determine whether any sensitive and special-status plant and wildlife species have been observed in the region (CDFW 2018).

A formal Site-specific wetlands delineation was not performed. However, based on review of the USFWS National Wetlands Inventory, no wetlands are known to occur on the Site (USFWS 2018), and no other wet areas or potential wetlands have been observed within the Site boundaries. Therefore, aquatic plant and wildlife species are not anticipated to occur on the Site due to the lack of persistent surface water.

The Site has been used for continuous agricultural row crop production for approximately 150 years, and the entire property has been graded and tilled. Orchard and ornamental trees are located on the residential and farmyard portion of the property and a line of trees is located along the road to the west of the Site.

Due to the general lack of vegetation at the Site, terrestrial species that occur in croplands and disturbed areas, such as the European starling (*Sturnus vulgaris*), Brewer's blackbird *(Euphagus cyanocephalus*), song sparrow (*Melospiza melodia*), mourning dove (*Zenaida macroura*), and house sparrow (*Passer domesticus*) as well as mice, voles, gophers, and ground squirrels are reasonably expected to occur as transient visitors to the Site.

8.2.1 Off-site Habitats

The predominant land uses within a one-mile radius of the Site are residential housing (east, south, and west of the Site) commercial development (north and east), and agricultural row crops (east and south). Several schools and a hospital are also present within 1 mile of the Site. Cropland habitats are regulated by the crop cycle and do not conform to natural habitat stages.

Several species of rodents and birds have adapted to croplands and were controlled through the use of fences, traps, and poison to mitigate crop losses (Mayer and Laudenslayer 1988). Species potentially occurring at the Site (e.g., starlings, mourning doves, and sparrows) are also likely to be observed at the nearby agricultural areas. Residential and commercial areas are typically characterized by the introduction of new, often non-native, vegetation, and the presence of human-subsidized wildlife species that are highly tolerant of human disturbance. Species observed may include western fence lizards (*Sceloporus occidentalis*), mourning doves, sparrows, mice (*Mus* spp.), and raccoons (*Procyon lotor*) (Mayer and Laudenslayer 1988).

8.2.2 Special-status Species

A search of the California Natural Diversity Database (CDFW 2018) was conducted for the Oxnard USGS 7.5' quadrangle search to determine if any sensitive or special-status plant and wildlife species had been observed in the area (CDFW 2018). Table 18 lists the sensitive and special-status species that were found in this search. Of the species listed in Table 18, the following species have the potential to utilize the site as occasional visitors:

- American peregrine falcon (*Falco peregrinus anatum*);
- Burrowing owl (*Athene cunicularia*);

- Coast horned lizard (*Phrynosoma blainvillii*);
- Monarch butterfly (*Danaus plexippus*); and
- Crotch bumble bee (*Bombus crotchii*).

The burrowing owl has the potential to reside at the Site should suitable burrows (primarily ground squirrel) be present. The monarch butterfly may roost in trees surrounding the Site. The other species identified in Table 18 are unlikely to occur at the Site due to their habitat requirements.

8.3 PATHWAY ASSESSMENT

Potentially complete exposure pathways consist of a source and mechanism of COPEC release, a transport medium (e.g., soil, water, tissue), a point or area where receptors of concern may be exposed to COPECs, and an exposure route through which COPEC uptake occurs (e.g., ingestion). Exposure routes considered in the ecological screening evaluation include:

Soil

- Uptake of COPECs in soil by plants and soil invertebrates; and
- Incidental ingestion of COPECs in surface soil by terrestrial wildlife.

Air (in Burrows)

- Inhalation of volatile COPECs in soils by burrowing animals.

Food Items

- Ingestion of COPECs in food items by terrestrial wildlife.

Uptake is defined as the accumulation of COPECs across tissue surfaces and retention of COPECs by biota. Plants may take up COPECs in soils in the root zone (< 5 feet bgs for most plants). Even for deeper-rooted plants, most of the root mass and uptake processes occur in relatively shallow soils (Raven et al. 1986).

Dermal absorption of COPECs was considered to be an insignificant exposure pathway for identified wildlife receptors because:

- Dense undercoats or down effectively prevent the COPECs from reaching the skin of wildlife species and significantly reduce the total surface area of exposed skin (Peterle 1991; U.S. Army Corps of Engineers [USACE] 1996); and
- Results of exposure studies indicate that exposures due to dermal absorption are insignificant compared to ingestion for terrestrial receptors (Peterle 1991).

Inhalation of volatile COPECs by surface-dwelling wildlife was not evaluated because:

- Concentrations of volatile chemicals released from soil to above ground air are drastically reduced, even near the soil surface USACE 1996; and

- Concentrations of VOCs in soils would have to be great to induce noncarcinogenic effects in wildlife based on inhalation toxicity data for laboratory rats and mice (USACE 1996).

Inhalation of volatile COPECs was assessed for burrowing animals at the site. Burrowing animals may be exposed to higher concentrations of volatile COPECs while in their burrows because ventilation may be limited. VOCs in soils surrounding underground burrows are assumed to migrate into the confined air spaces of these animal burrows.

Conceptual exposure pathway models that identify the source, mechanisms of transport, media of concern, exposure routes, and receptors at the site are shown in Figures 7 and 8 for current conditions and planned future conditions, respectively. Exposure pathways under "Current Conditions" and under "Planned Future Conditions" are discussed further below.

8.3.1 Exposure Pathways Under Current Conditions

For most wildlife receptors, existing information suggests incomplete exposure pathways (Figure 7).

Groundwater. Groundwater is located below approximately 20 feet bgs and is inaccessible to plants and terrestrial wildlife at the site. Furthermore, groundwater does not discharge to the surface at or near the site. Exposure to groundwater, therefore, is considered an incomplete pathway.

Surface Water. No long-standing or permanent surface water bodies exist at the site or immediately adjacent to the site. Thus, the site and off-site areas provide no habitat for aquatic receptors and provide no attractive drinking water sources for terrestrial receptors. Uptake by aquatic receptors and drinking exposure pathways are considered to be incomplete pathways.

Soils. Organochlorine pesticides and PAHs have been identified as COPECs in soil. Uptake of COPECs in soils by plants and soil invertebrates and incidental soil ingestion by wildlife are considered to be potentially complete exposure pathways (Figure 7).

Air in Burrows. VOCs (i.e., naphthalene and toluene) were detected in a number of soil gas samples distributed throughout the Site. Due to continued disturbance of the surface soils by farming activities, burrowing animals are unlikely to be present. Therefore, inhalation of COPECs in burrow air is considered to be an incomplete pathway due to absence of receptors.

Food Items. The organochlorine pesticides and PAHs are known to bioaccumulate in animals. However, wildlife at the site are likely to be infrequent, transient visitors. Given limited exposure durations, bioaccumulation is likely to be limited. Nonetheless, potential ingestion of organic compounds and metals in food items is considered to be a complete pathway (Figure 7).

8.3.2 Planned Future Conditions

For most wildlife receptors, existing information suggests incomplete exposure pathways under future conditions (Figure 8).

Groundwater. Groundwater will likely continue to be inaccessible to plant and terrestrial wildlife at the site due to its depth.

Surface Water. Plans indicate that the school site will not support any aquatic habitats. Uptake by aquatic receptors and drinking exposure pathways under planned future conditions, therefore, are also considered to be incomplete pathways.

Soils. Plans for the construction of the school and landscaping of the grounds indicate that much of the site will be paved or support school buildings. Other areas of the site are likely to be re-sodded to create playing fields. Though potentially complete pathways, exposures due to uptake of COPECs in soils by plants (other than grass or ornamental shrubs and trees) are considered to be negligible (Figure 8). Soil invertebrates may continue to be exposed to COPECs in soils. Herbivorous birds may visit the site to feed on seeds and soil invertebrates. Burrowing mammals such as mice and ground squirrels may be present in grassed areas.

Air in Burrows. Volatile organic compounds were detected in a number of soil gas samples throughout the Site. Burrowing mammals may be exposed to volatile organic compounds in soils. Similarly, burrowing owls may utilize ground squirrel burrows for nesting sites.

Food Items. Given planned future use, exposures of surface soils to plants and wildlife will likely be limited. Moreover, wildlife observed at the site are likely to be infrequent, transient visitors. Based on this information, bioaccumulation of COPECs in soils is likely to be negligible and exposure via the ingestion of tainted food is likely to be negligible.

8.4 SCREENING CRITERIA

Toxicity screening criteria were developed based on review of U.S. EPA Ecological Soil Screening Criteria (Eco-SSL) documents, supplemented with screening criteria prepared by U.S. EPA Region 4 (2015). These screening criteria are provided in Table 19. Screening criteria are available separately for major taxonomic groups for soil exposures. However, only a single value is available to screen soil gas exposures and is applicable to both mammals and birds.

8.5 SUMMARY

8.5.1 Hazard Quotient Calculation

Hazard quotients were calculated to allow comparison of measured exposure point concentrations to the ecological screening criteria to evaluate the potential for adverse toxic effects to organisms present at the Site (Table 20). To provide a conservative evaluation of the potential for adverse effects, the lowest screening criterion for each COPEC (Table 19) was used for this screening. It is also assumed that the organisms spend 100% of their time at the Site.

Based on the screening calculations, ecological effects due to exposures to PAHs (phenanthrene and fluoranthene) and to volatile compounds in soil gas (toluene and naphthalene) are considered to be negligible. The primary COPECs of concern are the organochlorine pesticides, primarily DDT/DDE/DDD, Dieldrin, and Toxaphene (Table 20).

8.5.2 Current Exposures.

Currently, the Site does not support any aquatic habitat. In addition, the Site does not support any vegetation that would present attractive habitat for terrestrial wildlife populations. Species from off-site areas that are likely to be exposed at the site are common, abundant species that are frequently observed in residential areas or row crop fields of central California. Many of these species are highly tolerant of

human disturbance (e.g., house finch). However, due to the lack of habitat, exposures are considered minimal.

Given current conditions, exposures to COPECs in groundwater and surface water are considered to be incomplete or insignificant. Exposure pathways to organic compounds in soils and food items are considered to be complete. Although exposure pathways to organic compounds in soils and in food items are considered to be complete, wildlife exposures to these COPECs are considered to be minimal because wildlife observed on the Site are likely to be infrequent visitors.

Based on the ecological risk screening previously presented, current conditions at the Site do not appear to pose significant risks to ecological receptors.

8.5.3 Planned Future Exposures.

Based on future plans, much of the Site will be paved or support school structures and is not expected to support vegetation that would provide attractive habitat for terrestrial wildlife populations. Species likely to be exposed are likely to be common, abundant species that are tolerant of human disturbance (e.g., European starling, house finch).

Once the school is built, exposure pathways to COPECs in groundwater or surface water are considered to be incomplete. Although exposure pathways to organochlorine pesticides in soils and in food items are considered to be complete, wildlife exposures to these COPECs are likely to be limited because wildlife observed on school grounds are likely to be infrequent visitors.

Based on the ecological risk screening presented above, future conditions at the Site do not appear to pose significant risks to ecological receptors.

9.0 COMMUNITY PROFILE

9.1 COMMUNITY BACKGROUND INFORMATION

The City of Oxnard is an incorporated agricultural and manufacturing community located on the coast of California, approximately 60 miles west of downtown Los Angeles and 300 miles south of San Francisco. Housing costs remain among the most affordable in the area, attracting many young families and retired persons. Year-round crops attract many Hispanic families who work in the agricultural fields or other service industries. The City's population was estimated to be 210,037 in July 2017 (United States Census 2018).

English is the most common language. The second most commonly spoken language is Spanish. Oxnard has a Mayor/City Council government. The City was incorporated in 1903 (Wikipedia 2018).

The proposed High School No. 8 Site is located on the east side of Oxnard. The proposed school is designed to accommodate high school students in the surrounding new housing developments and adjacent neighborhoods.

The community demographic profile available from the City of Oxnard (United States Census 2018) is as follows:

Population:	
2017 Census	210,037
2010 Census	197,899
Percent Population Change 2010–2017	6.1%
Households:	
2012-2016 Census	50,839
Occupied Housing Units (2015 Census):	
Owner occupied 2012-2016	53.5%
Renter occupied 2012-2016	46.5%
Estimated population by race (2010 Census):	
Asian[a]	7.6%
Black[a]	2.7%
Hispanic Origin[b]	74.3%
White[a]	75.5%

a - Includes persons reporting only one race.
b - Hispanics may be of any race, so also are included in applicable race categories.

Age (2010 Census):	
Age 0–4	7.9%
Age 5–18	20.3%
Age 19–64	62.3%
Age 65 and older	9.5%

Education level (2010 Census, persons 18 years and over):	
No high school diploma	33.9%
High school graduate or higher	66.1%
Bachelor's degree or higher	16.3%
Median Household Income:	
2012-2016	$61,709
Per Capita Income in Last 12 Months (2015 Dollars):	
2016-2016	$21,102
Persons in Poverty Percent:	
2011-2015	16.3%

9.2 COMMUNITY CONCERNS

The project has not generated much public attention to date. An Environmental Impact Report (EIR) will be prepared according to California Environmental Quality Act (CEQA) guidelines and will be made available for public review and comment.

9.3 PUBLIC PARTICIPATION

California Education Code (CEC) 17210.1(b) requires that residents in line-of-sight of the Site be notified, in writing, of the proposed field sampling. The residents nearest to the Site are located along west side of Festivo Street to the east, on the south side of Camino Del Sol to the south, on the west side of North Rose Avenue to west, and the north side of Cesar Chavez Drive to the North (Figure 2). The proposed PEA sample locations are located approximately 150 feet west of residences on Festivo Street, 150 feet north of the residences on Camino Del Sol, 225 feet east of the residences on North Rose Avenue, and 900 feet south of the residences on Cesar Chavez Drive. A covered six-foot-high chain link fence surrounds the entire Maulhardt Ranch, including the Site, and prevents the visual examination of the Site by the residents in the neighborhoods surrounding the Maulhardt Ranch. Given the distance from the surrounding residential properties to the PEA sample locations, and that the Site is not within the line-of-site of the surrounding residential properties, public notification is not necessary for these residences and was not performed.

Two public information repositories for review of the PEA are being established by the School District. One is the City of Oxnard Library located at 251 South A Street, Oxnard, California 93030 and the other is the School District's Headquarters Office located at 309 South K Street, Oxnard, California 93030. A copy of the PEA Report will be placed in these two repositories for access by local community members.

10.0 QUALITY ASSURANCE PROJECT PLAN IMPLEMENTATION

An integral part of the PEA sampling and analysis plan is the QA/QC program to ensure the reliability and compatibility of all data generated during the PEA. The QAPP provides specific descriptions of the field and laboratory procedures to be used for verifying and maintaining performance quality for collection of environmental samples and subsequent chemical analysis. The QAPP sets forth the policies, procedures, and activities for the identification and documentation of the precision, accuracy, completeness, and representativeness of the data during the performance of the PEA. The QAPP is presented in Appendix A.

During the PEA investigation, a variety of data were collected. Each sample was analyzed for a number of different chemicals, depending on the rationale for sample collection. Data collected were evaluated to determine which of the chemicals identified are likely to be site-related and to assess whether the reported concentrations for these chemicals are of acceptable quality for use in the screening evaluation.

10.1 EVALUATION OF ANALYTICAL METHODS

The analytical methodology used for data collection was assessed for appropriateness for use in the screening evaluation. Analytical results that are not specific for a particular compound or results of screening analytical methods (e.g., PID readings) were not used for the Human Health Screening Evaluation.

10.2 EVALUATION OF DETECTION LIMITS

Detection limits associated with the analytical data were reviewed before eliminating chemicals because they were not detected. In some cases, the detection limit for a chemical may be greater than the corresponding standards, criteria, or concentrations derived from toxicity reference values; therefore, the chemical may be present at levels greater than these corresponding reference concentrations, which may result in undetected risk. In other cases, a particular detection limit may be significantly higher than positively detected values in other samples in a data set. After considering these cases and any other reasonable explanations why contaminants may not have been detected, chemicals that were not detected in any medium were eliminated.

10.3 EVALUATION OF QUALIFIED DATA

For analytical results, various qualifiers pertaining to the quality of the data are attached to certain data points by either the laboratories conducting the analysis or by persons conducting the data validation (procedures for data validation are discussed in Section 8.3 of the QAPP [Appendix A]). A number of data points were qualified as estimated ("J" flagged) because the detected concentration was below the MRL for the analyte.

Methane and hydrogen sulfide were analyzed in the field using a mobile laboratory. Methane was analyzed via U.S. EPA method 8015B and hydrogen sulfide using a handheld Jerome H_2S Analyzer Model 631-X analyzer in accordance with the guidelines in *Advisory – Active Soil Gas Investigations* (DTSC and LARWQCB 2015). No detections of methane or hydrogen sulfide were reported. Since a field instrument was used to obtain the hydrogen sulfide data, the data does not meet the definitive data protocols used for all other data in this data set. Therefore, no definitive data QC results are available to determine the true data quality. These data are usable as qualitatively determined data only.

No data were rejected as unusable.

10.4 DATA VALIDATION RESULTS

A typical PEA validation effort consists of a review of 10% of the analytical data; however, due to the limited number of analytical batches associated with the subject investigation, 100% of the data were reviewed. The validation guidance used in evaluating the data is presented in *USEPA National Functional Guidelines for Inorganic Data Review* (U.S. EPA 2014a) and *USEPA National Functional Guidelines for Organic Data Review* (U.S. EPA 2014b). The data review consisted of an evaluation of all applicable Quality Control (QC) sample results as they relate to the field data under review. Raw data were not reviewed. The review determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

The data were evaluated by results from the following QC elements:

- Holding Times;
- Method Blanks;
- Laboratory Control Samples;
- Surrogate Recovery (Organic Methods);
- Field Replicate Analysis;
- Spiked Duplicate Analysis; and
- Relative Percent Difference (RPD) Compliance.

The A & R Laboratory data for soil gas analyses had compliant QC results for all QC samples. Based on the results of this data validation review, it is concluded that the A & R Laboratory soil gas data are usable as reported. The results are considered correct and reliable. The DQOs were satisfied per the FSP (Tetra Tech 2018b) and the data are usable for their intended purpose.

The AETL data for soil sample and groundwater analyses had compliant QC results for all QC samples. The AETL soil and groundwater data are usable as stated and qualified. The results are considered correct and reliable The DQOs were satisfied per the FSP (Tetra Tech 2018b) and the data are usable for their intended purpose.

No target analytes were detected in method blanks, laboratory control sample recoveries were within control limits, holding times were met, surrogate recoveries were within control limits, spiked duplicate analyses were within recovery and RPD control limits, compounds were identified correctly, the analytical methods were performed correctly, and the COC documentation was in compliance.

The only data that were qualified as estimated ("J" flagged) were results that were reported at concentrations below the MRL. No data were rejected.

The results of the data validation review indicate that the data meet the DQOs of the PEA and are usable as reported. The data validation memorandum is provided in Appendix N.

10.5 COMPARISON OF SITE WITH BACKGROUND DATA

Arsenic

The *Interim Guidance for Sampling Agricultural Properties* (DTSC 2008) states "If all the arsenic results for the site are at or below 12 milligrams per kilogram (mg/kg), then collection of background samples will not be required." The FSP stated that "If the arsenic concentrations in any of the 15 discrete and two duplicate surface soil samples collected for arsenic analysis exceed 12 mg/kg, additional actions, including sample collection and remedial actions may be required." However, the maximum arsenic concentration from the 17 discrete and two duplicate soil samples collected at the Site was 2.65 mg/kg (refer Section 6.8.3), which is well below the 12 mg/kg DTSC screening level. Therefore, no background arsenic samples were collected.

10.6 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

All chemicals that were not eliminated by any of the above evaluations were considered COPCs for the Site and evaluated further through the Human Health Screening Evaluation (Section 7.0). Tables 13 and 14 list the soil gas COPCs and Table 15 lists the soil COPCs identified for this Site. The associated soil gas and soil risks are summarized in Tables 13 through 16. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. Receptors were evaluated for: (1) carcinogenic risks and (2) noncarcinogenic hazards. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. Noncarcinogenic hazard from assumed exposures to the COPCs in soil and soil gas at the Site (HI = 0.2) is well below the threshold level of 1.

The detected VOCs naphthalene and toluene were selected soil gas COPCs, the detected OCPs chlordane (total), 4,4'-DDD (DDD), 4,4'-DDE (DDE), 4,4'-DDT (DDT), dieldrin, and toxaphene, PAHs, fluoranthene and phenanthrene, and TPH-gasoline (C4-C12), TPH-diesel (C9-C22, and TPH-motor oil (C23-C40) were selected as soil COPCs. As indicated in the DTSC *Interim Guidance for Sampling Agricultural Properties* (DTSC 2008), if all arsenic data are equal to or less than 12 mg/kg, then arsenic does not need to be considered a COPC and this determination does not require collection and comparison to a background data set. Therefore, arsenic was not selected as a COPC and was not evaluated.

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11.0 HEALTH AND SAFETY PLAN IMPLEMENTATION

Tetra Tech prepared a site-specific Health and Safety Plan (HSP) pursuant to Health and Safety Code 1910.120 (Appendix B). The plan:

- Identified and described potentially hazardous substances that may be encountered during field operations;
- Specified PPE and clothing for Site activities; and
- Outlined measures to be implemented in the event of an emergency.

Tetra Tech field personnel reviewed the HSP prior to commencing field work. Prior to initiation of field activities each day, a site safety briefing was conducted to identify potential physical and chemical hazards and outline measures to be taken in event of an emergency. All onsite personnel were required to sign the site safety briefing form.

During field activities, appropriate Level D PPE was worn by all personnel within the exclusion zone. Operator breathing zone PID readings were obtained on a regular basis as required by the HSP. All PID readings during field activities were 0.0 ppm. Based on these measurements, an upgrade to Level C PPE was not required.

Potential hazards to public health and safety were minimal due to the nature of the sampling activities and the absence of detectable vapors in the exclusion zone. No incidents or emergency actions occurred during the field program.

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12.0 VARIANCES

The following two variances to the FSP (Tetra Tech 2018b) occurred during the course of the PEA investigation:

- The discrete soil samples were to be combined into 15 composite samples and two duplicate composite samples by AETL, the analytical laboratory in accordance with the FSP (Tetra Tech 2018b). The 60 discrete soil samples were not combined into 15 composite samples or two duplicate composite and all 60 discrete soil samples and nine duplicate samples were analyzed for OCPs via EPA method SW8081A; and

- The original subsurface soil sampling schedule presented in the FSP (Tetra Tech 2018b) indicated that the groundwater samples would be collected at 5 to 5.5 feet bgs and 10 to 10.5 feet bgs based on the assumption that groundwater would be encountered at 15 feet bgs. The subsurface soil sample collection schedule was adjusted to 15 feet to 15.5 feet bgs and 20 to 20.5 feet bgs because groundwater was encountered at approximately 21 feet bgs.

The two variances discussed above are not expected to have a significant negative impact on the DQOs of the PEA investigation.

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13.0 EVALUATION OF APPLICABLE OR RELEVANT LAWS AND REGULATIONS PERTAINING TO SCHOOL SITES

Public Resources Code Section 21151.8 and Education Code Section 17213 prohibit the approval of an Environmental Impact Report or Negative Declaration for a project involving the purchase of a school site or construction of a new elementary or secondary school unless all of the following occur:

- The EIR or Negative Declaration (ND) includes information needed to determine if the property is any of the following:
  - The site of a current or former hazardous waste disposal site or solid waste disposal site and, if so, whether the wastes have been removed;
  - A hazardous substance release site identified by the State Department of Health Services in a current list adopted pursuant to Section 25356 for removal or remedial action pursuant to Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code; or
  - A site that contains one or more pipelines, situated underground or above ground, which carries hazardous substances, acutely hazardous materials, or hazardous wastes, unless the pipeline is a natural gas line which is used only to supply natural gas to that school or neighborhood.
- Facilities located within a one-quarter mile radius of the proposed site that might reasonably emit hazardous or acutely hazardous air emissions have been identified; and
- It has been determined that the health risks from facilities do not and will not constitute an actual or potential endangerment of public health to persons who attend or are employed at the school; or
- If impacts are identified, mitigation of all chronic or accidental hazardous air emissions must be made prior to school occupancy and a determination of no actual or potential endangerment shall be certified by the governing board.

A comprehensive review of relevant background information was undertaken for preparation of this PEA Report. This information, including a list of agencies contacted for information regarding the Site, is summarized in Section 3.0. On the basis of the information reviewed, there is no documentation that the Site is a current or former hazardous waste disposal site, as defined in Section 25114 of the Health and Safety Code. No active or former landfills are known to be located within one-half mile of the Site and the Site is not known to be situated upon a current or former disposal site. The Site is not listed in regulatory agency databases as a hazardous substances release site.

Records indicate the Site has been used for agricultural production since at least 1869 and is located in the Oxnard Oil Field. Sources of potential environmental contamination identified at the Site are summarized in Section 4.0.

The following hazardous pipelines identified within 1,500 feet of the Site (Figure 2):

- The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site;

- The City of Oxnard maintains a 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site;

- The UWCD maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site; and

- The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch. The Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8.

Pursuant to California Code of Regulations, Title 5, Section 14010 [h], a pipeline risk assessment will be performed in accordance with *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007) to determine whether the pipelines operated by the City of Oxnard and UWCD pose a safety hazard. The Pipeline Risk Analysis Report will be included as an addendum to the PEA report. Because the Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8, they will not be included in the Pipeline Risk Analysis.

14.0 CONCLUSIONS

14.1 BACKGROUND RESEARCH

The Site is located in an area that has historically been developed for petroleum and agricultural production. The Site is part of the Maulhardt Ranch and is currently being used for strawberry cultivation. The Site is planned for development as a high school within a new mixed residential/commercial development, the Maulhardt Property Urban Village. The properties surrounding the Site are currently for residential/commercial land use. Based upon the information reviewed, the Site is not located at a known hazardous waste disposal site, hazardous substance release site, or landfill.

Research of available Site background information, including regulatory agency database lists and agency file searches, and owner interviews, indicates the Site area was used primarily for agricultural purposes since at least 1869. Petroleum production also occurred in the Site area, but not on the Site in the past. Although documentation of known release(s) of hazardous materials at the Site was not obtained, activities conducted at the Site have the potential to result in releases. Potential sources of hazardous materials impact to the Site identified during the investigations include:

1. Potential toxic soil gas from potential formation leakage from the Oxnard Oil Field;

2. Potential residual OCPs, arsenic, SVOCs, PAHs, TPHd and TPHmo collectively known as TPHde in soil from fuel oil in smudge pots that were formerly used for frost abatement as part of the agricultural production activities at the Site;

3. Potential impacts to shallow soil, soil gas, and groundwater in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas ASTs and USTs formerly used for the storage of motor fuel (Figure 3);

4. Potentially hazardous substances and petroleum products that contained VOCs and TPHg have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area (Figure 3); and

5. PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol (Figure 2).

A database search did not reveal any off-site facilities within one-half mile of the Site where releases to the environment have been documented. Tetra Tech reviewed agency files for facilities surrounding the Site. Based upon the information reviewed, none of the surrounding facilities appears to have a significant potential to have impacted the Site.

The following hazardous pipelines identified within 1,500 feet of the Site (Figure 2):

- The City of Oxnard maintains a 12-inch diameter PVC water pipeline routed north-south beneath North Rose Avenue immediately west of the Site;

- The City of Oxnard maintains a 12-inch diameter ACP water pipeline routed east-west beneath Camino Del Sol immediately south of the Site;

- The UWCD maintains a 42-inch water pipeline beneath North Rose Avenue immediately west of the Site; and

- The Maulhardt Ranch maintains a 12-inch diameter PVC water pipeline routed east to west underlying the dirt access road just south of the northern boundary of the Maulhardt Ranch, approximately 920 feet north of the Site. This pipeline is connected to two buried 12-inch diameter PVC water pipelines that are routed north-south beneath and just west of the main north-south road approximately 450 to 460 feet east of Rose Avenue through the Site to the farmyard/residential area of the Maulhardt Ranch. The Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8.

Pursuant to California Code of Regulations, Title 5, Section 14010 [h], a pipeline risk assessment will be performed in accordance with *Guidance Protocol for School Site Pipeline Risk Analysis* (CDE 2007) to determine whether the pipelines operated by the City of Oxnard and UWCD pose a safety hazard. The Pipeline Risk Analysis Report will be included as an addendum to the PEA report. Because the Maulhardt Ranch water pipelines will be removed from the Site and surrounding areas prior to the development of the High School No. 8, they will not be included in the Pipeline Risk Analysis.

14.2 PEA INVESTIGATION

Field and laboratory investigations were conducted to develop site-specific data regarding the potential presence of contaminants in Site media (soil gas, soil, and groundwater). The results of the investigation indicate that soil gas beneath the Site has not been impacted by emissions from the Oxnard Oil Field, and fuel or petroleum products that may have been released from ASTs and USTs formerly located in the adjacent Maulhardt Ranch farm maintenance activities performed in farmyard and residential areas. No methane, carbon monoxide, carbon dioxide, hydrogen sulfide, or TPHg were detected in any of the soil gas samples (Tables 9 and 10). Naphthalene and toluene were detected at concentrations well below DTSC Screening Levels.

The Site appears to have been impacted by agricultural production activities. OCPs were detected in all 60 of the discrete surface oil samples and the nine duplicate samples collected for OCP analysis (Table 11). The OCPs 4,4'-DDD (DDD), 4,4'-DDT (DDT), 4,4'-DDE (DDE), Chlordane (total0, Chlordane (alpha), and Chlordane (gamma) were detected at concentrations below their respective DTSC Screening Levels (Table 11). Dieldrin was detected in three samples at concentrations of 34.70 µg/kg, 37.20 µg/kg, and 40.40 µg/kg, slightly above its DTSC Screening Level of 34 µg/kg. Toxaphene was detected in 33 samples at concentrations above its DTSC Screening Level (490 µg/kg) at concentrations ranging from 510 µg/kg to 2,600 µg/kg over an area of approximately 28 acres (Figure 5). No other significant impacts were identified at the Site.

Arsenic was detected in one sample with J-Flagged results at a concentration 2.65 mg/kg. Arsenic was not detected at concentrations above its laboratory MDL (2.5 mg/kg) or the DTSC-ASL of 12 mg/kg (DTSC 2008) in any of the other 16 samples (Appendix M). No significant impacts to the Site from arsenic in surface soil were identified.

The Site surface soils do not appear to have been significantly impacted by smudge pot fuel. SVOCs, PAHs, TPHde, and TPHg were not detected at concentrations above their respective DTSC Screening Levels (refer to Table 7 and Appendix M).

The Site subsurface soil in areas of the Site adjacent to the Maulhardt Ranch farmyard and residential areas do not appear to have been significantly impacted by releases of VOCs, TPHg, and TPHde from

petroleum products that may have been released from ASTs and USTs and farm maintenance activities. VOCs, TPHg, and TPHde were not detected at concentrations above their respective DTSC Screening Levels (refer to Appendix M).

The groundwater in areas of the Site adjacent to the Maulhardt Ranch farmyard and residential areas does not appear to have been significantly impacted by releases of VOCs, SVOCs, and TPHde from petroleum products that may have been released from ASTs and USTs and farm maintenance activities.

The detected VOCs naphthalene and toluene were selected soil gas COPCs, the detected OCPs chlordane (total), 4,4'-DDD (DDD), 4,4'-DDE (DDE), 4,4'-DDT (DDT), dieldrin, and toxaphene, PAHs, fluoranthene and phenanthrene, and TPH-gasoline (C4-C12), TPH-diesel (C9-C22, and TPH-motor oil (C23-C40) were selected as soil COPCs. As indicated in the DTSC *Interim Guidance for Sampling Agricultural Properties* (DTSC 2008), if all arsenic data are equal to or less than 12 mg/kg, then arsenic does not need to be considered a COPC and this determination does not require collection and comparison to a background data set. Therefore, arsenic was not selected as a COPC and was not evaluated.

No evidence for release of petroleum products to groundwater beneath the Site from the adjacent areas of the Maulhardt Ranch farmyard and residential areas was identified in the samples collected for this PEA. Contamination of groundwater beneath the Site from off-site sources is considered unlikely. Therefore, potential groundwater exposure pathways are considered incomplete and were not evaluated in this human health screening evaluation.

The compounds listed in Tables 13 and 14 (VOCs) and Table 15 (OCPs, PAHs, and TPH) were evaluated in the human health screening evaluation. Potential risks were estimated using a residential/unrestricted land use scenario, which evaluates hypothetical Site residents. Exposures to the COPCs listed in Tables 13, 14 and 15 were evaluated for direct dermal contact with soils, incidental ingestion of soils, and the inhalation of airborne dusts and vapors. Receptors were evaluated for carcinogenic risks and noncarcinogenic hazards.

A screening level human health risk evaluation was conducted for residential exposures to the COPCs identified in soil gas, groundwater, and soils at the proposed High School No. 8 Site. The COPCs identified in soils at the Site include OCPs, TPHs, and VOCs. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. Receptors were evaluated for: (1) carcinogenic risks, and (2) noncarcinogenic hazards. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors.

Noncarcinogenic hazard from assumed exposures to the COPCs in soil and soil gas at the Site (HI = 0.2) is well below the threshold level of 1

Ecological risks were evaluated qualitatively. This assessment consisted of identifying onsite habitats, ecological receptors, and the likelihood that sensitive receptors could be exposed to COPECs. Currently, the Site does not support any aquatic habitat. In addition, the Site does not support any vegetation that would present attractive habitat for terrestrial wildlife populations. Species likely to be exposed at the Site are common, abundant species that are frequently observed in row crop fields of central California. Many of these species are introduced and are highly tolerant of human disturbance. Special-status species that occur within the Oxnard USGS 7 1/2-minute quadrangle special-status species are unlikely to occur at the Site. Given current conditions, ecological exposure pathways related to groundwater, surface water, and air are considered to be incomplete or insignificant. Although exposure pathways to

organochlorine pesticides in soils and in food items are considered to be complete, wildlife exposures to these COPECs are likely to be limited because wildlife observed on school grounds are likely to be infrequent visitors. Based on the ecological risk screening presented, future conditions at the Site do not appear to pose significant risks to ecological receptors.

14.3 SUMMARY

Based on the results of the PEA, including the human health screening evaluation (Section 7.0) and the ecological screening evaluation (Section 8.0), OCPs detected at the Site (primarily toxaphene) appear to be present at significant concentrations that pose a threat to likely human receptors, including residential/unrestricted land use. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. The estimated cumulative cancer risk associated with potential exposures to soil based on the 95% UCLs for pesticides maximum detected concentrations for other chemicals is 4×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the point of departure of 1×10^{-6} for potential residential receptors.

15.0 RECOMMENDATIONS

Findings of this PEA indicate that the Site surface soils have been significantly impacted by OCPs. Potential health risks due to chemicals detected at the Site were evaluated using a residential/unrestricted land use exposure scenario. The residential exposure scenario using the maximum concentrations of COPCs provides conservative risk estimates for the Site based on the planned future use and the distribution of COPCs in soil. Based on the results of the PEA, including the human health screening evaluation (Section 7.0) and the ecological screening evaluation (Section 8.0), OCPs detected at the Site (primarily toxaphene) appear to be present at significant concentrations that pose a threat to likely human receptors, including residential/unrestricted land use. Assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors.

The surface soil sampling performed for PEA has adequately defined the lateral extent of OCP-impacted soil at the Site at concentrations exceeding DTSC Screening Levels. Tetra Tech recommends that a Supplemental Site Investigation (SSI) workplan be developed and implemented at the Site under DTSC oversight to assess the depth of OCP-impacted soil at the Site at concentrations exceeding DTSC Screening Levels (specifically toxaphene and dieldrin). A remedy for the OCP-impacted soil at the Site will be developed following completion of the SSI.

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16.0 DISCLAIMER

This report was compiled based partially on information supplied to Tetra Tech from outside sources and other information which is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others which may be contained in the report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Since the facts forming the basis for the report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under local, state, or federal laws or any modifications or changes to such laws.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

TETRA TECH

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17.0 REFERENCES

AirNav.com
2017 https://www.airnav.com/cgi-bin/airport-search. September 15.

American Society for Testing and Materials (ASTM)
1990a *Designation D 2487 – 90, Standard Practice for Classification of Soils for Engineering Purposes*.

American Society for Testing and Materials (ASTM)
1990b *Designation D 2488 – 90, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).*

ASTM International (ASTM)
2013 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. E 1527–13.

California Department of Conservation, Division of Mines and Geology (CDMG)
1997 *Special Publication 117 Guidelines for Evaluating and Mitigating Seismic Hazards in California.*

California Department of Conservation, Division of Mines and Geology (CDMG)
1998a *Earthquake Fault Zones, Camarillo Quadrangle Official Map, Ventura County, California*. May 1.

California Department of Conservation, Division of Mines and Geology (CDMG)
1998b *Earthquake Fault Zones, Santa Paula Quadrangle, Official Map Ventura County, California*. May 1.

California Department of Conservation, Division of Mines and Geology (CDMG)
2000 *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos.* April.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)
2017 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.

California Department of Conservation, California Geological Survey (CGS)
2002a *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

California Department of Conservation, California Geological Survey (CGS)
2002b *State of California Seismic Hazard Zones Oxnard Quadrangle, Revised Official Map.* December 20.

California Department of Education (CDE)
2007 *Guidance Protocol for School Site Pipeline Risk Analysis.*

California Department of Fish and Wildlife (CDFW)

2018 California Natural Diversity Database. Oxnard, Camarillo, Point Mugu, Santa Paula, Saticoy, Ventura Quadrangles. Accessed October 8, 2018: http://www.dfg.ca.gov/biogeodata/bios/.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2004 *Guidance for School Site Risk Assessment Pursuant to Health and Safety Code Section 901 (f): Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites.* February.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2008 *Interim Guidance for sampling Agricultural Properties (Third Revision)*. August 7.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2015 *Preliminary Endangerment Assessment Guidance Manual*. January 1994 (Revised October 2015).

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB)

2015 *Advisory – Active Soil Gas Investigations*. June.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2016 *Human Health Risk Assessment (HHRA) Note. HERO HHRA Note Number: 3. DTSC-modified Screening Levels (DTSC-SLs)*. June.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2018 EnviroStor Database. October 13. https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60002683.

California Environmental Protection Agency State Water Resources Control Board (SWRCB)

2017 Geotracker database at http://geotracker.waterboards.ca.gov/. September 14.

California Geological Survey (CGS)

2007 *Special Publication No. 42, Fault Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*. Interim Revision.

California Office of Environmental Health Hazard Assessment (OEHHA)

2004 *Guidance for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(f): Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites.*

City of Oxnard

2010 City of Oxnard Water Atlas. February

City of Oxnard
2011 City of Oxnard Water Atlas. June

City of Oxnard Development Services Planning Division (COPD)
2017 City of Oxnard Zoning Map. January 11.

County of Ventura
2005 *Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California*. March.

County of Ventura
2013 *Ventura County General Plan Hazards Appendix*. 2008, Amended October 22, 2013.

Earth Systems Pacific (ESP)
2018 *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California.* August 31.

Environmental Data Resources, Inc. (EDR)
2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Federal Emergency Management Agency (FEMA)
2010 Flood Insurance Rate Map No. 06111C0910E. May 16.

Gutierrez, Carlos I., Siang, Tan S. and Clahan, Kevin B.
2008 *Geologic Map of the East Half of the Santa Barbara 30' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

Henigan, Anne
2017 Personal Communication for Cal Fire. September 20.

High, Ken
2017 Memorandum Re: Disclosure of Existing Conditions affecting Phase I Environmental Report. October 5.

Jennings, Charles W.
1994 *Fault Activity Map of California and Adjacent Areas*, California Department of Conservation, Division of Mines and Geology California Geologic Data Map Series Map No. 06.

Jennings, Charles W, William A Bryant, and George Saucedo.
2010 *Map No. 0-6 California Geological Survey 150th Anniversary Fault Activity Map of California.*

Jensen Design and Survey, Inc.
2018 *Northeast Community Specific Plan, Maulhardt Property Urban Village Site Plan*. June 20.

Maulhardt, Lynn and Richard
2017 Personal Communication. October 23.

Mayer, K.E., and W.F. Laudenslayer
1988. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection.

Oakeshott, Gordon B.
1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

National Pipeline Mapping System (NPMS)
2017 https://www.npms.phmsa.dot.gov/PublicViewer/. May 16.

Norris, R.M. and Webb, R.W.
1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Peterle, T.J.
1991 Wildlife Toxicology. Van Nostrand Reinhold. New York.

Ross, Stephanie L., David M. Boore, Michael A. Fisher, Arthur D. Frankel, Eric L. Geist, Kenneth W. Hudnut, Robert E. Kayen, Homa J. Lee, William R. Normark, and Florence L. Wong
2004 *Comments on Potential Geologic and Seismic Hazards Affecting Coastal Ventura County, California.* U.S. Department of the Interior, U.S. Geological Survey Open File Report 2004-1286.

Tetra Tech
2018a *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California*. March 29.

Tetra Tech
2018b *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California*. July 27.

Tetra Tech
2018c *Geohazard Assessment/Geotechnical Investigation High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California*. October 11.

Treiman, Jerome A.
1997 *Springville, Camarillo and Related Faults in the Camarillo and Santa Paula Quadrangles, Ventura County, California*. California Division of Mines and Geology (CDMG) Fault Evaluation Report FER-237. September 23.

Turner, John, and Mike Mukae
1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

United States Census 2018
2018 Quick Facts, Oxnard City, California. https://www.census.gov/quickfacts/fact/table/oxnardcitycalifornia/RHI125217#viewtop. October 15.

U. S. Army Corps of Engineers (USACE).
1996 *Risk Assessment Handbook. Vol. II. Environmental Evaluation*. EM 200-1-4. Washington, D.C.

U.S. Department of Agriculture, Soil Conservation Service (USDA)
1970 *Soil Survey of Ventura Area, California.* July.

U.S. Environmental Protection Agency (U.S. EPA)
2016 *Regional Screening Levels (RSLs) – Generic Tables at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016.* May.

U.S. Fish and Wildlife Service (USFWS)
2018 National Wetlands Inventory, Wetland Mapper V2. Accessed October 10, 2018: https://www.fws.gov/wetlands/Data/Mapper.html.

U. S. Geological Survey (USGS)
2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

U.S. Department of the Interior, Geological Survey (USGS) Earthquake Hazards Program
2018 Search Earthquake Catalogue. https://earthquake.usgs.gov/earthquakes/search/. September.

Ventura County Public Works Department (VCPWA)
1975 *Ventura County Water Resources Management Study, Aquifer Delineation in the Oxnard-Calleguas Area, Ventura County*

Wall, Steve
2017 Personal communication for Southern California Edison (SCE). November 20.

Weather Spark
2018 Average Weather in Oxnard., California, United States. https://weatherspark.com/y/1438/Average-Weather-in-Oxnard-California-United-States-Year-Round. October 12.

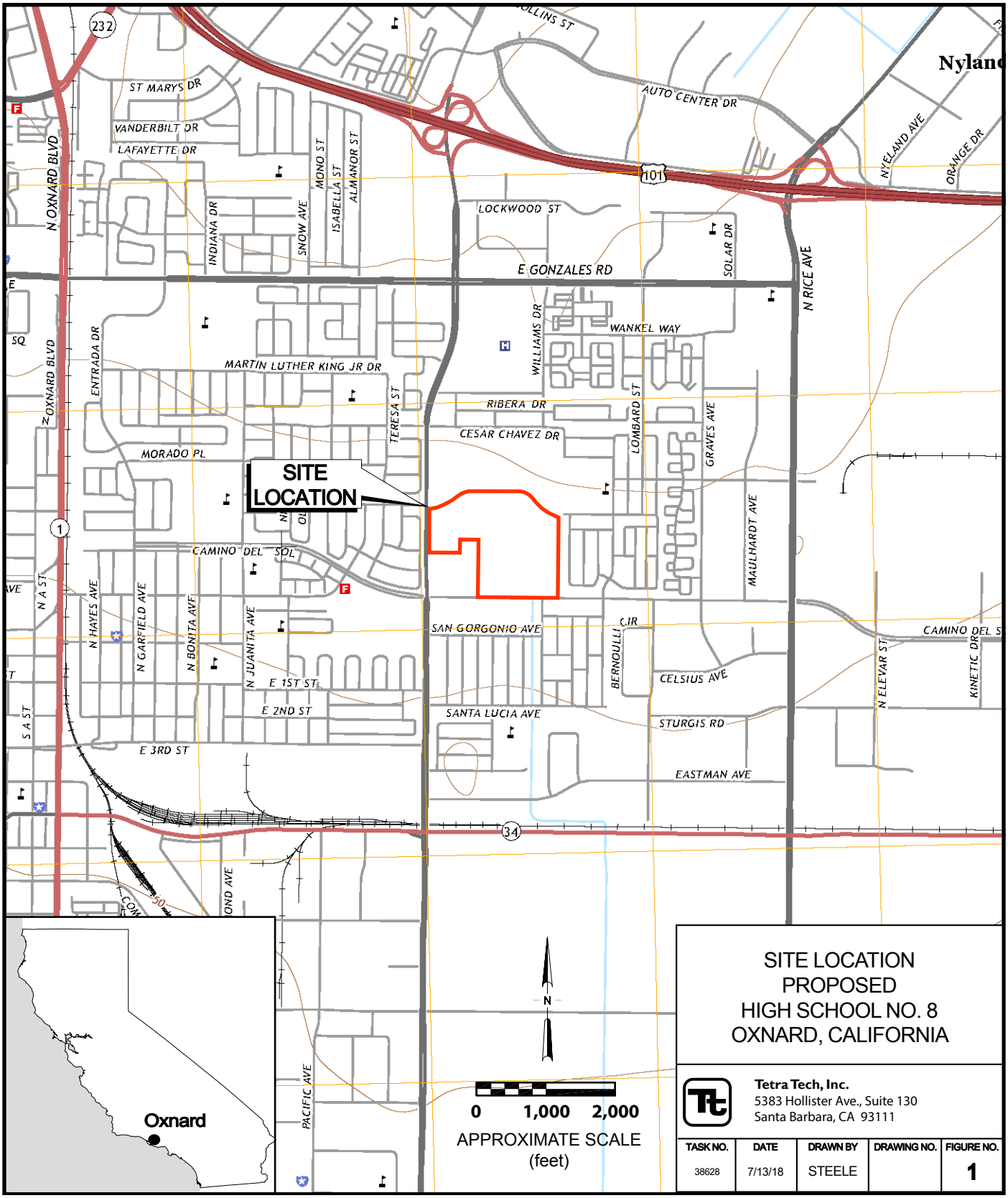
Wikipedia
2018 *Oxnard, California*. https://en.wikipedia.org/wiki/Oxnard,_California

WLC Architects
2018 Overall Site Plan. June 19.

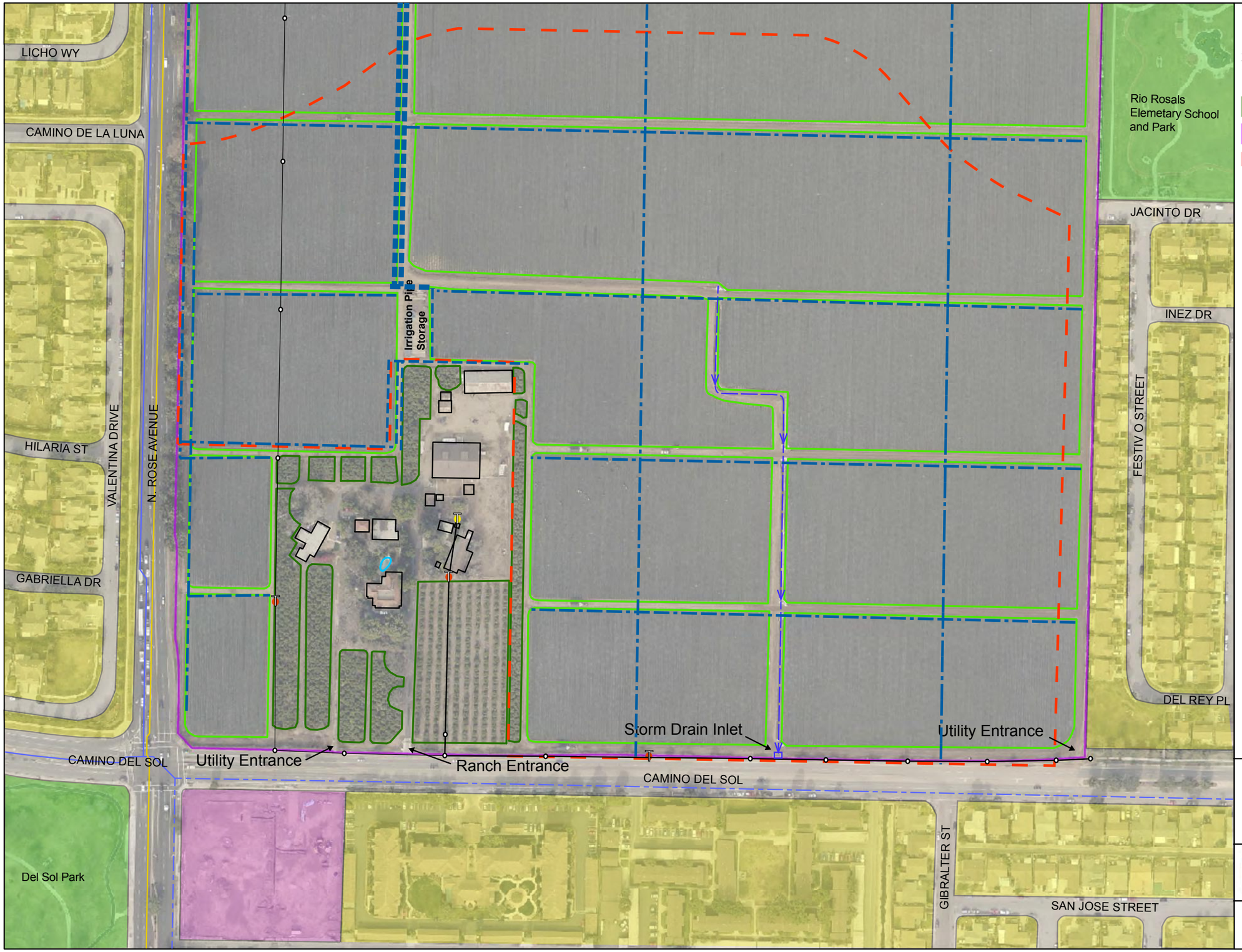
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FIGURES

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Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Features

- Building
- Pool
- Orchard
- Strawberries
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inchAsbestos-Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Surrounding Area Land Use

- Residential
- Commercial
- Park

Note: All building and utility locations are approximate.

N

0 50 200 400 Feet

Background imagery: Ventura County, 2016

SITE PLAN
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
38186	10/12/2018	tr/JS	10045	2



Legend

- Building
- Orchard
- Strawberries
- Pool
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- Septic Line
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- 12 Potential Recognized Environmental Concern (Refer to Table 2)
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Note: All building and utility locations are approximate.

N

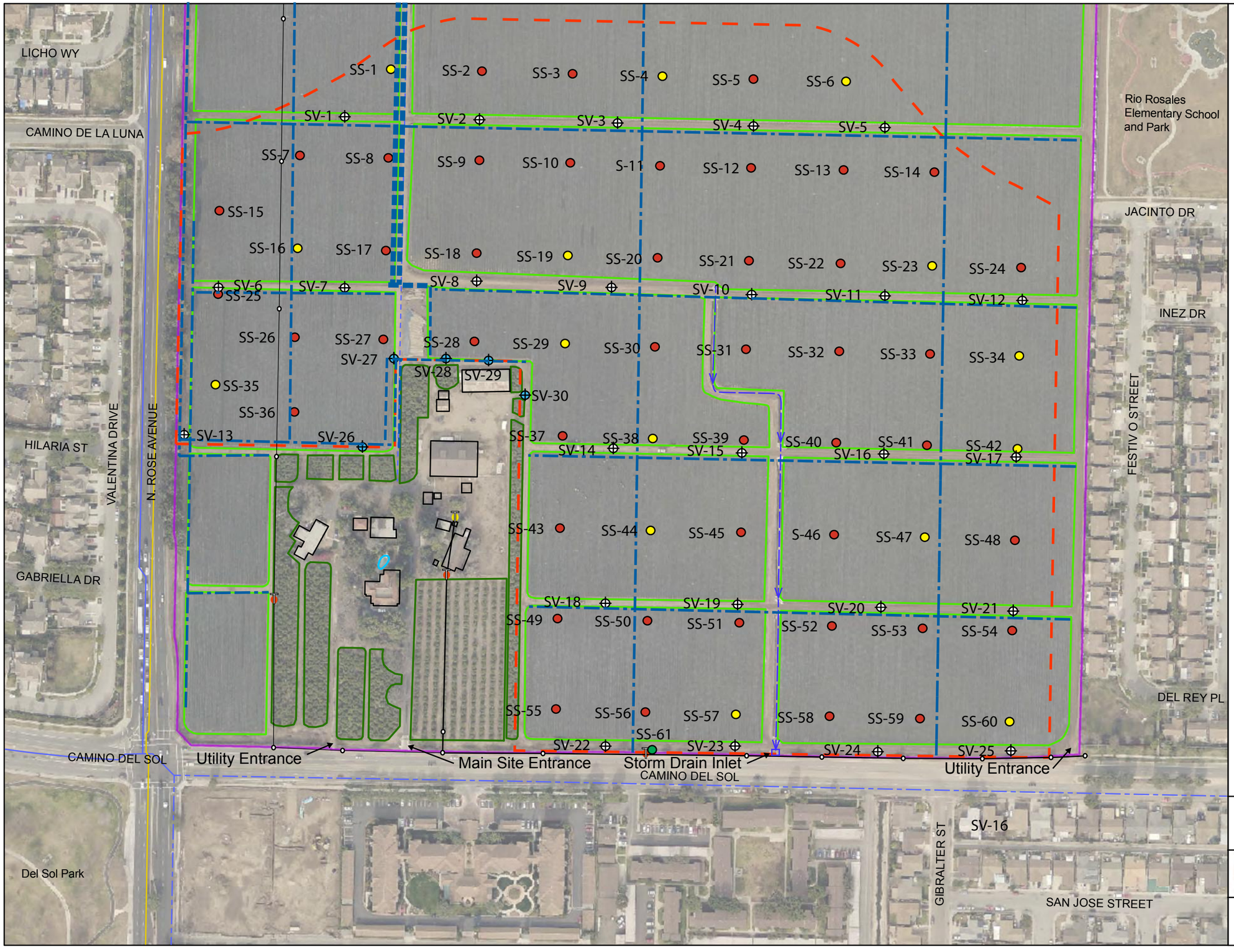
0 50 100 200 Feet

Background imagery: Ventura County, 2016

MAULHARDT RANCH
RESIDENCE/FARM YARD AREA DETAIL
PROPOSED
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
38186	10/15/18	tr/JS	10046	3



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:
All features, including PEA sample, building, utility, and boundary locations are approximate.
As - Arsenic
OCP - Oganochlorine Pesticide
PAH - Polyaromatic Hydrocarbon
PCB- Polychlorinated Biphenyl
SVOC - Semivolatile Organic Compond
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

N

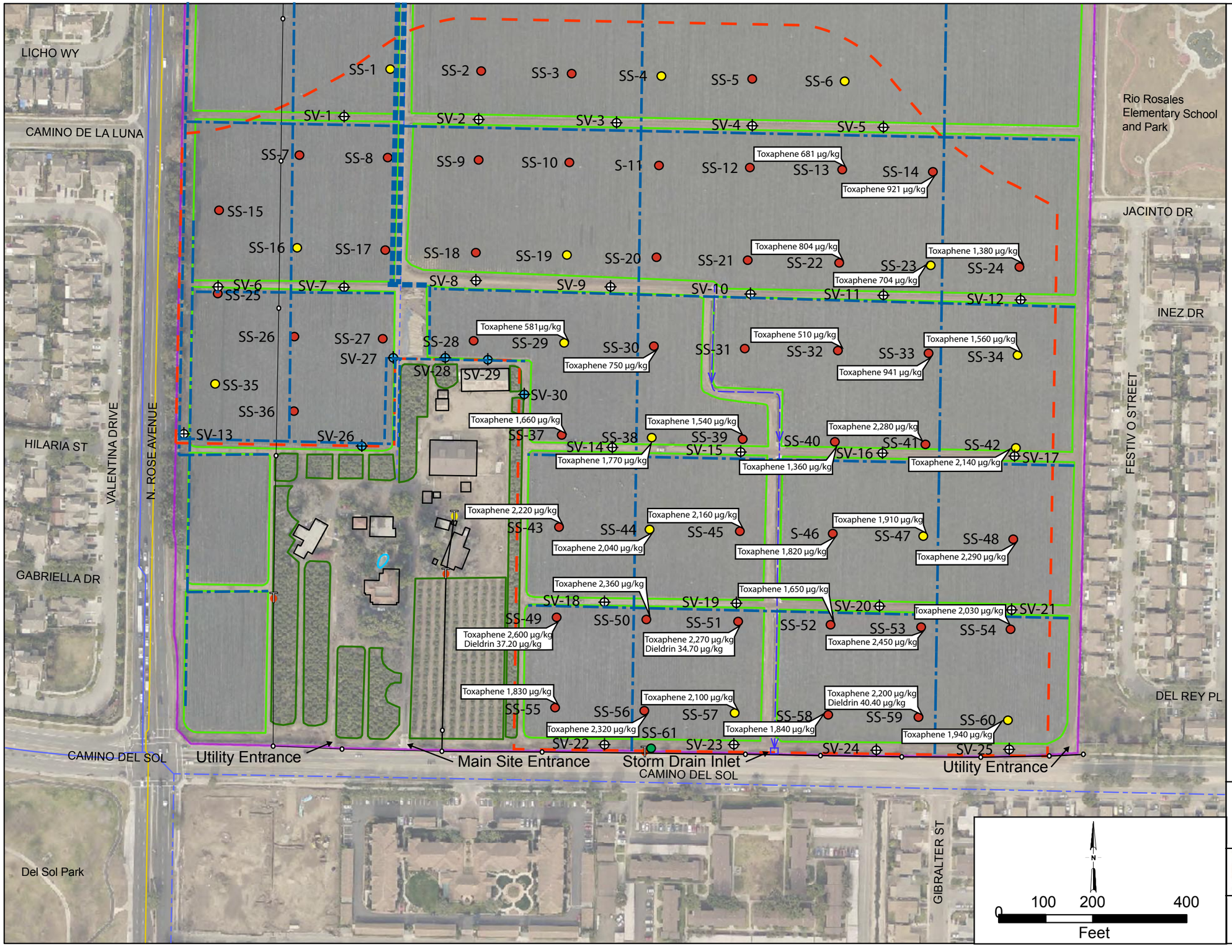
0 100 200 400 Feet

Background imagery: Ventura County, 2016

PEA SAMPLE LOCATIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
38186	10/12/2018	tr/JS	10045	4



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
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- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:

1.) All features, including PEA sample, building, utility, and boundary locations are approximate.

2.) The maximum concentrations are show where duplicate soil samples were collected.

Definitions:

As - Arsenic

DTSC - California Department of Toxic Substances Control

OCP - Oganochlorine Pesticide

PAH - Polyaromatic Hydrocarbon

PCB - Polychlorinated Biphenyl

µg/L - Micrograms per Kilogram

SVOC - Semivolatile Organic Compond

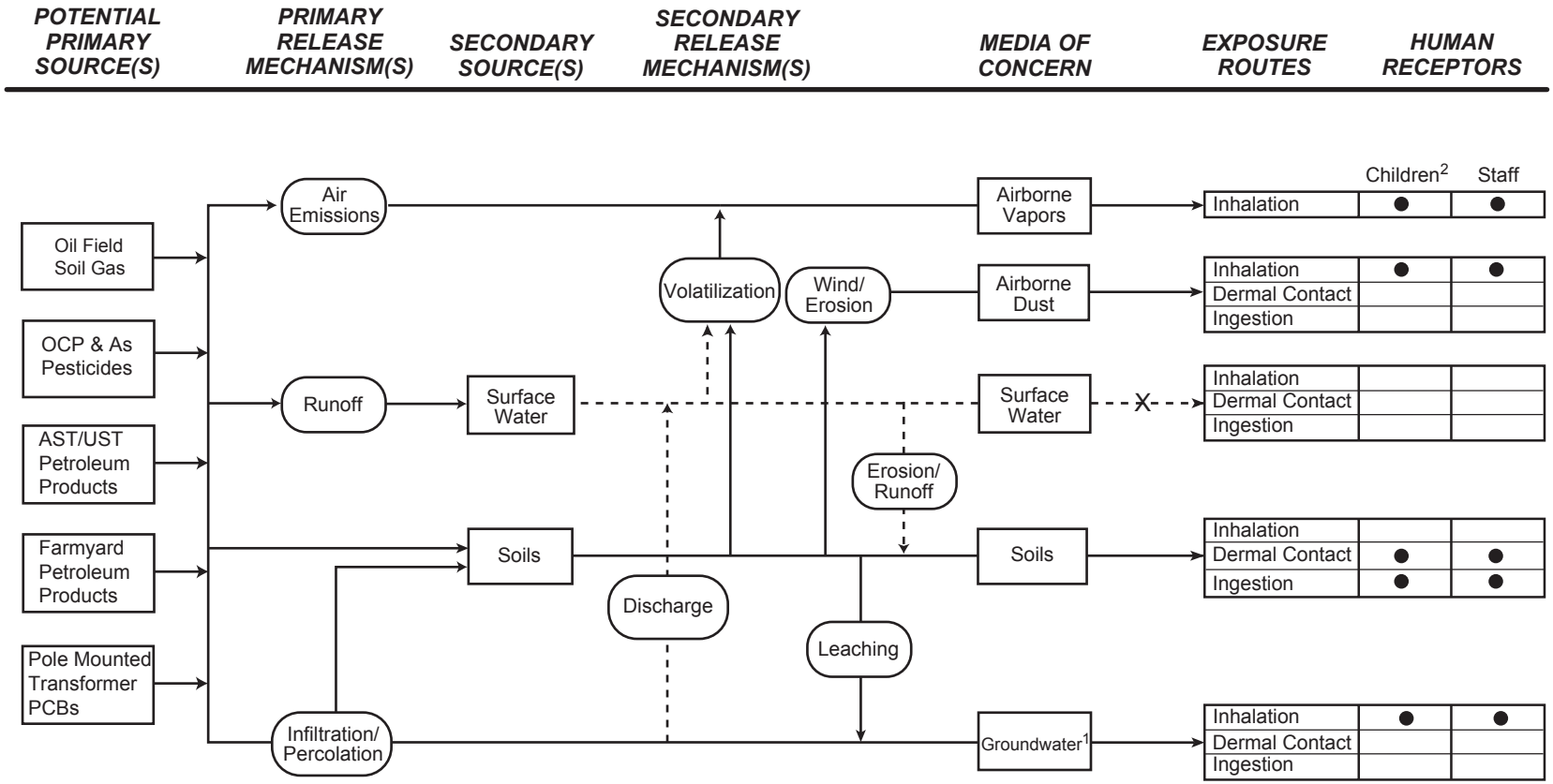
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

Background imagery: Ventura County, 2016

SOIL SAMPLE RESULTS AT CONCENTRATIONS ABOVE DTSC SCREENING LEVELS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
38186	10/12/2018	tr/JS	10045	5



● Potentially complete exposure route.

1 Groundwater at depth greater of 21 feet below ground surface.

2 School children and staff are conservatively evaluated assuming residential exposure assumptions.

→ Potentially complete exposure pathway

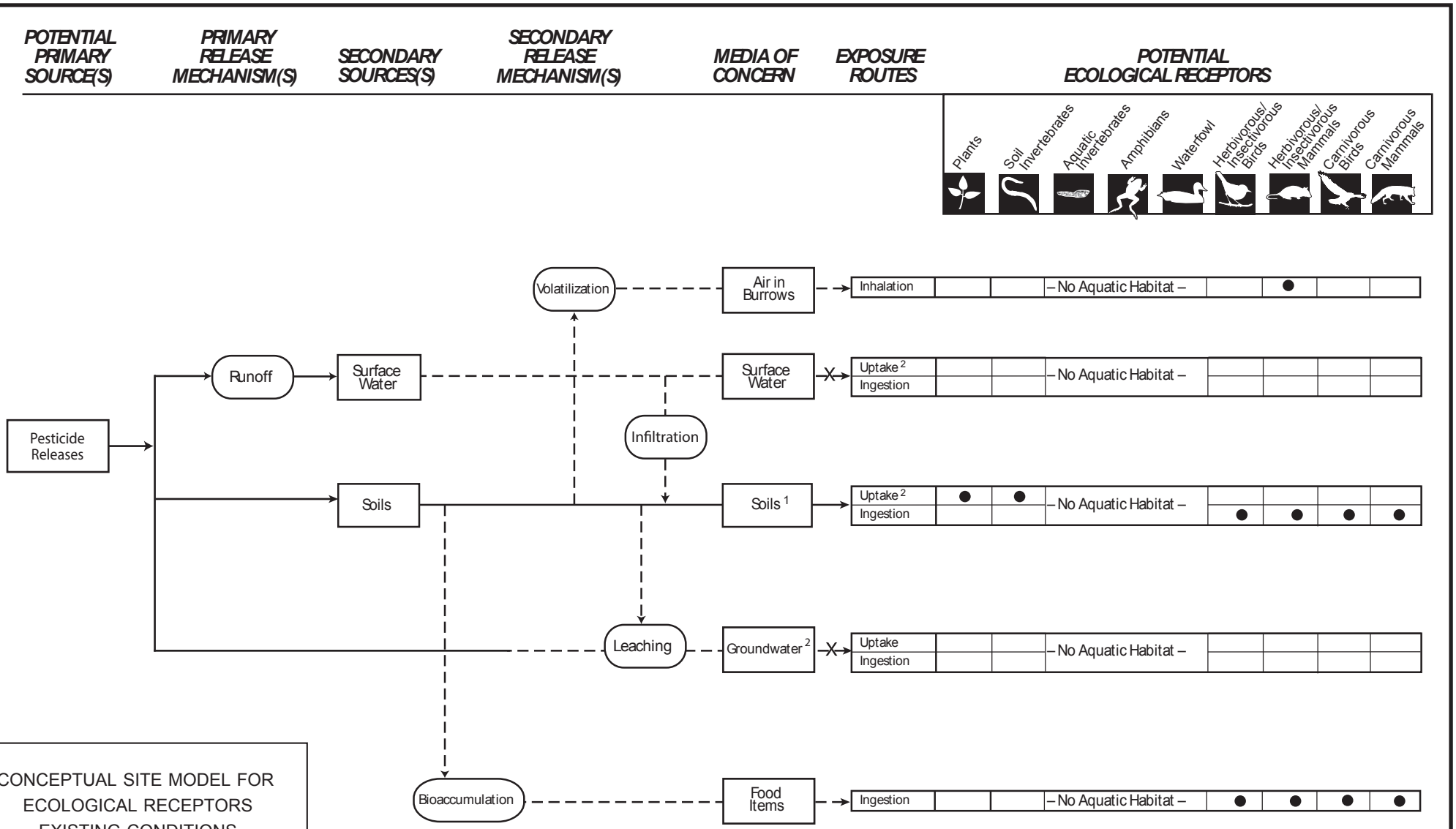
- - - → Potentially incomplete exposure pathway

- - X - → Incomplete exposure pathway

CONCEPTUAL SITE MODEL FOR
HUMAN RECEPTORS
SCHOOL SITE EXPOSURE SCENARIO
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave, Suite 130
Santa Barbara, CA 93111

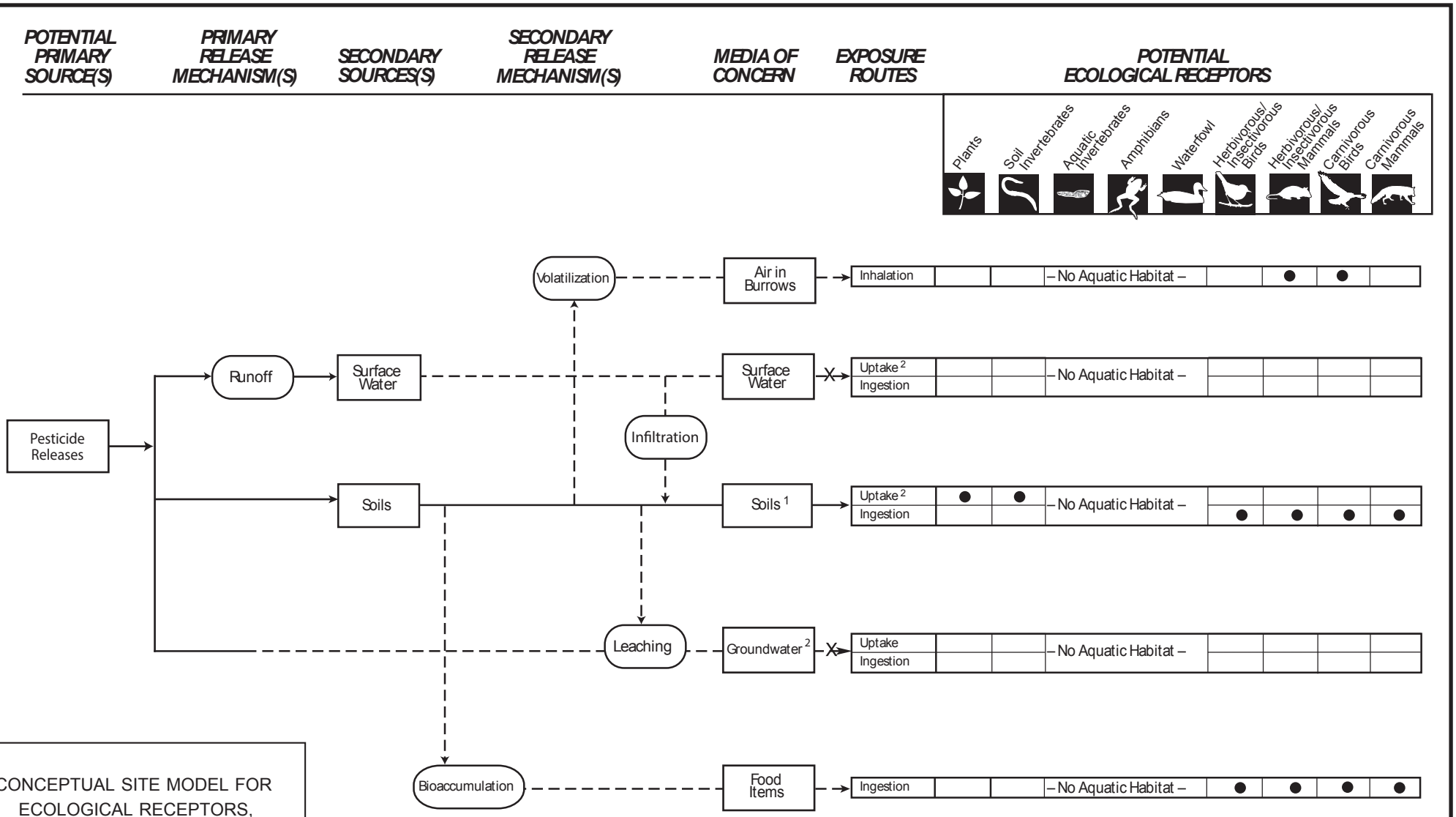
TASK NO.	DATE	DRAWN BY	FIGURE NO.
38186	10/15/18	Steele	6



CONCEPTUAL SITE MODEL FOR
ECOLOGICAL RECEPTORS
EXISTING CONDITIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave, Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	FIGURE NO.
38186-04	10/12/18	Steele	7



CONCEPTUAL SITE MODEL FOR
ECOLOGICAL RECEPTORS,
PLANNED FUTURE CONDITIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave, Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	FIGURE NO.
38186-04	10/12/18	Steele	8

TABLES

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Table 1
High School No. 8
Conceptual Site Plan Summary

Building	Building Footprint ft^2	Notes
Lockers/Gymnasium	45,730	Two-Story
Performing Arts	26,500	Two-Story
Media/Administration	14,575	One-Story
Academic/Classroom 1	5,380	Two-Story
Academic/Classroom 2	5,960	Two-Story
Academic/Classroom 3	14,470	Two-Story
Academic/Labs	17,400	Two-Story
Shops 1	14,025	Two-Story
Shops 2	11,160	One-Story
Kitchen/Multipurpose Room	17,770	One-Story
Daycare	2,900	One-Story
Home Bleachers	15,175	Two-Story
Visitor Bleachers	7,500	Two-Story
Stadium Restroom 1	1,600	One-Story
Stadium Restroom 2	1,600	One-Story
Pool Building	2,270	One-Story
Maintenance & Ops.	7,100	One-Story
Total	**211,115**	

Parking Lot	Parking Lot ft^2	No. Parking Spaces
Staff	180,088	318
Student	123,300	305
Visitor	3,230	18
Northeast Joint Use	33,115	89
Northwest Joint Use	46,810	76
Total	**386,543**	**806**

Sport Facility	Facility ft^2	Ground Surface
Track/Football Field	159,031	Turf
Varsity Baseball Field	135,347	Turf
JV Baseball Field	113,034	Turf
Varsity Softball Field	55,259	Turf
JV Softball Field	53,695	Turf
Soccer Field	182,831	Turf
Basketball Courts	52,960	Paved
Tennis Courts	43,590	Paved
Pool	7,240	Paved
Total	**802,987**	

Note:
ft^2 - Square Foot. All square footage estimates are approximate.

Table 2
Site Reconnaissance Features

Number	Item	Location
1	Series of active concrete residential septic tanks.	East of Main Residence near kitchen window.
2	Potential abandoned septic tank	Underlying driveway east of the Main Residence.
3	Underground laundry room wastewater septic tank.	Under northeast corner of Main Residence.
4	Abandoned cesspool	Near northeastern corner of orchard on the east side of the Main Residence.
5	Pole mounted transformer	In citrus orchard south of eastern Mobile Home.
6	Eastern Mobile Home septic tank	Approximately 10-15 feet east of eastern Mobile Home.
7	Abandoned water well	Southwest of Workshop.
8	Power pole and former location of three pole mounted transformers	Northwest of Workshop.
9	Abandoned septic tank	South of Horse Barn.
10	Bonfire area	North of Horse Barn and south of Tin Shed.
11	Former location of removed 500-gallon (approximate) gasoline fuel above ground storage tank (AST) removed in 1980's.	Southwest corner of Garage.
12	Former location of 500-gallon (approximate) diesel fuel UST removed in 1980's.	Southeast corner of Garage.
13	Oil Change Sump.	Inside of Garage.
14	Former location of two 2-story Bunkhouses removed in 1970's. Abandoned septic tank and cesspool likely present.	In orchard west of Garage and Storage Shed.
15	Former 500-gallon (approximate) weed oil AST removed in the 1970's without a removal permit.	Located along northwest corner of Garage.
16	Former pesticide mixing area.	Located near southwest corner of Tin Shed.
17	Smudge Pot	Inside of Tin Shed at northwest corner.
18	Soil/ floor staining observed.	Located inside of Tin Shed.
19	Old concrete footing from removed wind electric machine.	Located north of Tin Shed.
20	Abandoned septic tank.	North of Office.
21	Abandoned redwood septic tank	Northwest of Office.
22	Apartment septic tank	North of Apartment.
23	Oil residue under Apartment garage. Area was backfilled with concrete slurry.	Inside Apartment garage at southeast corner.
24	Former location of 250-gallon (approximate) gasoline UST and pump.	South of the Apartment.
25	500-gallon (approximate) propane AST owned and operated by AAA Propane Services, Inc. (AAA).	Northwest corner of Apartment.
26	Septic Tank	East of western Mobile Home.
27	500-gallon (approximate) propane AST owned and operated by AAA	West of Main Residence.
28	Abandoned 500-gallon (approximate) heating oil AST.	West of Main Residence.
29	Pole mounted transformer	In orchards west of Main Residence.
30	500-gallon (approximate) propane AST owned and operated by AAA	North of eastern Mobile Home.
31	Recreational Vehicle	East of the Horse Barn.

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
SV-1	ASV1-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV1-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-2	ASV2-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV2-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-3	ASV3-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV3-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-4	ASV4-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
	ASV4-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-5	ASV5-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV5-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-5	**SVDUP1**	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-5-15
SV-6	ASV6-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV6-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-7	ASV7-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
	ASV7-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-8	ASV8-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASG8-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-9	ASV9-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV9-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-10	ASV10-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SG-10	**SVDUP2**	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-10-5

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
	ASV10-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-11	ASV11-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASG11-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-12	ASV12-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV12-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-13	ASV13-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV13-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
SV-14	ASV14-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV14-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-15	ASV15-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV15-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-15	**SVDUP3**	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-15-15
SV-16	ASV16-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV16-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
SV-17	ASV17-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV17-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-18	ASV18-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV18-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-19	ASV19-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV19-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-20	ASV20-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
SV-20	**SVDUP4**	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-20-5
	ASV20-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-21	ASV21-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV21-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-22	ASV22-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV22-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-23	ASV23-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
	ASV23-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-24	ASV24-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV24-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-25	ASV25-5	5	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV25-15	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	SVDUP5	15	Methane by EPA method 8015M and hydrogen sulfide using a Jerome Analyzer 631-X	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-25-15
SV-26	ASV26-5	5	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV26-15	15	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal

Table 3
Soil Gas Sampling Schedule
High School No. 8 Site PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	On-Site Analysis	Off-Site Analysis	Sample Type
SV-27	ASV27-5	5	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV27-15	15		Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-28	ASV25-5	5	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV28-15	15	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-29	ASV29-5	5	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV29-15	15	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
SV-30	ASV30-5	5	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	ASV30-15	15	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Normal
	SVDUP6	15	VOCs by EPA method 8260B, TPHg by LUFT GCMS	Fixed gases nitrogen, carbon dioxide, carbon monoxide, and oxygen by ASTM method D-1946	Field Duplicate from ASV-30-15

Notes:

1 - The sample locations are shown on Figure 4.
bgs - below ground surface
H_2S - hydrogen sulfide
LUFT GCMS - California Regional Water Quality Control Board, Los Angeles Region Environmental Laboratory Accreditation Program certified method for analyzing TPHg in vapor samples.
PEA - Preliminary Environmental Assessment
TCD - Thermal conductivity detector
TPHg - gasoline range total petroleum hydrocarbons
VOC - volatile organic compound

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-1	SS-1-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Surface Soil Agricultural Assessment and Smudge Pot Heating Oil Assessment
SS-2	SS-2-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-3	SS-3-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-4	SS-4-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Surface Soil Agricultural Assessment and Smudge Pot Heating Oil Assessment
SS-5	SS-5-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-6	SS-6-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Surface Soil Agricultural Assessment and Smudge Pot Heating Oil Assessment
SS-7	SS-7-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-8	SS-8-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-9	SS-9-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-10	SS-10-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-10	**Soil Dup 2-2**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-10-0 for duplicate composite sample.	Quality control
SS-11	SS-11-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-12	SS-12-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-12	**Soil Dup 2-1**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-12-0 for duplicate composite sample.	Quality control
SS-13	SS-13-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-14	SS-14-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-15	SS-15-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-16	SS-16-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Surface Soil Agricultural Assessment and Smudge Pot Heating Oil Assessment
SS-17	SS-17-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-18	SS-18-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-19	SS-19-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Surface Soil Agricultural Assessment and Smudge Pot Heating Oil Assessment
SS-20	SS-20-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-21	SS-21-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-22	SS-22-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-23	SS-23-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-24	SS-24-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-25	SS-25-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-26	SS-26-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-27	SS-27-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-28	SS-28-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-29	SS-29-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-29	**Soil Dup 3**	0–0.5	Surface soil	EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Field duplicate analysis. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Quality control
SS-30	SS-30-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-31	SS-31-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-32	SS-32-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-33	SS-33-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-34	SS-34-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-35	SS-35-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-36	SS-36-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-37	SS-37-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-38	SS-38-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-39	SS-39-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-40	SS-40-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-41	SS-41-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-42	SS-42-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-43	SS-43-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-44	SS-44-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-45	SS-46-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-43	SS-43-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-47	SS-47-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-48	SS-48-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-49	SS-49-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
	Soil Dup 3-1	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-49-0 for duplicate composite sample.	Quality control
SS-50	SS-50-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-50	**Soil Dup 3-2**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-50-0 for duplicate composite sample.	Quality control
SS-51	SS-51-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-51	**Soil Dup 3-3**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-51-0 for duplicate composite sample.	Quality control
SS-52	SS-52-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-52	**Soil Dup3-4**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-52-0 for duplicate composite sample.	Quality control
SS-53	SS-53-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-54	SS-54-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-54	**Soil Dup 2**	0–0.5	Surface soil	EPA method 8081A for OCPs	Field duplicate composite analysis for OCPs[2]. Collect additional container for duplicate of sample SS-52-0 for duplicate composite sample.	Quality control
SS-55	SS-55-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-56	SS-56-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-57	SS-57-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment
SS-58	SS-56-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-59	SS-56-0	0–0.5	Surface soil	EPA method 8081A for OCPs	Composite analysis for OCPs[2].	Surface Soil Agricultural Assessment
SS-60	SS-57-0	0–0.5	Surface soil	EPA method 8081A for OCPs EPA method 6010B for arsenic EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Composite analysis for OCPs[2]. Normal analysis for remaining methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Subsurface Soil Oil Field Waste Material Assessment

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-60	**Soil Dup 1**	0–0.5	Surface soil	EPA method 8270C for SVOCs EPA method 8310 for PAHs EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Field duplicate analysis. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Quality control
SS-61	SS-61-0	0–0.5	Surface soil	EPA method 8082 for PCBs	Normal analysis	Surface Soil Potential PCBs from Pole Mounted Transformer
SS-61	**Soil Dup 6**	0–0.5	Surface soil	EPA method 8082 for PCBs	Field duplicate analysis.	Quality control
SV-26	SV-26-15	15.0–15.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-26	SV-26-20	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-27	SV-27-15	15.0–15.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-27	SV-27-20	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-27	**Soil Dup 7**	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Field duplicate analysis. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHde soil sample analytical results.	Quality control
SV-28	SV-28-15	15.0–15.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-28	SV-28-20	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-29	SV-29-15	15.0–15.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage

Table 4
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location[1]	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SV-29	SV-29-20	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-30	SV-30-15	15.0–15.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage
SV-30	SV-30-20	20.0–20.5	Subsurface soil	EPA method 8260B for VOCs EPA method 80105B for TPHg EPA method 8015B for diesel and heavy oil range TPH (TPHde) Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics	Normal analysis for methods. Extra sample volume will be archived and analysis determined for MADEP-EPH-04 pending review of TPHg and TPHde soil sample analytical results.	Subsurface Soil impacts from former offsite UST/AST fuel storage

Notes:
1 - The sample locations are shown on Figure 4.
bgs - below ground surface
EPA - U. S. Environmental Protection Agency
EPH - Extractable Petroleum Hydrocarbons
MADEP - Massachusetts Department of Environmental Protection
OCP - organochlorine pesticide
PCB - polychlorinated biphenyl
PEA - Preliminary Environmental Assessment
TPHg - gasoline range total petroleum hydrocarbons
TPHde - diesel-heavy end range total petroleum hydrocarbons
VOC - volatile organic compound

Table 5
Groundwater Sampling Schedule
High School No. 8 PEA
Oxnard, California

Boring	Sample ID[1]	Sample Depth (ft)	Analysis	Sample Count	Rationale
SV-26	SVGW-26-10	15.0–16.5	1, 2, 3, and 4	1	Groundwater impacts from former offsite UST/AST fuel storage
SV-27	SVGW-27-10	15.0–16.5	1, 2, 3, and 4	2	Groundwater impacts from former offsite UST/AST fuel storage
SV-27	GWDup1	15.0–16.5	1, 2, 3, and 4	3	Groundwater impacts from former offsite UST/AST fuel storage
SV-28	SVGW-28-10	15.0–16.5	1, 2, 3, and 4	4	Groundwater impacts from former offsite UST/AST fuel storage
SV-29	SVGW-29-10	15.0–16.5	1, 2, 3, and 4	5	Groundwater impacts from former offsite UST/AST fuel storage
SV-30	SVGW-30-10	15.0–16.5	1, 2, 3, and 4	6	Groundwater impacts from former offsite UST/AST fuel storage

Sample Analyses:
1. EPA method 8260B for VOCs
2. EPA method 8015B for TPHg
3. EPA method 8015B for diesel and heavy oil range TPH (TPHde)
4. Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics

Notes:
1 - The sample locations are shown on Figure 4.
AST - Above ground storage tank
bgs - below ground surface
EPA - U. S. Environmental Protection Agency
EPH - Extractable Petroleum Hydrocarbons
MADEP - Massachusetts Department of Environmental Protection
PEA - Preliminary Environmental Assessment
TPHg - gasoline range total petroleum hydrocarbons
TPHde - diesel-heavy end range total petroleum hydrocarbons
UST - Under ground storage tank
VOC - volatile organic compound

Table 6
Analytical Methods, Target Compounds, and Detection Levels for Soil Gas Samples
High School No. 8 PEA

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**MDL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
EPA 8260B	**Volatile Organic Compounds**	**µg/m^3**	**µg/m^3**	**µg/m^3**	**Note**	**µg/m^3**	**µg/m^3**
	Acetone	250	NA	32,000	3	NA	32,000,000
	t-Amyl Methyl Ether (TAME)	25	NA	NA		NA	NA
	Benzene	18	0.10	3	4	97	3,100
	Bromobenzene	25	NA	63	3	NA	63,000
	Bromochloromethane	25	NA	42	3	NA	42,000
	Bromodicholoromethane	25	0.076	0.33	4	76	330
	Bromoform	25	2.60	83	4	2600	83,000
	Bromomethane	25	NA	5.2	3	NA	5,200
	t-Butanol (TBA)	250	NA	NA		NA	NA
	2-Butanone (MEK)	250	NA	5,200	3	NA	5,200,000
	n-Butylbenzene	25	NA	21	4	NA	21,000
	sec-Butylbenzene	25	NA	420	4	NA	420,000
	tert-Butylbenzene	25	NA	420	4	NA	420,000
	Carbon Disulfide	250	NA	730	3	NA	730,000
	Carbon Tetrachloride	13	0.067	42	4	67	42,000
	Chlorobenzene	25	NA	52	3	NA	52,000
	Chloroform	25	0.12	100	3	120	100,000
	Chloromethane	25	NA	94	3	NA	94,000
	2-Chlorotoluene	25	NA	83	4	NA	83,000
	4-Chlorotoluene	25	NA	83	4	NA	83,000
	Dibromomethane	25	NA	4.2	3	NA	4,200
	1,2-Dichlorobenzene	25	NA	210	3	NA	210,000
	1,4-Dichlorobenzene	25	0.26	830	3	260	830,000
	Dichlorodifluoromethane	25	NA	100	3	NA	100,000
	1,1-Dichloroethane	25	1.80	830	4	1800	830,000
	1,2-Dichloroethane	25	0.11	7.3	3	110	7,300
	1,1-Dichloroethene	25	NA	73	4	NA	73,000
	cis-1,2-Dichloroethene	25	NA	8.3	3	NA	8,300
	trans-1,2-Dichloroethene	25	NA	8.3	4	NA	8,300
	1,2-Dichloropropane	25	0.28	4.2	4	280	4,200
	1,3-Dichloropropane	25	NA	83	4	NA	83,000
	Ethylbenzene	25	1.1	1,000	3	1100	4,429
	Ethyl-t-Butyl Ether (EtBE)	25	NA	NA		NA	NA
	Hexachlorobutadiene	25	0.13	4.2	4	130	4,200
	2-Hexanone	250	NA	31	3	NA	31,000
	Isopropanol (IPA)	250	NA	210	3	NA	210,000
	Methylene Chloride	25	1	420	4	1,000	420,000
	4-Methyl-2-Pentanone	250	NA	3,100	3	NA	3,100,000
	Methyl-t-butyl Ether (MtBE)	25	11	3,100	3	11,000	3,100,000
	Styrene	25	NA	940	4	NA	940,000
	1,1,1,2-Tetrachloroethane	25	0.38	130	4	380	130,000
	1,1,2,2-Tetrachloroethane	25	0.05	83	4	48	83,000
	Tetrachloroethene	25	0.46	420	4	460	420,000
	Toluene	25	NA	310	4	NA	310,000
	1,2,3-Trichlorobenzene	25	NA	3.3	4	NA	3,300
	1,2,4-Trichlorobenzene	25	0.39	2.1	4	390	2,100
	1,1,1-Trichloroethane	25	NA	5,200	3	NA	5,200,000
	1,1,2-Trichloroethane	25	0.18	21	3	180	21,000
	Trichloroethene	25	0.48	2	3	480	2,100
	Trichlorofluoromethane	25	NA	1,300	4	NA	1,300,000

Table 6
Analytical Methods, Target Compounds, and Detection Levels for Soil Gas Samples
High School No. 8 PEA

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**MDL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
EPA 8260B	**Volatile Organic Compounds**	**µg/m^3**	**µg/m^3**	**µg/m^3**	**Note**	**µg/m^3**	**µg/m^3**
	1,2,4-Trimethylbenzene	25	NA	63	3	NA	63,000
	1,3,5-Trimethylbenzene	25	NA	63	3	NA	63,000
	Vinyl Chloride	13	0.17	100	4	170	100,000
	m,p-Xylenes	50	NA	100	3	NA	100,000
	o-Xylene	25	NA	100	3	NA	100,000

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**RL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
		µg/m^3					**µg/m^3**
LUFT GCMS	TPHg (C4-C12 carbon range)	10	NA	100	5		50,000
		ppmv					**ppmv**
8015M	Methane	15	NA	NA	6	NA	1,000
ASTM D-1946	**Fixed Gases**	**%**					
	Nitrogen	0.50	NA	NA		NA	NA
	Carbon Monoxide	0.50	NA	NA		NA	NA
	Oxygen	0.50	NA	NA		NA	NA
Detector		**µg/m^3**					**µg/m^3**
Jerome Analyser 631-X	Hydrogen sulfide	10	NA	2.1	3	NA	2,100

Notes:

1 - The listed Residential Air Screening Levels are DTSC-Modified Air Screening Levels from Table 3 of *HERO Note Number 3., DTSC-modified Screening Levels (DTSC-SLs)* (DTSC 2018) (DTSC HHRA Note 3), if available, or USEPA Region 9 Air Regional Screening Levels (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

2 - The Residential Soil Gas Screening Levels for VOCs and hydrogen sulfide were dervied by dividing the Residential Air Screening Levels by the future residential contaminant source attenuation factor of 0.001 from Table 2 of the *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)* (DTSC 2011).

3 - Residential Air Screening Level is the DTSC-Modified Air Screening Level from Table 3 of DTSC HHRA Note 3 (DTSC 2018).

4 - Residential Air Screening Level is the USEPA Region 9 Air RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

5 - Residential Air Screening Level and Soil Gas Screeing Level are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).

6 - Residential Soil Gas Screeing Level is from the recommended action level for further investigation in *Advisory on Methane Assessment and Common Remedies at School Sites* (DTSC 2005).

% - Percent by volume

EPA - U.S. Environmental Protection Agency

LUFT GCMS - California Regional Water Quality Control Board, Los Angeles Region Environmntal Laboratory Accreditation Program certified method for analyzing TPHg in vapor samples.

M - Modified

MDL - method detection limit

MS - mass spectrometry

NA - Not applicable

TPHg - micrograms per cubic meter

ppmV - parts per million by volume

RL - reporting limit

TPHg - Gasoline range total petroleum hyocarbons (C_4-C_{12} carbon range)

VOC - volatile organic compound

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Total Petroleum Hydrocarbons Diesel Extended Range (TPHde) by Modified EPA 8015B									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap* ***Amount Required:*** *120 gr*									
Preservation: *Cool, 4°C* ***Holding Time:*** *Extraction: 7 days* *Analysis: 40 days*									
TPH as Diesel (C_{13} to C_{22})	5	10	mg/Kg	75	125	20	NA	1	mg/Kg
TPH as Heavy Hydrocarbons (C_{23} to C_{40})	5	10	mg/Kg				NA	1	mg/Kg
Total TPH as Diesel and Heavy Hydrocarbons (C_{13} to C_{40})	5	10	mg/Kg				NA	1	mg/Kg
8015B surrogates									
Chlorobenzene				*75*	*125*		NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT			
Total Petroleum Hydrocarbons Gasoline Range (TPHg)by Modified EPA 8015B									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.* ***Amount Required:*** *120 gr, or 5 gr X 4*									
Preservation: *Cool, 4°C* ***Holding Time:*** *14 days*									
TPH as Gasoline and Light Hydrocarbons (C_4 to C_{12})	0.5	1	mg/Kg	75	125	20	NA	1	mg/Kg
8015B surrogates									
4-Bromofluorobenzene				*75*	*125*		NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT			
Volatile Organic Compounds by EPA 8260B									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.* ***Amount Required:*** *120 gr, or 5 gr X 4*									
Preservation: *Cool, 4°C* ***Holding Time:*** *14 days*									
1,1,1,2-Tetrachloroethane	5	10	µg/Kg				2,000	2	µg/Kg
1,1,1-Trichloroethane	5	10	µg/Kg	75	125		NA	2	µg/Kg
1,1,2,2-Tetrachloroethane	5	10	µg/Kg				600	2	µg/Kg
1,1,2-Trichloroethane	5	10	µg/Kg				NA	3	µg/Kg
1,1-Dichloroethane	5	10	µg/Kg				3,600	2	µg/Kg
1,1-Dichloroethene	5	10	µg/Kg	75	125	20	NA	3	µg/Kg
1,1-Dichloropropene	5	10	µg/Kg				NA	3	µg/Kg
1,2,3-Trichlorobenzene	5	10	µg/Kg				NA	2	µg/Kg
1,2,4-Trichlorobenzene	5	10	µg/Kg				24,000.00	3	µg/Kg
1,2,4-Trimethylbenzene	5	10	µg/Kg				NA	3	µg/Kg

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Volatile Organic Compounds by EPA 8260B									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*						
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*						
1,2-Dibromoethane	5	10	µg/Kg				36	3	µg/Kg
1,2-Dichlorobenzene	5	10	µg/Kg				NA	3	µg/Kg
1,2-Dichloroethane	5	10	µg/Kg				460.00	3	µg/Kg
1,2-Dichloropropane	5	10	µg/Kg				2,500	3	µg/Kg
1,3,5-Trimethylbenzene	5	10	µg/Kg				270,000	3	µg/Kg
1,3-Dichlorobenzene	5	10	µg/Kg				NA		
1,3-Dichloropropane	5	10	µg/Kg				NA	2	µg/Kg
1,4-Dichlorobenzene	5	10	µg/Kg				206,000	3	µg/Kg
2,2-Dichloropropane	5	10	µg/Kg				NA	3	µg/Kg
2-Butanone (Methylethyl kethone [MEK])	25	50	µg/Kg				NA	3	µg/Kg
2-Chloroethyl Vinylether	50	50	µg/Kg				NA		
2-Chlorotoluene	5	10	µg/Kg				NA	2	µg/Kg
2-Hexanone	25	50	µg/Kg				NA	3	µg/Kg
4-Chlorotoluene	5	10	µg/Kg				NA	2	µg/Kg
4-Methyl-2-Pentanone	25	50	µg/Kg				NA	3	µg/Kg
Acetone	25	50	µg/Kg				NA	3	µg/Kg
Benzene	2	10	µg/Kg	75	125	20	330	2	µg/Kg
Bromobenzene	5	10	µg/Kg				NA	3	µg/Kg
Bromochloromethane	5	10	µg/Kg				NA	3	µg/Kg
Bromodichloromethane	5	10	µg/Kg				3,000	2	µg/Kg
Bromoform	25	50	µg/Kg				20,000	2	µg/Kg
Bromomethane	15	30	µg/Kg				NA	3	µg/Kg
Carbon Disulfide	25	50	µg/Kg				NA	3	µg/Kg
Carbon Tetrachloride	5	10	µg/Kg				99	2	µg/Kg
Chlorobenzene	5	10	µg/Kg	75	125	20	NA	3	µg/Kg
Chloroethane	15	30	µg/Kg				NA		
Chloroform	5	10	µg/Kg	75	125		320	3	µg/Kg
Chloromethane	15	30	µg/Kg				NA	3	µg/Kg
cis-1,2-Dichloroethene	5	10	µg/Kg				NA	2	µg/Kg
cis-1,3-Dichloropropene	5	10	µg/Kg				NA		
Dibromochloromethane	5	10	µg/Kg				8,300	3	µg/Kg
Dibromomethane	5	10	µg/Kg				NA	3	µg/Kg
Dichlorodifluoromethane	15	30	µg/Kg				NA		
Ethylbenzene	2	10	µg/Kg	75	125		NA	3	µg/Kg
Hexachlorobutadiene	5	10	µg/Kg				1,200	2	µg/Kg
Isopropylbenzene	5	10	µg/Kg				NA		
Methylene Chloride	25	50	µg/Kg				1,900	2	µg/Kg

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Volatile Organic Compounds by EPA 8260B									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*						
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*						
MTBE	5	10	µg/Kg				47,000	3	µg/Kg
n-Butylbenzene	5	10	µg/Kg				NA	2	µg/Kg
n- Propylbenzene	5	10	µg/Kg				NA	3	µg/Kg
Naphthalene	5	10	µg/Kg				3,800.00	3	µg/Kg
p- Isopropyltoluene	5	10	µg/Kg				NA		
sec-Butylbenzene	5	10	µg/Kg				NA	3	µg/Kg
Styrene	5	10	µg/Kg				NA	3	µg/Kg
tert-Butylbenzene	5	10	µg/Kg				NA	3	µg/Kg
Tetrachloroethene	5	10	µg/Kg				590	2	µg/Kg
Toluene	2	10	µg/Kg	75	125	20	NA	2	µg/Kg
trans-1,2-Dichloroethene	5	10	µg/Kg				NA	2	µg/Kg
trans-1,3-Dichloropropene	5	10	µg/Kg				NA		
Trichloroethene	5	10	µg/Kg	75	125	20	94,000.00	3	µg/Kg
Trichlorofluoromethane	5	10	µg/Kg				NA	2	µg/Kg
Vinyl Acetate	25	50	µg/Kg				NA	3	µg/Kg
o-xylene	2	10	µg/Kg	75	125		NA	3	µg/Kg
m,p-xylenes	2	20	µg/Kg	75	125		NA	3	µg/Kg
8260B surrogates									
Toluene-d8			µg/Kg	*75*	*125*		NA		
4-Bromofluorobenzene			µg/Kg	*75*	*125*		NA		
Dibromofluoromethane			µg/Kg	*75*	*125*		NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT			
TTLC Metals by Method 6010B/7471A									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *6 months, and 28 days for Hg.*						
Antimony	1	5	mg/Kg	80	120	15	NA	3	mg/Kg
Arsenic	1	5	mg/Kg	80	120	15	NA	4	mg/Kg
Barium	2.5	5	mg/Kg	80	120	15	NA	3	mg/Kg
Beryllium	1.3	2.5	mg/Kg	80	120	15	1,600.00	2	mg/Kg
Cadmium	1.3	2.5	mg/Kg	80	120	15	2,100.00	2	mg/Kg
Chromium	2.5	5	mg/Kg	80	120	15	NA	2	mg/Kg
Cobalt	2.5	5	mg/Kg	80	120	15	NA	3	mg/Kg
Copper	2.5	5	mg/Kg	80	120	15	NA	3	mg/Kg
Lead	2.5	5	mg/Kg	80	120	15	NA	2	mg/Kg
Mercury by 7471A	0.1	0.2	mg/Kg	80	120	15	NA	2	mg/Kg

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
TTLC Metals by Method 6010B/7471A									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *6 months, and 28 days for Hg.*						
Molybdenum	2.5	5	mg/Kg	80	120	15	NA	3	mg/Kg
Nickel	2.5	5	mg/Kg	80	120	15	15,000.00	2	mg/Kg
Selenium	1	5	mg/Kg	80	120	15	NA	3	mg/Kg
Silver	2.5	5	mg/Kg	80	120	15	NA	2	mg/Kg
Thallium	1	10	mg/Kg	80	120	15	NA	3	mg/Kg
Vanadium	2.5	5	mg/Kg	80	120	15	NA	2	mg/Kg
Zinc	2.5	5	mg/Kg	80	120	15	NA	3	mg/Kg
ANALYTE	**MDL**	**PQL**	**UNITS**	**LOWER CONTROL LIMIT %**	**UPPER CONTROL LIMIT %**	**RPD LIMIT**			
Semi-Volatile Organic Compounds by EPA 8270C									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*						
1,2,4-Trichlorobenzene	0.25	0.5	mg/Kg	38	107	20	24.00	3	mg/Kg
1,2-Dichlorobenzene	0.25	0.5	mg/Kg				NA	3	mg/Kg
1,3-Dichlorobenzene	0.25	0.5	mg/Kg				NA		
1,4-Dichlorobenzene	0.25	0.5	mg/Kg	28	104	20	2.6	3	mg/Kg
2,4,5-Trichlorophenol	0.25	0.5	mg/Kg				NA	3	mg/Kg
2,4,6-Trichlorophenol	0.25	0.5	mg/Kg				7.5	2	mg/Kg
2,4-Dichlorophenol	0.25	0.5	mg/Kg				NA	3	mg/Kg
2,4-Dimethylphenol	0.25	0.5	mg/Kg				NA	3	mg/Kg
2,4-Dinitrophenol	0.25	0.5	mg/Kg				NA	3	mg/Kg
2,4-Dinitrotoluene	0.25	0.5	mg/Kg	28	89	20	1.7	3	mg/Kg
2,6-Dinitrotoluene	0.25	0.5	mg/Kg				0.36	3	mg/Kg
2-Chloronaphthalene	0.25	0.5	mg/Kg				NA		
2-Chlorophenol	0.25	0.5	mg/Kg	25	102	20	NA	3	mg/Kg
2-Methylnaphthalene	0.25	0.5	mg/Kg				NA		
2-Methylphenol	0.25	0.5	mg/Kg				NA		
2-Nitroaniline	0.25	0.5	mg/Kg				NA	3	mg/Kg
2-Nitrophenol	0.25	0.5	mg/Kg				NA		
3,3-Dichlorobenzidine	0.25	0.5	mg/Kg				1.2	2	mg/Kg
3-Methylphenol	0.25	0.5	mg/Kg				NA		
3-Nitroaniline	0.25	0.5	mg/Kg				NA		
4,6-Dinitro-2-methylphenol	0.25	0.5	mg/Kg				NA		
4-Bromophenyl Phenyl Ether	0.25	0.5	mg/Kg				NA		
4-Chloro-3-methylphenol	0.25	0.5	mg/Kg	40	99	20	NA		
4-Chloroaniline	0.25	0.5	mg/Kg				NA		

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Semi-Volatile Organic Compounds by EPA 8270C									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap* ***Amount Required:*** *120 gr* ***Holding Time:*** *Extraction: 14 days* ***Preservation:*** *Cool, 4°C* *Analysis: 40 days*									
4-Methylphenol	0.25	0.5	mg/Kg				NA		
4-Nitroaniline	0.25	0.5	mg/Kg				27	3	mg/Kg
4-Nitrophenol	0.25	0.5	mg/Kg	11	114	20	NA		
Acenaphthene	0.25	0.5	mg/Kg	31	137	20	NA	3	mg/Kg
Acenaphthylene	0.25	0.5	mg/Kg				NA		
Anthracene	0.25	0.5	mg/Kg				NA	3	mg/Kg
Benzo (a) anthracene	0.25	0.5	mg/Kg				1.10	3	mg/Kg
Benzo (b) fluoranthene	0.25	0.5	mg/Kg				0.42	3	mg/Kg
Benzo (g,h,i) perylene	0.25	0.5	mg/Kg				NA		
Benzo (k) fluoranthene	0.25	0.5	mg/Kg				11.00		mg/Kg
Benzoic Acid	0.25	0.5	mg/Kg				NA	3	mg/Kg
Benzyl Alcohol	0.25	0.5	mg/Kg				NA	3	mg/Kg
Bis-(2-chloroethoxy)methane	0.25	0.5	mg/Kg				NA	3	mg/Kg
Bis-(2-chloroisopropyl)ether	0.25	0.5	mg/Kg				NA		
Bis-(2-ethylhexyl) Phthalate	0.25	0.5	mg/Kg				NA		
Butyl Benzyl Phthalate	0.25	0.5	mg/Kg				NA		
Chrysene	0.25	0.5	mg/Kg				110	3	mg/Kg
Dibenzofuran	0.25	0.5	mg/Kg				NA		
Diethyl Phthalate	0.25	0.5	mg/Kg				NA	3	mg/Kg
Dimethyl Phthalate	0.25	0.5	mg/Kg				NA		
Di-n-butyl Phthalate	0.25	0.5	mg/Kg				NA		
Di-n-octyl Phthalate	0.25	0.5	mg/Kg				NA	3	mg/Kg
Fluoranthene	0.25	0.5	mg/Kg				NA	3	mg/Kg
Fluorene	0.25	0.5	mg/Kg				NA	3	mg/Kg
Hexachlorobutadiene	0.25	0.5	mg/Kg				1.2	2	mg/Kg
Hexachlorocyclopentadiene	0.25	0.5	mg/Kg				NA	3	mg/Kg
Hexachloroethane	0.25	0.5	mg/Kg				1.8	3	mg/Kg
Indeno-(1,2,3-cd) pyrene	0.25	0.5	mg/Kg				1.1	3	mg/Kg
Isophorone	0.25	0.5	mg/Kg				570.00	3	mg/Kg
Naphthalene	0.25	0.5	mg/Kg				3.80	3	mg/Kg
Nitrobenzene	0.25	0.5	mg/Kg				5.10	3	mg/Kg
N-Nitrosodiphenylamine	0.25	0.5	mg/Kg				110	3	mg/Kg

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Semi-Volatile Organic Compounds by EPA 8270C									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*						
Phenanthrene	0.25	0.5	mg/Kg				NA		
Phenol	0.25	0.5	mg/Kg	26	90	20	NA	3	mg/Kg
Pyrene	0.25	0.5	mg/Kg	35	142	20	NA	3	mg/Kg
8270C surrogates									
2-Fluorobiphenyl			mg/Kg	*30*	*115*		NA		
2-Fluorophenol			mg/Kg	*25*	*121*		NA		
Nitrobenzene-d5			mg/Kg	*23*	*120*		NA		
Phenol-d5			mg/Kg	*21*	*113*		NA		
Terphenyl-d14			mg/Kg	*18*	*137*		NA		
2,4,6-Tribromophenol			mg/Kg	*19*	*122*		NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT			
Organochlorine Pesticide Compounds by EPA 8081A									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*						
Aldrin	0.01	0.05	mg/Kg	40	140	40	0.039	3	mg/Kg
Chlordane	0.04	0.2	mg/Kg				1.7	3	mg/Kg
alpha-Chlordane	0.01	0.05	mg/Kg				NA		
4,4'-DDD (DDD)	0.01	0.05	mg/Kg				NA	3	mg/Kg
4,4'-DDE (DDE)	0.01	0.05	mg/Kg				2	3	mg/Kg
4,4'-DDT (DDT)	0.01	0.05	mg/Kg	40	140	40	1.90	3	mg/Kg
Dieldrin	0.01	0.05	mg/Kg	40	140	40	0.03	3	mg/Kg
Endosulfan 1	0.01	0.05	mg/Kg				NA	3	mg/Kg
Endosulfan 11	0.01	0.05	mg/Kg				NA	3	mg/Kg
Endosulfan sulfate	0.01	0.05	mg/Kg				NA		
Endrin	0.01	0.05	mg/Kg	40	140	40	NA	3	mg/Kg
Endrin aldehyde	0.01	0.05	mg/Kg				NA		
Endrin ketone	0.01	0.05	mg/Kg				NA	3	mg/Kg
Gamma-Chlordane	0.01	0.05	mg/Kg				1.70	3	mg/Kg
Heptachlor	0.01	0.05	mg/Kg	40	140	40	0.13	3	mg/Kg
Heptachlor epoxide	0.01	0.05	mg/Kg				0.07	3	mg/Kg
alpha-Hexachlorocyclohexane (Alpha-BHC)	0.01	0.05	mg/Kg				0.086	3	mg/Kg
Beta- Hexachlorocyclohexane (Betta-BHC)	0.01	0.05	mg/Kg				0.30	3	mg/Kg

Table 7
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level		UNITS
							Cancer	Note	
Organochlorine Pesticide Compounds by EPA 8081A									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*						
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.01	0.05	mg/Kg	40	140	40	0.57	3	mg/Kg
Methoxychlor	0.01	0.05	mg/Kg				NA	3	mg/Kg
Toxaphene	0.04	0.2	mg/Kg				0.49	3	mg/Kg
8081A surrogates									
Tetrachloro-m-xylene			mg/Kg	*30*	*150*		NA		
Decachlorobiphenyl			mg/Kg	*30*	*150*		NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT			
PCB Compounds by EPA 8082									
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*						
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*						
Aroclor-1016 (PCB-1016)	35	35	µg/Kg				NA	3	µg/Kg
Aroclor-1221 (PCB-1221)	70	70	µg/Kg				200	3	µg/Kg
Aroclor-1232 (PCB-1232)	35	35	µg/Kg				170	3	µg/Kg
Aroclor-1242 (PCB-1242)	35	35	µg/Kg				230	3	µg/Kg
Aroclor-1248 (PCB-1248)	35	35	µg/Kg				230	3	µg/Kg
Aroclor-1254 (PCB-1254)	35	35	µg/Kg				240	3	µg/Kg
Aroclor-1260 (PCB-1260)	35	35	µg/Kg	50	150	20	240	3	µg/Kg
Aroclor-1262 (PCB-1262)	35	35	µg/Kg				NA		
Aroclor-1268 (PCB-1268)	35	35	µg/Kg				NA		
8082 surrogates									
Tetrachloro-m-xylene			µg/Kg	*50*	*150*		NA		

Notes:
1 - Residential Soil Screeing Levels are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).
2 - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
3 - Residential Soil Screening Level is the DTSC-Modified Soil Screening Level from Table 1 of DTSC HHRA Note 3 (DTSC 2018).
4 - Residential Soil Screening Level for arsenic is the DTSC Screening Level for School Sites from the *Interim Guidance for sampling Agricultural Properties* (DTSC 2008
EPA - U.S. Environmental Protection Agency
MDL - method detection limit
PQL - practical quantitation limit
NA - not applicable
mg/kg - milligrams per kilogram
µg/kg - micrograms per kiologram
RPD - relative percent difference

Table 8
Summary of Analytes and Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Total Petroleum Hydrocarbons Diesel Extended Range (TPHde) by Modified EPA 8015B										
Container: *1 Liter Amber Glass Bottle*			***Amount Required:*** *4,000 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 7 days Analysis: 40 days*							
TPH as Diesel (C_{13} to C_{22})	0.1	0.5	mg/L	75	125	20	NA	100	1	mg/L
TPH as Heavy Hydrocarbons (C_{23} to C_{40})	0.1	0.5	mg/L				NA	100	1	mg/L
Total TPH as Diesel and Heavy Hydrocarbons (C_{13} to C_{40})	0.1	0.5	mg/L				NA	100	1	mg/L
8015B surrogates										
Chlorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Total Petroleum Hydrocarbons Gasoline Range (TPHg) by Modified EPA 8015B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *160 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
TPH as Gasoline and Light Hydrocarbons (C_4 to C_{12})	0.005	0.010	mg/L	75	125	20	NA	100	1	mg/L
8015B surrogates										
4-Bromofluorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,1,1,2-Tetrachloroethane	0.5	1.0	µg/L				0.57	NA	3	µg/L
1,1,1-Trichloroethane	0.5	1.0	µg/L	75	125		NA	2,000	2	µg/L
1,1,2,2-Tetrachloroethane	0.07	1.0	µg/L				0.076	110	2	µg/L
1,1,2-Trichloroethane	0.25	1.0	µg/L				0.28	NA	3	µg/L
1,1-Dichloroethane	0.5	1.0	µg/L				2.7	1,200	2	µg/L
1,1-Dichloroethene	0.5	1.0	µg/L	75	125	20	NA	280	3	µg/L
1,1-Dichloropropene	0.5	1.0	µg/L				NA	NA		
1,2,3-Trichlorobenzene	0.5	1.0	µg/L				NA	7	3	µg/L
1,2,4-Trichlorobenzene	0.5	1.0	µg/L				1.2	NA	3	µg/L
1,2,4-Trimethylbenzene	0.5	1.0	µg/L				NA	56	3	µg/L
1,2-Dibromo-3-Chloropropane	2.5	5.0	µg/L				NA	NA		

Table 8
Summary of Analytes and Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,2-Dibromoethane	0.070	1.0	µg/L				0.075	NA	3	µg/L
1,2-Dichlorobenzene	0.5	1.0	µg/L				NA	300	3	µg/L
1,2-Dichloroethane	0.15	1.0	µg/L				0.17	NA	3	µg/L
1,2-Dichloropropane	0.5	1.0	µg/L				0.44	8	2	µg/L
1,3,5-Trimethylbenzene	0.5	1.0	µg/L				NA	60	3	µg/L
1,3-Dichlorobenzene	0.5	1.0	µg/L				NA	5	3	µg/L
1,3-Dichloropropane	0.5	1.0	µg/L				NA	110	2	µg/L
1,4-Dichlorobenzene	0.45	1.0	µg/L				0.48	NA	3	µg/L
2,2-Dichloropropane	2.5	5.0	µg/L				NA	NA		
2-Butanone (Methylethyl kethone [MEK])	5.0	5.0	µg/L				NA	5,600	3	µg/L
2-Chloroethyl Vinylether	2.5	5.0	µg/L				NA	NA		
2-Chlorotoluene	2.5	5.0	µg/L				NA	240	3	µg/L
2-Hexanone	2.5	5.0	µg/L				NA	38	3	µg/L
4-Chlorotoluene	0.5	1.0	µg/L				NA	250	3	µg/L
4-Methyl-2-Pentanone	2.5	5.0	µg/L				NA	6,300	3	µg/L
Acetone	10	10	µg/L				NA	14,000	3	µg/L
Benzene	0.1	1.0	µg/L	75	125	20	0.15	6	2	µg/L
Bromobenzene	0.5	1.0	µg/L				NA	62	3	µg/L
Bromochloromethane	0.5	1.0	µg/L				NA	836	3	µg/L
Bromodichloromethane	0.5	1.0	µg/L				0.12	120	2	µg/L
Bromoform	2.5	5.0	µg/L				2.9	120	2	µg/L
Bromomethane	1.5	3.0	µg/L				NA	7.5	3	µg/L
Carbon Disulfide	0.5	1.0	µg/L				NA	810	3	µg/L
Carbon Tetrachloride	0.5	1.0	µg/L				0.1	360	2	µg/L
Chlorobenzene	0.5	1.0	µg/L	75	125	20	NA	78	3	µg/L
Chloroethane	1.5	3.0	µg/L				NA	NA		
Chloroform	0.2	1.0	µg/L	75	125		0.22	NA	3	µg/L
Chloromethane	1.5	3.0	µg/L				NA	190	3	µg/L
cis-1,2-Dichloroethene	0.5	1.0	µg/L				NA	12	2	µg/L
cis-1,3-Dichloropropene	0.5	1.0	µg/L				NA	NA		
Dibromochloromethane	0.5	1.0	µg/L				0.87	NA	3	µg/L
Dibromomethane	0.5	1.0	µg/L				NA	8.3	3	µg/L
Dichlorodifluoromethane	1.5	3.0	µg/L				NA	200.0	3	µg/L
Ethylbenzene	0.5	1.0	µg/L	75	125		1.5	NA	3	µg/L
Hexachlorobutadiene	0.1	3.0	µg/L				0.14	NA	3	µg/L
Isopropylbenzene	0.5	1.0	µg/L				NA	NA		
Methylene Chloride	0.85	4.0	µg/L				0.93	100	2	

Table 8
Summary of Analytes and Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
MTBE	0.5	1.0	µg/L				14	NA	3	µg/L
n-Butylbenzene	0.5	1.0	µg/L				NA	290	2	µg/L
n- Propylbenzene	0.5	1.0	µg/L				NA	NA		
Naphthalene	0.15	1.0	µg/L				0.17	NA	3	µg/L
p- Isopropyltoluene	0.5	1.0	µg/L				NA	NA		
sec-Butylbenzene	0.5	1.0	µg/L				NA	590	2	µg/L
Styrene	0.5	1.0	µg/L				NA	1,200	3	µg/L
tert-Butylbenzene	0.5	1.0	µg/L				NA	690	3	µg/L
Tetrachloroethene	0.05	1.0	µg/L				0.082	0.41	2	µg/L
Toluene	0.5	1.0	µg/L	75	125	20	NA	1,100	2	µg/L
trans-1,2-Dichloroethene	0.5	1.0	µg/L				NA	110	2	µg/L
trans-1,3-Dichloropropene	0.5	1.0	µg/L				NA	NA		
Trichloroethene	0.45	1.0	µg/L	75	125	20	0.49	NA	3	µg/L
Trichlorofluoromethane	0.5	1.0	µg/L				NA	1,700	2	µg/L
Vinyl Acetate	0.5	1.0	µg/L				NA	410	3	µg/L
Vinyl Chloride	0.015	1.0	µg/L				0.019	NA	3	µg/L
o-xylene	0.5	1.0	µg/L	75	125		NA	190	3	µg/L
m,p-xylenes	1.0	2.0	µg/L	75	125		NA	190	3	µg/L
8260B surrogates										
Toluene-d8			µg/Kg	*75*	*125*		NA	NA		
4-Bromofluorobenzene			µg/Kg	*75*	*125*		NA	NA		
Dibromofluoromethane			µg/Kg	*75*	*125*		NA	NA		

Notes:

1 - Residential Groundwater Screeing Levels are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).

2 - Residential Groundwater Screening Level is the DTSC-Modified Soil Screening Level from Table 2 of DTSC HHRA Note 3 (DTSC 2018).

3 - Residential Groundwater Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

EPA - U.S. Environmental Protection Agency

MDL - method detection limit

PQL - practical quantitation limit

NA - not applicable

mg/L - milligrams per liter

µg/L - micrograms per liter

RPD - relative percent difference

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Location ID					**SV-1**	**SV-1**	**SV-2**	**SV-2**	**SV-3**	**SV-3**	**SV-4**
Sample ID					**SV-1-5**	**SV-1-15**	**SV-2-5**	**SV-2-15**	**SV-3-5**	**SV-3-15**	**SV-4-5**
Colletion Date					**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**
Colletion Depth					**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**
Dilution					**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	b, c	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	b, d	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA		<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA		<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA		**77.6**	**79.5**	**78.1**	**78.9**	**78.1**	**78.2**	**80.2**
Oxygen (%)	0.3700	0.50	NA		**18.7**	**17.0**	**18.3**	**15.4**	**18.3**	**16.7**	**18.9**

Location ID					**SV-4**	**SV-5**	**SV-5**	**SV-6**	**SV-6**	**SV-7**	**SV-7**
Sample ID					**SV-4-15**	**SV-5-5**	**SV-15-5**	**SV-6-5**	**SV-6-15**	**SV-7-5**	**SV-7-15**
Colletion Date					**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**
Colletion Depth					**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**
Dilution					**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	b, c	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	b, d	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA		<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA		<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA		**79.2**	**66.6**	**77.9**	**77.6**	**78.2**	**76.2**	**78.6**
Oxygen (%)	0.3700	0.50	NA		**16.6**	**16.7**	**15.6**	**19.7**	**19.2**	**19.5**	**18.1**

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Location ID				**SV-8**	**SV-8**	**SV-9**	**SV-9**	**SV-10**	**SV-10**	**SV-11**
Sample ID				**SV-8-5**	**SV-8-15**	**SV-9-5**	**SV-9-15**	**SV-10-5**	**SV-10-15**	**SV-11-5**
Colletion Date				**9/20/2018**	**9/20/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**
Colletion Depth				**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**79.5**	**79.1**	**81.3**	**79.9**	**79.4**	**73.5**	**80.2**
Oxygen (%)	0.3700	0.50	NA	**19.6**	**20.1**	**19.2**	**19.2**	**17.3**	**16.9**	**19.1**

Location ID				**SV-11**	**SV-12**	**SV-12**	**SV-13**	**SV-13**	**SV-13**	**SV-14**
Sample ID				**SV-11-15**	**SV-12-5**	**SV-12-15**	**SV-13-5**	**SV-13-15**	**SV-13-15 DUP**	**SV-14-5**
Colletion Date				**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**
Colletion Depth				**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**15.0**	**5.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**82.9**	**82.9**	**84.5**	**76.4**	**78.9**	**76.8**	**78.9**
Oxygen (%)	0.3700	0.50	NA	**17.1**	**17.1**	**16.4**	**19.9**	**18.1**	**20.1**	**21.2**

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Location ID				**SV-14**	**SV-15**	**SV-15**	**SV-16**	**SV-16**	**SV-17**	**SV-17**
Sample ID				**SV-14-15**	**SV-15-5**	**SV-15-15**	**SV-16-5**	**SV-16-15**	**SV-17-5**	**SV-17-15**
Colletion Date				**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/19/2018**
Colletion Depth				**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**
Dilution				**1.0**	**2**	**2**	**2**	**2**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**90.6**	**80.8**	**80.3**	**80.3**	**80.2**	**80.6**	**81.5**
Oxygen (%)	0.3700	0.50	NA	**10.3**	**19.5**	**21.2**	**20.8**	**22.4**	**22.4**	**18.5**

Location ID				**SV-17**	**SV-18**	**SV-18**	**SV-19**	**SV-19**	**SV-19**	**SV-20**
Sample ID				**SV-17-15 DUP**	**SV-18-5**	**SV-18-15**	**SV-19-5**	**SV-19-5 DUP**	**SV-19-15**	**SV-20-5**
Colletion Date				**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**
Colletion Depth				**5.0**	**5.0**	**15.0**	**5.0**	**5.0**	**15.0**	**5.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**80.5**	**82.9**	**87.1**	**81.1**	**80.6**	**72.7**	**81.2**
Oxygen (%)	0.3700	0.50	NA	**19.3**	**17.8**	**11.9**	**19.1**	**20.1**	**14.4**	**20.9**

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Location ID				**SV-20**	**SV-21**	**SV-21**	**SV-22**	**SV-22**	**SV-23**	**SV-23**
Sample ID				**SV-20-15**	**SV-21-5**	**SV-21-15**	**SV-22-5**	**SV-22-15**	**SV-23-5**	**SV-23-15**
Colletion Date				**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**
Colletion Depth				**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	<10	<10	<10
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**81.0**	**81.5**	**83.2**	**81.2**	**68.6**	**75.5**	**83.1**
Oxygen (%)	0.3700	0.50	NA	**19.0**	**18.5**	**16.1**	**15.8**	**14.6**	**15.8**	**15.6**

Location ID				**SV-24**	**SV-24**	**SV-25**	**SV-25**	**SV-26**	**SV-26**	**SV-26**
Sample ID				**SV-24-5**	**SV-24-15**	**SV-25-5**	**SV-25-15**	**SV-26-5**	**SV-26-15**	**SV-26-15 DUP**
Colletion Date				**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**
Colletion Depth				**5.0**	**15.0**	**5.0**	**15.0**	**15.0**	**15.0**	**15.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	<0.010	<0.010	<0.010	<0.010	NA	NA	NA
Methane (ppmv)	10.0000	15	1,000	<10	<10	<10	<10	NA	NA	NA
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**81.6**	**82.6**	**82.7**	**83.1**	**76.3**	**79.1**	**79.8**
Oxygen (%)	0.3700	0.50	NA	**18.9**	**18.0**	**17.8**	**16.4**	**17.5**	**20.2**	**19.5**

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Location ID				**SV-27**	**SV-27**	**SV-28**	**SV-28**	**SV-29**	**SV-29**	**SV-30**
Sample ID				**SV-27-5**	**SV-27-15**	**SV-28-5**	**SV-28-15**	**SV-29-5**	**SV-29-15**	**SV-30-5**
Colletion Date				**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**	**9/19/2018**
Colletion Depth				**5.0**	**15.0**	**5.0**	**15.0**	**5.0**	**15.0**	**5.0**
Dilution				**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	NA	NA	NA	NA	NA	NA	NA
Methane (ppmv)	10.0000	15	1,000	NA	NA	NA	NA	NA	NA	NA
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**79.2**	**78.5**	**79.2**	**76.5**	**76.8**	**78.1**	**78.1**
Oxygen (%)	0.3700	0.50	NA	**19.9**	**20.1**	**20.2**	**19.5**	**20.1**	**19.2**	**17.2**

Location ID				**SV-30**
Sample ID				**SV-30-15**
Colletion Date				**9/19/2018**
Colletion Depth				**15.0**
Dilution				**1.0**
Analyyte (Units)[a]	MDL	RL	SL	Result
Hydrogen Sulfide (ppmv)	0.0100	0.010	2.1	NA
Methane (ppmv)	10.0000	15	1,000	NA
Carbon Dioxide (%)	0.3440	0.5	NA	<0.3440
Carbon Monoxide (%)	0.2720	0.50	NA	<0.2720
Nitrogen (%)	0.1740	0.50	NA	**77.2**
Oxygen (%)	0.3700	0.50	NA	**18.9**

Table 9
Methane, Hydrogen Sulfide
and Fixed Gases in Soil Gas
High School No. 8
Oxnard, California

Notes:

a - Hydrogen Sulfide analysis peformed with a HACH HS-C field instrument, methane analysis peformed by EPA method 8015M, and fixed gases analysis performed by menthod ASTM D-1946.

b - non carcinogenic

c - Residential Air Screening Level is the DTSC-Modified Air Screening Level from Table 3 of DTSC HHRA Note 3 (DTSC 2018).

d - Residential Soil Gas Screeing Level is from the recommended action level for further investigation in Advisory on Methane Assessment and Common Remedies at School Sites (DTSC 2005).

EPA - U.S. Environmental Protection Agency

MDL - method detection limit

ppmv - parts per million by volume

% - percent

RL - method reporting limit

SL - Screening Level

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-26**		**SV-26**		**SV-26**		**SV-27**	
Sample ID					**SV-26-5**		**SV-26-15**		**SV-26-15 DUP**		**SV-27-5**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**5.0**		**15.0**		**15.0**		**5.0**	
Dilution LUFT GCMS					**1.0**		**1.0**		**1.0**		**1.0**	
Dilution for Acetone EPA 8260B					**0.5**		**0.5**		**0.5**		**0.5**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ	Result	DQ
C4-C12 TPH (Gasoline)	5.000	10	50	b, f	<5		<5		<5		<5	
Acetone	0.2500	0.50	32000	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
t-Amyl Methyl Ether (TAME)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250		<0.0250	
Benzene	0.0180	0.025	0.097	c, e	<0.0180		<0.0180		<0.0180		<0.0180	
Bromobenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Bromochloromethane	0.0250	0.050	42	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Bromoform	0.0250	0.050	2.6	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
Bromomethane	0.0250	0.050	5.2	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
t-Butanol (TBA)	0.2500	0.05	NA		<0.2500		<0.2500		<0.2500		<0.2500	
2-Butanone (MEK)	0.2500	0.05	5200	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
n-Butylbenzene	0.0250	0.050	21	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
sec-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
tert-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Carbon Disulfide	0.2500	0.05	730	b, e	<0.2500		<0.2500		<0.2500		<0.2500	
Carbon Tetrachloride	0.0125	0.025	0.067	c, e	<0.0125		<0.0125		<0.0125		<0.0125	
Chlorobenzene	0.0250	0.050	52	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Chloroform	0.0250	0.050	0.12	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Chloromethane	0.0250	0.050	94	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
2-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
4-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Dibromomethane	0.0250	0.050	4.2	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichlorobenzene	0.0250	0.050	210	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,4-Dichlorobenzene	0.0250	0.050	0.26	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Dichlorodifluoromethane	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1-Dichloroethane	0.0250	0.050	1.8	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichloroethane	0.0250	0.050	0.11	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1-Dichloroethene	0.0250	0.050	73	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
cis-1,2-Dichloroethene	0.0250	0.050	8.3	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
trans-1,2-Dichloroethene	0.0250	0.050	8.3	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichloropropane	0.0250	0.050	0.28	c, e	<0.0250		<0.0250		<0.0250		<0.0250	

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-26**		**SV-26**		**SV-26**		**SV-27**	
Sample ID					**SV-26-5**		**SV-26-15**		**SV-26-15 DUP**		**SV-27-5**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**5.0**		**15.0**		**15.0**		**5.0**	
Dilution LUFT GCMS					**1.0**		**1.0**		**1.0**		**1.0**	
Dilution for Acetone EPA 8260B					**0.5**		**0.5**		**0.5**		**0.5**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ	Result	DQ
1,3-Dichloropropane	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Ethylbenzene	0.0250	0.050	1.1	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Ethyl-t-Butyl Ether (EtBE)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250		<0.0250	
Hexachlorobutadiene	0.0250	0.050	0.13	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
2-Hexanone	0.2500	0.50	31	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
Methylene Chloride	0.0250	0.05	1	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
4-Methyl-2-Pentanone (MIBK)	0.2500	0.50	3100	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
Methyl-t-butyl Ether (MtBE)	0.0250	0.050	11	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Naphthalene	0.0160	0.025	8.3	c, d	<0.0160		<0.0160		<0.0160		<0.0160	
Styrene	0.0250	0.050	940	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,1,2-Tetrachloroethane	0.0250	0.050	0.38	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,2,2-Tetrachloroethane	0.0250	0.050	0.048	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Tetrachloroethene	0.0250	0.050	0.46	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
Toluene	0.0250	0.050	310	b, d	**0.070**	J	**0.030**	J	**0.030**	J	**0.050**	
1,2,3-Trichlorobenzene	0.0250	0.050	3.3	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2,4-Trichlorobenzene	0.0250	0.050	0.39	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,1-Trichloroethane	0.0250	0.050	5200	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,2-Trichloroethane	0.0250	0.050	0.18	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Trichloroethene	0.0250	0.050	0.48	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Trichlorofluoromethane	0.0250	0.050	1300	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2,4-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,3,5-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Vinyl Chloride	0.0125	0.025	0.17	c, e	<0.0125		<0.0125		<0.0125		<0.0125	
m,p-Xylenes	0.0500	0.10	200	b, d	<0.0500		<0.0500		<0.0500		<0.0500	
o-Xylene	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Isopropanol (IPA) (VOC Sampling Tracer)	0.2500	0.50	210	b, d	<0.2500		<0.2500		<0.2500		<0.2500	

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-27**		**SV-28**		**SV-28**		**SV-29**	
Sample ID					**SV-27-15**		**SV-28-5**		**SV-28-15**		**SV-29-5**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**15.0**		**5.0**		**15.0**		**5.0**	
Dilution LUFT GCMS					**1.0**		**1.0**		**1.0**		**1.0**	
Dilution for Acetone EPA 8260B					**0.5**		**0.5**		**0.5**		**0.5**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ	Result	DQ
C4-C12 TPH (Gasoline)	5.000	10	50	b, f	<5		<5		<5		<5	
Acetone	0.2500	0.50	32000	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
t-Amyl Methyl Ether (TAME)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250		<0.0250	
Benzene	0.0180	0.025	0.097	c, e	<0.0180		<0.0180		<0.0180		<0.0180	
Bromobenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Bromochloromethane	0.0250	0.050	42	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Bromoform	0.0250	0.050	2.6	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
Bromomethane	0.0250	0.050	5.2	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
t-Butanol (TBA)	0.2500	0.05	NA		<0.2500		<0.2500		<0.2500		<0.2500	
2-Butanone (MEK)	0.2500	0.05	5200	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
n-Butylbenzene	0.0250	0.050	21	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
sec-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
tert-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Carbon Disulfide	0.2500	0.05	730	b, e	<0.2500		<0.2500		<0.2500		<0.2500	
Carbon Tetrachloride	0.0125	0.025	0.067	c, e	<0.0125		<0.0125		<0.0125		<0.0125	
Chlorobenzene	0.0250	0.050	52	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Chloroform	0.0250	0.050	0.12	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Chloromethane	0.0250	0.050	94	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
2-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
4-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Dibromomethane	0.0250	0.050	4.2	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichlorobenzene	0.0250	0.050	210	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,4-Dichlorobenzene	0.0250	0.050	0.26	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Dichlorodifluoromethane	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1-Dichloroethane	0.0250	0.050	1.8	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichloroethane	0.0250	0.050	0.11	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1-Dichloroethene	0.0250	0.050	73	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
cis-1,2-Dichloroethene	0.0250	0.050	8.3	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
trans-1,2-Dichloroethene	0.0250	0.050	8.3	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2-Dichloropropane	0.0250	0.050	0.28	c, e	<0.0250		<0.0250		<0.0250		<0.0250	

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-27**		**SV-28**		**SV-28**		**SV-29**	
Sample ID					**SV-27-15**		**SV-28-5**		**SV-28-15**		**SV-29-5**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**15.0**		**5.0**		**15.0**		**5.0**	
Dilution LUFT GCMS					**1.0**		**1.0**		**1.0**		**1.0**	
Dilution for Acetone EPA 8260B					**0.5**		**0.5**		**0.5**		**0.5**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ	Result	DQ
1,3-Dichloropropane	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
Ethylbenzene	0.0250	0.050	1.1	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Ethyl-t-Butyl Ether (EtBE)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250		<0.0250	
Hexachlorobutadiene	0.0250	0.050	0.13	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
2-Hexanone	0.2500	0.50	31	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
Methylene Chloride	0.0250	0.05	1	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
4-Methyl-2-Pentanone (MIBK)	0.2500	0.50	3100	b, d	<0.2500		<0.2500		<0.2500		<0.2500	
Methyl-t-butyl Ether (MtBE)	0.0250	0.050	11	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Naphthalene	0.0160	0.025	8.3	c, d	**0.020**	J	<0.0160		**0.020**	J	<0.0160	
Styrene	0.0250	0.050	940	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,1,2-Tetrachloroethane	0.0250	0.050	0.38	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,2,2-Tetrachloroethane	0.0250	0.050	0.048	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Tetrachloroethene	0.0250	0.050	0.46	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
Toluene	0.0250	0.050	310	b, d	**0.030**	J	**0.030**	J	**0.040**	J	**0.030**	J
1,2,3-Trichlorobenzene	0.0250	0.050	3.3	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2,4-Trichlorobenzene	0.0250	0.050	0.39	c, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,1-Trichloroethane	0.0250	0.050	5200	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,1,2-Trichloroethane	0.0250	0.050	0.18	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Trichloroethene	0.0250	0.050	0.48	c, d	<0.0250		<0.0250		<0.0250		<0.0250	
Trichlorofluoromethane	0.0250	0.050	1300	b, e	<0.0250		<0.0250		<0.0250		<0.0250	
1,2,4-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
1,3,5-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Vinyl Chloride	0.0125	0.025	0.17	c, e	<0.0125		<0.0125		<0.0125		<0.0125	
m,p-Xylenes	0.0500	0.10	200	b, d	<0.0500		<0.0500		<0.0500		<0.0500	
o-Xylene	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250		<0.0250	
Isopropanol (IPA) (VOC Sampling Tracer)	0.2500	0.50	210	b, d	<0.2500		<0.2500		<0.2500		<0.2500	

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-29**		**SV-30**		**SV-30**	
Sample ID					**SV-29-15**		**SV-30-5**		**SV-30-15**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**15.0**		**5.0**		**15.0**	
Dilution LUFT GCMS					**1.0**		**0.5**		**0.5**	
Dilution for Acetone EPA 8260B					**0.5**		**0**		**0**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ
C4-C12 TPH (Gasoline)	5.000	10	50	b, f	<5		<5		<5	
Acetone	0.2500	0.50	32000	b, d	<0.2500		<0.2500		<0.2500	
t-Amyl Methyl Ether (TAME)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250	
Benzene	0.0180	0.025	0.097	c, e	<0.0180		<0.0180		<0.0180	
Bromobenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250	
Bromochloromethane	0.0250	0.050	42	b, d	<0.0250		<0.0250		<0.0250	
Bromoform	0.0250	0.050	2.6	c, e	<0.0250		<0.0250		<0.0250	
Bromomethane	0.0250	0.050	5.2	b, d	<0.0250		<0.0250		<0.0250	
t-Butanol (TBA)	0.2500	0.05	NA		<0.2500		<0.2500		<0.2500	
2-Butanone (MEK)	0.2500	0.05	5200	b, d	<0.2500		<0.2500		<0.2500	
n-Butylbenzene	0.0250	0.050	21	b, e	<0.0250		<0.0250		<0.0250	
sec-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250	
tert-Butylbenzene	0.0250	0.050	420	b, e	<0.0250		<0.0250		<0.0250	
Carbon Disulfide	0.2500	0.05	730	b, e	<0.2500		<0.2500		<0.2500	
Carbon Tetrachloride	0.0125	0.025	0.067	c, e	<0.0125		<0.0125		<0.0125	
Chlorobenzene	0.0250	0.050	52	b, d	<0.0250		<0.0250		<0.0250	
Chloroform	0.0250	0.050	0.12	c, d	<0.0250		<0.0250		<0.0250	
Chloromethane	0.0250	0.050	94	b, d	<0.0250		<0.0250		<0.0250	
2-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250	
4-Chlorotoluene	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250	
Dibromomethane	0.0250	0.050	4.2	b, e	<0.0250		<0.0250		<0.0250	
1,2-Dichlorobenzene	0.0250	0.050	210	b, d	<0.0250		<0.0250		<0.0250	
1,4-Dichlorobenzene	0.0250	0.050	0.26	c, d	<0.0250		<0.0250		<0.0250	
Dichlorodifluoromethane	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250	
1,1-Dichloroethane	0.0250	0.050	1.8	b, e	<0.0250		<0.0250		<0.0250	
1,2-Dichloroethane	0.0250	0.050	0.11	c, d	<0.0250		<0.0250		<0.0250	
1,1-Dichloroethene	0.0250	0.050	73	b, e	<0.0250		<0.0250		<0.0250	
cis-1,2-Dichloroethene	0.0250	0.050	8.3	b, d	<0.0250		<0.0250		<0.0250	
trans-1,2-Dichloroethene	0.0250	0.050	8.3	b, e	<0.0250		<0.0250		<0.0250	
1,2-Dichloropropane	0.0250	0.050	0.28	c, e	<0.0250		<0.0250		<0.0250	

Table 10
TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Location ID					**SV-29**		**SV-30**		**SV-30**	
Sample ID					**SV-29-15**		**SV-30-5**		**SV-30-15**	
Colletion Date					**9/20/2018**		**9/20/2018**		**9/20/2018**	
Colletion Depth					**15.0**		**5.0**		**15.0**	
Dilution LUFT GCMS					**1.0**		**0.5**		**0.5**	
Dilution for Acetone EPA 8260B					**0.5**		**0**		**0**	
Analyte[a]	MDL	RL	SL	Notes	Result	DQ	Result	DQ	Result	DQ
1,3-Dichloropropane	0.0250	0.050	83	b, e	<0.0250		<0.0250		<0.0250	
Ethylbenzene	0.0250	0.050	1.1	c, d	<0.0250		<0.0250		<0.0250	
Ethyl-t-Butyl Ether (EtBE)	0.0250	0.050	NA		<0.0250		<0.0250		<0.0250	
Hexachlorobutadiene	0.0250	0.050	0.13	c, e	<0.0250		<0.0250		<0.0250	
2-Hexanone	0.2500	0.50	31	b, d	<0.2500		<0.2500		<0.2500	
Methylene Chloride	0.0250	0.05	1	c, e	<0.0250		<0.0250		<0.0250	
4-Methyl-2-Pentanone (MIBK)	0.2500	0.50	3100	b, d	<0.2500		<0.2500		<0.2500	
Methyl-t-butyl Ether (MtBE)	0.0250	0.050	11	c, d	<0.0250		<0.0250		<0.0250	
Naphthalene	0.0160	0.025	8.3	c, d	<0.0160		**0.020**	J	<0.0160	
Styrene	0.0250	0.050	940	b, e	<0.0250		<0.0250		<0.0250	
1,1,1,2-Tetrachloroethane	0.0250	0.050	0.38	c, e	<0.0250		<0.0250		<0.0250	
1,1,2,2-Tetrachloroethane	0.0250	0.050	0.048	c, d	<0.0250		<0.0250		<0.0250	
Tetrachloroethene	0.0250	0.050	0.46	c, e	<0.0250		<0.0250		<0.0250	
Toluene	0.0250	0.050	310	b, d	**0.030**	J	**0.030**	J	**0.030**	J
1,2,3-Trichlorobenzene	0.0250	0.050	3.3	b, e	<0.0250		<0.0250		<0.0250	
1,2,4-Trichlorobenzene	0.0250	0.050	0.39	c, e	<0.0250		<0.0250		<0.0250	
1,1,1-Trichloroethane	0.0250	0.050	5200	b, d	<0.0250		<0.0250		<0.0250	
1,1,2-Trichloroethane	0.0250	0.050	0.18	c, d	<0.0250		<0.0250		<0.0250	
Trichloroethene	0.0250	0.050	0.48	c, d	<0.0250		<0.0250		<0.0250	
Trichlorofluoromethane	0.0250	0.050	1300	b, e	<0.0250		<0.0250		<0.0250	
1,2,4-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250	
1,3,5-Trimethylbenzene	0.0250	0.050	63	b, d	<0.0250		<0.0250		<0.0250	
Vinyl Chloride	0.0125	0.025	0.17	c, e	<0.0125		<0.0125		<0.0125	
m,p-Xylenes	0.0500	0.10	200	b, d	<0.0500		<0.0500		<0.0500	
o-Xylene	0.0250	0.050	100	b, d	<0.0250		<0.0250		<0.0250	
Isopropanol (IPA) (VOC Sampling Tracer)	0.2500	0.50	210	b, d	<0.2500		<0.2500		<0.2500	

Table 10
Summary of TPHg and VOC Concentrations in Soil Gas Samples (µg/L)
High School No. 8
Oxnard, California

Notes:

a - C4-C12 TPH (Gasoline) analysis peformed via LUFT GCMS. The remainder of analytes were analyzed by EPA method 8260B.
b - non carcinogenic
c - carcinogenic
d - Residential Air Screening Level is the DTSC-Modified Air Screening Level from Table 3 of DTSC HHRA Note 3 (DTSC 2018).
DQ - data qualifier
e - Residential Air Screening Level is the USEPA Region 9 Air RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
EPA - U.S. Environmental Protection Agency
f - Residential Air Screening Level and Soil Gas Screeing Level are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).
J - J flagged, where concentration of the analyte detected is between RL and MDL.
MDL - method detection limit
µg/L - micrograms per liter
RL - method reporting limit
SL - Screening Level
TPH - Total Petroleum Hydrocarbons

Table 11
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-1**	**SS-1**	**SS-2**	**SS-3**	**SS-4**	**SS-5**	**SS-6**	**SS-7**
Sample ID					**SS-1-0**	**Soil Dupe 1**	**SS-2-0**	**SS-3-0**	**SS-4-0**	**SS-5-0**	**SS-6-0**	**SS-7-0**
Collection Date					**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	**1.00**	ND<1.0	**1.51**	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.63**	**7.49**	**4.61**	**3.46**	**1.96**	**1.53**	**7.23**	**2.71**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**18.80**	**54.90**	**44.10**	**43.20**	**32.50**	**31.10**	**75.30**	**19.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**23.50**	**29.70**	**56.80**	**53.70**	**33.30**	**56.20**	**156.00**	**33.20**
Dieldrin	1.0	2.0	34	c, d	<1.0	ND<1.0	<1.0	**1.13**	ND<1.0	ND<1.0	**2.72**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**266.00**	ND<85.0	**125.00**	**246.00**	**257.00**	**325.00**	**528.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-8**	**SS-9**	**SS-9**	**SS-10**	**SS-10**	**SS-11**	**SS-12**	**SS-12**
Sample ID					**SS-8-0**	**SS-9-0**	**Soil Dupe 2**	**SS-10-0**	**Soil Dup 2-2**	**SS-11-0**	**SS-12-0**	**Soil Dup 2-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.49**	**1.01**	ND<1.0	ND<1.0	**6.53**	ND<1.0	ND<1.0	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	ND<1.0	ND<1.0	**2.92**	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.84**	**3.18**	**8.65**	**4.93**	**8.80**	**4.82**	**3.29**	**2.56**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	ND<1.0	**38.60**	**76.30**	**36.00**	**65.90**	**32.40**	**25.40**	**25.80**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**16.70**	**63.10**	**48.10**	**60.20**	**75.50**	**54.20**	**43.30**	**43.40**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**1.06**	**1.41**	ND<1.0	**2.54**	**2.07**	ND<1.0	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**3.61**	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**130.00**	ND<85.0	**209.00**	**372.00**	**199.00**	**214.00**	**223.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 11
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-13**	**SS-14**	**SS-15**	**SS-16**	**SS-17**	**SS-18**	**SS-19**	**SS-20**
Sample ID					**SS-13-0**	**SS-14-0**	**SS-15-0**	**SS-16-0**	**SS-17-0**	**SS-18-0**	**SS-19-0**	**SS-20-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**2.50**	**4.70**	ND<1.0	ND<1.0	**1.52**	**1.21**	ND<1.0	**1.16**
Chlordane (alpha)	1.0	2.0	NA		**1.37**	**2.16**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**10.30**	**16.30**	**2.23**	**4.42**	**4.34**	**5.05**	**3.18**	**3.61**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**104.00**	**250.00**	**21.80**	**30.50**	**41.00**	**34.80**	**29.00**	**30.60**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**226.00**	**405.00**	**25.10**	**35.00**	**33.20**	**38.40**	**44.90**	**39.50**
Dieldrin	1.0	2.0	34	c, d	**5.75**	**6.18**	ND<1.0	ND<1.0	**1.09**	**1.11**	**1.31**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**1.13**	**2.54**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**681.00**	**921.00**	ND<85.0	ND<85.0	**282.00**	**133.00**	**125.00**	**198.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-21**	**SS-22**	**SS-23**	**SS-24-0**	**SS-25-0**	**SS-26**	**SS-27-0**	**SS-28-0**
Sample ID					**SS-21-0**	**SS-22-0**	**SS-23-0**	**SS-24-0**	**SS-25-0**	**SS-26-0**	**SS-27-0**	**SS-28-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.18**	**2.65**	**5.47**	**3.25**	ND<1.0	**2.90**	**1.81**	**2.38**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	**2.51**	**1.92**	ND<1.0	**1.29**	ND<1.0	**1.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.53**	**11.20**	**15.90**	**23.90**	**3.11**	**3.96**	**4.80**	**10.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**26.10**	**104.00**	**150.00**	**369.00**	**43.90**	**48.60**	**66.90**	**50.10**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**41.80**	**216.00**	**334.00**	**542.00**	**35.80**	**31.90**	**44.10**	**43.00**
Dieldrin	1.0	2.0	34	c, d	**1.08**	**3.13**	**6.60**	**9.57**	ND<1.0	ND<1.0	**1.03**	**1.65**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**1.68**	**2.96**	**1.33**	ND<1.0	**1.61**	ND<1.0	**1.38**
Toxaphene	85.0	170.0	490	c, d	**237.00**	**804.00**	**704.00**	**1,380.00**	ND<85.0	ND<85.0	ND<85.0	**289.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 11
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-29-0**	**SS-29-0**	**SS-30**	**SS-31**	**SS-32**	**SS-33**	**SS-34**	**SS-35**
Sample ID					**SS-29-0**	**Soil Dup 3**	**SS-30-0**	**SS-31-0**	**SS-32-0**	**SS-33-0**	**SS-34-0**	**SS-35-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**5.03**	**6.53**	**4.67**	**3.04**	**3.22**	**9.87**	**10.90**	**1.27**
Chlordane (alpha)	1.0	2.0	NA		**2.98**	**2.92**	**2.34**	**1.57**	**1.66**	**4.66**	**5.67**	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**11.50**	**8.80**	**9.54**	**6.98**	**11.70**	**24.50**	**34.80**	**3.20**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**103.00**	**65.90**	**96.70**	**51.60**	**97.40**	**337.00**	**405.00**	**39.50**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**103.00**	**75.50**	**96.20**	**83.40**	**102.00**	**520.00**	**594.00**	**33.60**
Dieldrin	1.0	2.0	34	c, d	**2.71**	**2.54**	**4.60**	**2.64**	**4.25**	**9.42**	**15.90**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**2.05**	**3.61**	**2.33**	**1.47**	**1.56**	**5.21**	**5.25**	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**581.00**	**372.00**	**750.00**	**417.00**	**510.00**	**941.00**	**1,560.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-36**	**SS-37**	**SS-38**	**SS-39**	**SS-40**	**SS-41**	**SS-42**	**SS-43**
Sample ID					**SS-36-0**	**SS-37-0**	**SS-38-0**	**SS-39-0**	**SS-40-0**	**SS-41-0**	**SS-42-0**	**SS-43-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	ND<1.0	**18.60**	**20.80**	**12.70**	**13.00**	**20.30**	**46.50**	**20.80**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	**9.72**	**10.00**	**6.66**	**6.36**	**10.70**	**24.40**	**8.29**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.19**	**30.90**	**39.60**	**28.30**	**23.90**	**41.60**	**51.90**	**45.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**25.70**	**419.00**	**345.00**	**178.00**	**256.00**	**363.00**	**475.00**	**573.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**17.70**	**406.00**	**415.00**	**290.00**	**361.00**	**638.00**	**607.00**	**513.00**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**10.70**	**13.80**	**7.89**	**9.24**	**18.10**	**16.20**	**11.00**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**8.91**	**10.80**	**6.02**	**6.65**	**9.64**	**22.10**	**12.50**
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**1,660.00**	**1,770.00**	**1,540.00**	**1,360.00**	**2,280.00**	**2,140.00**	**2,220.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 11
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-44**	**SS-45**	**SS-46**	**SS-47**	**SS-48**	**SS-49**	**SS-49**
Sample ID					**SS-44-0**	**SS-45-0**	**SS-46-0**	**SS-47-0**	**SS-48-0**	**SS-49-0**	**Soil Dupe 3-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**24.80**	**28.70**	**24.60**	**19.40**	**25.70**	**25.00**	**31.80**
Chlordane (alpha)	1.0	2.0	NA		**12.40**	**14.40**	**14.10**	**11.20**	**13.90**	**12.60**	**16.10**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**60.90**	**37.20**	**36.40**	**40.70**	**69.80**	**36.40**	**74.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**443.00**	**352.00**	**209.00**	**370.00**	**562.00**	**452.00**	**761.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**441.00**	**375.00**	**428.00**	**520.00**	**663.00**	**437.00**	**814.00**
Dieldrin	1.0	2.0	34	c, d	**13.80**	**19.30**	**14.20**	**12.10**	**24.00**	**29.20**	**37.20**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**12.40**	**14.30**	**10.50**	**8.16**	**11.80**	**12.40**	**15.70**
Toxaphene	85.0	170.0	490	c, d	**2,040.00**	**2,160.00**	**1,820.00**	**1,910.00**	**2,290.00**	**1,560.00**	**2,600.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-50**	**SS-50**	**SS-51**	**SS-51**	**SS-52**	**SS-52**	**SS-53**
Sample ID					**SS-50-0**	**Soil Dupe 3-2**	**SS-51-0**	**Soil Dupe 3-3**	**SS-52-0**	**Soil Dupe 3-4**	**SS-53-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**27.20**	**30.80**	**40.30**	**53.20**	**29.00**	**40.30**	**45.10**
Chlordane (alpha)	1.0	2.0	NA		**13.90**	**14.10**	**19.00**	**29.80**	**14.40**	**18.70**	**21.70**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**62.90**	**63.20**	**48.70**	**64.20**	**57.70**	**70.20**	**44.90**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**576.00**	**660.00**	**468.00**	**485.00**	**256.00**	**280.00**	**453.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**547.00**	**646.00**	**489.00**	**499.00**	**301.00**	**370.00**	**721.00**
Dieldrin	1.0	2.0	34	c, d	**31.70**	**25.60**	**33.80**	**34.70**	**23.50**	**12.10**	**19.90**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**13.30**	**16.70**	**21.30**	**23.40**	**14.60**	**21.60**	**23.40**
Toxaphene	85.0	170.0	490	c, d	**2,360.00**	**2,300.00**	**2,270.00**	**2,180.00**	**1,540.00**	**1,650.00**	**2,450.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Table 11
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-54**	**SS-55**	**SS-56**	**SS-57**	**SS-58**	**SS-59**
Sample ID					**SS-54-0**	**SS-55-0**	**SS-56-0**	**SS-57-0**	**SS-58-0**	**SS-59-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**48.70**	**22.70**	**36.70**	**35.00**	**47.00**	**53.40**
Chlordane (alpha)	1.0	2.0	NA		**24.50**	**11.30**	**17.90**	**14.80**	**21.80**	**25.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**50.20**	**80.20**	**63.10**	**65.40**	**47.60**	**72.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**550.00**	**511.00**	**523.00**	**534.00**	**383.00**	**427.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**540.00**	**434.00**	**490.00**	**475.00**	**491.00**	**652.00**
Dieldrin	1.0	2.0	34	c, d	**32.70**	**14.80**	**31.90**	**16.80**	**19.60**	**40.40**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**24.20**	**11.40**	**18.80**	**20.20**	**25.20**	**28.40**
Toxaphene	85.0	170.0	490	c, d	**2,030.00**	**1,830.00**	**2,320.00**	**2,100.00**	**1,840.00**	**2,200.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND

Location ID					**SS-60**
Sample ID					**SS-60-0**
Collection Date					**9/18/2018**
Collection Depth					**0.0**
Dilution					**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**35.20**
Chlordane (alpha)	1.0	2.0	NA		**16.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**63.70**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**487.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**505.00**
Dieldrin	1.0	2.0	34	c, d	**27.50**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**19.20**
Toxaphene	85.0	170.0	490	c, d	**1,940.00**
All other OCPs[e]					ND

Table 11
Organochlorine Pesicides in Soil
High School No. 8
Oxnard, California

Notes:
a - Organochlorine pesticides analyzed by EPA method 8081A.
b - non carcinogenic
c - carcinogenic
d - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
e - Table 6 lists compound-specific MDLs and PQLs for analytes that were not detected.
MDL - method detection limit
ND - not detected
PQL - practical quantitation limit
SL - Screening Level
The analytical results in red font are J-flagged, where concentration of the analyte detected is between MDL and PQL.
The analyte concentrations in yellow highligted cells exceed their relevant screening level.

Table 12
Total Petroleum Hydrocarbons in Soil (mg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-1**	**SS-1**	**SS-4**	**SS-16**	**SS-19**	**SS-23**	**SS-29-0**	**SS-29-0**	**SS-34**
Sample ID					**SS-1-0**	**Soil Dupe 1**	**SS-4-0**	**SS-16-0**	**SS-23-0**	**SS-23-0**	**SS-29-0**	**Soil Dup 3**	**SS-34-0**
Colletion Date					**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Colletion Depth (feet bgs)					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Constituent[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result	Result
TPH as Gasoline (C4-C12)					NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH as Diesel (C9-C22)	1.0	10.0	230	b, c	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
TPH as Heavy Hydrocarbons (C23-C40)	1.0	2.0	5,100	b, c	ND<1.0	ND<1.0	**4.3**	ND<1.0	ND<1.0	ND<1.0	**9.9**	**11.3**	ND<1.0
TPH Total as Diesel/Heavy HC. (C9-C40)	1.0	2.0	1,900	b, c	ND<1.0	ND<1.0	**4.3**	ND<1.0	ND<1.0	ND<1.0	**9.9**	**11.3**	ND<1.0

Location ID					**SS-35**	**SS-38**	**SS-42**	**SS-44**	**SS-47**	**SS-57**	**SS-57**	**SS-60**	**SV-26**
Sample ID					**SS-35-0**	**SS-38-0**	**SS-42-0**	**SS-44-0**	**SS-47-0**	**SS-57-0**	**Soil Dup 5**	**SS-34-0**	**SV-26-15**
Colletion Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/18/2018**	**9/18/2018**	**9/17/2018**	**9/20/2018**
Colletion Depth (feet bgs)					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**15.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Constituent[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result	Result
TPH as Gasoline (C4-C12)					NA	NA	NA	NA	NA	NA	NA	NA	ND<0.100
TPH as Diesel (C9-C22)	1.0	10.0	230	b, c	**8**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
TPH as Heavy Hydrocarbons (C23-C40)	1.0	2.0	5,100	b, c	**19.1**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**12.6**	**5.8**	ND<1.0	ND<1.0
TPH Total as Diesel/Heavy HC. (C9-C40)	1.0	2.0	1,900	b, c	**27.1**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**12.6**	**5.8**	ND<1.0	ND<1.0

Table 12
Total Petroleum Hydrocarbons in Soil (mg/kg)
High School No. 8
Oxnard, California

Location ID					**SV-26**	**SV-27**	**SV-27**	**SV-28**	**SV-28**	**SV-29**	**SV-26**	**SV-29**
Sample ID					**SV-26-20**	**SV-27-15**	**SV-27-20**	**SV-28-15**	**SV-28-20**	**SV-29-15**	**SV-26-15**	**Soil Dup 7**
Colletion Date					**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**	**9/20/2018**
Colletion Depth (feet bgs)					**20.0**	**15.0**	**20.0**	**15.0**	**20.0**	**15.0**	**20.0**	**20.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Constituent[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
TPH as Gasoline (C4-C12)					ND<0.100	ND<0.100	ND<0.100	ND<0.100	**0.128**	ND<0.100	ND<0.100	ND<0.100
TPH as Diesel (C9-C22)	1.0	10.0	230	b, c	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**2.7**	ND<1.0	ND<1.0	ND<1.0
TPH as Heavy Hydrocarbons (C23-C40)	1.0	2.0	5,100	b, c	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
TPH Total as Diesel/Heavy HC. (C9-C40)	1.0	2.0	1,900	b, c	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**2.7**	ND<1.0	ND<1.0	ND<1.0

Location ID					**SV-30**	**SV-30**
Sample ID					**SV-30-15**	**SV-30-20**
Colletion Date					**9/20/2018**	**9/20/2018**
Colletion Depth (feet bgs)					**15.0**	**20.0**
Dilution					**1**	**1**
Constituent[a]	MDL	PQL	SL	Notes	Result	Result
TPH as Gasoline (C4-C12)					ND<0.100	ND<0.100
TPH as Diesel (C9-C22)	1.0	10.0	230	b, c	ND<1.0	ND<1.0
TPH as Heavy Hydrocarbons (C23-C40)	1.0	2.0	5,100	b, c	ND<1.0	ND<1.0
TPH Total as Diesel/Heavy HC. (C9-C40)	1.0	2.0	1,900	b, c	ND<1.0	ND<1.0

Table 12
Total Petroleum Hydrocarbons in Soil (mg/kg)
High School No. 8
Oxnard, California

Notes:
a - Gasoline (C4-C12), Diesel (C9-C22), and Motor Oil Range (C22-C40) Total Petroleum Hydrocarbons by EPA method 8015M.
b - non carcinogenic
bgs - below ground surface
c - Residential Soil Screeing Levels are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional
MDL - method detection limit
NA - not analyzed
ND - not detected
PQL - practical quantitation limit
SL - Screening Level
The analytical results in red font are J-flagged, where concentration of the analyte detected is between MDL and PQL.
TPH- total petroleum hydrocarbons

Table 13
Estimated Risk for Potential Residential Vapor Intrusion Exposures from Soil Gas (Depth = 5 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	Residential Soil Gas Screening Levels (µg/L)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.042	3.1	4.8E-07	6.5E-03
Toluene	0.070	----	310	----	2.3E-04
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-07	0.007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by the DTSC default future residential soil gas attenuation factor of 0.001 (DTSC 2011).

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

[4] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 14
Estimated Risk for Potential Residential Vapor Intrusion Exposures from Soil Gas (Depth = 15 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	Residential Soil Gas Screening Levels (µg/L)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.042	3.1	4.8E-07	6.5E-03
Toluene	0.040	----	310	----	1.3E-04
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-07	0.007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by the DTSC default future residential soil gas attenuation factor of 0.001 (DTSC 2011).

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

Table 15
Estimated Risk for Potential School Site Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	Residential Soil Screening Levels (mg/kg)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	0.44	35	1.2E-07	1.5E-03
4,4'-DDD (DDD)	0.080	2.3	1.9	3.5E-08	4.2E-02
4,4'-DDE (DDE)	0.76	2.0	23	3.8E-07	3.3E-02
4,4'-DDT (DDT)	0.81	1.9	37	4.3E-07	2.2E-02
Dieldrin	0.040	0.034	3.2	1.2E-06	1.3E-02
Toxaphene	2.6	0.49	----	5.3E-06	----
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[4]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	740	----	1.7E-04
TPH-diesel (C9-C22)	8.0	----	230	----	3.5E-02
TPH-motor oil (C23-C40)	19	----	11,000	----	1.7E-03
Maximum Estimated Cumulative Risk and Hazard Index[5]				7.E-06	0.1

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2016).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Screening value for pyrene used as a surrogate.

[5] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 16
Estimated Risk for Potential School Site Exposures to Soil, 95% UCL
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	Residential Soil Screening Levels (mg/kg)[2]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Estimated Risk[3]	Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	0.44	35	5.3E-08	6.7E-04
4,4'-DDD (DDD)	0.039	2.30	1.9	1.7E-08	2.0E-02
4,4'-DDE (DDE)	0.34	2.0	23	1.7E-07	1.5E-02
4,4'-DDT (DDT)	0.40	1.9	37	2.1E-07	1.1E-02
Dieldrin	0.013	0.034	3.2	3.7E-07	3.9E-03
Toxaphene	1.5	0.49	----	3.1E-06	----
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[5]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	740	----	1.7E-04
TPH-diesel (C9-C22)	8.0	----	230	----	3.5E-02
TPH-motor oil (C23-C40)	19	----	11,000	----	1.7E-03
Estimated Cumulative Risk and Hazard Index[6]				4.E-06	0.09

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2016).

[2] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 17
Summary Statistics for COPECs Identified
at the High School No 8 Site

Parameter	Units	Num Obs	Num Detected	Num Non-Detects	% NDs	Minimum	Maximum	KM Mean	Median	95% UCL	EPC
Chlordane(Total)	mg/kg	69	53	16	23.19%	1	53.4	14.13	13	22.66	22.66
Chlordane(alpha)	mg/kg	69	41	28	40.58%	1	29.8	7.156	11.3	8.75	8.75
Chlordane(gamma)	mg/kg	69	42	27	39.13%	1.13	28.4	7.314	11.1	8.956	8.956
4,4'-DDD	mg/kg	69	69	0	0.00%	1.53	80.2	25.73	11.5	38.81	38.81
4,4'-DDE	mg/kg	69	68	1	1.45%	18.8	761	225.6	104	336.4	336.4
4,4'-DDT	mg/kg	69	69	0	0.00%	16.7	814	270.5	216	395.4	395.4
Dieldrin	mg/kg	69	51	18	26.09%	1.03	40.4	10.27	11	13	13
Toxaphene	mg/kg	69	58	11	15.94%	125	2600	1032	1370	1496	1496
Phenanthrene	mg/kg	18	1	17	94.44%	-	0.0117	-	-	-	0.0117
Fluoranthene	mg/kg	18	1	17	94.44%	-	0.01	-	-	-	0.01
Toluene	µg/L	11	11	0	0.00%	0.03	0.07	0.0364	0.03	0.0434	0.0434
Naphthalene	µg/L	11	3	8	72.73%	0.02	0.02	0.02	0.02	-	0.02

Table 18
Sensitive and Special-status Species that May Potentially Occur
at the High School No. 8

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS Status[3]
PLANTS				
White rabbit-tobacco	*Pseudognaphalium leucocephalum*	-	-	2B.2
Coulter's goldfields	*Lasthenia glabrata ssp. Coulteri*	-	-	1B.1
Mexican malacothrix	*Malacothrix similis*	-	-	2A
Davidson's saltscale	*Atriplex serenana var. davidsonii*	-	-	1B.2
Ventura Marsh milk-vetch	*Astragalus pycnostachyus var. lanosissimus*	FE	FE	1B.1
Salt marsh bird's-beak	*Chloropyron maritimum ssp. maritimum*	FE	FE	1B.2
WILDLIFE				
Birds				
American peregrine falcon	*Falco peregrinus anatum*	-	-	FP
California black rail	*Laterallus jamaicensis coturniculus*	-	ST	FP
Western snowy plover	*Charadrius alexandrinus nivosus*	FT	SSC	
California least tern	*Sternula antillarum browni*	FE	SE	FP
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT	SE	
Burrowing owl	*Athene cunicularia*	-	SSC	
Bank swallow	*Riparia riparia*	-	ST	
Least Bell's vireo	*Vireo bellii pusillus*	FE	SE	
Belding's savannah sparrow	*Passerculus sandwichensis beldingi*	-	SE	
Reptiles				
Western pond turtle	*Emys marmorata*	-	SSC	
Southern California legless lizard	*Anniella stebbinsi*	-	SSC	
Coast horned lizard	*Phrynosoma blainvillii*	-	SSC	
Fish				
Santa Ana sucker	*Catostomus santaanae*	FT	-	
Tidewater goby	*Eucyclogobius newberryi*	FE	SSC	
Invertebrates				
Sandy beach tiger beetle	*Cicindela hirticollis gravida*	-	-	
Globose dune beetle	*Coelus globosus*	-	-	
Crotch bumble bee	*Bombus crotchii*	-	-	
Monarch - california overwintering populati	*Danaus plexippus pop.1*	-	-	
Mimic tryonia (=California brackishwater sı	*Tryonia imitator*	-	-	

Notes:

[1]Federal Status:

- FE Federally listed endangered
- FT Federally listed threatened
- FPE Federally proposed (endangered)
- FPT Federally proposed (threatened)
- FC Federal candidate

[2]State Status:

- SE State listed as endangered
- ST State listed as threatened
- SR State listed as rare
- SCE State candidate for listing as endangered
- SCT State candidate for listing as threatened
- SSC CDFW Species of Special Concern

[3]California Native Plant Society (CNPS) List:

- 1A Presumed extinct in California, and rare or extinct elsewhere
- 1B Rare, threatened, or endangered in California and elsewhere
- 2A Presumed extinct California, but more common elsewhere
- 2B Rare, threatened, or endangered in California, but more common elsewhere
- 3 Plants about which more information is needed - Review List
- 4 Plants of limited distribution - Watch List

Source:
CDFW Natural Diversity Database Rarefind, 2018
Based on Five USGS 7.5' Quadrangle Query

Table 19
Soil Screening Levels
for the High School
No. 8

Parameter	Soil Screening Levels (mg/kg)				Soil Gas (µg/L) Screening Levels	Source
	Plant	Soil Invert.	Avian	Mammal		
4,4'-DDD	-	-	0.093	0.063	-	Eco-SSL
4,4'-DDE	-	-	0.093	0.063	-	Eco-SSL
4,4'-DDT	-	-	0.093	0.063	-	Eco-SSL
alpha-Chlordane	2.2	0.17	0.28	0.27	-	US EPA Reg 4
gamma-Chlordane	2.2	0.17	2.3	2.2	-	US EPA Reg 4
Dieldrin	-	-	0.022	0.0049	-	Eco-SSL
Toxaphene	-	0.38	4.1	5.9	-	US EPA Reg 4
Phenanthrene	-	5.5	-	10	-	Eco-SSL
Fluoranthene	-	10	-	22	-	Eco-SSL
Toluene	-	-	-	-	1040	US EPA Reg 5
Naphthalene	-	-	-	-	80.1	US EPA Reg 5

Table 20
Screening Hazard Quotients
for COPECs at the
High School No. 8

Parameter		Units	EPC	Screening Criterion	HQ
Chlordane(Total)		mg/kg	22.66	0.17	133.29
Chlordane(alpha)		mg/kg	8.75	0.17	51.47
Chlordane(gamma)		mg/kg	8.956	0.17	52.68
4,4'-DDD		mg/kg	38.81	0.063	616.03
4,4'-DDE		mg/kg	336.4	0.063	5,339.68
4,4'-DDT		mg/kg	395.4	0.063	6,276.19
Dieldrin		mg/kg	13	0.0049	2,653.06
Toxaphene		mg/kg	1496	0.38	3,936.84
Phenanthrene		mg/kg	0.0117	5.5	0.0021
Fluoranthene		mg/kg	0.01	10	0.0010
Toluene		µg/L	0.0434	1040	0.0000
Naphthalene		µg/L	0.02	80.1	0.0002

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A QUALITY ASSURANCE PROJECT PLAN

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Job No. 38186

Quality Assurance Project Plan for Preliminary Environmental Site Assessment, High School No. 8 APN 214-002-059 on North Rose Avenue Oxnard, California

Prepared for:

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Assistant Superintendent Business Services
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August 10, 2018

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1.0 INTRODUCTION/BACKGROUND

This Quality Assurance Project Plan (QAPP) has been prepared by Tetra Tech, Inc. (Tetra Tech) on behalf of the Oxnard Union High School District (School District) to address quality assurance (QA) and quality control (QC) policies associated with the collection of environmental data at the proposed Measure T School Site, located in Santa Maria, California (hereinafter referred to as the Site). Together with the *Technical Memorandum Field Sampling Plan Proposed High School No. 8 Site APN 214-002-059 on North Rose Avenue, Oxnard, California 93030* (Tetra Tech 2018b) (FSP), this QAPP presents the plan for sampling and analysis as part of the Preliminary Environmental Assessment (PEA) performed under the direction of the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC). U.S. Environmental Protection Agency (U.S. EPA) policy requires a QAPP for all environmental data collection projects mandated or supported by the U.S. EPA through regulations or other formalized means (U.S. EPA 1998a). The purpose of this QAPP is to identify the methods to establish technical accuracy, precision, and validity of data that are generated at the site.

The sampling program is formally described in the FSP. This QAPP contains general and specific details regarding field sampling, laboratory, and analytical procedures that apply to activities described in the FSP. It provides field and laboratory personnel with instructions regarding activities to be performed before, during, and after field investigations. These instructions will insure that data collected for use in project decisions will be of the type and quality needed and expected for their intended purpose.

Guidelines followed in the preparation of this QAPP are described in *EPA Requirements for Quality Assurance Plans for Environmental Data Operations, External Review Draft Final, EPA QA/R-5* (U.S. EPA 1998a) and *EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5* (U.S. EPA 1998b). Other documents that have been referenced in this plan include *Guidance for the Data Quality Objectives Process, EPA QA/G-4* (U.S. EPA 1994a), *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (U.S. EPA 1996), *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994, Revised 2015), *Interim Guidance for sampling Agricultural Properties (Third Revision)*(DTSC 2008), and the *Advisory – Active Soil Gas Investigations* (Cal/EPA, DTSC, and Los Angeles Regional Water Quality Control Board [LARWQCB] 2015).

1.1 PROJECT HISTORY AND OBJECTIVES

The Site is located in the Oxnard Oil Field and is currently being used for agricultural production. The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California. The review of historical aerial photographs and maps, and interviews with the current owner, indicate the Site and adjacent areas have been used for agricultural production (row crops) since at least 1869. The Site is located in an area that is developed for commercial, residential, park, and agricultural land use. The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas. The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue.

High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site. A more complete description of the historical land use of the Site and surrounding area is provided in the High School No. 8 Phase I ESA (Tetra Tech 2018a).

Based on Tetra Tech's background research for the Site in the High School No. 8 Phase I ESA (Tetra Tech 2018a) and the discussion during the July 25, 2018 PEA scoping meeting between DTSC, OUHSD and Tetra Tech, the following six RECs require assessment:

1. Potential toxic soil gas from potential formation leakage from the Oxnard Oil Field;

2. Potential residual organochlorine pesticides (OCPs), arsenic, semivolatile organic compounds (SVOCs), polyaromatic hydrocarbons (PAHs), and diesel (C_{13}-C_{22} carbon range) (THPd) and heavy oil range total petroleum hydrocarbons (C_{23}-C_{40} carbon range) (TPHmo) collectively known as diesel extended range TPH (TPHde) (C_{13}-C_{40} carbon range) in soil from fuel oil in smudge pots that were formerly used for frost abatement as part of the agricultural production activities at the Site;

3. Potential impacts to shallow soil, soil gas, and groundwater in the area of the Site adjacent to the Maulhardt Ranch farm yard and residential areas from above ground storage tanks (ASTs) and underground storage tanks (USTs) formerly used for the storage of motor fuel;

4. Potentially hazardous substances and petroleum products that contained volatile organic compounds (VOCs) and C_4-C_{12} carbon range gasoline range total petroleum hydrocarbons (TPHg) have been used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area;

5. Potential polychlorinated biphenyl (PCB) soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol; and

6. Hazardous pipelines identified within 1,500 feet of the Site.

The data collected as part of this PEA will be used to assess the relative threat associated with any found releases of hazardous substances using the accepted methods for evaluating human and ecological risks. The field sampling program has been designed to provide sufficient data through adequate numbers of samples, a comprehensive analytical program, and proper QC procedures.

2.0 PROJECT DESCRIPTION

This section presents information concerning the proposed sampling activities, selected analytical parameters, data objectives, and the resulting project decisions. The FSP (Tetra Tech 2018b) provides specifications for field activities.

2.1 ANALYTICAL SCOPE

The planned sampling effort includes the sampling and analysis of surface and subsurface soils for OCPs, arsenic, SVOCs, PAHs, PCBs, diesel and heavy hydrocarbon range total petroleum hydrocarbons (TPHde), VOCs, and gasoline and light hydrocarbon range total petroleum hydrocarbons (TPHg). Sampling and analysis of soil gas will be performed for VOCs, hydrogen sulfide (H_2S), methane, and fixed gases. A detailed plan of this investigation is provided in the FSP (Tetra Tech 2018b), and includes specified numbers and locations of samples to be collected. The FSP also includes specific procedures for use in collecting samples from the designated locations. Samples will be collected in accordance with methods presented in the FSP. Matrices to be sampled and analytical methods to be used are summarized below.

- Soil samples will be analyzed for OCPs via U.S. EPA method SW8081A.
- Soil samples will be analyzed for arsenic via U.S. EPA method SW6010B/ SW7471A.
- Soil samples will be analyzed for SVOCs via U.S. EPA method SW8260B.
- Soil samples will be analyzed for PAHs via U.S. EPA method SW8310.
- Soil samples will be analyzed for PCBs via U.S. EPA method SW8082.
- Soil samples will be analyzed for TPHg and TPHde via U.S. EPA method SW8015B modified for C3–40 carbon range characterization.
- Soil and groundwater samples will be analyzed for VOCs via U.S. EPA method SW8260B.
- Soil and groundwater samples will be analyzed for gasoline TPHg via U.S. EPA method 8015B.
- Soil gas samples will be analyzed in an onsite mobile laboratory for VOCs via U.S. EPA method SW8260B.
- Soil gas samples will be analyzed onsite mobile laboratory for methane via U.S. EPA method 8015M, for H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument.
- The soil gas samples will also be analyzed at A&R's stationary laboratory in Ontario, California for the fixed gases carbon dioxide, oxygen, nitrogen, and carbon monoxide using ASTM Method D-1946.

The soil samples in which TPHg and/or TPHde are detected will also be analyzed for extractable petroleum hydrocarbons (EPH) by Massachusetts Department of Environmental Protection Method in accordance with the recommendation in the PEA Guidance Manual (DTSC 2015) for performing simplified risk exposure analysis for TPH. Sample volume will be collected during the mobilization and archived with the laboratory pending review of TPH sample results.

American Environmental Testing Laboratory, Inc. (AETL) in Burbank, California has been selected to provide analytical services for soil samples. AETLs current Method Detection Limits (MDLs) and Method Reporting Levels (MRLs) for analytes to be assessed during this PEA are provided in Table A-1.

A & R Laboratories, Inc (A&R) in Ontario California has been selected to perform the soil gas sample collection and analysis for this project. The soil gas sample collection and analyses will be performed in accordance with the Cal/EPA, DTSC, and LARWQCB *Advisory – Active Soil Gas Investigations* (Cal/EPA, DTSC, and LARWQCB 2015).

A&R will analyze soil gas samples on-site for methane via EPA method 8015B, VOCs via EPA method 82060B, and TPHG via LUFT GCMS, and for H_2S using a Jerome H_2S Analyzer Model 631-X hand held portable gas analyzer instrument. The Jerome H_2S Analyzer Model 631-X will be calibrated in the field in accordance with the manufacturer's specifications before use.

A&R will collect soil gas samples for off-site analysis at A&R's stationary laboratory in Ontario, California for the fixed gases carbon dioxide, oxygen, nitrogen, and carbon monoxide using ASTM Method D-1946.

The method reporting limits for soil gas analytical methods are provided in Table A-2.

2.2 DATA USE

It is intended that data collected through implementation of this QAPP will satisfy federal, state, and local data quality requirements. These data will be used to characterize the nature and extent of any contamination, support risk assessment, support the evaluation of corrective/remedial action if warranted, or assist in determination of additional actions. If results from the risk screening evaluations indicate no risks of exposure with respect to the proposed use of the property, then the School District will use the data to support a No Further Action decision by DTSC, and the proposed school development may continue without modification. If the evaluation indicates unacceptable risks, then the data will be used by the School District to determine appropriate further action.

3.0 PROJECT ORGANIZATION

This section provides a description of the organizational structure and responsibilities of the individual positions for this project. This description defines the lines of communication and identifies key personnel assigned to various activities for the project.

3.1 REGULATORY AGENCY

Mr. Aslam Shareef, will act as DTSC's Project Manager and provide regulatory oversight for the project. Mr. Shareef's responsibilities will include reviewing and approving work plans, work activities, and reports for the duration of the project. Mr. Shareef will provide direction based on DTSC policy and environmental objectives.

3.2 SANTA MARIA-BONITA SCHOOL DISTRICT

Mr. Jeff Weinstein is the Assistant Superintendent for Business Services for the School District. The School District has agreed to seek the review and approval of the DTSC on environmental matters relating to the selection of sites for new educational facilities. Mr. Weinstein will be responsible for the directional decisions, as well as budget control, for work conducted on behalf of the School District. Mr. Weinstein, or designee, may perform document review of related work plans, reports, and drawings for activities associated with this project.

3.3 TETRA TECH

The investigation contractor has responsibility for assigned phases of investigation and reporting. Together the management team (Technical Director, Project Manager, and Field Managers) will be responsible for the technical planning and implementation of the work prescribed in FSP. The QA staff has responsibility for effective planning, verification, and management of QA activities associated with the assigned project.

Mr. Randy Westhaus is the Tetra Tech California Schools Director. Mr. Westhaus has the authority to commit the necessary resources of Tetra Tech to ensure timely completion of project tasks. His responsibilities include strategy development, budget control, and document review.

Mr. James R. Steele is the Tetra Tech Project Manager for the investigation. Mr. Steele will serve as the primary contact for the School District. He is responsible for implementing the described field program. As Project Manager, Mr. Steele will provide day-to-day management and tracking of the project schedule and budget. Other responsibilities include coordination and preparation of the required reports, and assignment of technical responsibilities to appropriate personnel or subcontractors.

Mr. Jason Dane is the Tetra Tech Field Manager and Site Safety Officer. Mr. Morse will be responsible for the day-to-day coordination of field activities under the direction of the Project Manager. Other responsibilities include coordination of subcontractors and field crews to ensure that field activities conform to the specifications presented in the FSP and Health and Safety Plan.

Mr. Steele is the Tetra Tech QA Manager. Mr. Steele will be responsible for the QA and QC aspects of the project. It is the responsibility of the QA Manager to ensure that all required QA/QC protocols are met in the field and laboratory. Mr. Steele will also provide oversight of related data validation activities.

Mr. Mathew Horrigan of Tetra Tech, is the project's Risk Assessment Coordinator. Mr. Horrigan will compile the necessary data for determination of human and ecological health risk assessment. Mr. Horrigan will perform her tasks under the direction of the Project Manager.

3.4 LABORATORY

The primary laboratory for soil sample analyses will be AETL. AETL will perform off-site analytical testing for soil samples collected for this investigation at their laboratory in Burbank, California. A&R will perform laboratory analyses of soil-gas samples with an on-site field instruments and at their stationary laboratory in Ontario, California. Both of the laboratory's project managers will report to the Tetra Tech Field Manager or QA Manager on all aspects of the sample analyses. In addition, the Tetra Tech QA Manager will be advised of any matters related to data quality during the course of the investigation. The laboratories will conform to the QA and QC procedures outlined in their standard operating procedures (SOPs) and QA manuals (Attachments A and B).

4.0 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) have been specified for each data collection activity, and the work will be conducted and documented so the data collected are of sufficient quality for their intended use (U.S. EPA 1998a, 1998b). DQOs specify the data type, quality, quantity, and uses needed to make decisions, and are the basis for designing data collection activities. The DQOs have been used to design the data collection activities presented in the FSP. The DQOs for the project are discussed in the following sections.

4.1 DATA QUALITY OBJECTIVE PROCESS

The project DQOs developed specifically for the planned sampling and analysis program have been determined based on U.S. EPA's seven-step DQO process (U.S. EPA 1994a). The Project Manager will evaluate the project DQOs to determine if the quantitative and qualitative needs of the sampling and analysis program have been met. The project definition associated with each step of the DQO process can be summarized as follows:

State the Problem: The purpose of the sampling program is to determine if the site is acceptable for an elementary school.

Identify the Decision: The data obtained from the sampling and testing activities will be used to evaluate whether historical uses of the Site have resulted in hazardous substance releases. The data will be further evaluated to determine the extent to which any found contamination will result in risk of exposure. The data will be compiled and used to assess the relative threat associated with any found contamination through a screening risk evaluation. Based on the calculation of human health and ecological risks for the site, the suitability of the property for its intended development/use will be determined.

Identify Inputs to the Decision: Inputs to the decision will include results of analytical testing of soil samples and soil gas samples collected from selected locations on the Site. Each of these matrices will be tested for the specified analytes listed in Section 2.0.

Define the Study Boundaries: The boundaries of the field sampling and analysis program will be the perimeter of the Site as detailed in the FSP (Tetra Tech 2018b).

Develop a Decision Rule: Decisions will be based upon laboratory results for the target constituents presented in Tables A-1, A-2, and A-3 for each matrix tested. If no valid detectable concentrations of target compounds are reported for the given samples, then a decision will be made that the Site is fully characterized with respect to the compounds tested and no further sampling will be required as part of this PEA. If target constituents are detected in the samples tested, then the data will be compiled for use in calculating the human health and ecological risk of exposure. The results of the risk evaluation will be used by the School District to request a No Further Action decision from DTSC, or to guide further action as warranted.

Specify Limits on Decision Error: Data are determined to be valid if the specified limits on precision, accuracy, representativeness, comparability, and completeness are achieved. The results of any detected target constituents will be considered in evaluating the need for additional sampling of soil and/or soil gas, and assessing the necessity for reducing any risks posed by the potential contamination.

Optimize the Design: The field sampling program has been designed to provide the type and quantity of data needed to satisfy each of the aforementioned objectives. The FSP provides the details of the data

collection activities, including the number of samples, sampling locations, and sampling techniques. The quality of the data will be assessed through the procedures described in this QAPP.

4.2 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY, AND COMPLETENESS

The basis for assessing the elements of data quality is discussed in the following subsections. In the absence of laboratory-specific precision and accuracy limits, the QC limits listed in this section must be met.

4.2.1 Precision

Precision measures the reproducibility of repetitive measurements. It is strictly defined as the degree of mutual agreement among independent measurements as the result of repeated application of the sample process under similar conditions.

Analytical precision is a measurement of the variability associated with duplicate or replicate analyses of the same sample in the laboratory, and is determined by analysis of laboratory quality control samples, such as duplicate control samples and laboratory duplicates. If the variability of results from the specified control samples are comparable within established control limits, then precision is within limits.

Total precision is a measurement of the variability associated with the entire sampling and analytical process. It is determined by analysis of duplicate or replicate field samples, and measures variability introduced by both the laboratory and field operations. Field duplicate samples are analyzed to assess field and analytical precision.

Duplicate results are assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeds the statistically determined control limit, data will be qualified as described in the applicable validation procedure. If the RPD between primary and duplicate field samples exceeds 40 percent for soil or soil gas, data will be qualified as described in the applicable validation procedure. The RPD will be calculated as follows:

$$\%RPD = 100 \times \frac{X_2 - X_1}{(X_2 + X_1)/2}$$

where X_2 is the larger of the two observed values, and X_1 is the smaller of the two observed values.

4.2.2 Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systematic error. It reflects the total error associated with a measurement. A measurement is accurate when the value reported is within a degree of agreement with the true value or known concentration of the spike or standard.

Laboratory control samples (LCSs), surrogate standards, matrix spikes (MS), and initial and continuing calibrations of instruments will assess accuracy of laboratory analyses. Laboratory accuracy is expressed as the percent recovery (%R). Accuracy limits are statistically generated by the laboratory or required by specified EPA methods. Current laboratory limits are provided in Attachment A for LCSs, surrogates,

and matrix spikes. If the percent recovery is determined to be outside of acceptance criteria, data will be qualified as described in Section 8. The formula for percent recovery is:

$$\%R = 100 \times \frac{X_S - X}{T}$$

where X_s is the measured value of the spiked sample, X is the measured value of the unspiked sample, and T is the true value of the spike solution added.

4.2.3 Representativeness

Representativeness is the degree to which data accurately and precisely represent selected characteristics of the media sampled. Representativeness of data collection is addressed by careful preparation of sampling and analysis programs. This QAPP, together with the FSP, address representativeness by specifying sufficient and proper numbers and locations of samples; incorporating appropriate sampling methodologies; specifying proper sample collection techniques and decontamination procedures; selecting appropriate laboratory methods to prepare and analyze soil and soil gas samples; and establishing proper field and laboratory QA/QC procedures.

4.2.4 Completeness

Completeness is the amount of valid data obtained compared to the amount that was expected under ideal conditions. The number of valid results divided by the number of possible results, expressed as a percentage determines the completeness of the data set. The objective for completeness is to recover at least 90 percent of the planned data to support field efforts. For background samples, no less than 100 percent completeness of the planned data set will be acceptable. The formula for completeness is:

$$\%Completeness = 100 \times \frac{N_V}{N_E}$$

where N_V is the number of valid results and N_E is the number of expected results.

4.2.5 Comparability

Comparability is an expression of confidence with which one data set can be compared to another. The objective of comparability is to ensure that data developed during the investigation are comparable to site knowledge and adequately address applicable criteria or standards established by the U.S. EPA and California Department of Health Services (CADOHS). This QAPP addresses comparability by specifying laboratory methods that are consistent with the current standards of practice as approved by the U.S. EPA and CADOHS. Field methods are discussed in the FSP (Tetra Tech 2018b).

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5.0 QUALITY CONTROL ELEMENTS

This section presents QC requirements relevant to analysis of environmental samples that will be followed during all project analytical activities. The purpose of the QC program is to produce data of known quality that satisfy the project objectives and that meet or exceed the requirements of the standard methods of analysis. This program provides a mechanism for ongoing control and evaluation of data quality measurements through the use of QC materials.

5.1 QUALITY CONTROL PROCEDURES

The chemical data to be collected for this effort will be used to determine that the extent of contamination is properly evaluated. As such, it is critical that the chemical data be reliable and of the highest quality. Consequently, strict QA/QC procedures will be adhered to. These procedures include:

- Adherence to strict protocols for field sampling and decontamination procedures;
- Collection and laboratory analysis of appropriate field blanks to monitor for contamination of samples in the field or the laboratory;
- Collection and laboratory analysis of matrix spike, matrix spike duplicate, and blind split samples to evaluate analytical precision and accuracy; and
- Attainment of completeness goals.

5.1.1 Equipment Decontamination

Non-dedicated equipment will be decontaminated before and after each sample is collected. The equipment will be washed in a non-phosphate detergent and potable water, rinsed in potable water, and then double rinsed in distilled water. All decontaminated equipment will be allowed to air dry or be dried with clean paper towels before being used again. A description of the specific methodologies to be followed to maximize proper decontamination of non-dedicated sampling equipment is provided in the FSP.

5.1.2 Standards

Standards used for calibration or to prepare samples will be certified by National Institute of Standards and Technology (NIST), U.S. EPA, or other equivalent source. The standards will be current. The expiration date will be established by the manufacturer, or based on chemical stability, the possibility of contamination, and environmental and storage conditions. Standards will be labeled with expiration dates, and will reference the primary standard sources if applicable. Expired standards will be discarded.

5.1.3 Supplies

All supplies will be inspected prior to their use in the field or laboratory. The descriptions for sample collection and analysis contained in the methods will be used as a guideline for establishing the acceptance criteria for supplies. A current inventory and appropriate storage system for these materials will assure their integrity prior to use. Efficiency and purity of supplies will be monitored through the use of standards and blank samples.

5.1.4 Holding Time Compliance

Sample preparation and analysis will be completed within the required method holding time (Table A-4). Holding time begins at the time of sample collection. If holding times are exceeded, and the analyses are performed, the associated results will be qualified as described in the applicable validation procedure. The following definitions of extraction and analysis compliance are used to assess holding times:

- Preparation or extraction completion: completion of the sample preparation process as described in the applicable method, prior to any necessary extract cleanup.

- Analysis completion: completion of all analytical runs, including dilutions, second-column confirmations, and any required re-analyses.

5.1.5 Preventative Maintenance

The Tetra Tech Field Manager is responsible for documenting the maintenance of all field equipment as prescribed in the manufacturer's specifications. Trained Tetra Tech personnel will perform scheduled maintenance. Procedures specific to the calibration, use, and maintenance of field equipment are presented in the FSP. The analytical laboratory is responsible for all analytical equipment calibration and maintenance as described in their laboratory QA Plan. Subcontractors are responsible for maintenance of all equipment needed to carry out subcontracted duties.

5.2 QA/QC MONITORING COMPONENTS

The purpose of this QA/QC program is to produce data of known quality that satisfy the project objectives and that meet or exceed the requirements of the standard methods of analysis. This program provides a mechanism for ongoing control and evaluation of data quality measurements through the use of QA/QC monitoring components. The QA/QC monitoring components discussed below will be utilized as part of the overall QA/QC program.

5.2.1 Field Equipment Blanks

A field equipment blank is a sample that is prepared in the field by pouring de-ionized, distilled water into cleaned sampling equipment. The water is then collected and analyzed as a sample. The field equipment blank gives an indication of contamination from field procedures (e.g., improperly cleaned sampling equipment, cross-contamination). Field equipment blanks will be collected as warranted when non-dedicated equipment is used. The field equipment blanks will be analyzed using the same methods requested for the associated primary samples.

5.2.2 Trip Blanks

The primary purpose of trip blanks is to detect additional sources of contamination that could potentially influence contaminant values reported in field samples, both quantitatively and qualitatively. Trip blanks serve as a mechanism of control for sample bottle preparation, blank water quality, sample handling, and potential cross-contamination during sample transport. They are submitted to the laboratory for VOC analysis.

The trip blank consists of a VOC sample vial filled at the laboratory with American Society for Testing and Materials (ASTM) Type II reagent grade water. The trip blank travels to the site with the empty sample bottles and returns from the site with the collected field samples in an effort to simulate sample-

handling conditions. One trip blank will be included in each shipping container transporting samples for VOC analysis. The following are potential sources of contamination in trip blanks:

- Sample containers;
- Cross-contamination during shipment;
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory; and
- Laboratory reagents used in analytical procedures.

When a trip blank is identified as contaminated, the appropriate validation flag, as described in the applicable validation procedure, will be applied to the associated sample results.

The temperature of the trip blanks during storage will be maintained at 4 ±2 degrees Celsius. The holding time for analysis of trip blanks begins when the first associated field sample is collected.

5.2.3 Sample Receiving Temperature.

Temperature of the samples will be recorded upon arrival at the laboratory. The temperatures will be compared to the recommended preservation temperatures specified in Table A-4. If the temperature deviates from the recommended preservation temperatures, professional judgment will be used to determine if the deviation warrants qualification of the data.

5.2.4 Laboratory or Method Blanks

A laboratory blank or method blank consists of reagent grade (analyte free) water that is extracted by the laboratory and analyzed as a sample. Analysis of the reagent blank indicates potential sources of contamination from laboratory procedures (e.g., contaminated reagents, improperly cleaned laboratory equipment, or persistent contamination due to presence of certain compounds in the ambient laboratory air). A reagent blank will be analyzed at least once each day for each method utilized by the laboratory for that day.

5.2.5 Laboratory Control Samples

The LCS consists of reagent grade water spiked with known concentrations of target analytes and is used to determine if the analytical system is in control. Results from the LCS are considered free of any matrix effects and analyte recoveries outside control limits are used to qualify data.

5.2.6 Surrogates

For many methods, surrogate compounds are added to every sample at the beginning of sample preparation and are used to monitor the analytical process and give information concerning possible matrix effects. Surrogate recoveries are the single most useful QC entity for evaluating environmental analytical data. The ubiquitous use of surrogates in analytical methods has afforded a large database of results from which useful correlated information can be obtained. Surrogates are chemically similar to target analytes and their recovery within control limits indicates the process is in control. Surrogates are the primary indicators of matrix effects.

5.2.7 Second Column Confirmation.

When specified by the relevant analytical method, the presence of analytes detected on the primary column will be confirmed by detection on the secondary column. Analytes that cannot be confirmed on the second column will be qualified and considered not-detected.

5.2.8 Matrix Spike Samples

Matrix spikes are analyzed by the laboratory to evaluate the efficiency of the sample extraction and analysis procedures, and are necessary because matrix interference may have a widely varying impact on the accuracy and precision of the extraction and analysis. Matrix spikes are performed in duplicate in order to evaluate the precision of the procedures as well as the accuracy. The MS/MSD is prepared by the addition of known quantities of target compounds to a field sample. The spiked sample is then extracted and analyzed like normal field samples. The results of the analysis are compared with the known additions and the percent recovery is calculated giving an evaluation of the accuracy of the extraction and analysis procedures. MS/MSD recoveries are reviewed to check that they are within an acceptable range; however, the acceptable ranges vary widely with both sample matrix and analytical method. Precision objectives (represented by agreement between MS and MSD recoveries) and accuracy objectives (represented by MS and MSD recovery results) are based on statistically generated limits established annually by the analytical laboratory. It is important to note that these objectives are to be viewed as goals, not as criteria. MS/MSDs will be analyzed by the laboratory at a frequency of at least one per twenty, or 5 percent of the primary field samples; moreover, a minimum of one MS/MSD pair of samples will be prepared for each soil type encountered at the Site.

5.2.9 Field Duplicate Samples

Field duplicate samples will be collected and analyzed to evaluate sampling and analytical precision. Field duplicates are collected and analyzed in the same manner as the primary samples. Agreement between duplicate sample results will indicate good sampling and analytical precision. Field duplicates will be collected at a frequency of 10 percent of the primary samples collected. The duplicate samples will be analyzed for all laboratory analyses requested for the primary samples. The precision goal for field duplicate analyses will be an RPD of 40 or less.

5.2.10 Internal Standards

Internal standards are measured amounts of method-specified compounds added after preparation, or extraction, of a sample. Internal standards are added to field samples, control samples, and blanks in accordance with method requirements to identify column injection losses, purging losses, or viscosity effects.

Acceptance limits for internal standard recoveries are set forth in the applicable method. If the internal standard recovery falls outside of acceptance criteria, the instrument will be checked for malfunction and the corrective action will be in accordance with the method and the laboratory's SOP (Attachment A).

5.2.11 Retention Time Windows

Retention time windows will be established as described in SW-846 method 8000B for applicable analyses of organic compounds. Retention time windows are used for qualitative identification of analytes and are calculated based on multiple, replicated analyses of a respective standard.

Retention times will be checked daily. Acceptance criteria for retention time windows are established in the referenced method. If the retention time falls outside the respective window, actions will be taken to correct the problem.

5.2.12 Instrument Calibration

Analytical instruments will be calibrated in accordance with the procedures specified in the applicable method. All analytes that are reported will be present in the initial and continuing calibrations, and these calibrations must meet the acceptance criteria specified in the reference method. Records of standard preparation and instrument calibration will be maintained. Records will unambiguously trace the preparation of standards and their use in calibration and quantitation of sample results. Calibration records will be traceable to standard materials as described in Section 5.1.2.

At the onset of analysis, instrument calibrations will be checked using all of the analytes of interest. This applies equally to multi-response analytes. At a minimum, calibration criteria will satisfy method requirements. Analyte concentrations can be determined with either calibration curves or response factors, as defined in the method. Guidance provided in SW-846 should be considered to determine appropriate evaluation procedures.

5.2.13 Performance Evaluation Samples

Double blind performance evaluation (PE) samples may be submitted to the analytical laboratory during any site investigation. These samples may be of soil or water matrix, and are used to assess the accuracy of analytical procedures employed for a given sample set. PE samples will be used if questionable data quality is suspected as determined during laboratory audits or data validation.

If used, double blind PE samples will be prepared by Environmental Resources Associates, or similar supplier, in sample containers similar to those for the project field samples and shipped from the field to the laboratory for analysis.

The project-specific PE samples will contain known concentrations of the analytes of interest. Laboratory results will be evaluated against the original Certificates of Analysis for precision and accuracy. PE samples may be submitted for analysis as part of the laboratory pre-qualification process, or as part of a given sampling event.

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6.0 SAMPLING PROCEDURES

The defensibility of data is dependent on the use of well-defined, accepted sampling procedures. This section describes the sampling and handling procedures that will be followed for each sampling event.

6.1 FIELD PROCEDURES

Collection of environmental samples of high integrity is important to the quality of chemical data to be generated. To this end, strict field procedures have been developed that will be used during the field investigation. These procedures are detailed in the FSP (Tetra Tech 2018b).

6.2 SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Table A-4 lists the required sample containers, preservatives, and recommended maximum holding times for samples. Sample containers provided by the laboratory will be purchased commercially from I-Chem, Eagle Pitcher, or other equivalent source.

6.3 SAMPLE HANDLING AND STORAGE

In the field, each sample container will be marked with the sample identification number, the analytical methods to be performed on the sample, and the date and time of sample collection. All sample containers will be wiped with paper towels and securely packed, in a cooler on ice, in preparation for delivery to the laboratory.

Upon receipt of the samples, the laboratory will immediately notify the Field Manager if conditions or problems are identified which require immediate resolution. Such conditions include container breakage, missing or improper chain-of-custody forms, exceeded holding times, missing or illegible sample labels, or temperature excursions.

6.4 SAMPLE CUSTODY

For each sample that is submitted to the laboratory for analysis, an entry will be made on a chain-of-custody form. The information to be recorded includes the sampling date and time, sample identification number, matrix type, requested analyses and methods, preservatives, and the sampler's name. Sampling team members will maintain custody of the samples until they are relinquished to laboratory personnel or a professional courier service. The chain-of-custody form will accompany the samples from the time of collection until they are received by the laboratory. Each party in possession of the samples (except the professional courier service) will sign the chain-of-custody form signifying receipt. The chain-of-custody form will be placed in a plastic bag and shipped with samples inside the cooler. After the samples, ice, and chain-of-custody forms are packed in the coolers, the cooler will be appropriately sealed before it is relinquished to the courier. A copy of the original completed chain-of-custody form will be provided by the laboratory along with the report of results. Upon receipt, the laboratory will inspect the condition of the sample containers and report the information on the chain-of-custody or similar form.

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7.0 ANALYTICAL PROCEDURES

The analytical methods used for this project are U.S. EPA approved methods and are listed in Table A-4. Specific analytical method procedures are detailed in the laboratories' SOPs and QA manual (Attachments A and B). Tetra Tech quality assurance staff may review these documents during laboratory audits to ensure that project specifications are met. Analytical methods to be used for the sample analyses are detailed in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, *SW-846*, 3rd Edition Updates III (U.S. EPA 1996). All guidelines and procedures specified in the analytical methods will be strictly adhered to. Deviations from those guidelines and procedures will be documented and immediately reported to the Tetra Tech Project Manager or QA Manager. If a deviation from the method renders the data unusable for its intended purpose, resampling and/or re-extraction and reanalysis may be required.

7.1 DETECTION LIMITS

Detection limits are required for all methods of quantitative analysis to evaluate each method's performance. Detection limits for any analytical procedures depend on the matrix of the sample being tested. The MDL is the minimum concentration of an analyte, or compound, that can be measured and reported with 99 percent confidence that the concentration is greater than zero. MDLs are established for each method, matrix, and analyte. MDLs are derived using the procedures described in 40 CFR 136 Appendix B (U.S. EPA 1990a). U.S. EPA requires that MDLs be established on an annual basis.

7.2 QUANTITATION LEVELS

All analytes have an established practical quantitation level (PQL), which is validated by having the level of the PQL included as one level in the multilevel calibration curve. Any concentrations reported at or above the PQL are considered quantitated data of known precision and accuracy, in contrast to concentrations reported below the PQL, which are considered estimated values. STL has set their reporting levels, presented in Table A-1, at a value equal to or greater than their PQLs.

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8.0 DATA REPORTING

This section presents reporting requirements relevant to the analysis data produced during this project.

8.1 FIELD DATA

Data measured by field instruments will be recorded in field notebooks, laptops, and/or on required field forms. Units of measure for field analyses are identified with the recorded measurement. The field data will be reviewed by the Tetra Tech Project Manager or Field Manager to evaluate completeness of the field records and appropriateness of the field methods employed. All field records will be retained in the project files.

8.2 LABORATORY DATA

Analytical data will contain the necessary sample results and quality control data to evaluate the data quality objectives defined for the project. Laboratory report packages will include the following data and summary forms:

- The original signed Chain-of-Custody form showing the date and time the sample was received.
- A cross-reference to relate field sample IDs to laboratory sample IDs.
- A cross-reference to relate applicable laboratory QC samples with associated field samples.
- A glossary defining the symbols and terms used in the laboratory report.
- Sample collection date, sample receiving temperature, sample extraction/preparation dates, and sample analysis dates.
- A list of the method detection limits and practical quantitation limits.
- Analysis data sheets for all field samples (including second column confirmations and all dilutions), blanks, MS/MSDs, and LCSs.
- Method blank summary reports that identify all related field samples, MS/MSDs, and LCSs.
- Surrogate compound recovery reports with control limits for all field samples, blanks, MS/MSDs, and LCSs.
- Matrix spike/matrix spike duplicate recovery reports with control limits.
- LCS recovery reports with control limits.
- A case narrative that discusses each QC element for each method and whether each QC element was acceptable or not and why. For any QC element that is outside acceptance criteria, the value and the criteria will be noted; corrective action taken will be described; and the impact to the data quality will be evaluated and discussed.

- Associated raw data and magnetic tape or equivalent upon request.

8.3 DATA VALIDATION

Data validation criteria are derived from the U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA 1994b and 1994c). The Functional Guidelines provide data validation criteria that can be applied to data generated for this investigation.

The laboratory data will be reviewed for compliance with the applicable method and the quality of the data reported. The following summarizes the areas of data validation:

- Data completeness;
- Holding times;
- Calibrations;
- Blanks;
- Laboratory control samples;
- Matrix spike/matrix spike duplicates;
- Surrogates/internal standards (as applicable);
- Field quality control samples; and
- Compound identification and quantification.

The application of data validation criteria is a function of project-specific DQOs. The QA/QC Manager will determine if the DQOs for the analytical data have been met.

The data validation procedures were designed to review each data set and identify biases inherent to the data and determine its usefulness. Data validation flags are applied to those sample results that fall outside of specified tolerance limits, and, therefore, did not meet the DQOs described in Section 4.0. Data validation flags to be used for this project are defined in the *National Functional Guidelines* (U.S. EPA 1994b, 1994c). Data validation flags will indicate if results are considered anomalous, estimated, or rejected. Only rejected data are considered unusable for decision-making purposes; however, other qualified data may require further verification.

A preliminary review of the data will be conducted to determine whether comprehensive data validation of all data points is required. Data validation will be documented in a manner consistent with the functional guidelines. The results of the data validation will be included in a Data Validation Memorandum. This documentation will be maintained by Tetra Tech in the project files.

9.0 PERFORMANCE AND SYSTEM AUDITS

Audit programs are established and directed by the Tetra Tech quality assurance staff to ensure that field and laboratory activities are performed in compliance with project controlling documents. This section describes responsibilities, requirements, and methods for scheduling, conducting, and documenting audits of field and laboratory activities.

9.1 FIELD AUDITS

Field audits focus on appropriateness of personnel assignments and expertise, availability of field equipment, adherence to project controlling documents for sample collection and identification, sample handling and transport, use of QA samples, chain of custody procedures, equipment decontamination, and documentation. Field audits are not required, but may be performed in the event significant discrepancies are identified that warrant evaluation of field practices.

9.2 LABORATORY AUDITS

Laboratory audits include reviews of sample handling procedures, internal sample tracking, SOPs, analytical data documentation, QA/QC protocols, and data reporting. Any selected mobile or offsite laboratory will be licensed by the State of California as a certified testing laboratory, and will participate in the WP/WS Performance Program for hazardous waste, wastewater, and drinking water analyses. Tetra Tech may conduct a scheduled audit to ensure the integrity of sample handling and processing by the laboratory.

9.3 DATA AUDITS

Data audits will be performed on analytical results received from the laboratories. These audits will be accomplished through the process of preliminary review and/or data validation as described in Section 8.3, or may involve a more detailed review of laboratory analytical results. Data audits require the laboratory to submit complete raw data files to Tetra Tech for validation. Tetra Tech chemists will perform a review of the data consistent with the level of effort described in the *National Functional Guidelines* (U.S. EPA 1994b, 1994c). This level of validation consists of a detailed review of sample data, including verification of data calculations for calibration and quality control samples to assess whether these data are consistent with method requirements. Upon request, the laboratory will make available all supporting documentation in a timely fashion.

9.4 SCHEDULING

Audits will be scheduled such that field and laboratory activities are adequately monitored, or in the event discrepancies are identified. The overall frequency of audits conducted for these activities will be based on the importance and duration of work, as well as significant changes in project scope or personnel.

9.5 REPORTS TO MANAGEMENT AND RESPONSIBILITIES

Upon completion of any audit, the auditor will submit to the Tetra Tech Project Manager and Field Manager a report or memorandum describing any problems or deficiencies identified during the audit. It is the responsibility of the Project Manager to determine if the deviations will result in any adverse effect on the project conclusions. If it is determined that corrective action is necessary, procedures outlined in Section 9.6 will be followed.

9.6 CORRECTIVE ACTION

Corrective actions will be initiated whenever data quality indicators suggest that DQOs have not been met. Corrective actions will begin with identifying the source of the problem. Potential problem sources include failure to adhere to method procedures, improper data reduction, equipment malfunctions, or systemic contamination. The first level of responsibility for identifying the problems and initiating corrective action lies with the analyst/field personnel. The second level of responsibility lies with any person reviewing the data. Corrective actions may include more intensive staff training, equipment repair followed by a more intensive preventative maintenance program, or removal of the source of systemic contamination. Once resolved, the corrective action procedure will be fully documented and, if DQOs were not met, the samples in question will be recollected and/or reanalyzed using a properly functioning system.

10.0 REFERENCES

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2008 *Interim Guidance for sampling Agricultural Properties (Third Revision)*. August 7.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2015 *Preliminary Endangerment Assessment Guidance Manual*. January 1994 (Revised October 2015).

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB)

2015 *Advisory – Active Soil Gas Investigations*. July.

Tetra Tech, Inc. (Tetra Tech)

2018a *Final Phase I Environmental Site Assessment, Proposed Oxnard High School No. 8, APN 214-002-059 on North Rose Avenue, Oxnard, California*. March 29.

Tetra Tech, Inc. (Tetra Tech)

2018b *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California*. July 27.

U.S. Environmental Protection Agency (U.S. EPA)

1990a *Code of Federal Regulations, Title 40 – Protection of Environment.* Office of the Federal Register. U.S. National Archives and Records Administration, Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)

1990b *Region 9 Laboratory Documentation Requirements for Data Validation*. Document Control No. 9QA-07-90. U.S. Environmental Protection Agency, Region 9. San Francisco, California.

U.S. Environmental Protection Agency (U.S. EPA)

1994a *Guidance for the Data Quality Objectives Process.* EPA QA/G-4. Office of Research and Development U.S. Environmental Protection Agency. Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)

1994b *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA540/R-94/013. Office of Emergency and Remedial Response. Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)

1994c *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. EPA540/R-94/012. Office of Emergency and Remedial Response. Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)

1996 *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846, Third Edition, Office of Solid Waste and Emergency Response U.S. Environmental Protection Agency. Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)
1998a *EPA Guidance for Quality Assurance Project Plans*. EPA QA/G-5. Office of Research and Development U.S. Environmental Protection Agency. Washington, D.C.

U.S. Environmental Protection Agency (U.S. EPA)
1998b *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, External Review Draft Final.* EPA QA/R-5. Washington, D.C.

TABLES

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Table A-1
Summary of Analytes and Detection Limits for Soil
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Total Petroleum Hydrocarbons Diesel Extended Range (TPHde) by Modified EPA 8015B										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 7 days* *Analysis: 40 days*							
TPH as Diesel (C_{13} to C_{22})	5	10	mg/Kg	75	125	20	NA	230	1	mg/Kg
TPH as Heavy Hydrocarbons (C_{23} to C_{40})	5	10	mg/Kg				NA	5,100	1	mg/Kg
Total TPH as Diesel and Heavy Hydrocarbons (C_{13} to C_{40})	5	10	mg/Kg				NA	5,100	1	mg/Kg
8015B surrogates										
Chlorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Total Petroleum Hydrocarbons Gasoline Range (TPHg)by Modified EPA 8015B										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
TPH as Gasoline and Light Hydrocarbons (C_4 to C_{12})	0.5	1	mg/Kg	75	125	20	NA	100	1	mg/Kg
8015B surrogates										
4-Bromofluorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Volatile Organic Compounds by EPA 8260B										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,1,1,2-Tetrachloroethane	5	10	µg/Kg				2,000	5,500	2	µg/Kg
1,1,1-Trichloroethane	5	10	µg/Kg	75	125		NA	1,700,000	2	µg/Kg
1,1,2,2-Tetrachloroethane	5	10	µg/Kg				600	1,600,000	2	µg/Kg
1,1,2-Trichloroethane	5	10	µg/Kg				NA	1,100	3	µg/Kg
1,1-Dichloroethane	5	10	µg/Kg				3,600	1,600,000	2	µg/Kg
1,1-Dichloroethene	5	10	µg/Kg	75	125	20	NA	230,000	3	µg/Kg
1,1-Dichloropropene	5	10	µg/Kg				NA	NA	3	µg/Kg
1,2,3-Trichlorobenzene	5	10	µg/Kg				NA	63,000	2	µg/Kg
1,2,4-Trichlorobenzene	5	10	µg/Kg				24,000.00	NA	3	µg/Kg
1,2,4-Trimethylbenzene	5	10	µg/Kg				NA	300	3	µg/Kg

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ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,2-Dibromoethane	5	10	µg/Kg				36	NA	3	µg/Kg
1,2-Dichlorobenzene	5	10	µg/Kg				NA	1,800,000	3	µg/Kg
1,2-Dichloroethane	5	10	µg/Kg				460.00	NA	3	µg/Kg
1,2-Dichloropropane	5	10	µg/Kg				2,500	NA	3	µg/Kg
1,3,5-Trimethylbenzene	5	10	µg/Kg				270,000	NA	3	µg/Kg
1,3-Dichlorobenzene	5	10	µg/Kg				NA	NA		
1,3-Dichloropropane	5	10	µg/Kg				NA	420,000	2	µg/Kg
1,4-Dichlorobenzene	5	10	µg/Kg				206,000	NA	3	µg/Kg
2,2-Dichloropropane	5	10	µg/Kg				NA	NA	3	µg/Kg
2-Butanone (Methylethyl kethone [MEK])	25	50	µg/Kg				NA	27,000,000	3	µg/Kg
2-Chloroethyl Vinylether	50	50	µg/Kg				NA	NA		
2-Chlorotoluene	5	10	µg/Kg				NA	480,000	2	µg/Kg
2-Hexanone	25	50	µg/Kg				NA	200,000	3	µg/Kg
4-Chlorotoluene	5	10	µg/Kg				NA	440,000	2	µg/Kg
4-Methyl-2-Pentanone	25	50	µg/Kg				NA	54,000,000	3	µg/Kg
Acetone	25	50	µg/Kg				NA	61,000,000	3	µg/Kg
Benzene	2	10	µg/Kg	75	125	20	330	11,000	2	µg/Kg
Bromobenzene	5	10	µg/Kg				NA	290,000	3	µg/Kg
Bromochloromethane	5	10	µg/Kg				NA	150,000	3	µg/Kg
Bromodichloromethane	5	10	µg/Kg				3,000	280,000	2	µg/Kg
Bromoform	25	50	µg/Kg				20,000	1,600,000	2	µg/Kg
Bromomethane	15	30	µg/Kg				NA	6,800	3	µg/Kg
Carbon Disulfide	25	50	µg/Kg				NA	770,000	3	µg/Kg
Carbon Tetrachloride	5	10	µg/Kg				99	10,000	2	µg/Kg
Chlorobenzene	5	10	µg/Kg	75	125	20	NA	280,000	3	µg/Kg
Chloroethane	15	30	µg/Kg				NA	NA		
Chloroform	5	10	µg/Kg	75	125		320	NA	3	µg/Kg
Chloromethane	15	30	µg/Kg				NA	110,000	3	µg/Kg
cis-1,2-Dichloroethene	5	10	µg/Kg				NA	19,000	2	µg/Kg
cis-1,3-Dichloropropene	5	10	µg/Kg				NA	NA		
Dibromochloromethane	5	10	µg/Kg				8,300	NA	3	µg/Kg
Dibromomethane	5	10	µg/Kg				NA	24,000	3	µg/Kg
Dichlorodifluoromethane	15	30	µg/Kg				NA	NA		
Ethylbenzene	2	10	µg/Kg	75	125		NA	5,800	3	µg/Kg
Hexachlorobutadiene	5	10	µg/Kg				1,200	78,000	2	µg/Kg
Isopropylbenzene	5	10	µg/Kg				NA	NA		
Methylene Chloride	25	50	µg/Kg				1,900	350,000	2	µg/Kg

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ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap, Encor, pre-preserved 40ml vials X 4, SS Sleeve, or other.*			***Amount Required:*** *120 gr, or 5 gr X 4*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
MTBE	5	10	µg/Kg				47,000	NA	3	µg/Kg
n-Butylbenzene	5	10	µg/Kg				NA	1,200	2	µg/Kg
n- Propylbenzene	5	10	µg/Kg				NA	3,800,000	3	µg/Kg
Naphthalene	5	10	µg/Kg				3,800.00	NA	3	µg/Kg
p- Isopropyltoluene	5	10	µg/Kg				NA	NA		
sec-Butylbenzene	5	10	µg/Kg				NA	7,800,000	3	µg/Kg
Styrene	5	10	µg/Kg				NA	6,000,000	3	µg/Kg
tert-Butylbenzene	5	10	µg/Kg				NA	7,800,000	3	µg/Kg
Tetrachloroethene	5	10	µg/Kg				590	820,000	2	µg/Kg
Toluene	2	10	µg/Kg	75	125	20	NA	1,100,000	2	µg/Kg
trans-1,2-Dichloroethene	5	10	µg/Kg				NA	130,000	2	µg/Kg
trans-1,3-Dichloropropene	5	10	µg/Kg				NA	NA		
Trichloroethene	5	10	µg/Kg	75	125	20	94,000.00	NA	3	µg/Kg
Trichlorofluoromethane	5	10	µg/Kg				NA	1,200,000	2	µg/Kg
Vinyl Acetate	25	50	µg/Kg				NA	910,000	3	µg/Kg
o-xylene	2	10	µg/Kg	75	125		NA	650,000	3	µg/Kg
m,p-xylenes	2	20	µg/Kg	75	125		NA	580,000	3	µg/Kg
8260B surrogates										
Toluene-d8			µg/Kg	*75*	*125*		NA	NA		
4-Bromofluorobenzene			µg/Kg	*75*	*125*		NA	NA		
Dibromofluoromethane			µg/Kg	*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
TTLC Metals by Method 6010B/7471A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *6 months, and 28 days for Hg.*							
Antimony	1	5	mg/Kg	80	120	15	NA	31	3	mg/Kg
Arsenic	1	5	mg/Kg	80	120	15	NA	12.0	4	mg/Kg
Barium	2.5	5	mg/Kg	80	120	15	NA	15,000	3	mg/Kg
Beryllium	1.3	2.5	mg/Kg	80	120	15	1,600.00	15	2	mg/Kg
Cadmium	1.3	2.5	mg/Kg	80	120	15	2,100.00	5	2	mg/Kg
Chromium	2.5	5	mg/Kg	80	120	15	NA	36,000	2	mg/Kg
Cobalt	2.5	5	mg/Kg	80	120	15	NA	23	3	mg/Kg
Copper	2.5	5	mg/Kg	80	120	15	NA	3,100	3	mg/Kg
Lead	2.5	5	mg/Kg	80	120	15	NA	80	2	mg/Kg
Mercury by 7471A	0.1	0.2	mg/Kg	80	120	15	NA	1	2	mg/Kg

Table A-1
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ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
TTLC Metals by Method 6010B/7471A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *6 months, and 28 days for Hg.*							
Molybdenum	2.5	5	mg/Kg	80	120	15	NA	390	3	mg/Kg
Nickel	2.5	5	mg/Kg	80	120	15	15,000.00	490	2	mg/Kg
Selenium	1	5	mg/Kg	80	120	15	NA	390	3	mg/Kg
Silver	2.5	5	mg/Kg	80	120	15	NA	390	2	mg/Kg
Thallium	1	10	mg/Kg	80	120	15	NA	2	3	mg/Kg
Vanadium	2.5	5	mg/Kg	80	120	15	NA	390	2	mg/Kg
Zinc	2.5	5	mg/Kg	80	120	15	NA	23,000	3	mg/Kg
ANALYTE	**MDL**	**PQL**	**UNITS**	**LOWER CONTROL LIMIT %**	**UPPER CONTROL LIMIT %**	**RPD LIMIT**				
Semi-Volatile Organic Compounds by EPA 8270C										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
1,2,4-Trichlorobenzene	0.25	0.5	mg/Kg	38	107	20	24.00	NA	3	mg/Kg
1,2-Dichlorobenzene	0.25	0.5	mg/Kg				NA	1,800,000	3	mg/Kg
1,3-Dichlorobenzene	0.25	0.5	mg/Kg				NA	NA		
1,4-Dichlorobenzene	0.25	0.5	mg/Kg	28	104	20	2.6	NA	3	mg/Kg
2,4,5-Trichlorophenol	0.25	0.5	mg/Kg				NA	6,300	3	mg/Kg
2,4,6-Trichlorophenol	0.25	0.5	mg/Kg				7.5	63	2	mg/Kg
2,4-Dichlorophenol	0.25	0.5	mg/Kg				NA	190	3	mg/Kg
2,4-Dimethylphenol	0.25	0.5	mg/Kg				NA	1,300	3	mg/Kg
2,4-Dinitrophenol	0.25	0.5	mg/Kg				NA	130	3	mg/Kg
2,4-Dinitrotoluene	0.25	0.5	mg/Kg	28	89	20	1.7	NA	3	mg/Kg
2,6-Dinitrotoluene	0.25	0.5	mg/Kg				0.36	NA	3	mg/Kg
2-Chloronaphthalene	0.25	0.5	mg/Kg				NA	NA		
2-Chlorophenol	0.25	0.5	mg/Kg	25	102	20	NA	390	3	mg/Kg
2-Methylnaphthalene	0.25	0.5	mg/Kg				NA	NA		
2-Methylphenol	0.25	0.5	mg/Kg				NA	NA		
2-Nitroaniline	0.25	0.5	mg/Kg				NA	630	3	mg/Kg
2-Nitrophenol	0.25	0.5	mg/Kg				NA	NA		
3,3-Dichlorobenzidine	0.25	0.5	mg/Kg				1.2	1.2	2	mg/Kg
3-Methylphenol	0.25	0.5	mg/Kg				NA	NA		
3-Nitroaniline	0.25	0.5	mg/Kg				NA	NA		
4,6-Dinitro-2-methylphenol	0.25	0.5	mg/Kg				NA	NA		
4-Bromophenyl Phenyl Ether	0.25	0.5	mg/Kg				NA	NA		
4-Chloro-3-methylphenol	0.25	0.5	mg/Kg	40	99	20	NA	NA		
4-Chloroaniline	0.25	0.5	mg/Kg				NA	NA		

Table A-1
Summary of Analytes and Detection Limits for Soil
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Semi-Volatile Organic Compounds by EPA 8270C										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap* ***Amount Required:*** *120 gr*										
Preservation: *Cool, 4°C* ***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*										
4-Methylphenol	0.25	0.5	mg/Kg				NA	NA		
4-Nitroaniline	0.25	0.5	mg/Kg				27	NA	3	mg/Kg
4-Nitrophenol	0.25	0.5	mg/Kg	11	114	20	NA	NA		
Acenaphthene	0.25	0.5	mg/Kg	31	137	20	NA	3,600	3	mg/Kg
Acenaphthylene	0.25	0.5	mg/Kg				NA	NA		
Anthracene	0.25	0.5	mg/Kg				NA	18,000	3	mg/Kg
Benzo (a) anthracene	0.25	0.5	mg/Kg				1.10	NA	3	mg/Kg
Benzo (b) fluoranthene	0.25	0.5	mg/Kg				0.42	NA	3	mg/Kg
Benzo (g,h,i) perylene	0.25	0.5	mg/Kg				NA	NA		
Benzo (k) fluoranthene	0.25	0.5	mg/Kg				11.00	NA		mg/Kg
Benzoic Acid	0.25	0.5	mg/Kg				NA	250,000	3	mg/Kg
Benzyl Alcohol	0.25	0.5	mg/Kg				NA	6,300	3	mg/Kg
Bis-(2-chloroethoxy)methane	0.25	0.5	mg/Kg				NA	190	3	mg/Kg
Bis-(2-chloroisopropyl)ether	0.25	0.5	mg/Kg				NA	NA		
Bis-(2-ethylhexyl) Phthalate	0.25	0.5	mg/Kg				NA	NA		
Butyl Benzyl Phthalate	0.25	0.5	mg/Kg				NA	NA		
Chrysene	0.25	0.5	mg/Kg				110	NA	3	mg/Kg
Dibenzofuran	0.25	0.5	mg/Kg				NA	NA		
Diethyl Phthalate	0.25	0.5	mg/Kg				NA	51,000	3	mg/Kg
Dimethyl Phthalate	0.25	0.5	mg/Kg				NA	NA		
Di-n-butyl Phthalate	0.25	0.5	mg/Kg				NA	NA		
Di-n-octyl Phthalate	0.25	0.5	mg/Kg				NA	630	3	mg/Kg
Fluoranthene	0.25	0.5	mg/Kg				NA	2,400	3	mg/Kg
Fluorene	0.25	0.5	mg/Kg				NA	2,400	3	mg/Kg
Hexachlorobutadiene	0.25	0.5	mg/Kg				1.2	78	2	mg/Kg
Hexachlorocyclopentadiene	0.25	0.5	mg/Kg				NA	2	3	mg/Kg
Hexachloroethane	0.25	0.5	mg/Kg				1.8	NA	3	mg/Kg
Indeno-(1,2,3-cd) pyrene	0.25	0.5	mg/Kg				1.1	NA	3	mg/Kg
Isophorone	0.25	0.5	mg/Kg				570.00	NA	3	mg/Kg
Naphthalene	0.25	0.5	mg/Kg				3.80	NA	3	mg/Kg
Nitrobenzene	0.25	0.5	mg/Kg				5.10	NA	3	mg/Kg
N-Nitrosodiphenylamine	0.25	0.5	mg/Kg				110	NA	3	mg/Kg

Table A-1
Summary of Analytes and Detection Limits for Soil
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Semi-Volatile Organic Compounds by EPA 8270C										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
Phenanthrene	0.25	0.5	mg/Kg				NA	NA		
Phenol	0.25	0.5	mg/Kg	26	90	20	NA	19,000	3	mg/Kg
Pyrene	0.25	0.5	mg/Kg	35	142	20	NA	1,800	3	mg/Kg
8270C surrogates										
2-Fluorobiphenyl			mg/Kg	*30*	*115*		NA	NA		
2-Fluorophenol			mg/Kg	*25*	*121*		NA	NA		
Nitrobenzene-d5			mg/Kg	*23*	*120*		NA	NA		
Phenol-d5			mg/Kg	*21*	*113*		NA	NA		
Terphenyl-d14			mg/Kg	*18*	*137*		NA	NA		
2,4,6-Tribromophenol			mg/Kg	*19*	*122*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Organochlorine Pesticide Compounds by EPA 8081A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
Aldrin	0.01	0.05	mg/Kg	40	140	40	0.039	NA	3	mg/Kg
Chlordane	0.04	0.2	mg/Kg				1.7	NA	3	mg/Kg
alpha-Chlordane	0.01	0.05	mg/Kg				NA	NA		
4,4'-DDD (DDD)	0.01	0.05	mg/Kg				NA	1.90	3	mg/Kg
4,4'-DDE (DDE)	0.01	0.05	mg/Kg				2	NA	3	mg/Kg
4,4'-DDT (DDT)	0.01	0.05	mg/Kg	40	140	40	1.90	NA	3	mg/Kg
Dieldrin	0.01	0.05	mg/Kg	40	140	40	0.03	NA	3	mg/Kg
Endosulfan 1	0.01	0.05	mg/Kg				NA	470	3	mg/Kg
Endosulfan 11	0.01	0.05	mg/Kg				NA	470	3	mg/Kg
Endosulfan sulfate	0.01	0.05	mg/Kg				NA	NA		
Endrin	0.01	0.05	mg/Kg	40	140	40	NA	19	3	mg/Kg
Endrin aldehyde	0.01	0.05	mg/Kg				NA	NA		
Endrin ketone	0.01	0.05	mg/Kg				NA	NA	3	mg/Kg
Gamma-Chlordane	0.01	0.05	mg/Kg				1.70	NA	3	mg/Kg
Heptachlor	0.01	0.05	mg/Kg	40	140	40	0.13	NA	3	mg/Kg
Heptachlor epoxide	0.01	0.05	mg/Kg				0.07	NA	3	mg/Kg
alpha-Hexachlorocyclohexane (Alpha-BHC)	0.01	0.05	mg/Kg				0.086	NA	3	mg/Kg
Beta- Hexachlorocyclohexane (Betta-BHC)	0.01	0.05	mg/Kg				0.30	NA	3	mg/Kg

Table A-1
Summary of Analytes and Detection Limits for Soil
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Organochlorine Pesticide Compounds by EPA 8081A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.01	0.05	mg/Kg	40	140	40	0.57	NA	3	mg/Kg
Methoxychlor	0.01	0.05	mg/Kg				NA	320	3	mg/Kg
Toxaphene	0.04	0.2	mg/Kg				0.49	NA	3	mg/Kg
8081A surrogates										
Tetrachloro-m-xylene			mg/Kg	*30*	*150*		NA	NA		
Decachlorobiphenyl			mg/Kg	*30*	*150*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
PCB Compounds by EPA 8082										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
Aroclor-1016 (PCB-1016)	35	35	µg/Kg				NA	4,100	3	µg/Kg
Aroclor-1221 (PCB-1221)	70	70	µg/Kg				200	NA	3	µg/Kg
Aroclor-1232 (PCB-1232)	35	35	µg/Kg				170	NA	3	µg/Kg
Aroclor-1242 (PCB-1242)	35	35	µg/Kg				230	NA	3	µg/Kg
Aroclor-1248 (PCB-1248)	35	35	µg/Kg				230	NA	3	µg/Kg
Aroclor-1254 (PCB-1254)	35	35	µg/Kg				240	NA	3	µg/Kg
Aroclor-1260 (PCB-1260)	35	35	µg/Kg	50	150	20	240	NA	3	µg/Kg
Aroclor-1262 (PCB-1262)	35	35	µg/Kg				NA	NA		
Aroclor-1268 (PCB-1268)	35	35	µg/Kg				NA	NA		
8082 surrogates										
Tetrachloro-m-xylene			µg/Kg	*50*	*150*		NA	NA		

Notes:
1 - Residential Soil Screeing Levels are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).
2 - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
3 - Residential Soil Screening Level is the DTSC-Modified Soil Screening Level from Table 1 of DTSC HHRA Note 3 (DTSC 2018).
4 - Residential Soil Screening Level for arsenic is the DTSC Screening Level for School Sites from the *Interim Guidance for sampling Agricultural Properties* (DTSC 2008).
EPA - U.S. Environmental Protection Agency
MDL - method detection limit
PQL - practical quantitation limit
NA - not applicable
mg/kg - milligrams per kilogram
µg/kg - micrograms per kiologram
RPD - relative percent difference

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Table A-2
Summary of Analytes and Proposed Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Total Petroleum Hydrocarbons Diesel Extended Range (TPHde) by Modified EPA 8015B										
Container: *1 Liter Amber Glass Bottle*			***Amount Required:*** *4,000 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 7 days Analysis: 40 days*							
TPH as Diesel (C_{13} to C_{22})	0.1	0.5	mg/L	75	125	20	NA	100	1	mg/L
TPH as Heavy Hydrocarbons (C_{23} to C_{40})	0.1	0.5	mg/L				NA	100	1	mg/L
Total TPH as Diesel and Heavy Hydrocarbons (C_{13} to C_{40})	0.1	0.5	mg/L				NA	100	1	mg/L
8015B surrogates										
Chlorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Total Petroleum Hydrocarbons Gasoline Range (TPHg) by Modified EPA 8015B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *160 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
TPH as Gasoline and Light Hydrocarbons (C_4 to C_{12})	0.005	0.010	mg/L	75	125	20	NA	100	1	mg/L
8015B surrogates										
4-Bromofluorobenzene				*75*	*125*		NA	NA		

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT				
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,1,1,2-Tetrachloroethane	0.5	1.0	µg/L				0.57	NA	3	µg/L
1,1,1-Trichloroethane	0.5	1.0	µg/L	75	125		NA	2,000	2	µg/L
1,1,2,2-Tetrachloroethane	0.07	1.0	µg/L				0.076	110	2	µg/L
1,1,2-Trichloroethane	0.25	1.0	µg/L				0.28	NA	3	µg/L
1,1-Dichloroethane	0.5	1.0	µg/L				2.7	1,200	2	µg/L
1,1-Dichloroethene	0.5	1.0	µg/L	75	125	20	NA	280	3	µg/L
1,1-Dichloropropene	0.5	1.0	µg/L				NA	NA		
1,2,3-Trichlorobenzene	0.5	1.0	µg/L				NA	7	3	µg/L
1,2,4-Trichlorobenzene	0.5	1.0	µg/L				1.2	NA	3	µg/L
1,2,4-Trimethylbenzene	0.5	1.0	µg/L				NA	56	3	µg/L
1,2-Dibromo-3-Chloropropane	2.5	5.0	µg/L				NA	NA		

Table A-2
Summary of Analytes and Proposed Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
1,2-Dibromoethane	0.070	1.0	µg/L				0.075	NA	3	µg/L
1,2-Dichlorobenzene	0.5	1.0	µg/L				NA	300	3	µg/L
1,2-Dichloroethane	0.15	1.0	µg/L				0.17	NA	3	µg/L
1,2-Dichloropropane	0.5	1.0	µg/L				0.44	8	2	µg/L
1,3,5-Trimethylbenzene	0.5	1.0	µg/L				NA	60	3	µg/L
1,3-Dichlorobenzene	0.5	1.0	µg/L				NA	5	3	µg/L
1,3-Dichloropropane	0.5	1.0	µg/L				NA	110	2	µg/L
1,4-Dichlorobenzene	0.45	1.0	µg/L				0.48	NA	3	µg/L
2,2-Dichloropropane	2.5	5.0	µg/L				NA	NA		
2-Butanone (Methylethyl kethone [MEK])	5.0	5.0	µg/L				NA	5,600	3	µg/L
2-Chloroethyl Vinylether	2.5	5.0	µg/L				NA	NA		
2-Chlorotoluene	2.5	5.0	µg/L				NA	240	3	µg/L
2-Hexanone	2.5	5.0	µg/L				NA	38	3	µg/L
4-Chlorotoluene	0.5	1.0	µg/L				NA	250	3	µg/L
4-Methyl-2-Pentanone	2.5	5.0	µg/L				NA	6,300	3	µg/L
Acetone	10	10	µg/L				NA	14,000	3	µg/L
Benzene	0.1	1.0	µg/L	75	125	20	0.15	6	2	µg/L
Bromobenzene	0.5	1.0	µg/L				NA	62	3	µg/L
Bromochloromethane	0.5	1.0	µg/L				NA	836	3	µg/L
Bromodichloromethane	0.5	1.0	µg/L				0.12	120	2	µg/L
Bromoform	2.5	5.0	µg/L				2.9	120	2	µg/L
Bromomethane	1.5	3.0	µg/L				NA	7.5	3	µg/L
Carbon Disulfide	0.5	1.0	µg/L				NA	810	3	µg/L
Carbon Tetrachloride	0.5	1.0	µg/L				0.1	360	2	µg/L
Chlorobenzene	0.5	1.0	µg/L	75	125	20	NA	78	3	µg/L
Chloroethane	1.5	3.0	µg/L				NA	NA		
Chloroform	0.2	1.0	µg/L	75	125		0.22	NA	3	µg/L
Chloromethane	1.5	3.0	µg/L				NA	190	3	µg/L
cis-1,2-Dichloroethene	0.5	1.0	µg/L				NA	12	2	µg/L
cis-1,3-Dichloropropene	0.5	1.0	µg/L				NA	NA		
Dibromochloromethane	0.5	1.0	µg/L				0.87	NA	3	µg/L
Dibromomethane	0.5	1.0	µg/L				NA	8.3	3	µg/L
Dichlorodifluoromethane	1.5	3.0	µg/L				NA	200.0	3	µg/L
Ethylbenzene	0.5	1.0	µg/L	75	125		1.5	NA	3	µg/L
Hexachlorobutadiene	0.1	3.0	µg/L				0.14	NA	3	µg/L
Isopropylbenzene	0.5	1.0	µg/L				NA	NA		
Methylene Chloride	0.85	4.0	µg/L				0.93	100	2	

Table A-2
Summary of Analytes and Proposed Detection Limits for Groundwater Samples
High School No. 8 PEA

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Groundwater Screening Level			UNITS
							Cancer	Noncancer	Note	
Volatile Organic Compounds by EPA 8260B										
Container: *Pre-preserved 40ml vials X 4.*			***Amount Required:*** *2x40 ml*							
Preservation: *Cool, 4°C*			***Holding Time:*** *14 days*							
MTBE	0.5	1.0	µg/L				14	NA	3	µg/L
n-Butylbenzene	0.5	1.0	µg/L				NA	290	2	µg/L
n- Propylbenzene	0.5	1.0	µg/L				NA	NA		
Naphthalene	0.15	1.0	µg/L				0.17	NA	3	µg/L
p- Isopropyltoluene	0.5	1.0	µg/L				NA	NA		
sec-Butylbenzene	0.5	1.0	µg/L				NA	590	2	µg/L
Styrene	0.5	1.0	µg/L				NA	1,200	3	µg/L
tert-Butylbenzene	0.5	1.0	µg/L				NA	690	3	µg/L
Tetrachloroethene	0.05	1.0	µg/L				0.082	0.41	2	µg/L
Toluene	0.5	1.0	µg/L	75	125	20	NA	1,100	2	µg/L
trans-1,2-Dichloroethene	0.5	1.0	µg/L				NA	110	2	µg/L
trans-1,3-Dichloropropene	0.5	1.0	µg/L				NA	NA		
Trichloroethene	0.45	1.0	µg/L	75	125	20	0.49	NA	3	µg/L
Trichlorofluoromethane	0.5	1.0	µg/L				NA	1,700	2	µg/L
Vinyl Acetate	0.5	1.0	µg/L				NA	410	3	µg/L
Vinyl Chloride	0.015	1.0	µg/L				0.019	NA	3	µg/L
o-xylene	0.5	1.0	µg/L	75	125		NA	190	3	µg/L
m,p-xylenes	1.0	2.0	µg/L	75	125		NA	190	3	µg/L
8260B surrogates										
Toluene-d8			µg/Kg	*75*	*125*		NA	NA		
4-Bromofluorobenzene			µg/Kg	*75*	*125*		NA	NA		
Dibromofluoromethane			µg/Kg	*75*	*125*		NA	NA		

Notes:

1 - Residential Groundwater Screeing Levels are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).

2 - Residential Groundwater Screening Level is the DTSC-Modified Soil Screening Level from Table 2 of DTSC HHRA Note 3 (DTSC 2018).

3 - Residential Groundwater Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

EPA - U.S. Environmental Protection Agency

MDL - method detection limit

PQL - practical quantitation limit

NA - not applicable

mg/L - milligrams per liter

µg/L - micrograms per liter

RPD - relative percent difference

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Table A-3
Analytical Methods, Target Compounds, and Detection Levels for Soil Gas Samples
High School No. PEA

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**MDL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
EPA 8260B	**Volatile Organic Compounds**	**µg/m^3**	**µg/m^3**	**µg/m^3**	**Note**	**µg/m^3**	**µg/m^3**
	Acetone	250	NA	32,000	3	NA	32,000,000
	t-Amyl Methyl Ether (TAME)	25	NA	NA		NA	NA
	Benzene	18	0.10	3	4	97	3,100
	Bromobenzene	25	NA	63	3	NA	63,000
	Bromochloromethane	25	NA	42	3	NA	42,000
	Bromodicholoromethane	25	0.076	0.33	4	76	330
	Bromoform	25	2.60	83	4	2600	83,000
	Bromomethane	25	NA	5.2	3	NA	5,200
	t-Butanol (TBA)	250	NA	NA		NA	NA
	2-Butanone (MEK)	250	NA	5,200	3	NA	5,200,000
	n-Butylbenzene	25	NA	21	4	NA	21,000
	sec-Butylbenzene	25	NA	420	4	NA	420,000
	tert-Butylbenzene	25	NA	420	4	NA	420,000
	Carbon Disulfide	250	NA	730	3	NA	730,000
	Carbon Tetrachloride	13	0.067	42	4	67	42,000
	Chlorobenzene	25	NA	52	3	NA	52,000
	Chloroform	25	0.12	100	3	120	100,000
	Chloromethane	25	NA	94	3	NA	94,000
	2-Chlorotoluene	25	NA	83	4	NA	83,000
	4-Chlorotoluene	25	NA	83	4	NA	83,000
	Dibromomethane	25	NA	4.2	3	NA	4,200
	1,2-Dichlorobenzene	25	NA	210	3	NA	210,000
	1,4-Dichlorobenzene	25	0.26	830	3	260	830,000
	Dichlorodifluoromethane	25	NA	100	3	NA	100,000
	1,1-Dichloroethane	25	1.80	830	4	1800	830,000
	1,2-Dichloroethane	25	0.11	7.3	3	110	7,300
	1,1-Dichloroethene	25	NA	73	4	NA	73,000
	cis-1,2-Dichloroethene	25	NA	8.3	3	NA	8,300
	trans-1,2-Dichloroethene	25	NA	8.3	4	NA	8,300
	1,2-Dichloropropane	25	0.28	4.2	4	280	4,200
	1,3-Dichloropropane	25	NA	83	4	NA	83,000
	Ethylbenzene	25	1.1	1,000	3	1100	4,429
	Ethyl-t-Butyl Ether (EtBE)	25	NA	NA		NA	NA
	Hexachlorobutadiene	25	0.13	4.2	4	130	4,200
	2-Hexanone	250	NA	31	3	NA	31,000
	Isopropanol (IPA)	250	NA	210	3	NA	210,000
	Methylene Chloride	25	1	420	4	1,000	420,000
	4-Methyl-2-Pentanone	250	NA	3,100	3	NA	3,100,000
	Methyl-t-butyl Ether (MtBE)	25	11	3,100	3	11,000	3,100,000
	Styrene	25	NA	940	4	NA	940,000
	1,1,1,2-Tetrachloroethane	25	0.38	130	4	380	130,000
	1,1,2,2-Tetrachloroethane	25	0.05	83	4	48	83,000
	Tetrachloroethene	25	0.46	420	4	460	420,000
	Toluene	25	NA	310	4	NA	310,000
	1,2,3-Trichlorobenzene	25	NA	3.3	4	NA	3,300
	1,2,4-Trichlorobenzene	25	0.39	2.1	4	390	2,100
	1,1,1-Trichloroethane	25	NA	5,200	3	NA	5,200,000
	1,1,2-Trichloroethane	25	0.18	21	3	180	21,000
	Trichloroethene	25	0.48	2	3	480	2,100
	Trichlorofluoromethane	25	NA	1,300	4	NA	1,300,000

Table A-3
Analytical Methods, Target Compounds, and Detection Levels for Soil Gas Samples
High School No. PEA

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**MDL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
EPA 8260B	**Volatile Organic Compounds**	**µg/m^3**	**µg/m^3**	**µg/m^3**	**Note**	**µg/m^3**	**µg/m^3**
	1,2,4-Trimethylbenzene	25	NA	63	3	NA	63,000
	1,3,5-Trimethylbenzene	25	NA	63	3	NA	63,000
	Vinyl Chloride	13	0.17	100	4	170	100,000
	m,p-Xylenes	50	NA	100	3	NA	100,000
	o-Xylene	25	NA	100	3	NA	100,000

			Residential Air Screening Level[1]			Residential Soil Gas Screening Level[2]	
Method	**Compound**	**RL**	**Cancer**	**Noncancer**		**Cancer**	**Noncancer**
		µg/m^3					**µg/m^3**
LUFT GCMS	TPHg (C4-C12 carbon range)	10	NA	100	5		50,000
		ppmv					**ppmv**
8015M	Methane	15	NA	NA	6	NA	1,000
ASTM D-1946	**Fixed Gases**	**%**					
	Nitrogen	0.50	NA	NA		NA	NA
	Carbon Monoxide	0.50	NA	NA		NA	NA
	Oxygen	0.50	NA	NA		NA	NA
Detector		**µg/m^3**					**µg/m^3**
Jerome Analyser 631-X	Hydrogen sulfide	10	NA	2.1	3	NA	2,100

Notes:

1 - The listed Residential Air Screening Levels are DTSC-Modified Air Screening Levels from Table 3 of *HERO Note Number 3., DTSC-modified Screening Levels (DTSC-SLs)* (DTSC 2018) (DTSC HHRA Note 3), if available, or USEPA Region 9 Air Regional Screening Levels (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

2 - The Residential Soil Gas Screening Levels for VOCs and hydrogen sulfide were dervied by dividing the Residential Air Screening Levels by the future residential contaminant source attenuation factor of 0.001 from Table 2 of the *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)* (DTSC 2011).

3 - Residential Air Screening Level is the DTSC-Modified Air Screening Level from Table 3 of DTSC HHRA Note 3 (DTSC 2018).

4 - Residential Air Screening Level is the USEPA Region 9 Air RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).

5 - Residential Air Screening Level and Soil Gas Screeing Level are from Tier 1 Enviromental Screening Levels (ESLs) (San Francisco Bay Regional Water Quality Control Board 2016).

6 - Residential Soil Gas Screeing Level is from the recommended action level for further investigation in *Advisory on Methane Assessment and Common Remedies at School Sites* (DTSC 2005).

% - Percent by volume

EPA - U.S. Environmental Protection Agency

LUFT GCMS - California Regional Water Quality Control Board, Los Angeles Region Environmntal Laboratory Accreditation Program certified method for analyzing TPHg in vapor samples.

M - Modified

MDL - method detection limit

MS - mass spectrometry

NA - Not applicable

TPHg - micrograms per cubic meter

ppmV - parts per million by volume

RL - reporting limit

TPHg - Gasoline range total petroleum hyocarbons (C_4-C_{12} carbon range)

VOC - volatile organic compound

Table A-4
Sample Analyses, Numbers, Analytical Methods, Containers, Preservative Methods, and Holding Times
High School No. 8 PEA

Analyte	Minimum Number of Samples (Total)	EPA Method	Container	Preservative	Holding Time
Soil Analyses					
Organochlorine pesticide	60 regular surface samples combined by the laboratory into 15 composite samples. Eight discrete duplicate samples combined by the laboratory into two duplicate composite samples	SW8081A	Acetate/SS sleeve or glass jar	4 °C	14 days to extraction, 40 days to analysis
Arsenic Metals[1]	15 regular surface 4 duplicate	SW6010B	Acetate/SS sleeve or glass jar	4 °C	180 days
Semivolatile Organic Compounds	15 regular surface 10 regular subsurface 3 duplicate	SW8270C	Acetate/SS sleeve or glass jar	4 °C	14 days to extraction, 40 days to analysis
Polyaromatic Hydrocarbons	15 regular surface/ 2 duplicate	SW8310	Acetate/SS sleeve or glass jar	4 °C	14 days to extraction, 40 days to analysis
Polychlorinated Biphenyls	1 regular surface 1 duplicate	SW8082	Acetate/SS sleeve or glass jar	4 °C	14 days to extraction, 40 days to analysis
Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	15 regular surface 10 regular subsurface 3 duplicate	SW8015M	Acetate/SS sleeve or glass jar	4 °C	14 days to extraction, 40 days to analysis
Volatile Organic Compounds	10 regular subsurface 1 duplicate	SW8260B	Acetate/SS sleeve or glass jar and EPA Method 5035 kit	4 °C and EPA Method 5035	14 days to analysis
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12)	10 regular subsurface 1 duplicate	SW8015M	Acetate/SS sleeve or glass jar and EPA Method 5035 kit	4 °C and EPA Method 5035	14 days to analysis
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12) and/or Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	Up to 35 regular surface/ subsurface Up to 4 duplicate	MADEP_EPH-04 for Aliphatics	Acetate/SS sleeve or glass jar and EPA Method 5035 kit	4 °C and EPA Method 5035	14 days to extraction, 40 days to analysis

Table A-4
Sample Analyses, Numbers, Analytical Methods, Containers, Preservative Methods, and Holding Times
High School No. 8 PEA

Analyte	Minimum Number of Samples (Total)	EPA Method	Container	Preservative	Holding Time
Soil Analyses					
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12) and/or Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	Up to 35 regular surface/ subsurface Up to 4 duplicate	MADEP_EPH-04 for Aromatics	Acetate/SS sleeve or glass jar and EPA Method 5035 kit	4 °C and EPA Method 5035	14 days to extraction, 40 days to analysis

Analyte	Minimum Number of Samples (Total)	EPA Method	Container	Preservative	Holding Time
Groundwater Analyses					
Volatile Organic Compounds	5 regular samples 1 duplicate	SW8260B	Three 40 ml glass VOA vials	4 °C and HCL	14 days to analysis
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12)	5 regular samples 1 duplicate	SW8015M	Three 40 ml glass VOA vials	4 °C and HCL	14 days to analysis
Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	5 regular samples 1 duplicate	SW8015M	One liter amber glass bottle	4 °C	14 days to analysis
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12) and/or Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	Up to 5 regular samples 1 duplicate	MADEP_EPH-04 for Aliphatics	Three 40 ml glass VOA vials or One liter amber glass bottle	4 °C and/or HCL	40 days to analysis
Gasoline and Light Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-4–C-12) and/or Diesel and Heavy Hydrocarbon Range Total petroleum hydrocarbons (total carbon range C-13–C-40)	Up to 5 regular samples 1 duplicate	MADEP_EPH-04 for Aromatics	Three 40 ml glass VOA vials or One liter amber glass bottle	4 °C and/or HCL	40 days to analysis

Table A-4
Sample Analyses, Numbers, Analytical Methods, Containers, Preservative Methods, and Holding Times
High School No. 8 PEA

Analyte	Minimum Number of Samples (Total)	Method	Container	Preservative	Holding Time
Soil Gas Analyses					
Volatile organic compounds	10 regular subsurface 1 duplicate	U.S, EPA 8260B	Tedlar Bag	None	Analyzed immediately
Gasoline range total petroleum hydrocarbons (C_4-C_{12} carbon range)	10 regular subsurface 1 duplicate	LUFT GCMS	Tedlar Bag	None	Analyzed immediately
Methane	60 regular subsurface 6 duplicate	U.S. EPA 8015M	Tedlar Bag	None	Analyzed immediately
Hydrogen sulfide	60 regular subsurface 6 duplicate	Jerome H_2S Analyzer Model 631-X	Tedlar Bag	None	Analyzed immediately
Fixed gases (carbon dioxide, carbon monoxide, nitrogen, and oxygen)	60 regular subsurface 6 duplicate	ASTM Method D-1946	Tedlar Bag	None	30 days to analysis

Notes:
1 - antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc
°C - degrees Celsius
EPA - U.S. Environmental Protection Agency
HCL - Hydrochloric acid
MADEP Massachusetts Department of Environmental Protection
ml - milliliter
SS - stainless steel

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A AMERICAN ENVIRONMENTAL TESTING LABORATORY STANDARD OPERATING PROCEDURES

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American Environmental Testing Laboratory

Quality Assurance/Quality Control

Manual

American Environmental Testing Laboratory

Quality Assurance/Quality Control

Manual

Reviewed and Approved by:



12/04/14

Cyrus Razmara Ph.D. - Laboratory Director — Date



12/04/14

QA/QC Manager — Date

American Environmental Testing Laboratory

Quality Assurance/Quality Control

Manual

AETL Control # *One of One*

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Quality Control/Quality Assurance Manual

PURPOSE

The purpose of this manual is to formally document the principles and procedures by which the laboratory produces its data. The objective of this QA/QC program is to provide a system of checks and controls which enables the laboratory to reliably and consistently provide data that is performed according to established EPA methodologies, of known precision and accuracy, and defensible in court, if necessary.

To meet this commitment, a comprehensive QA/QC program has been established. American Environmental Testing Laboratory (hereinafter called AETL) adheres to the principles and procedures outlined in this manual.

SCOPE

This manual presents an overview of the Quality Assurance/Quality Control (QA/QC) program that governs all data which is produced by AETL. The essential components of AETL's QA/QC program are outlined in the following sections. Detailed information regarding specific methods/procedures should be directed to documented Standard Operating Procedures (SOPs) or to laboratory management.

AETL has modeled its program after guidelines as outlined in "Interim Guidelines and Specifications for Preparing Quality Assurance Program Plans," QAMS-004/80, December 29, 1980 and "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," QAMS_005/80, February, 1983, both of which have been issued by the Office of Monitoring Systems and Quality Assurance, Office of Research and Development, USEPA. All routine QA/QC practices follow EPA "Minimum Guidelines for the Evaluation of Laboratory DATA" as reporting in the Thursday, February 8, 1990 (page 4440) issue of the Federal Register.

INTRODUCTION

American Environmental Testing Laboratory is an analytical laboratory offering specialized environmental testing services. The laboratory has expertise in the analysis of organic and inorganic compounds in support of various

environmental activities including investigations, remediations, monitoring services, underground tank (UST) programs and other related events.

The laboratory routinely analyses in full compliance with the following agencies:

- US Environmental Protection Agency (USEPA)
- California Department of Health Services (CA DHS)
- American Society of Materials and Testing (ASTM)
- Arizona Department of Health Services (ADHS)
- Nevada Department of Health Services (UST work only)

Outside laboratories are audited for Quality Control procedures for all analyses not performed by AETL. An objective list of standard features is used for each outside laboratory with each laboratory listed in the order in which they are graded.

DEFINITIONS

Analytical Batch- is the basic unit for analytical quality control. The analytical batch is a group of samples which are analyzed together with the same method sequence and same lots of reagents and with manipulations common to each sample within the same time period or in continuous sequential time periods. Samples in each batch should be similar in composition (matrix) and must be analyzed within the same 24 hour time frame as a unit.
An analytical batch at AETL is composed of 15 or less samples. Every analytical batch has a corresponding QC batch number which is the extraction date for extractable organic compounds and the analysis date for non-extractable organic compounds. The QC batch number for wet chemistry and analysis of metals is the corresponding preparation date of each analytical method.

Method Detection Limit (MDL)- is a statistically derived number specific to each instrument, each instrument detector and in some instances, each different analyte, the amount of which is distinctively detectable, and is above zero concentration (99% sure).

Practical Quantitation Limit (PQL)- is a mathematical multiple of the MDL. The value of the multiple which can range from 1 to 10 is dependent upon factors such as the method of analysis and the actual practice that is followed by individual chemists in the laboratory.

Environmental Sample (or field sample)- is a representative portion of any material collected from any source for which determination of composition or portions thereof is requested.

Initiate Analysis- is the point in time that the sample, extract or digestate is introduced into an instrument or process for analysis of the parameter of interest.

Method Blank- is an analysis involving all of the reagents or chemical solutions common to a given analysis using reagent grade water (see below) as the matrix.

QA/QC Program- is the complete plan of policies and procedures incorporated by the laboratory in order to produce acceptable data.

Reagent Grade- is a reagent which conforms to the current specifications of the Committee on Analytical Reagents of the American Chemical Society. The burden of verification of this is generally left to the chemical manufacturer.

Replicate Sample- is a sample prepared by dividing a sample into two or more separate aliquots. Duplicate samples are considered to be two replicates.

Standard Curve- is a plot of instrument response to an analyte versus the known concentration of a standard analyte.

Reagent Water- is an analyte-free or laboratory pure water which is either distilled and/or de-ionized and is free of contaminants that may interfere with the analytical test in question.

LABORATORY STRUCTURE

The current management structure of AETL consists of a Laboratory Director, Project Managers, Laboratory Supervisors, and Chemists. The laboratory is structured into two main branches, the Organic Branch that includes the analysis of all organic compounds by GC/FID/PID/HALL, GC/MS, HPLC and IR, and the Inorganic Branch that includes the analysis of all inorganic compounds such as metals by ICP, FLAA, GFAA, anions, and cations by wet chemistry methods.

QA/QC OBJECTIVES FOR DATA MEASUREMENT

The Quality Assurance/Quality Control program is an essential part of the analytical protocol. It has been integrated into all facets of the laboratory operation. Its purpose is to detect and correct problems in the measurement process, to ensure that all data is valid, of known precision and accuracy and legally defensible. It is designed to monitor and control the quality of data

generated by the laboratory. The conscientious execution of the QA/QC procedures described herein ensures that the results will meet or exceed the minimum requirements of data acceptability as established by the EPA and California DHS. It assures the proper sample collection, preservation, labeling and storage procedures are applied to maintain sample integrity and identification. The specific procedures implemented to obtain valid data are described in the following sections.

The QA/QC program objectives include:

- Demonstration of the ability of the laboratory to perform analyses accurately, reproducibly and reliably.
- Reduction of measurement errors to acceptable minimum levels.
- Evaluation and control of data generation.
- Documentation of the laboratory's performance on a daily basis.

An essential part of the formally documented QA/QC program is the sound judgment of the technical staff. It is the technical staff that interprets events that may have caused an out-of-control condition. A function of the QA/QC program is to alert the staff that a nonconformity may exist. This ensures that corrective action can be administered without delay. Samples analyzed under conditions that are found to be out-of-control are reanalyzed utilizing a properly operating system.

SAMPLING PROCEDURES

In an attempt to minimize sample preservation effects, samples should be analyzed as soon as possible after receipt into the laboratory. Since it is not always possible to perform analyses immediately, sample must be maintained in an unaltered state. Samples are always preserved with consideration for desired analyte(s).

Sample collection technique preservation conditions and storage conditions may have a significant impact on chemical/physical analysis. AETL has a policy of providing certified pre-cleaned sampling containers to clients so that container integrity is not an issue. The use of proper sampling containers, protocols and performance of analyses within the established holding time limit are criteria for data acceptance that are not compromised at AETL. The following items demand attention to ensure sample integrity:

- Samples must be collected and stored in contaminant-free containers.
- Samples must consist of an adequate volume and /or weight.

- Samples must be clearly and completely labeled corresponding to the client chain of custody record.
- Samples must be properly preserved immediately after collection.

A listing of sampling and preservation requirements for analyses performed by AETL is presented in Appendix 1.

When sample containers and labels are provided to clients, AETL adheres to the EPA's established guidelines for sample preservation, storage, and holding times. For the analyses of water and waste water, the laboratory follows the guidelines found in Table 1060: I, page 1-22 in "Standard Methods for the Examination of Water and Waste Water," 1995, 19th edition, APHA, AWWA, WEF and Table 2-16 in SW-846, September 1986, 3rd edition, Volume 1A, pages 31-32.

SAMPLE CUSTODY

The chain of custody procedure employed by AETL follows procedures established by the EPA and is applied to all samples whether they are analyzed immediately, in the field, by the laboratory or sent to an outside laboratory by courier. The objective of the chain of custody procedure is to establish legal documentation describing the transfer of samples. The procedure records the custody of the samples from the sampling event, through shipment and receipt by the laboratory. The samples may be considered legal evidence and it is the intention of AETL to treat them accordingly.

The chain of custody procedure is outlined below:

1. When samples are received in the laboratory, they are checked against the chain of custody to make sure that samples and chain of custody match. If any discrepancies such as missing samples, miss-matching of numbers or quantity of sample are observed the information is conveyed to the pre-assigned project manager, who in turn will inform the sampler or client for explanation or new instructions.
   After matching of samples and the chain of custody, up to three pages of chains of custody are grouped together and assigned an AETL job number. This is done in order to avoid generation of large document files in AETL Laboratory Information Management System (LIMS). All documents in relation to all the samples in an AETL job are filed in the specific folder for that AETL job number. These documents could be specific instructions for the analysis of the samples or AETL generated chains of custody for subcontract work, etc. If a group of samples are subdivided into many AETL jobs, then all instructions for that group of samples are filed in every corresponding AETL job.

2. All samples that are received by the laboratory, and which have been grouped in an AETL job, are individually assigned an unambiguous, laboratory identification number at the time of receipt in the laboratory. Samples that are to be archived, are not assigned a laboratory identification number. These samples are stored in the pre-determined area in a refrigerator. Archived samples will be held until an analysis is assigned to them. At that time, they will be assigned a laboratory identification number and processed.

3. The sample containers are fully identified with this laboratory identification number. Sample labels are completed and are permanently fixed to the sample container. The time and date of the sampling event, the identity of the sampler and the preservative, if any, are documented on the chain of custody record.

4. Each sample on the chain of custody is marked with the assigned laboratory identification number and the record is compared with the labeling of the sample container. Information noted on the chain of custody record includes: client name, project name and location, sampler's signature, sample identification, analysis requested, turn around time requirements, number of containers per sample, description of sample matrix, date and time of the sampling event, laboratory's name and the laboratory sample number.

5. Each transfer of sample custody is recorded on the form. The relinquishing party and the receiving party accepting the samples must sign the chain of custody record and document the time and date of the transfer.

6. All information with regards to sample identity and requested analysis is transferred to the laboratory logbook. The chain of custody which now contains an AETL job number and individual laboratory identification numbers are forwarded to data entry. At the data entry all samples with the requested analysis are logged in to the Laboratory Information Management System (LIMS). After entry into the LIMS, a work order is generated. Project manager then checks the work order for corrections and completeness. The project manager will make sure that all the information with regards to a project, samples, and requested analysis have been transcribed correctly and completely into the LIMS.

7. After the samples have been logged in and tagged with their individual laboratory identification number, they will be transferred to the corresponding refrigerator for soil, water and air samples. Samples will be grouped by AETL job number and placed in pre-assigned locations

according to their laboratory identification number. Range of laboratory identification numbers are posted outside individual refrigerators so that samples can be located by the analysts for analysis.

8. There is usually a time laps between receipt of samples and the issuance of a work order. In order to avoid any delays in the analysis of the samples, after logging in of the samples in the laboratory log book, every analyst that has to perform any analysis will receive a copy of the chain of custody with the requested analysis hi-lighted for that analyst. Each of the pertinent analysts are also informed of incoming samples with the required turn around times by the project managers as soon as the information is available. If laboratory is at capacity, then alternative arrangements will be made.

9. When the analyst is ready for the analysis of samples, he or she will remove the samples from their corresponding storage space and will return the samples to the same place after completion of his or her work.

10. If a sample has to be shared by more than one analyst, then the analysts are informed by the project manager of the requirement so that the sample will be analyzed in accordance with the proper order of analytical priorities. The order of analytical priorities at AETL is as such: VOC, Organics, Wet Chem, Metals.

11. Samples are kept in cold storage for up to 3 months. After this period they are kept in ambient storage for up to 6 months. Unless the client requests that sample be held longer, all samples will be disposed by certified waste disposal companies. All samples are documented by their laboratory identification number prior to their disposal. All wastes that are disposed, are manifested and the manifest documents filed and kept for six years.

A copy of the AETL chain of custody record is presented in Appendix 2.

CALIBRATION PROCEDURES AND FREQUENCY

The accuracy of calibration is dependent on the purity of the standard solutions and reagents used in the analytical operation. AETL continually monitors the quality of its reagents and standard solutions. When possible, standards acquired have traceability to the USEPA or the National Institute of Standards and Technology (NIST). Permanent records are maintained to document standard traceability. This information is recorded in a Standards Log Book. An example form is given in Appendix 3.

The generation of valid data is dependent on the accurate and reliable calibration of the instrument. Although calibration and standardization procedures vary depending on the type of system and analytical method employed, the principles of calibration are universal. Proper calibration ensures that the analytical system is operating correctly and functioning at the proper sensitivity to meet established method detection limits. Before a system is used for analyses, the calibration range is defined, detection limits are determined and potential interferences are identified and eliminated where possible. The calibration status is checked periodically to ensure that the system is functioning properly. Each instrument is calibrated with standards appropriate to the type of analysis and the calibration range established for the method employed. The calibration program at AETL is instrument/method specific. The calibration procedure for selected instruments are given in the following sections.

Gas Chromatography/Mass Spectroscopy (GC/MS) Analysis

Commercially available standards or standards prepared from neat compounds, validated by comparison to EPA or NIST reference materials when possible, are used to determine the detectability and adjust the selectivity of the chromatographic system for all compounds or multi-response mixtures being measured.

The calibration procedure is initiated after the system has been reviewed to ensure proper operation. A blank is analyzed immediately prior to the analysis of calibration standards to indicate the absence of interferences. Calibration is completed by analyzing standard solutions at a minimum of five concentration levels according to the standard operating procedure for the method under consideration. The standard of lowest concentration is at or slightly above the established limit of quantification for each analyte. Analyzing a standard with a concentration in the midpoint level completes the calibration process. The source of this standard is independent of the calibration standards. It is also verified at least once for every 15 measurements and at the beginning and end of a batch.

The criteria of retention time stability and sensitivity of instrumentation for every method are met prior to the start of any analysis of samples.

Bromofluorobenzene (BFB) Tuning criteria and calibration verification (SPCC and CCC) criteria must be met before analyzing samples and checked every 12 hours during sample analyses. When the response for all parameters is within the limits set for acceptance, the analysis of environmental samples may continue. When an individual response falls outside this range, the system must be recalibrated for that parameter after checking the original response.

Internal Standard Calibration

All GC/MS procedures at AETL use the internal standard calibration procedure concentrations.

Gas Chromatography (GC) Analysis

Commercially available standards or standards prepared from neat compounds, validated by comparison to EPA or NIST reference materials when possible, are used to determine the detectibility and adjust the selectivity of the chromatographic system for all compounds or multi-response mixtures being measured.

The calibration procedure is initiated after the system has been reviewed to ensure proper operation. A blank is analyzed immediately prior to the analysis of calibration standards to indicate the absence of interferences. Calibration is completed by analyzing standard solutions at a minimum of five concentration levels according to the standard operating procedure for the method under consideration. The standard of lowest concentration is at or slightly above the established limit of quantification for each analyte. The other standards should be limited by the working range of the detector(s) in use. The calibration process is completed by analyzing a standard, usually a midpoint level concentration, that originates from a source independent of the calibration standards. It is also verified at least once for every 15 measurements and at the beginning and end of a batch.

When the response for all parameters is within the limits set for acceptance (usually $\pm$ 15%), the analysis of environmental samples may continue. When an individual response falls outside this range, the system must be recalibrated for that parameter after checking the original response. In addition, the samples analyzed under the failed check standard must be reanalyzed for the parameter that failed.

High Performance Liquid Chromatography (HPLC)

Commercially available standards or standards prepared from neat compounds, validated by comparison to EPA or NIST reference materials when possible, are used to determine the detectibility and adjust the selectivity of the chromatographic system for all compounds or multi-response mixtures being measured.

The calibration procedure is initiated after the system has been reviewed to ensure proper operation. A blank is analyzed immediately prior to the analysis

of calibration standards to indicate the absence of interferences. Calibration is completed by analyzing standard solutions at a minimum of five concentration levels according to the standard operating procedure for the method under consideration. The standard of lowest concentration is at or slightly above the established limit of quantification for each analyte. The other standards should be limited by the working range of the detector(s) in use. The calibration process is completed by analyzing a standard, usually a midpoint level concentration, that originates from a source independent of the calibration standards. It is also verified at least once for every 15 measurements and at the beginning and end of a batch.

When the response for all parameters is within the limits set for acceptance (usually $\pm$ 15%), the analysis of environmental samples may continue. When an individual response falls outside this range, the system must be recalibrated for that parameter after checking the original response. In addition, the samples analyzed under the failed check standard must be reanalyzed for the parameter that failed.

External Standard Calibration

All Chromatographic procedures at AETL use the external standard calibration procedure. A calibration curve is constructed with peak height or area versus concentration for the analyte of interest. An R squared value of 98% or greater for the external five point calibration curves are forced through the origin to account for background noise. The calibration factor can then be used to determine analyte concentrations.

Metals Analyses

Commercially available standards or standards prepared from neat compounds, validated by comparison to EPA or NIST reference materials when possible, are used to determine the concentrations of each metal analyzed.

For Flame Atomic Absorption (FLAA) or Graphite Furnace Atomic Absorption (GFAA), a three-point calibration curve is initiated by analyzing a minimum of three different concentrations and a calibration curve is initiated by analyzing a minimum of three different concentrations and a calibration blank. For Inductively Coupled Plasma (ICP) a calibration blank and a high concentration standard for each of the elements of interest are analyzed. Concentrations of each level are specified by the manufacturer or are in the EPA methods. This is to ensure proper operation and calibration of the system before commencing the analysis scheme. A blank is analyzed immediately prior to the

analysis of calibration standards to indicate the absence of interferences and a clean system. In addition, a method blank is always run after a high or off-scale analysis has been run. The calibration process is completed by analyzing a standard, usually at midpoint level concentration, that originates from a source independent of the calibration standards.

After every 10 samples the working standard curve is verified by measuring a midpoint standard. For ICP analyses, this check standard value must be within 10% of the true value or the previous 10 samples need to be reanalyzed. For FLAA analyses, this check standard value must be within 15% of the true value or the previous 10 samples need to be reanalyzed. For GFAA, this check standard value must be within 20% of the true value or the previous 10 samples need to be reanalyzed.

For ICP analyses the interelement and background correction factors must be verified at the beginning and end of each analytical run or twice every 8-hour work shift, which ever is more frequent. Results must be within 20% of the true value or analyses cannot continue.

All EDL or hollow cathode lamps for FLAA or GFAA are checked each time they are used to determine if they are within manufacturer's specified energy levels.

Conventional Wet Chemistry Analyses

Conventional wet analyses utilize various instrumentation, which are applied to specific analytical methodologies. Each instrument is calibrated or checked prior to sample analysis. A method blank and a minimum of three standards are prepared when appropriate. Calibration is deemed acceptable when a linear response is obtained or when the calibration response is within method guidelines. Reagent grade standards are used for calibration purposes. Check standards are obtained from an independent source.

IR analyses for EPA 418.1 and 413.2 use at least a five-point calibration and preferably a seven-point calibration. Since it is unlikely that the calibration will ever fail unless there is an instrument malfunction, a single midpoint calibration check should be sufficient for each batch of IR analyses. After every 10 samples the working standard curve is verified by measuring a midpoint standard. This sample value must be within 20% of the true value or the previous 10 samples need to be reanalyzed.

ANALYSTS TRAINING

All analysts who are hired by AETL are screened rigorously for their professional backgrounds and formal education. After hiring, every analyst is assigned a supervisor and a peer member who will work with the new analyst. The new analyst is then issued a Good Laboratory Practice Standards Manual and the Standard Operating Procedure (SOP) of the assigned analytical method. The analyst will then work with the peer member under the supervision of an assigned supervisor. When the analyst feels confident enough that he or she can perform the method, he or she is asked to proceed with an Initial Demonstration of Proficiency (IDP). When the analyst can show an IDP of 90% or better he or she will be given a blind internal QC sample. After passing of the QC sample and achievement of a 90% or better result on the IDP, the analysts will be allowed to work independently. All analysts constantly work under the supervision of their section supervisor at all times.

ANALYTICAL PROCEDURES

The laboratory routinely provides analyses of organic and inorganic parameters in conformity with US EPA and CA DHS methodologies. Appropriate analytical techniques are incorporated into methods and procedures as prescribed by the EPA and ASTM. The origination of these procedures and techniques is presented in Appendix 4.

Each analytical method employed is documented in the form of a Standard Operating Procedure (SOP). The purpose of establishing these procedures is to standardize the methods so that all samples are analyzed consistently, correctly and without bias. In addition, the SOPs provide a good starting point for the training of new analysts. The SOP is constructed so that it contains detailed instructions describing the use and performance of the method. All pertinent QA/QC program procedures are integrated into the SOP.

Before an analytical method is used to generate data, the method is validated. Method validation includes definition of detection limits, the determination of the calibration range, and precision and accuracy. A list of recommended methods for the analysis of specific parameters to be used in this laboratory and in outside laboratories is presented in Appendix 1.

DATA MANAGEMENT

All data generated at AETL is extensively checked to ensure that it is valid, of known precision and accuracy and defensible. The data validation

process consists of data generation, reduction, and review. After this process has been completed to the satisfaction of the QA/QC project plan, the laboratory report is generated and reviewed.

Data Reduction

Data reduction is the process by which raw data is transformed into final results. The analyst who generated the analytical data has the primary responsibility for its quality. All data is generated and reduced following procedures specified by the laboratory SOPs. Each analyst reviews the quality of his/her work based on these established QA/QA procedures, his/her technical knowledge, and experience. The analysts reviews the data package to ensure that:

- Raw data generated from the analysis is correct and complete
- Appropriate SOPs have been followed
- Analytical results are correct and defensible
- Method blank test results are within control limits
- Matrix spike/spike duplicate results are within control limits
- Laboratory control sample results are within established limits
- Documentation is complete

Data Validation

After the data reduction package is reviewed, initialed, and dated by the analyst, it is then forwarded to the laboratory manager for review. This review also includes verification of calculations and raw data to provide a complete independent audit of the data package. When no errors are found, the reviewed data are then approved for release and the final report is prepared.

Report Documentation

The purpose of the Laboratory Report is to provide a concise and complete description of the analytical results generated for a specific set of samples. The Laboratory Report consists of three parts: general client and lab information, laboratory results and the Quality Assurance/Quality Control summary.

General information issued in the laboratory report consists of the client identification and address, project identification and address, date of the report, laboratory job number and client job number, the date the sample(s) was

collected, the date it was received by the laboratory, the date it was analyzed and the physical state of the sample.

The QA/QC summary issued in the laboratory report consists of a description of the parameter investigated, the method used, the QC type (Matrix Spike/Spike Duplicate or Laboratory Control Sample), the recovery, the acceptable range for recovery, the reproducibility and the acceptable range for reproducibility.

The laboratory results section of the laboratory report identifies the test performed, the sample on which the test was performed, the parameters investigated, the level determined for each parameter investigated with the appropriate units and the method detection limit for each parameter.

Additional information issued in the laboratory report includes a statement as to the condition of the sample(s) on receipt. In addition, any qualifications about the sample analysis such as fuel type, method alterations, etc. will be places in the laboratory report summaries on footnotes.

INTERNAL QUALITY CONTROL CHECKS

Data quality is monitored with internal QC checks. The checks are used to determine whether the laboratory is operating within acceptable limits. Sample matrix effects are also evaluated by the use of QC checks.

Method Blanks

Method blanks are analyzed to assess the level of background interference or contamination in the analytical system. A method blank is analyzed each time a batch is processed. When compounds are found in the blank, their values are evaluated to determine their effect on the analysis of environmental samples. Three possibilities exist:

1. There are no compounds found in the blank.
   No action is required.

2. Compound(s) is (are) found in the blank, but are not found in the sample.
   No action is required.

3. Compound(s) is (are) found in the blank and are found in the sample. The results are not corrected by subtracting any blank value from the sample. No positive sample result is reported unless the concentration of the

compound in the sample exceeds five times the amount of the compound in question found in the blank or if it exceeds 10 times the amount in any blank for the common contaminants listed below:

a. methylene chloride
b. acetone
c. toluene
d. 2-butanone
e. phthalate esters

Certain other compounds such as Freon 113, hexane, and pentane may be present in blanks if they are being used in the vicinity of analyses. The presence of these compounds in the blank and sample should be dealt with using the five times rule listed above.

Calibration Check Standards

Calibration check standards are analyzed to confirm that measurements were performed in an in-control mode of operation. The calibration check standard concentration is established near the midpoint of the calibration range. Instrument calibration is checked with every analytical batch. It is also verified once for at least every 15 measurements or at the end of a batch, whichever is more frequent. Calibration checks must be within 15% for all analytes of interest before proceeding with the analysis of samples.

Laboratory Control Samples

Laboratory Control Samples (LCS) are prepared/obtained from sources independent of the calibration standards. The LCS concentration is established near the midpoint calibration range. An LCS must be prepared and analyzed once per batch of samples.

Matrix Spikes

A matrix spike is an environmental sample into which known concentrations of analyte(s) have been added. The matrix spike sample is analyzed with environmental samples of the same matrix type in each batch and the results are used to evaluate sample matrix effects on method accuracy. For each method at least two compounds or 10 percent of the analytes of interest must be spiked.

Matrix Spike Duplicates

A matrix spike duplicate is one of two QC checks of an environmental sample. It is spiked with the same concentration of an analyte(s) as the matrix spike. The matrix spike duplicate sample is analyzed with environmental samples of the same matrix type in each batch. The results evaluate sample matrix effects on method accuracy. Values obtained from the matrix spike and matrix spike duplicate analyses are compared to evaluate sample matrix effects on method precision. Statistics are kept for each analyte recovery for each matrix type.

Surrogates

Surrogates are organic compounds, which are similar to the analytes of interest, but are not normally found in environmental samples. Surrogates must be spiked into blanks, standards, spikes, and samples for organic analyses to monitor sample specific effects on method accuracy. They should not interfere with target analytes.

Field / Trip Blanks

Field blanks are used to monitor contamination origination from the collection and transportation of environmental samples. They are prepared and sealed in the laboratory using reagent grade water (preferably Type II) and are released to the sample collector prior to the collection event. These blanks are analyzed immediately in order to eliminate interferences from storage effects.

There are two types of field blanks; field blanks which are opened in the field during the time that a sample is being collected and equipment blanks, which are the rinsate from sample collection.

A trip blank remains sealed the entire from the laboratory to sample collection to the laboratory again. It measures any effects due to the sample container, transportation effects, and sample environment to and from the laboratory.

INTRALABORATORY AUDITS

Audits are an integral part of the QA/QC program. Audits conducted at AETL are of two types: system audits, which quantitatively evaluate the operational details of the QA/QC program, and performance audits which

quantitatively evaluate the accuracy of analytical data generated. It is the responsibility of the laboratory manager or an outside auditing entity such as CA DHS personnel to conduct these audits.

System Audits

System audits consist of checks of critical operations in randomly selected test record that are reviewed to assure that all required documentation are retrievable. Data is examined in detail to determine the quality as well as the completeness of the information. This detailed examination also ensures that all steps of the QA/QC program are performed. The frequency of system audits depends on the critical nature of the data output, the importance of different certifications/recertifications, and the number of system changes.

Performance Audits

Performance audits evaluate test methods. The laboratory manager conducts these audits by introducing reference samples into the analysis stream without the knowledge of the analyst when possible. The audit is completed upon evaluation of the analytical results of reference samples by the laboratory manager.

PREVENTIVE MAINTENANCE

A preventive maintenance schedule exists for each instrument, which enables consistent generation of quality data. Routine instrument maintenance is conducted by designated laboratory personnel in accordance with the manufacturer’s specification and/or the experience of the operator. Instrument repairs are performed by trained staff of instrument manufacturer representatives. AETL maintains logbooks documenting the preventive maintenance and repairs performed on each instrument.

DATA ASSESSMENT

The effectiveness of a QA/QC program is measured by the quality of data generated by the laboratory. Data generated by the laboratory is assessed in terms of the measure of its precision, accuracy, representativeness, completeness, and comparability. The quantification procedure for each of these terms is detailed in the following sections.

Precision

Precision is the degree to which a measurement can be reproduced without assumption of any prior knowledge as to the true result. Precision is assessed by the means of duplicate/replicate sample analyses. The acceptability of replicate analyses at AETL is the evaluation of the relative percent difference (RPD) of control sample values. The RPD is calculated in all cases where matrix spike and matrix spike duplicate determination are made. Its definition is given below:

$$RPD = \{(X_1 - X_2) \div [(X_1 + X_2) \div 2]\} \times 100$$

Where X_1 and X_2 are measurements of the same parameter of duplicate/replicate sample analyses.

Accuracy

Accuracy is the determination of how close a measurement is to the actual value. It can be assessed by means of laboratory control samples (LCS), standard reference materials or spiked samples and their corresponding percent recoveries. The calculation of accuracy is terms of percent recovery is as follows:

$$\text{Percent Recovery} = [(\text{Observed Value} - \text{Sample Value}) \div \text{Known Value}] \times 100$$

The determination of the accuracy of a measurement requires knowledge of the known value for the parameter being measured.

Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a given set of samples or data sets to that of the site from which the samples were collected. The use of appropriate methods and sound judgment in the field will ensure that samples are representative of the site and that their collection was performed in accordance with the appropriate project sampling and analysis plan (SAP). To maximize representatieness of results, sampling procedures should follow established protocols and sample locations should be chosen based on sound judgment and knowledge of the particular site. Laboratory personnel will be able to advise the client on these matters. Some samples may require analysis of multiple phases to obtain representative results. The client is always consulted as to which phase of a multi-phase sample is to be analyzed.

Completeness

Completeness is defined as the ratio of usable (i.e. non-rejected) laboratory measurements to the total number of planned measurements for an investigation.

Percent completeness=(NUR ÷TNPR) x 100

NUR = Number of Usable Results i.e. Non-rejected Results
TNPR = Total Number of Possible Results

AETL goal is to achieve Percent Completeness of 90% or better.

Comparability

Comparability is an evaluation of the relative consistency of the laboratory measurement data. Since comparability cannot be measured quantitatively, therefore professional judgment is relied upon. Internal comparability will be achieved for samples by adhering to consistent sample collection procedures and analyses methods throughout each investigation.

Control Charts / QA Statistics

Statistics are maintained by the laboratory to determine laboratory specific Quality Control limits. Matrix Spike/Matrix Spike Duplicate data are tabulated on a Semi-Annually basis for each parameter for each matrix type. Control charts are established using this data to monitor trends and shifts in data generation. Check standards and matrix spike/matrix spike duplicates sets or laboratory control sample spikes are used in conjunction with laboratory control charts to monitor the daily performance of analytical methods. Precision and accuracy are evaluated for each QC sample and compared to established laboratory acceptance criteria. If laboratory criterion has not been established, or the laboratory has produced an insufficient number of data points, then the EPA method should be consulted for control limits.

The control chart is a graph of the mean value line with upper and lower control limits. There are two types of control limits that evaluate data acceptability: the warning limit and the out-of-control limit. The warning limit is set at $\pm$ 2 standard deviations of the mean and the out-of-control limit at $\pm$ 3 standard deviations of the mean. QC results in the 2-3 standard deviation range alert the analyst to a potential out of range event. Data lying beyond the third standard deviation requires that the test be repeated for all samples affected. For the

purpose of control chart interpretation, an out of range event is defined as any QC data point or set of points that meet the following conditions:

- A single data point outside of 3 standard deviations.
- Two points which are consecutively outside of 2 standard deviations (warning limit).

The following criteria define a trend or shift, respectively:

- The steady increase or decrease in value of seven consecutive measurements.
- A series of seven or more consecutive points above or below the mean.

When any of the above conditions exists, all analyses pertaining to the method which is out-of-control must cease, corrective action must be initiated, and all samples analyzed under the out-of-control situation must be reanalyzed. The instrument or procedure should be examined for possible causes.

CORRECTIVE ACTION

Regardless of the cause, any activity in the laboratory which adversely affects the quality of the data is considered a nonconformance. Non-conformances are defined as errors, deficiencies or out-of-control situations. These situations can arise due to method procedural problems, equipment malfunctions, improper data reduction or nonsystematic errors. The QA/QC program provides systematic procedures called corrective actions to resolve these non-conformances and restore the system to its proper condition. The analyst, who performs the initial review of the situation and the initial diagnosis of the nonconformance, often handles corrective action procedures. If the problem persists or cannot be identified, the matter is referred to laboratory management for further investigation. Once a nonconformance has been confirmed, analysis must be stopped and the integrity of the results determined. When the analyses are adversely affected, the samples in question must be reanalyzed utilizing a system that is functioning properly. Once resolved, full documentation of the corrective action procedure is filed with management, placed into the maintenance logbook, and all reanalyzed samples noted in the instrument logbook. An example of a non-conformance report is presented in Appendix 5.

QUALITY ASSURANCE REPORTS

Once per month or more often if necessary, management discusses QA/QC issues that have relevance to the previous month’s performance. The

purpose of this discussion is to provide a monthly monitoring and review of the data produced by the laboratory. A continual effort is made through SOPs and QA/QC documents to upgrade the quality of data being produced by the laboratory.

Document Control

In relation to every project two types of document are generated. The first type is any document that is generated outside the laboratory by the client and the sampler. The second type is any document that is generated by the laboratory. All documents that are generated outside the laboratory and which are forwarded to the laboratory are filed in the corresponding AETL Job folder and returned to the client with the original results of analysis.
A copy of these documents with a copy of the analytical results are kept in the AETL job folder and eventually filed in storage in accordance with AETL job number.
All new data that are generated by the laboratory are also filed in the corresponding daily folder for each method and kept in storage in accordance with dates and AETL job numbers. All documents that are stored at AETL are kept for at least 6 years.

SECURITY

The laboratory maintains two levels of security to limit access to samples or associated data. Facility security is maintained through controlled access to the laboratory by keeping the doors locked with limited access for cleared laboratory employees. The door of the sample storage room, which is kept locked at all times, is only accessible by the sample custodian. Access to clients' old data and files, which are kept in locked files in the laboratory's main office, is only possible through the laboratory secretary with the approval of the laboratory director. Clients' new data is kept in computer network, which can be accessed through a password by the laboratory secretary with the approval of the laboratory director.

In addition all employees of AETL sign a confidentiality agreement when they become employed at AETL. Unless authorized by the laboratory director, none of AETL employees are allowed to discuss any of the results with any client. Only project manager and the laboratory director are authorized to discuss data with the clients. Data of no client is discussed with any third party unless, the client authorizes AETL in writing.

Data generated by AETL is transcribed into AETL LIMS by data entry staffs that are assigned a personal security pass codes. Once a data has been entered into

the LIMS, it can no longer be changed, deleted or added to unless, it is authorized by the corresponding project manager or laboratory director.
All information on AETL LIMS is stored on tape on a weekly basis. A copy of the tape is always kept by the laboratory director in storage outside the laboratory premises for safety.

APPENDIX 1

SAMPLING AND PRESERVATION REQUIREMENTS

AMERICAN ENVIRONMENTAL TESTING LABORATORY

INORGANIC TESTS

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Acidity	305.1	Water	Cool, 4°C	100 mL	P / G	14 days
Alkalinity	310.1	Water	Cool, 4°C	100 mL	P / G	14 days
Ammonia	350.1 auto 350.2 manual 350.3 electrode	Water	Cool, 4°C; H_2SO_4 to pH <2	500 mL	P / G	28 days
BOD	405.1	Water	Cool, 4°C	1000 mL	P / G	48 hours
Boron	200.7 212.3	Water	None Required	600 mL	P	28 days
Bromide	320.1 300	Water	None Required	100 mL	P / G	28 days
Calcium	215.2 200.7	Water	Cool, 4°C; H_2SO_4 to pH <2	600 mL	P / G	6 months
Chloride	325.3 300	Water	None Required	100 mL	P / G	28 days

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Chlorine, residual	330.4	Water	None Required	100 mL	P / G	Analyze Immediately
COD	410.4	Water	Cool, 4°C; H_2SO_4 to pH <2	100 mL	P / G	28 days
Color	110.2	Water	Cool, 4°C	100 mL	P / G	48 hours
Cyanide, Total	335.2 9010	Water Soil	Cool, 4°C; NaOH to pH>12 0.6 gm Ascorbic acid Cool, 4°C	500 mL 20 gm	P / G	14 days, 24h if sulfide is present
Cyanide, Amenable to Chlorination	335.1 9012	Water Soil	Cool, 4°C; NaOH to pH>12 0.6 gm Ascorbic acid Cool, 4°C	500 mL 20 gm	P / G	14 days, 24h if sulfide is present
Fluoride	340.2 300	Water	None Required	100 mL	P	28 days
Hardness	130.2 200.7	Water	HNO_3 to pH <2	100 mL	P / G	6 months
Iodide	345.1	Water	Cool, 4°C	100 mL	P	Analyze Immediately

Polyethylene (P), Glass (G)

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Metals, except Cr(VI) & Mercury	200 Series 6010/7000Series	Water* Soil/Sludge	HNO_3 to pH <2 None Required	600 mL 200 gm	P / G	6 months
Cr (VI)	7196 / 218.6 7199	Water* Soil/Sludge	Cool, 4°C	400 mL 100 gm	P / G	(W) 24 hours**, (S) 30days to digestion, 168 hr to analysis.
Mercury	245.1 7471	Water* Soil/Sludge	HNO_3 to pH <2 None Required	400 mL 200 gm	P / G	28 days
Nitrate	352.1 300	Water	Cool, 4°C	100 mL	P / G	48 hours
Nitrate & Nitrite	353.3 300	Water	Cool, 4°C; H_2SO_4 to pH <2	100 mL	P / G	28 days
Nitrite	354.1 300	Water	Cool, 4°C	100 mL	P / G	48 hours
Nitrogen, Total Kjeldahl	351.3	Water	Cool, 4°C; H_2SO_4 to pH <2	100 mL	P / G	28 days
Odor	140.1	Water	Cool, 4°C	500 mL	G	Analyze Immediately

***** For dissolved metals: Filter on site and then add preservative.

** As per EPA notes, the holding time maybe extended to 28 days by preservation of sample by ammonium sulfate.

Polyethylene (P), Glass (G).

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Oil and Grease	413.1 / 1664 9070	Water Soil/Sludge	Cool, 4°C; H_2SO_4 to pH <2	4000 mL 200 gm	G	28 days
Orthophosphate	365.1	Water	Filter Immediately; Cool, 4°C	100 mL	P / G	48 hours
Oxygen, Dissolve	360.1	Water	None Required	100 mL	G bottle and top	Analyze Immediately
pH	150.1 9040 / 9045	Water Soil/Sludge	None Required	100 mL 20 gm	P / G	Analyze Immediately
Phenolics	420.1 / 9065	Water	Cool, 4°C; H_2SO_4 to pH <2	500 mL	G	28 days
Phosphorus, Total	365.2	Water	Cool, 4°C; H_2SO_4 to pH <2	100 mL	P / G	28 days
Residue, Filterable (TDS)	160.1	Water	Cool, 4°C	200 mL	P / G	7 days
Residue, Nonfilterable (TSS)	160.2	Water	Cool, 4°C	200 mL	P / G	7 days

Polyethylene (P), Glass (G).

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Residue, Settleable (SS)	160.5	Water	Cool, 4°C	1000 mL	P / G	48 hours
Residue, Total (TS)	160.3	Water	Cool, 4°C	200 mL	P / G	7 days
Residue, Volatile (TVS)	160.4	Water	Cool, 4°C	200 mL	P / G	7 days
Silica	370.1 200.7	Water	Cool, 4°C	100 mL	P	28 days
Specific Conductance	120.1 / 9050	Water	Cool, 4°C	100 mL	P / G	28 days
Sulfate	375.4 9038	Water	Cool, 4°C	100 mL	P / G	28 days
Sulfide	376.2 9030	Water	Cool, 4°C; 2 mL zinc acetate plus NaOH to pH > 9	500 mL	P / G	7 days
Sulfite	377.1	Water	None Required	100 mL	P / G	Analyze Immediately

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Surfactants (MBAS)	425.1	Water	Cool, 4°C	100 mL	P / G	48 hours
Temperature	170.1	Water	None Required	100 mL	P / G	Analyze Immediately
Total Organic Carbon (TOC)	415.1 / 9060	Water	Cool, 4°C; HCl or H_2SO_4 to pH <2	100 mL	P / G	28 days
Total Organic Halogen (TOX)	9020	Water	Cool, 4°C; H_2SO_4 to pH <2	100 mL	G	28 days
Total Organic Lead	CA DHS	Soil/Sludge	Cool, 4°C	50 gm	P / G	14 days
Total Recoverable Petroleum Hydrocarbons(TRPH)	418.1	Water Soil	Cool, 4°C; H_2SO_4 to pH <2 Cool, 4°C	4000 mL 200 gm	G	14 days
Turbidity	180.1	Water	Cool, 4°C	100 mL	P / G	48 hours

AMERICAN ENVIRONMENTAL TESTING LABORATORY
ORGANIC TESTS

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Purgeable Halocarbons	601 / 8010	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate**	2 x 40 mL 50 gm	G, Teflon lined septum	14 days
Purgeable Aromatic Hydrocarbon	602 / 8020/8021B	Water Soil	HCl to pH 2, Cool, 4°C; 0.008% sodium thiosulfate** Cool, 4°C	2 x 40 mL 50 gm	G, Teflon lined septum	14 days
Acrolein, Acrylonitrile	603 / 8030	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate**adjust pH to 4-5 Cool, 4°C	2 x 40 mL 50 gm	G, Teflon lined septum	14 days
Phenols	604 / 8040	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate** Cool, 4°C	4000 mL 200 gm	G, Teflon lined septum	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Phthalate Esters	606 / 8060	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate** Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Organochlorine Pesticides / PCBs	608 / 8080	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Organochlorine Pesticides	8081	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
PCBs	8082	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Polynuclear Aromatic Hydrocarbons	610 / 8100 / 8310	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate** Store in dark	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction

**Added if residual Chlorine present, Glass (G), Soil (S), Water (W)

AMERICAN ENVIRONMENTAL TESTING LABORATORY

Determination	Method No.	Matrix	Preservative	Sample Required	Container	Holding Time
Chlorinated Hydrocarbon	612 / 8120	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Organo phosphorous compounds	8141	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Organochlorine Herbicides	615 / 8151A	Water Soil	Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Volatile Organic compounds	624 / 8240/8260B	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate* Cool, 4°C	2×40 mL 50 gm	G, Teflon lined cap	14 days for water, and 5030, 48 hours for soil by 5035
Semi - Volatile Organic compounds	625 / 8270C	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate* Cool, 4°C	4000 mL 200 gm	G, Teflon lined cap	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Total Petroleum Hydrocarbon as Gasoline	P & T / Extractable LUFT Manual	Water Soil	Cool, 4°C; 0.008% sodium thiosulfate* HCl to pH <2 Cool, 4°C	2×40 mL 50 gm	G, Teflon lined septum	14 days
Total Petroleum Hydrocarbon as Diesel	Extractable	Water Soil	Cool, 4°C	4000 mL 200 gm	G	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
PCDB-Dioxins and PCDB-Furans	8280/8290	Water Soil	Cool, 4°C	4000 mL 200 gm	G	(W), 7 days until extraction (S), 14 days until extraction 40 days after extraction
Dissolved gasses in water	RSK-175SOP	Water	Cool, 4°C	2 x 40 mL VOA	G	14 days

Polyethylene (P) Glass (G) *added if residual Chlorine present

APPENDIX 2

CHAIN-OF-CUSTODY RECORD

APPENDIX 3

STANDARDS LOG FORM

APPENDIX 4

LIST OF TECHNICAL REFERENCES

LIST OF TECHNICAL REFERENCES

Department of Health Services, ADHS Adopted Rule, Chapter 6, Appendix 14, R9 -15-

Method for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, revised March 1983 and EPA-600/4-84-017, March, 1984.

Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985, American Public Health Association, American Water Works Association, Water Pollution Control Federation

Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, Revised April, 1985 and 3rd edition, September, 1986.

Criteria for Identification of Hazardous and Extremely Hazardous Wastes, California Code of Regulation Title 22, Article 11.

Draft Method for Total Petroleum Hydrocarbons and Total Organic Lead, Draft Method Hazardous Materials Laboratory, California Department of Health Services, 2151 Berkeley Way, CA 94704.

Method for Organic Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057 July (1982).

Book of ASTM Standards, Volumes 11.01 and 11.02, American Society of Testing and Materials, Philadelphia, PA (1987)

Official Methods of Analysis, 14th Edition, Association of Official Analytical Chemists, 1984).

Manual of Water Resources Investigations of the United States Geological Survey (USGS) Laboratory Analysis, USGS, Washington DC (1979).

Method for the Determination of Organic Compounds in Finished Drinking Water and Raw USEPA, Environmental Monitoring and Support Laboratory-Cincinnati (1986).

REFERENCES FOR APPROVED METHODS

Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, revised March 1983 and EPA-600/4-84-017, March, 1984.

Standard Methods for the Examination of Water and Wastewater, 19th Edition, 1995, American Public Health Association, American Water Works Association, Water Environment Federation.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, USEPA, revised April 1985 and 3rd edition, September, 1986.

Draft Method for Total Petroleum Hydrocarbons and Total Organic Lead, Draft Method Available from Hazardous Materials Laboratory, California Department of Health Services, 2151 Berkeley Way, Berkeley, CA 94704.

Federal Register, Vol. 59, No. 135, pp. 29998-30001, July 17, 1989.

Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, December, 1988.

Methods for Organic Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July, 1982.

Official Methods and Recommended Practices of the American Oil Chemist's Society, American Oil Chemist's Society, 1988.

Federal Register, Vol. 56, No. 5, pp. 636-643, January 8, 1991.

Criteria for Identification of Hazardous and Extremely Hazardous Wastes, California Code of Regulations, (CCR) Title 22.

"Direct Current Plasma (DCP) Optical Spectrometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029", 1986, Revised 1991, Applied Research Laboratories, Inc., 24911 Avenue Stanford, Valencia, CA 91355.

APPENDIX 5

QC NONCONFORMANCE REPORT

QC NONCONFORMANCE REPORT

JOB # _____ SAMPLES AFFECTED _____

DATE _____

ANALYSIS OUT OF CONTROL_____
_____
_____
_____
_____

HOW THE PROBLEM WAS RESOLVED_____
_____
_____
_____
_____

COMMENTS_____
_____
_____
_____
_____

Attach control charts and other data associated with the nonconformance.

ANALYST_____

Corrective action verified by:_____
LABORATORY QA/QC

APPENDIX 6

DOHS CERTIFICATION

Standard Operating Procedure for the Determination of Trace Metals via ICP by EPA Method 6010B

for the
Metals Laboratory
of

American Environmental Testing Laboratory, Inc.
2834 North Naomi Street
Burbank, CA 91504

Tel: (818) 845-8200 Fax: (818) 845-8840

AETL Control # _____

Reviewed By:

C. Razmara

03/14/2014

Cyrus Razmara Ph.D. - Laboratory Director — Date

03/14/2014

Robert Aghazarian — Date

I SCOPE AND APPLICATION

This method is used to determine the concentration of certain trace metals, in solution, using an inductively coupled plasma-atomic emmision spectrometry (ICP). All matrices, excluding filtered groundwater samples but including ground water, aqueous samples, TCLP and STLC extracts, soils, aqueous sludge, waste solvents, tars, fibrous wastes, filter cakes, spent carbons, spent catalysts, sediments and hazardous waste matrices require digestion prior to analysis. Samples that have been prefiltered and acidified will not need digestion. Samples which are not digested must be matrix matched with the standards. These matrices are prepared for analysis, by utilizing a variety of digestion techniques, primarily EPA method 3005A and 3050B.

The Laboratory Supervisor and Chemist share responsibility for performance of this SOP. The experience of the analyst is crucial to the successful application of this method, and only experienced ICP analysts may use this method. The analyst must be able to interpret instrument performance and detector responses. Prior to data generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of proficiency. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000B in SW-846, Third Edition, Final Update III, December 1996, Section 8.4. The guidance specified in Method 8000B is used since procedures for determining such parameters for inorganic analyses is not specified elsewhere in SW-846. Instructions for performing the initial demonstration of proficiency are detailed in Appendix 1.

Method Detection Limit (MDL): Routinely analyzed compounds and laboratory-determined method detection limits are provided in Appendix 8. Detection limits are determined by conducting a method detection limit study as detailed in Appendix 4. The method detection limits have been generated using clean aqueous and solid matrices and are not achievable for many “real” sample matrices. The listed detection limit may vary based on the amount of sample used.

Practical Quantitation Limit (PQL): The practical quantitation limit (PQL) of this method is approximately 5 mg/kg (wet weight) for soil/sediments, and 0.05 mg/L for water (see Appendix 6). The LOQ will vary based upon the same factors that affect detection limits (dilutions and sample size).

II SUMMARY OF METHOD

Samples must be solubilized or digested using appropriate sample preparation methods (see Appendix 2). The digestates then undergo multielemental determination by ICP using a simultaneous optical system receiving and measuring emission from radial or axial viewing of the plasma.

Samples are nebulized and the resulting aerosol is transported to the plasma torch. Element-specific emission spectra are produced by a radio-frequency inductively coupled plasma. The spectra are dispersed by a grating spectrometer, and the intensities of the emission lines are monitored by photosensitive devices.

Background correction is required for trace element determination. Background must be measured adjacent to analyte lines on samples during analysis. The position selected for the background intensity measurement, on either or both sides of the analytical line, will be determined by the complexity of the spectrum adjacent to the analyte line. In one mode of analysis the position used should be as free as possible from spectral interference and should reflect the same change in background intensity as occurs at the analyte wavelength measured. The instrument provides automatic and programmable background correction for each spectral frequency used.

III SAMPLE COLLECTION, PRESERVATION, AND STORAGE

The maximum holding time from sampling to analysis, collection volume, and digestion volumes are given for trace metals analysis in the following table:

Measurement	Digestion Volume[a,c] (mL)	Collection Volume[a,c] (mL)	Treatment and/or Preservative	Holding Time[b]
Aqueous (Total)	100	600	HNO_3 to pH < 2	6 months
Aqueous (Dissolved)	100	600	Filter on site; HNO_3 to pH < 2	6 months
Aqueous (Suspended)	100	600	Filter on site	6 months
Solid (Total)	2 g	200 g	N/A	6 months

a Unless stated otherwise
b Either glass or plastic containers may be used
c Any sample volume reduction from the reference methods's instructions must be made in the exact proportion as described in the method and representative sampling must be maintained.

Samples slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts respectively.

Samples received for trace metals analysis are stored in a sample refrigerator at 4^0C until analysis. At the time of analysis, all samples and standards are warmed to room temperature.

The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plans. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data will be estimated. The lab will narrate any missed holding times to the client.

IV INTERFERENCES

Reagents, labware, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated signals, causing misinterpretation of the instrument response. All of

these materials must be demonstrated to be free from interferences, under the conditions of the analysis, by running method blanks.

Physical interferences are effects associated with the sample nebulization and transport processes. Changes in viscosity and surface tension can cause significant in accuracies, especially in samples containing high dissolved solids or high acid concentrations. If physical interferences are present, they must be reduced by diluting the sample, by using a peristaltic pump or by using a high solids nebulizer. Another problem that can occur with high dissolved solids is salt buildup at the tip of the nebulizer, affecting aerosol flow rate and causing instrumental drift. The problem can be controlled by wetting the argon prior to nebulization, using a tip washer, using a high solids nebulizer or diluting the sample. Also, it has been reported that better control of the argon flow rate (by mass flow controller), especially to the nebulizer, improves instrument performance.

Chemical interferences include molecular compound formation, ionization effects, and solute vaporization effects. Normally, these effects are not significant with the ICP technique, but if observed, can be minimized by careful selection of operating conditions, by buffering of the sample, by matrix matching, and by standard addition procedures. Chemical interferences are highly dependent on matrix type and the specific analyte element.

Memory interferences result when analytes in a previous sample contribute to the signals measured in a subsequent sample. Memory effects can result from sample deposition on the uptake tubing to the nebulizer and from the build up of sample material in the plasma torch and spray chamber. The site where these effects occur is dependent on the element and can be minimized by flushing the system with a rinse blank between samples. The possibility of memory interferences should be recognized within an analytical run and suitable rinse times should be used to reduce them. The rinse times necessary for a particular element must be estimated prior to analysis.

High salt concentrations can cause analyte signal suppressions and confuse interference tests. Dilution of the sample may be necessary or a spike recovery determination may be used to determine if sample results are valid from an undiluted run.

Spectral interferences are caused by background emission from continuous or recombination phenomena, stray light from the line emission of high concentration elements, overlap of a spectral line from another element, or unresolved overlap of molecular band spectra. Automatic and programmable background corrections are employed by the instrument to compensate for any stray light or emissions. Interference element checks (standards containing trace metals which contribute emission to the analyte spectral line of another) are employed to correct the quantitation of each element regardless of the presence of any other element within the analyzed digestate. See section 3.0 of the reference method for a full discussion of interelement corrections.

V EQUIPMENT AND SUPPLIES

Analytical Balance: Used to accurately weigh solid samples for preparation (±0.1mg sensitivity).

Analytical system (Perkin Elmer 4300):

a) Autosampler: AS 93 Plus
b) Detector: Simultaneous polychromator optics
c) RF generator: Controlled at 27.12 MHz
d) Instrument software: WinLab 32
e) Water circulator
f) Liquid argon tank with two-stage pressure regulator

Autosampler tubes

Beakers: 250 mL

Block digestor

Digestion tubes: With caps and watch glasses

Filter paper: Whatman No. 41 or equivalent

Filters: Filter inserts for digestion tubes

Filtration tubes: With caps

Funnels

Sample Spatulas, Stainless Steel: Used in the sample preparation of solid samples

Sieve: No. 10 ASTM

Volumetric Flasks: 10 mL, 50 mL, 100 mL, Class A with ground glass stoppers

Watch glasses

VI REAGENTS AND STANDARDS

Reagent water: Free of inorganic contamination. Reagent water used is Sparkletts™ distilled drinking water.

Digestion reagents:

a) Hydrochloric acid, concentrated, Baker Instra-Analyzed or equivalent
b) Hydrogen peroxide, 30%, Fisher Scientific or equivalent
c) Nitric acid, concentrated, Baker Instra-Analyzed or equivalent

The source and manufacturer may change from time to time; therefore, the brand and lot number must be documented in the sample preparation and standard preparation logs.

Calibration stock standards are purchased from the following manufacturers:

Environmental Express

QC stock standards are purchased from the following manufacturers:

SPEX

The calibration and QC stock standards are prepared using the following analytes:

A	B
Antimony	Aluminum
Arsenic	Calcium
Barium	Iron
Beryllium	Magnesium
Cadmium	Potassium
Chromium	Sodium
Cobalt	
Copper	
Lead	
Manganese	
Molybdenum	
Nickel	
Selenium	
Silver	
Thallium	
Vanadium	
Zinc	

Standards are divided into two mixes: A and B. Separate calibration curves are analyzed for both mixtures (see Section VII). Additionally, the two mixes are employed in interelement interference corrections by the separate analysis of Interference Check B and Interference Check A + B standard mixes.

Calibration and QC standards are purchased from a number of suppliers based on varying concentration and quality needs. All preparations are detailed by the analyst in the metals standards preparation logbook including documented standard sources and lot numbers.

The primary and working standard solutions expire 6 months after receipt or preparation and should be replaced immediately if comparison with an independent source or any other

nonconformance indicates a problem. The expiration date and standard number is recorded in the logbook and on the storage vial.

VII QUALITY CONTROL

A summary of the quality control samples, performance criteria, and calibration requirements are given in the following example of an analytical sequence for the testing of an analytical batch.

1. Summary

a) Initial Calibration Standard Curve (minimum of 3 points, see section VIII 3)
0.5, 5, 10 mg/L (STD A) or 10, 50, 100 mg/L (STD B)
b) ICB (analyte less than ½ LOQ)
c) ICV (90-110% recovery)
d) CCV
e) Interference check B
f) Interference check A+B
g) Method blank (analyte less than ½ LOQ)
d) LFB or LCS (see Appendix 6)
e) LFBD or LCSD (see Appendix 6)
f) Sample 1
e) Sample 1 MS (see Appendix 6)
f) Sample 1 MSD (see Appendix 6)
g) Sample 2-8
h) CCV
i) CCB
j) Sample 9-15
k) Sample 2 Duplicate
l) Interference check B (end of daily sequence)
m) Interference check A+B (end of daily sequence)
n) CCV
o) CCB

2. Initial Calibration Standard (IC) and Continuing Calibration Verification Standard (CCV)

The initial calibration is performed by generating a 3-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at a minimum of three levels*. Level 1 is at or below the limit of quantitation, and the high level standard is below the upper limit of the linear range of the system. Instructions for preparing the calibration standards are detailed in Appendix 3.

For each analysis batch the calibration must initially be verified prior to analyzing any samples. As a general rule, the initial calibration must be verified at the beginning of each day during which samples are analyzed. The daily analytical shift begins with the analysis of the first initial calibration standard. The shift ends after *completion* of the tenth analysis that can be

analyzed within the beginning of the shift. A midpoint (or 1.0 ppm) level standard is used to prepare the CCV standard. Percent recovery criteria for the CCV must be met before continuing the analysis batch and conducting any sample analyses. See Section VIII 4.

3. Initial Calibration Blank (ICB) and Continuing Calibration Blank (CCB)

The calibration blank is prepared by acidifying reagent water to the same concentrations of the acids found in the standards and samples. Prepare a sufficient quantity to flush the system between standards and samples. The calibration blank will also be used for all initial and continuing calibration blank determinations

4. Laboratory Reagent Blank (LRB) or Method Blank (MB)

An LRB must be prepared and treated exactly as a typical field sample including exposure to all glassware, equipment, solvents, filtration and reagents that are used with field samples. Data produced are used to assess instrument performance of a blank sample and evaluate contamination from the laboratory environment. Values that exceed ½ the LOQ indicate a laboratory or reagent contamination is present. The source of the contamination must be determined prior to conducting any sample analysis.

5. Laboratory Fortified Blank (LFB) or Laboratory Control Sample (LCS)

Prepare a secondary dilution stock using a different stock solution used to prepare the calibration standards. This separate, secondary dilution stock is used as a concentrate to fortify the LCS and MS/MSD. A LCS is required to be analyzed with each analysis batch immediately following the LRB. By analyzing the LCS initially, a control check is performed on the concentrated solution used to prepare the MS/MSD. If any deviations in the trace metals concentration(s) are present, it will be reflected in the LCS and not exclusively attributed to a matrix upon analysis of the MS/MSD. The percent recovery for trace metals must fall in the acceptable ranges (85-115%) prior to analyzing samples. If the LCS recovery for an analysis batch does not meet these recovery criteria the data are considered invalid, and the source of the problem should be identified and resolved before continuing analyses.

All analytes requested for analysis are spiked and reported.

6. Laboratory Fortified Matrix (LFM) or Matrix Spike (MS)

The laboratory must add a known amount of the target analyte to one sample within each analytical batch (of 15 samples). Samples which require such pretreatment require a MS to be taken through all sample handling and preparation procedures in order to confirm any matrix effects and that the laboratory performed the pretreatment step appropriately.

It is recommended that the solutions used to fortify the MS be prepared from different stocks than used to prepare the calibration standards.

The fortified concentration must be equal to or greater than the native sample concentration. Fortified samples that exceed the calibration range must be diluted to be within the linear calibration range. In the event that the fortified level is less than the observed native level of the unfortified matrix, the recovery should not be calculated. The sample should be fortified at a higher level and reanalyzed or a different sample should be chosen for the MS. For normal drinking waters, the MS typically should be prepared in the range of 1 mg/L. The MS should not be prepared at a concentation greater than ten times the highest concentration observed in any field sample and should be varied to reflect the range of concentrations expected in field samples. Ideally, the MS fortified spike concentration should be 3-5 times the native concentration.

Calculate the percent recovery for trace metals, corrected for concentrations measured in the unfortified sample, by using the following equation:

$$\%REC = ((C_s-C)/s) \times 100$$

Where,

%REC = Percent Recovery
C_s = measured trace metals in the fortified sample
C = measured native trace metals sample concentration
s = concentration equivalent of analyte added to the sample

If the recovery for trace metals falls outside the acceptance limits and the laboratory's performance for all other quality control performance criteria is acceptable, the accuracy problem encountered with the fortified sample is judged to be matrix related, not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure which may require corrective action.

All analytes requested for analysis are spiked and reported.

7. Duplicate LFM or Matrix Spike Duplicate (MSD)

This quality control sample must be analyzed with each analytical batch (fifteen samples). Calculate the relative percent difference (RPD) of the initial quantitated concentration (I_c) and duplicate quantitated concentration (D_c) using the following formula:

$$RPD = ((I_c-D_c)/([I_c+D_c]/2)) \times 100$$

If the RPD for the duplicate measurement of PAH falls outside ±15% and if all other quality control performance criteria are met, laboratory precision is out of control for the sample. The precision problem encountered with the fortified sample may judged to be matrix related, depending on the evaluation of other QC data, and not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure that may require corrective action.

8. Initial Calibration Verification (ICV) or Quality Control Standard (QCS)

After calibration curves have initially been established or have been reestablished, or as required to meet data quality needs, verify both the calibration and acceptable instrument performance with the preparation and analyses of an external/second source ICV. If the determined concentration is not within ±10% of the stated value, performance of the calibration is unacceptable. The source of the problem must be corrected before continuing with sample analysis.

9. Interference Check Standards

Verify the inerelement and background correction factors at the beginning and end of each sequence or analytical run by analyzing the interference check B and interference check A + B solutions. Results should be within ±20% of the true value.

10. Dilution Test, Post Digestion Spike Addition, and Method of Standard Additions

It is recommended that whenever a new or unusual sample matrix is encountered, a series of tests be performed prior to reporting concentration data for analyte elements. These tests, as outlined as follows, will ensure that neither positive nor negative interferences are operating on any of the analyte elements to distort the accuracy of the reported values.

Dilution Test: If the analyte concentration is sufficiently high (minimally, a factor of 10 above the instrument detection limit [IDL] after dilution), an analysis of a 1:5 dilution should agree within ± 10% of the original determination. If not, a chemical or physical interference effect should be suspected; therefore proceed with the Post Digestion Spike Addition.

Post Digestion Spike Addition: An analyte spike added to a portion of a prepared sample, or its dilution, should be recovered to within 75% to 125% of the known value. The spike addition should produce a minimum level of 10 times and a maximum of 100 times the IDL. If the spike is not recovered within the specified limits, a matrix effect should be suspected.

Method of Standard Additions (MSA): When the MSA is used, standards are added at one or more levels to portions of a prepared sample. This technique compensates for enhancement or depression of an analyte signal by a matrix. This procedure calls for two identical aliquots of the sample solution to be taken. To the first aliquot a small volume of standard is added; while to the second aliquot, a volume of acid blank is added equal to the standard addition. The sample concentration is calculated by:

Multiplying the intensity value for the unfortified aliquot by the volume (liters) and concentration (mg/L or mg/Kg) of the standard addition to make the numerator; the difference in intensities for the fortified sample and unfortified sample is multiplied by the volume (liters) of the sample aliquot for the denominator. The quotient is the sample concentration.

VIII PROCEDURE

1. Sample Preparation

Prepare matrix-specific batches of 15 samples or less. Matrices are typically defined as soil, water, and other. Due to differences in preparation of soils and waters, various matrices cannot be batched together.

Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

Consult all project-specific plans for matrix spike and duplicate preparation requirements. Samples from two clients that each require project-specific matrix spikes can be prepared together; however, two sets of QC will have to be prepared using each client's designated samples.

Prepare at least one set of the following QC samples with each batch (up to 15 samples with the same matrix): method blank, matrix spike, matrix spike duplicate, sample duplicate and LCS/LCSD.

Appendix 2 provides instructions for extraction of water and solid samples.

2. Instrument Start-up

Set up the instrument with the proper operating parameters as listed in Appendix 7. Specific wavelengths are listed in Appendix 8. Other wavelengths may be substituted if they can provide the needed sensitivity and are corrected for spectral interference.

After standards, QC samples, and field samples have been prepared, load the instrument autosampler. All samples should be in autosampler tubes and should be placed in sequential order and grouped by analysis batch. The autosamplers have a greater sample capacity that can be analyzed with one continuing calibration standard or initial calibration; therefore, multiple CCV and CCB standards need to be prepared if multiple batches of field samples, and associated QC are to be loaded within the autosampler. The autosampler capacity is approximately 150 vials.

To operate the Perkin Elmer 4300, first turn on monitor, printer and computer (in that order). Select the WinLab 32 software icon. Select the Plasma icon from the toolbar. Select On to light the plasma. Select the Workspace icon from the toolbar to access the Sample Information Editor and the Automated Analysis Control windows.

After allowing the instrument to stabilize for 30 minutes, perform the signal optimization alignment by selecting Tools from the menu options and then select Spectrometer Control. Select Axial as the mode and select Align View from the window options. After a 10 ppm Mn standard has begun being manually aspirated to the nebulizer, select OK. The window will read Idle when alignment is complete. Select Radial as the mode and repeat the above steps for a second alignment.

Select the appropriate instrument method for the Method field. Create the calibration sequence in the Automated Analysis Control window.

Create an instrument sequence. Select the Sample Information Editor and edit the Sample ID field plus the A/S (autosampler) field for each entry. The method blank should be edited first with the preparation batch number (different than the analytical batch number) and date of analysis. All remaining samples in the preparation batch should be analyzed subsequent to the method blank including required QC samples. Use the Laboratory Sample ID for the Sample ID fields and include any dilution factor or non-standard final digestate volume as a suffix after the Sample ID such as X5 or X10, for dilution factors of 5 and 10, respectively; or FV=10mL for a final volume of 10 mL.

Select Edit as the menu option and select Save As. Next, select Sample Info File and enter the file name as the date of analysis (yymmdd). Select the Automated Analysis Control window next, and select the Set-up page. Edit the sequence name (file name saved as) and edit the sample sequence numbers to be run. *Note: Do not enter autosampler position numbers.*

Reports are generated automatically and their format is based on the report options selected within the instrument method.

3. Initial Calibration

The initial calibration is performed by generating a 3-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at three levels*. Due to the interference effects and detection limits of various analytes, it is routinely necessary to analyze six separate standards to achieve three levels for each analyte.

Profile and calibrate the instrument according to the instrument manufacturer's recommended procedures, using the typical mixed calibration standard solutions described in Section VI. Flush the system with calibration blank between each standard and sample, and use the average intensity of multiple exposures for both standardization and sample analysis to reduce random error.

Linear or non-linear response curves (especially for alkali and alkaline earth metals which may exhibit non-linear response curves due to ionization and self absorbtion effects) may be used; however, the effective range must be checked (the upper range limit should be an observed signal no more than 10% below the level extrapolated from lower standards).

If the calibration values are acceptable for all analytes, quantitate the ICV standard against the 3-point initial calibration. All target compound recoveries must be within 90%-110% of the

expected value. If any target compounds do not meet the criteria, reanalyze the standard and/or proceed with other corrective action.

4. Continuing Calibration

Sample analysis may proceed with the incorporation of continuing calibration standards every 10 samples analyzed within an instrument sequence. Multiple CCV/ICV standards are required for each extraction batch (15 samples, one Method Blank, a pair of Matrix Spike and Matrix Spike Duplicate, one LCS/LCSD pair, and one Sample Duplicate).

The CCV/ICV standard is checked for percent recovery of the instrument response between the initial calibration and each subsequent analysis of the verification standard.

The percent recovery for the calibration verification standard must be within ± 10% for each analyte before any sample analysis may take place.

In those instances where the percent difference for one or more analytes exceeds 10%, *all* samples following the last acceptable ICV, CCV or check standard must be reanalyzed.

6. Method Blank Analysis

Analyze and check the method blank for contamination. When contamination of any type is found, the results should be documented so that a history of routine levels can be established. Analysis cannot continue until the criteria for a contaminant-free blank is met.

7. Sample Evaluation

Evaluate the following for quality control.

Matrix spikes will be evaluated based on the percent recovery. The recoveries will be compared to the ranges provided in Appendix 6. If the two recoveries are within the ranges provided, the data would be reported as valid. If any of the recoveries are outside of the ranges, the cause will be determined and an explanation provided. In many cases, a recovery problem is limited to the individual sample only, and will not affect the validity of the other samples in the run.

A Lab Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) is run at the rate of one per matrix per batch. This sample is the QC check sample prepared and analyzed in the identical manner as the samples. The results of the LCS are compared to criteria dictated in Appendix 6.

If the matrix spike duplicate or sample duplicate analysis fails to meet the designated criteria due to its sample matrix, the LCS is used as the means to demonstrate that the system is capable of generating acceptable data. If any analyte falls outside of the criteria established in Appendix 6, the analyst must provide an explanation in the narrative and determine the validity of the individual analyte.

8. Reporting of Results

The following is a summary of the calculation used by the computer, or the analyst to generate the reported data:

Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_{\chi \times 100}}{T}$$

Where:

C_χ = The concentration of the analyte spike or standard from the analysis.
T = The true value of the spike or standard added.

Sample concentration calculations for linear and non-linear calibration curves:

For aqueous samples, directly report ug/L of metal from the calibration curve or directly from the read-out of the system.

For diluted aqueous samples,

ug/L metal in sample = A x (C+B)/C

Where,

A = ug/L of metal in diluted aliquot from calibration curve.
B = Acid blank matrix used for dilution, mL.
C = Sample aliquot, mL.

For solid samples,

ug metal/ kg sample = (A x V)/W

Where,

A = ug/L of metal in processed sample from calibration curve.
V = Final volume of processed sample.
W = Weight of sample, g.

Concentrations are derived from calibration curves plotting instrument response versus concentration. Normally, a linear relationship exists between these two sets of data and the concentration may be determined from a first-order curve. In instances where a non-linear relationship between analyte concentration and response is present over the working range, or when similar calibration approaches have not met the acceptance criteria, the instrument data

system should be employed to calculate analyte concentrations via second order calibration curves. In order to be an acceptable calibration, the coefficient of the determination must be greater than or equal to 0.995.

Standard Deviation is calculated by the following equation:

$$SD = \sqrt{\frac{\sum_{N}\left(X_i - X_{Avg}\right)^2}{N-1}}$$

Where:

X_i = Analyte concentrations

X_{Avg} = Analyte mean concentration

N = Number of data points

Relative Percent Difference:

$$RPD = \left| \frac{\left[Conc_{MS} - Conc_{MSD}\right]}{\left[\frac{Conc_{MS} + Conc_{MSD}}{2}\right]} \right| \times 100$$

Where:

$Conc_{MS}$ = Matrix Spike (or Sample) Concentration
$Conc_{MSD}$ = Matrix Spike Duplicate (or Sample Duplicate) Concentration
RPD = Relative percent difference

IX CORRECTIVE ACTION

See Appendix 5 for specific information regarding quality system nonconformances and associated corrective actions.

X METHOD PERFORMANCE

Appendix 8 gives the results for the Initial Demonstration of Capability plus LOD (MDL) study results. See Appendix 6 for LOQ (PQL) data.

XI WASTE DISPOSAL AND WASTE PREVENTION

Whenever feasible, laboratory personnel should use pollution prevention techniques to address waste generation. Wastes should be reduced or minimized at the point of generation which includes the use of any reagent, standard, or eluent.

Wastes must be disposed of in accordance with all applicable rules and regulations. Wastes shall be disposed of in the following manner:

Water samples (not digested): Water waste
Soil samples (not digested): Soil drum waste
Sample digestates: Acid waste
Sample leachates: Acid waste
Waste hydrochloric acid: Acid waste
Waste nitric acid: Acid waste
Waste hydrogen peroxide: Acid waste
Trace metals standard solutions: Acid waste

XII SAFETY

The toxicity or carcinogenicity of each reagent used in this method has not fully been established. Each chemical should be regarded as a potential health hazard and exposure should be as low as reasonably achievable. Cautions are specifically listed on the corresponding MSDS sheet.

The following chemicals have the potential to be highly toxic or hazardous:

Nitric Acid: Toxic. Corrosive. Oxidizing. May be fatal if swallowed or inhaled. Extremely corrosive. Contact with eyes or skin may cause severe burns and permanent damage. Use safety glasses and face mask, *gloves*, and work within a fume hood.

Hydrochloric Acid: Toxic. Corrosive. Extremely corrosive. Inhalation of vapor can cause serious injury. Ingestion may be fatal. Liquid can cause severe damage to skin and eyes. Use safety glasses, face mask, gloves, and effective ventilation.

Hydrogen Peroxide, 30%: Toxic. Corrosive. Chemically unstable, readily decomposes to water and oxygen. Can cause serious burns. Eye contact can cause serious injury, possibly blindness. Harmful by inhalation, ingestion, and skin contact.

GLOSSARY

The following terms are defined for use in this document:

ACCURACY: The closeness of agreement between an observed value and an accepted reference value. When applied to a set of observed values, accuracy will be a combination of a random component and of a common systematic error (or bias) component.

BATCH: A group of samples which are similar with respect to the sampling or the testing procedures being employed and which are processed as a unit. For QC purposes, each group of 15 samples or less will be determined to be one batch.

BIAS: The deviation due to matrix effects of the measured value from a known spiked amount. Bias can be assessed by comparing a measured value to an accepted reference value in a sample of known concentration or by determining the recovery of a known amount of contaminant spiked into a sample (matrix spike). Thus, the bias (B) due to matrix effects based on a matrix spike is calculated as:

$B = (Xs - Xu) - K$

Where:

X_s = measured value for spiked sample,

X_u = measured value for unspiked sample, and

K = known value of the spike in the sample.

Using the following equation yields the percent recovery (%R).

$\%R = 100 (X_S - X_U) / K$

BLANK: see Equipment Rinsate, Method Blank, Trip Blank.

CONTROL SAMPLE: A QC sample introduced into a process to monitor the performance of the system.

DUPLICATE: see Matrix Duplicate, Field Duplicate, Matrix Spike Duplicate.

EQUIPMENT BLANK: see Equipment Rinsate.

EQUIPMENT RINSATE: A sample of analyte-free media which has been used to rinse the sampling equipment. It is collected after completion of decontamination and prior to sampling. This blank is useful in documenting adequate decontamination of sampling equipment.

PRACTICAL QUANTITATION LIMIT: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL or Limit of Quantitation (LOQ) is generally 2 to 10 times the MDL.

FIELD DUPLICATES: Independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

LABORATORY CONTROL SAMPLE: A known matrix spiked with compound(s) representing the target analytes. This is used to document laboratory performance.

MATRIX: The component or substrate (e.g., surface water, drinking water) which contains the analyte of interest.

MATRIX DUPLICATE: An intralaboratory split sample which is used to document the precision of a method in a given sample matrix.

MATRIX SPIKE: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

MATRIX SPIKE DUPLICATE: Intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.

METHOD BLANK: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting form the analytical process.

For a method blank to be acceptable for use with the accompanying samples, the concentration in the blank of any analyte of concern should not be higher than the highest of either:

(1) ½ the LOQ, or
(2) Five percent of the regulatory limit for that analyte, or
(3) Five percent of the measured concentration in the sample.

METHOD DETECTION LIMIT (MDL): The minimum concentration of a substance that is measureable and reportable with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte. Also, Limit of Detection (LOD).

PRECISION: The agreement among a set of replicate measurements without assumption of knowledge of the true value. Precision is estimated by means of duplicate/replicate analyses. These samples should contain concentrations of analyte above the MDL, and may involve the use of matrix spikes. The most commonly used estimates of precision are the Relative Standard Deviation (RSD) or the Relative Percent Difference (RPD)

$RSD = (s/x_i) \times 100$

Where:
x_i = the arithmetic mean of the x_i measurements
S = standard deviation

$RPD = 100 \times [(x_1 - x_2)/ \{(x_1 + x_2)/2\}]$

Where:
x_1 = First replicate result
x_2 = Second replicate result

REAGENT BLANK: See Method Blank

REAGENT GRADE: Analytical reagent (AR) grade, ACS reagent grade, and reagent grade are synonymous terms for reagents, which conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

REAGENT WATER: Water that has been generated by any method which would achieve the performance specifications for ASTM Type I water. For organic analyses, see the definition of organic-free reagent water.

REFERENCE MATERIAL: A material containing known quantities of target analytes in solution or in a homogeneous matrix. It is used to document the bias of the analytical process.

SPLIT SAMPLES: Aliquots of sample taken from the same container and analyzed independently. In cases where aliquots of samples are impossible to obtain, field duplicate samples should be taken for the matrix duplicate analysis. These are usually taken after mixing or compositing and are used to document intra- or inter- laboratory precision.

STANDARD CURVE: A plot of concentrations of known analyte standards versus the instrument response to the analyte. Calibration standards are prepared by successively diluting a standard solution to produce working standards, which cover the working range of the instrument. Standards should be prepared at the frequency specified in the appropriate section. The calibration standards should be prepared using the same type of acid or solvent and at the same concentration as will result in the samples following sample preparation. This is applicable to organic and inorganic chemical analyses.

REFERENCES

SW-846 Method 6010B, Revision 2, December 1996
Inductively Coupled Plasma-Atomic Emission Spectrometry

SW-846 Method 3050B, Revision 2, December 1996
Acid Digestion of Sediments, Sludges, and Soils

SW-846 Method 3005A, Revision 1 July 1992
Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy

SW-846 Chapter Three, Inorganic Analytes

Perkin Elmer 4300 Operating Manual

WinLab 32 Software Operating Manual

Appendix 1
Initial Demonstration of Capability

The initial demonstration of capability is performed to demonstrate that the system and the analyst can successfully perform the analysis. This is accomplished by running four aliquots of the Quality Control Check Sample in the same manner that samples are run.

The QC Check Sample standard is purchased from a certified source different than that used for the calibration standards. The following concentrations and volumes are used:

Standard Name	Final Concentration

1. Prepare the reference sample by adding 1.0 mL of the QC Check Sample standard to each of four 50 mL aliquots of organic-free water.
2. Analyze the four replicate aliquots of the well-mixed reference samples by the same procedures used to analyze actual samples. This will include a digestion method as well as the determinative method of 6010B.
3. Calculate the average recovery (x) in ug/L, and the standard deviation of the recoveries in ug/L, for each analyte of interest using the four results.
4. The QC acceptance criteria for this method is as follows:

Once an analyst and instrument have passed the accuracy and precision criteria for all analytes to be reported by the method, the analyst and instruments are certified as having established initial proficiency with the method.

Appendix 2
Sample Preparation

Aqueous Samples

1. Acid digestion of aqueous samples by EPA Method 3005A

a) Add 50 mL of well mixed sample to the polypropylene digestion tube.
b) Add 1.0 mL Concentrated HNO_3 and 2.5 mL HCl and mix.
c) Place tube in digestion block to heat to 85°C and cover with polypropylene watch glass. *Note: Sample templerature should rise to approximately 95°C with the addition of the watch glass.*
d) Heat sample for 2.5 hours.
e) Remove sample from digestion block and allow to cool to room temperature.
f) Dilute to 50 mL mark with reagent water.
g) Filter sample
    a. For samples containing significant amounts of suspended material, use the digestion tube filters (Filter Mate).
    b. For typical samples, decant the digestate into a filtration tube through a funnel containing Whatman No. 41 filter paper.
h) Analyze sample
i) Record all information on the Sample Preparation Logsheet.

Solid Samples

1. Acid digestion of sediment, sludge and soil samples by EPA Method 3050B

a) Exactly weigh (±0.01g) approximately 1g of thoroughly homogenized sample to a polypropylene digestion tube.
b) Add 10.0 mL of reagent water, 2.0 mL concentrated HNO_3, and 2.0 mL concentrated HCl
c) Place tube in digestion block to heat to 85°C and cover with polypropylene watch glass. *Note: Sample templerature should rise to approximately 95°C with the addition of the watch glass.*
d) Heat sample for 30 minutes and remove from block digestor.
e) Add 2.0 mL of 30% H_2O_2 and allow the samples to stand for 10 minutes. During this time readjust the digestor temperature to equilibrate to 75°C.
f) Place the samples back with the block digestor for 30 minutes (without watchglass).
g) Remove samples from the digestor and allow to cool to room temperature.
h) Filter sample
    a. For samples containing significant amounts of suspended material, use the digestion tube filters (Filter Mate).
    b. For typical samples, decant the digestate into a filtration tube through a funnel containing Whatman No. 41 filter paper.
j) Analyze sample
k) Record all information on the Sample Preparation Logsheet.

Appendix 3
Standards Preparation

All standard preparations are documented in the Metals Standards Preparation Logbook. Each entry must include the standard source or manufacturer, the standard lot number, the initial concentration, the final concentration, the solvent used, the date, and the analyst's initials. The expiration date and standard identification number are also recorded in the logbook and on the storage vial. The expiration date for stock and intermediate solutions is six months, although more frequent preparation may be required.

Appendix 4
Method Detection Limit (MDL) Study

The method detection limit (MDL) or limit of detection (LOD) is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix.

AETL's limit of detection procedure follows the EPA MDL procedure as described in 40 CFR part 136 Appendix B – Revision 1.11. See the SOP for Determination of LOD and LOQ for specific information regarding the procedures used in the calculation of this value. The LOD study shall incorporate all sample preparation procedures and shall be completed by analyte and matrix. LOD studies shall be conducted each time there is a significant change in the method, for the addition of new analytes, or if there is a significant change in the instrument type.

In brief, detection limit studies are performed using reagent water for aqueous matrices and clean sand for soil and solid matrices. Seven replicate standards are prepared using the calibration standard spiked at a level that is between 3 to 5 times the estimated MDL. The laboratory standard fortified blanks are analyzed and the mean recovery and standard deviation (SDEV) is calculated for each analyte. The MDL is then calculated as follows:

$$MDL = (3.143) \times SDEV$$

The Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), must be equal to or greater than the LOD and MDL

Appendix 5
Corrective Action

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Method Blank/ CCB	One per matrix per batch	Less than ½ LOQ	1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window
System blanks	As needed	Less than ½ LOQ	1) This is a corrective action when a contaminated system is identified.
MS/MSD	One per matrix per batch	Water: 80%-120% Soil: 80%-120%	1) Evaluate results against the LCS 2) If the LCS was compliant: narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes.
RPD limits	One per batch	RPD %15	1) Check calculations 2) Narrate failed RPD to client
ICV/CCV	Every 10th sample	%R within 90%-110%	1) Check calculations 2) Reanalyze 3) Reanalyze all samples associated ICV/CCV that fails criteria
LCS/LCSD	One per matrix per batch	%R within 80%-120%	1) Reanalyze LCS/LCSD 2) If still non-compliant, re-prep batch and reanalyze.

Appendix 6

Target Compounds	Wavelength nm[a]	RPD Limits	Water %R Limits	Soil %R Limits	Water PQL mg/L	Soil PQL mg/Kg
Aluminum	308.215	15	80-120	80-120	0.50	10
Antimony	206.836	15	80-120	80-120	0.10	5.0
Arsenic	193.696	15	80-120	80-120	0.10	5.0
Barium	233.527	15	80-120	80-120	0.05	5.0
Beryllium	313.042	15	80-120	80-120	0.05	2.5
Cadmium	226.502	15	80-120	80-120	0.05	2.5
Calcium	317.933	15	80-120	80-120	0.50	10
Chromium	267.716	15	80-120	80-120	0.05	5.0
Cobalt	228.616	15	80-120	80-120	0.05	5.0
Copper	324.752	15	80-120	80-120	0.05	5.0
Iron	259.939	15	80-120	80-120	0.10	10
Lead	220.353	15	80-120	80-120	0.10	5.0
Magnesium	279.077	15	80-120	80-120	0.50	10
Manganese	257.610	15	80-120	80-120	0.05	5.0
Molybdenum	202.031	15	80-120	80-120	0.05	5.0
Nickel	231.604	15	80-120	80-120	0.05	5.0
Potassium	766.490	15	80-120	80-120	1.0	10
Selenium	196.026	15	80-120	80-120	0.10	5.0
Silver	328.068	15	80-120	80-120	0.05	5.0
Sodium	588.995	15	80-120	80-120	0.50	10
Thallium	190.801	15	80-120	80-120	0.10	5.0
Vanadium	292.402	15	80-120	80-120	0.05	5.0
Zinc	213.857	15	80-120	80-120	0.05	5.0

a All curves are first-order including three calibration points plus the origin

Appendix 7
Operating Conditions

OPERATING CONDITIONS

Setting	Axial and Radial modes
Watts forward power	1450 watts
Viewing height	15.0 nm
Plasma flow	15 L/min
Argon auxiliary flow	0.2 L/min
Argon nebulizer flow	0.60 L/min
Sample flow rate	2 mL/min
Scan time	2 min
Delay time	76 sec
Preflush time	45 sec

Appendix 8
Method Performance

AMERICAN ENVIRONMENTAL TESTING LABORATORY

STANDARD OPERATING PROCEDURE

FOR

TPH DIESEL

BY

METHOD 8015B

Prepared by
Ziba Hosseini

Ziba Hosseini
Principal Analyst

Approved by
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Laboratory Director

1. SCOPE AND APPLICATION

1.1. Diesel range organics (DROs) correspond to the range of Alkanes from C_{10} to C_{28} and covering a boiling point range of approximately 170°C-430°C.

1.2. Method 8015M (DHS-LUFT) is used to determine the concentration of diesel range organics compound. Signal response ranges from C10 to C40 with reference to window defining standards.

1.3. The quantitation limit for this method is 1.0 mg/L for water and 20 mg/Kg for soil.

1.4. This method can also be used as screening tool (for semi-volatile organics) to obtain semi quantitative data for the prevention of sample overload during quantitative analysis on a GC/MS system.

2. SUMMARY OF METHOD

2.1. This method provides gas chromatographic conditions for the detection of alkanes (Diesel Range Organic Compounds).

2.2. Samples are introduced into the GC following solvent extraction and concentration using an autosampler. The separated organics are detected by the response to the detector, which are further quantitated and calculated by a data system.

2.3. Fused silica capillary column and temperature program is used in the gas chromatograph to separate the organic compounds. Detection is achieved by a flame ionization detector (FID).

2.4. This method is restricted to be used by, or under the supervision of analysts experienced in the use of gas chromatographs and skilled in the interpretation of gas chromatograms. Prior to the generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of capability. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000B in SW-846 Revision 2, Dec. 1997 Section 8.4. Specific laboratory instruction for performing this initial demonstration of capability is detailed in Section 9.

3. INTERFERENCES

3.1. Contamination by carryover can occur whenever high-concentration samples are concentrated following the extraction.

3.2. All glassware must be scrupulously cleaned. Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing with hot water, and rinses with tap water and organic free reagent water. Rinse with Methylene Chloride and drain.

4. SAMPLE COLLECTION, PRESERVATION, AND HANDLING

4.1 Samples analyzed by this method are waste waters, ground waters, soils, sludge, waste solvents, oily wastes, tars, fibrous wastes, filter cakes and sediments from various sources.

4.2 The maximum holding time from sampling to extraction is 7 days for water. The holding time for soil samples is fourteen days from collection to extraction. The extracts, if not analyzed at the same day, should be refrigerated. The holding time for the extracts is 40 days. Both solid and aqueous samples should be temperature preserved to 4°C. All preservation measures should be noted on the chain of custody.

4.3 Water samples must be collected in 1L pre-cleaned amber glass bottles. The analyst requires 20-30g of solid samples. This is to be collected in pre-cleaned jars. Enough sample for duplicate or MS/MSD determinations must be provided.

4.4 The laboratory will attempt to meet all holding time requirements, as dictated by this method and project specific plans. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data will be estimated. The lab will narrate any missed holding times to the client.

5. MATERIALS AND REAGENTS

5.1. All chemicals and analytes must be considered hazardous and handled in a cautious manner. MSDS data concerning the chemicals and standards must be on file and reviewed by laboratory personnel.

5.2. Sodium Sulfate-Granular, anhydrous sodium sulfate. Purify by heating to 400°C for four hours in a shallow tray, or by precleaning the sodium sulfate with methylene chloride.

5.3. Glass wool: Pyrex glass wool. Prewashed with 50 mL of methylene chloride.

5.4. Methylene chloride- reagent grade, boiling point 39°C. The source and manufacturer may change from time to time; therefore, the brand and lot number must be documented in the sample preparation and standard preparation logs.

5.5. Stock Standards: Certified stock standards are purchased from known manufacturers based on varying concentration and quantity needed. The standards for calibration, calibration verification and surrogate are prepared by first making primary stock standard solution from the original stock standard. If the concentration is still high, a secondary stock solution is prepared. Varying volumes of the standard solution are transferred into 10 or 100 mL volumetric flasks containing appropriate solvent, then making each flask to the final volume with the solvent (methylene chloride in this case). All preparations are documented in the organic standard preparation logbook, with standard sources and lot number.

5.5.1. A minimum of 5 standards is used to calibrate the system. All standards must be within the linear range of the system. A reagent blank must be run in addition to the standards.

5.5.2. Initial calibration verification standard should be analyzed with each initial calibration. The ICV standard is prepared using the same procedures as those for standards. The ICV standard is prepared from an independent source.

5.5.3. The stock standard solutions are good for 6 months, if closed tightly and refrigerated properly. Fresh standards should be prepared if the drift from the starting standard exceeds 20%. Special attention should be paid to the possibility of standards getting concentrated due to the evaporation of methylene chloride. The working standard solutions should be monitored more frequently. If comparison with an independent source indicates a problem, it should be replaced. The expiration date and standard number is recorded in the logbook and on the storage vial.

5.5.3.1. Table 1 is an example of the volumes used to prepare stock standard solutions.

Table 1

Standard	Supplier	Cat #	Initial Conc.	Amount used mL	Final volume mL	Final conc. ug/mL
Diesel	Accu Std	FU-009-D-40X	20.0 mg/mL	1.00	4	5000
Diesel	Diesel#2 (Mobile)	NA	Neat	1000mg	100	10,000
Chlorobenzene	J. T. Baker	D46656	Neat	250mg	50	5,000
Carbon chain	Accu Std	DRH-004S-R1-5X	1.0mg/mL	200µL	1.0mL	200

5.5.3.2 Table 2 is an example of the volumes used to prepare working standard solutions.

Table 2

Standard	Supplier	Initial Conc. µg/ml	Volume used µL	Final volume ml	Final conc. µg/ml
Diesel	AccuStd	5000	1000	10	500
Chlorobenzene	J. T. Baker	Neat	250m g	50	5000

6. APPARATUS AND MATERIALS

6.1. Balance – Top loading, accurate to two decimal points.
6.2. Sample spatulas – stainless steel.
6.3. Microsyringe – Hamilton 702 N or equivalent
6.4. Autosampler
    6.4.1. Hewlett Packard 7637 Injector with a tray of 100 sample vials.
6.5. Gas chromatograph – Agilent 5890, equipped with FID detector.

6.5.1. Column – 20 meter Phenomenex, ZB-5ms, 0.18D, 0.18 micrometer film thickness.

Data System – Chemstation Revesion A.09.01 (1206)

7. SAMPLE PREPARATION AND ANALYSIS PROCEDURES

7.1. Prepare matrix-specific batches of 15-20 samples. Matrices are typically defined as soil, water and solid/or liquid waste.

7.2. Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

7.3. Consult all project-specific plans for matrix spike and duplicate preparation requirements. Samples from two clients that each requires project-specific matrix spikes can be prepared together; however, two sets of QC will have to be prepared using each client's designated samples.

7.4. Prepare at least one set of the following QC smples with each batch: method blank, matrix spike/matrix spike duplicate and lab control sample (LCS).

7.5. Samples, standards and QC samples are placed into various positions of the autosampler. The positions and sample identifications are logged into the sample analyses log book and computer system.

7.6. Reserve the first few positions for standard and QC samples. Prepare the calibration standards, initial calibration verification standard, spike standard, and surrogate standard using the guidelines set forth in sections 5.5.3.1 and 5.5.3.2.

7.7. Solids: Weigh the appropriate amount (20) g of solid material into a 40 ml vial. spike with the appropriate volume of surrogates and add 20 mL of Methylene Chloride. Sonicate 15 minutes and leave to settle and inject by autosampler.

7.8. Liquid samples-allow the sample to come to ambient temperature. Transfer 1 Liter of water into a 2 liter separatory funnel. Add surrogate before extraction and extract three times with Methylene Chloride. Filter through pre dried Sodium Sulfate in a concentrating flask. Concentrate the extract to a final volume of 10.0 ml. Inject the appropriate volume of extract on GC.

8. OPERATING CONDITIONS

8.1. Gas chromatograph conditions are as follow:

Carrier gas (Helium) flow rate:	1.6 mL/minute
Makeup gas (Helium) flow rate:	30 mL/minute
Injector temperature:	240° C
Detector temperature:	360° C
Temperature Program:	
Initial temperature:	43° C hold 2.6 minutes
Program:	43° C to 260° C at 16°C/minute, held 0.1 minutes
	260° C to 350° C at 6°C/minutes,
Final temperature	350° C
Final hold:	6.0 minutes

Injector: Hewlett Packard 7673

9. INITIAL CALIBRATION

The calibration of Diesel Range Organics is markedly different from that of single component analytes. The response used for calibration must represent the entire area of the chromatogram within the retention time range or the fuel type, including the unresolved complex mixture that lies below the individual peaks.

Since Diesel contains a large number of compounds that will produce well-resolved peaks in a GC/FID chromatogram, it contains many other components that are not chromatographically resolved. This unresolved complex mixture results in the “bump” in the

chromatogram that is characteristic of these fuels. In addition, although the resolved peaks are important for the identification of the specific fuel type, the area of the unresolved complex mixture contributes a significant portion of the area of the total response

For the analysis of Diesel Range Organics (DROs), sum of the area of all peaks eluting between time ranges of 5.9 to 20.2 (depending on method) Minutes is integrated. This corresponds to C10 (n-Octane) -to C28 (Octacosane). This area is used to calculate the DRO concentration. However, heavier hydrocarbons are quantified and reported to the client with a note regarding the carbon range recognized with reference to window defining hydrocarbon standard. Column bleed subtraction may be performed if necessary. (Sec. 7.7.2.2/EPPA Method 8015B)

9.1 The initial calibration is performed by generating a 7-point calibration curve. Standards 1 and 2 are at or near the reporting limit, and the upper limit of the linear range of the system.

9.1.1 Add following volume of working standard (as prepared in section 5.5.3.1) to 1.0 mL vial and make to volume with Methylene Chloride.

	standard con.	Volume of stock Standard 5000 µg/mL	Final Volume
Standard 1	20µg/L	100µL	1mL
		40µL	1mL
Standard 2	50 µg/L	100µL	1mL
		100µL	1mL
Standard 3	100 µg/L	100µL	1mL
		200µL	1mL
Standard 4	200 µg/L	40µL	1mL
Standard 5	500 µg/L	100µL	1mL
Standard 6	1000 µg/L	200µL	1mL
Standard 7	2000 µg/L	400µL	1mL

9.1.2 Add the corresponding volume of surrogate standard and inject 2 µL to the Gas Chromatograph. Determine the area of the response as described in section 10. Calculate the response factor (RF) for each fuel type as below:

RF = Concentration of each level /Total area of the standard

9.2 Calibration linearity: The linearity of the calibration must be assessed. If the percent relative standard deviation (%RSD) of the calibration factors is less than 20% over the working range, linearity through the origin can be assumed, and the average calibration

factor can be used in place of a calibration curve. The % RSD is calculated by using the following equation:

$$\%RSD = \frac{\text{Standard Deviation of the RFs} \times 100}{\text{Average of the RFs}}$$

10. CALIBRATION VERIFICATION

10.1. The calibration curve and retention times must be verified at the beginning of each working day and it is repeated every 10 injections. Verification is accomplished by the measurement of one standard (normally mid-point) that contains all Diesel Range Organics and surrogates when individual target analytes are being analyzed. Verification is accomplished by the measurement of the fuel standard and the hydrocarbon retention time standard when petroleum hydrocarbons are being analyzed.

10.2. Linearity of calibration is per formed by calculation of the percent drift or percent difference of the instrument response between the initial calibration and each subsequent analysis of the verification standard.

$$\%difference = \frac{CFv - \overline{CF}}{\overline{CF}} \times 100$$

Where:
CFv = Calibration factor from verification standard.
CF = Mean calibration factor from initial calibration.

10.3. If the response for any analyte is within $\pm$15% of the response obtained during the initial calibration, then the initial calibration is considered still valid, and analyst may continue to use the mean CF values from the initial calibration to quantitate sample results. If the response varies from the predicted response by more than 15%, corrective action must be taken to restore the system or a new calibration curve must be prepared.

10.4. All n-alkanes in the calibration verification analysis must fall within previously established retention time windows. If the retention times do not fall within +/- 3 windows, corrective action must be taken to restore the system or a new calibration curve must be prepared for that compound.

10.5. Solvent blanks and any method blanks should be run with calibration verification analysis to confirm that laboratory contamination does not cause false positives.

11. SAMPLE ANALYSIS

11.1. Samples are analyzed in matrix specific batches of 15-20 samples. The sequence starts with calibration verification, followed by method blank, QC samples, and samples. Additional analysis of the verification standard (S) throughout a 12 hour shift are strongly recommended, especially when running samples that contain visible concentrations of oily material. Verification standard is also necessary at the end of a sequence.

11.2. Samples are analyzed with the same instrument configuration as is used during calibration

11.3. A window defining hydrocarbon standard is injected at least once a week to confirm the retention times.

11.4. Sample concentrations are calculated by comparing sample response data with the initial calibration of the system. If sample response exceeds the limits of the initial calibration range, a dilution of the sample must be analyzed. Computer reproduction of chromatograms, manipulated to ensure all peaks are on scale over a 100 fold range, are acceptable as long as calibration limits are not exceeded.

11.5. Use the following equation for calculation of aqueous samples:

$$Conc : mg / L = AsxDxRF$$

C = Concentration of the sample
As= Area of the sample
D = Dilution and/or concentration Factor
RF = mean Calibration factor from the initial calibration

11.6. Use the following equation for calculation of non-aqueous samples:

$$Concentration(mg / kg) = AsxDxRF$$

As= Area of the sample
D = Dilution and/or concentration Factor
RF = mean Calibration factor from the initial calibration

12. QUALITY CONTROL

12.1. Initial demonstration of proficiency: whenever new staff is trained or significant changes in instrumentation are made, initial demonstration of proficiency has to be performed. This is accomplished by running four aliquots of the Quality Control Check Sample in the same manner that samples are run.

12.1.1. The QC Check Sample is prepared by making an intermediate standard (as mentioned in section 5.5.3.1 and 5.5.3.2)

12.1.2. Prepare four Lab Control Samples for each matrix and analyze after the instrument has been calibrated.

12.2. Sample Quality Control for prepration and Analysis:

12.2.1. QC samples include analysis of a method blank, matrix spike, matrix spike duplicate and a Laboratory Control Sample (LCS) in each analytical batch and the addition of surrogates to each field sample and QC sample before extraction.

12.2.2. A Lab Control Sample (LCS) is included with each analytical batch. The LCS consists of an aliquot of a clean (Control) matrix similar to the sample matrix and of the same weight or volume. The LCS is spiked with the same analytes at the same concentrations as the matrix spike. When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

12.2.3. Surrogate recoveries. The surrogate recovery data from individual samples is evaluated versus the surrogate. Control limits developed by the laboratory, and percent recoveries are reported with the samples.

APPENDIX A

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Method Blank	One per matrix per batch	Less than detection limit	1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window
System blanks	As. needed	Less than detection limit	1) This is a corrective action when a contaminated system is identified.
Matrix Spike/Matrix Spike Duplicate	One per matrix per batch	Water: Diesel 70-130 Soil: Diesel 75-130	1) Evaluate results against the LCS 2) If the LCS was compliant: narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes.
RPD limits		Less than 20%	1) Check calculations 2) Narrate failed RPD to client
Surrogate Spikes	Every sample, method blank and standard	Water: Surrog. 60-140 Soil: Surrog. 70-135	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Laboratory Control Sample	One per matrix per batch	Water: Diesel 70-130 Soil: Diesel 75-130	1) Reanalyze LCS 2) If still Non-compliant, re-prep batch and reanalyze.

APPENDIX B

B.1. Liquid-liquid extraction of water (separatory funnel)

B.1.1. Apparatus and materials:

C.1.1.1. Separatory funnel: 2 L

C.1.1.2. Drying column: 20 mm I.D. Pyrex chromatorgraphic column with pyrex glass wool at bottom and a Teflon stopcock.

C.1.1.3. Erlenmeyer flask: 250 and 500 mL

C.1.1.4. Graduated cylinder

C.1.1.5. Extraction solvent; Mthylene chloride:

B.1.2 Procedure:

B.1.2.1. Using a 1 L graduated cylinder transfer 1 L of the sample to a 2 L separatory funnel. Add proper amount of spike standard to each of tow 1 L distilled water used as matrix. Add appropriate amount of spiking Sample standard to 1 L of distilled water. Add appropriate amount of surrogate standard to all.

B.1.2.2. Add 60 ml of Methylene Chloride to the separatory funnel. Immediately after the funnel is mixed, vent the funnel and repeat this procedure several times. Then shake the funnel vigorously for 2-3 minutes with periodic venting to release excess pressure.

B.1.2.3. Let the phases to separate for 10 minutes. Collect the solvent extract in an Erlenmeyer flask. If emulsion is present, mechanical techniques are employed to help the phase separation. Repeat the extraction two more times using fresh portions of methylene chloride. Combine the three extracts.

B.1.2.4. Dry the extract by passing through pre dried sodium sulfate and concentrate to 10.0 ml final volume.

B.2. Ultrasonic extraction of soil

B.2.1 Apparatus and materials:

B.2.1.1. A device for grinding or homogenization

B.2.1.2. Balance – Top loading accurate to .01 g

B.2.1.3. Ultrasonicator.

B.2.1.4. Centrifuge

B.2.1.5. Glass Vials

B.2.1.6. Sample spatulas – stainless steel

B.3.1 Sample handling:

B.3.1.1. Sediment/soil samples- Decant and discard any water layer on a sediment sample. Mix sample thoroughly, especially composited samples. Discard any foreign objects such a s sticks, leaves, or rocks.

B.3.1.2. Dry waste samples amenable to grinding: grind or otherwise subdivide the waste so that it either passed through a 1-mm sleeve or can be extruded through a 1-mm hole. Introduce sufficient sample into the grinding apparatus to yield at least 50g after grinding.

B.3.1.3. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding.

B.3.2 Determination of percent of dry weight- When sample results are to be calculated on a dry weight basis, a second portion of sample should be weighed out at the same time as the portion used for analytical determination. Immediately after weighing the sample for extraction, weigh 5-10g of the sample into a tared crucible. Dry this aliquot overnight at 105C. Allow to cool in a desiccator before weighing. Calculate the % dry weight as follows:

$$\%\ dry\ weight = \frac{g\ of\ dry\ sample}{g\ of\ sample} \times 100$$

B.3.3 Extraction method for samples expected to contain low concentrations of organics (less than or equal to 20 mg/kg)

B.3.3.1. Weigh 20g of sample into a 40 ml-vial glass jar. Add enough sodium sulfate to have a free flowing sample mixture. Add proper amount of surrogate standard.

B.3.3.2. Immediately add 20 mL of the appropriate extraction solvent or solvent mixture. ($MeCl_2$)

B.3.3.3. Extract the mixture in an ultrasonicator for 15 minutes. Mix several times and let the particles to settle down. If still cloudy, decant the extract into a centrifuge bottle and centrifuge at low speed to remove particles.

B.3.4. Extraction method for samples expected to contain high concentrations of organics (greater than 20mg/kg).

B.3.4.1. Transfer 2g of sample to a 40mL glass vial. Wipe the mouth of the vial with a tissue to remove any sample material. Record the exact weight of the sample taken. Cap the vial before proceeding with the next sample to avoid any cross contamination.

B.3.4.2. Add 2g of anhydrous sodium sulfate to the sample and mix well. Add proper amount of surrogate spiking solution to sample mixture. For the sample in each analytical batch selected for spiking, add proper amount of matrix spiking standard and surrogate standard solution.

B.3.4.3. Immediately add appropriate volume of solvent to bring the final volume to 10mL considering the added volume of surrogate and matrix spike standard. Sonicate the vial in the ultrasonicator for 15 minutes.

B.3.4.4. Centrifuge the vial and collect a volume appropriate for the sensitivity of the determinative method. It is advisable to collect a standard volume for such samples to simplify the final calculation.

B.3.4.5. If analysis will not be performed immediately, the extract is transferred to a vial with PTFE-line caps and refrigerated.

APPENDIX C:
Extract Concentration

C.1. Apparatus and Materials:

C.1.1. Kuderna-Danish (K-D) apparatus:

C.1.1.1. Concentrator tube – 10mL, graduated with ground glass stopper.

C.1.1.2. Evaporation flask: 500mL attached to concentrator tube with springs.

C.1.1.3. Snyder column: three ball (macro) and two ball (micro).

C.1.1.4. Springs or clamps

C1.1.5. boiling chips – Solvent extracted approximately 10/40 mesh (silicon carbide) or equivalent.

C.1.2. Water bath – Heated with concentric ring cover, capable of temperature control (+/- 5 C).

C.1.3. Drying column – 20-mm 1.d, Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

C.2. Pass the solvent extract through a drying column containing about 10cm of anhydrous sodium sulfate. Collect the dry extract in an evaporation flask connected to a K-D concentrator. Rinse the Erlenmeyer flask with 20-25 mL of methylene chloride, pass it through the drying column, and add it to the evaporation flask.

C.3. Add one or two clean boiling chips to the concentrator tube, and attach it to a three ball Snyder column. Pre-wet the Snyder column b%R within 75-130 y adding 1 ml of methylene chloride to the top of the column.

C.4. Place the K-D apparatus on a hot water bath (60-65 C) so that the concentrator tube is partially immersed in the hot water. The concentration should be complete in 10-20 minutes. When the apparent volume of liquid is reached to 1 ml, remove the K-D apparatus from water bath and let it drain and cool for 10 minutes. Make it to the desired volume regarding the method sensitivity.

STANDARD OPERATING PROCEDURE

FOR ANALYSIS OF

POLYCHLORINATED BIPHENYLS

BY

GAS CHROMATOGRAPHY / ELECTRON CAPTURE

CAPILLARY COLUMN TECHNIQUE

EPA METHOD 8082

Prepared by

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Laboratory Director

I SCOPE AND APPLICATION

This method is used to determine the concentrations of various polychlorinated biphenyls (PCB) as Aroclors or as individual PCB congeners by gas chromatography with electron capture detectors (ECD) and dual capillary columns (analytical and confirmation). The method is applicable to the determination of pesticides residues in air sampling media, waters, soils, aqueous sludge, caustic liquors, acid liquors, waste solvents, oily wastes, ground waters, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, sediments and hazardous wastes. These matrices are prepared for analysis by utilizing a variety of extraction techniques; primarily EPA method 3510C (separatory funnel liquid-liquid extraction), 3550B (ultrasonic extraction), 3580 (waste dilution), and 3541 (automated soxhlet extraction).

Multi-component mixtures (Aroclors) are listed as target analytes within this method. When samples contain more than one multi-component analyte, a higher level of analyst expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of multi-component analytes that have been subjected to environmental degradation or degradation by treatment technologies. These result in “weathered’ multi-component mixtures that may have significant differences in peak patterns than those of standards.

This SOP includes the use of dual column analysis. This option allows one injection to be used for dual-column analysis where both columns are used for compound identification. Quantitation is determined from the column giving the best performance for a given analyte in consideration of the quality of the chromatography, although quantitation results should be comparable, from both columns, within given acceptance criteria.

The Laboratory Supervisor and chemist share responsibility for performance of this SOP. The experience of the analyst is crucial to the successful application of this method, and only experienced GC/MS analysts may use this method. The analyst must be able to interpret retention times and detector responses. Prior to data generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of proficiency. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000B in SW-846, Third Edition, Final Update III, December 1996, Section 8.4. Specific instructions for performing the initial demonstration of proficiency are detailed in Appendix 1.

Method Detection Limit (MDL): Routinely analyzed compounds and laboratory-determined method detection limits are provided in Appendix 8. Detection limits are determined by conducting a method detection limit study as detailed in Appendix 4. The method detection limits have been generated using clean

aqueous and solid matrices and are not achievable for many “real” sample matrices. The listed detection limit may vary based on the amount of sample used.

Practical quantitation limit (PQL): The value of this method is approximately 50 µg/Kg (wet weight) for soil/sediments, and 1-2 µg/L for ground water samples. The PQL will vary based upon the same factors that affect detection limits (dilutions and sample size). See Appendix 6.

II SUMMARY OF METHOD

Liquid samples are prepared for analysis by EPA method 3510C. Solid samples are prepared for analysis by EPA method 3550B and waste samples utilize EPA method 3580. Sample preparation procedures are found in Appendix 2.

Depending on the nature of interference, different cleanup methods may be applied. Florisil cleanup (EPA Method 3620B), silica gel cleanup (EPA Method 3630C), or sulfuric acid/permaganate cleanup (EPA Method 3665A) are usually used. Cleanup methods are fully described in Appendix 2 of this SOP.

When the extraction is complete, sample extracts are injected to the gas chromatograph. Two analytical columns joined to a single injection port are used. The second column and second detector are used to confirm all positive results. Separated peaks are detected by the responses of the detector, identified by retention time, and quantitated by calculation via a data system. This method utilizes the external standard method of quantitation.

III SAMPLE COLLECTION, PREVERVATION, AND STORAGE

Samples that can be analyzed by this method are waste waters, ground waters, soils, acid and base liquors, sludge, waste solvents, oily wastes, tars, fibrous wastes, filter cakes, spent catalysts and carbons, polymeric emulsions and sediments from various sources. They may contain some solid matter or chemicals that may interfere with the efficiency of extraction or system. Interference problems require use of professional judgment regarding necessary changes to sample size or sample preparation and/or cleanup.

The maximum holding time from sampling to extraction is seven (7) days for aqueous samples and (14) days for solid samples. The maximum holding time from extraction to analysis is 40 days. Extracts must be refrigerated in the dark before analysis.

Aqueous samples should not be chemically preserved in the field. Both solid and aqueous samples should be temperature preserved at 4°C$\pm$2°C. All preservation measures should be noted on the chain of custody.

Soil samples must be collected in adequately cleaned (non-plastic) jars and water samples must be collected in 1-liter amber color bottles. The requested volumes are 200 grams of solid and one 1-liter bottle for aqueous samples. Data points slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts, respectively.

Samples received are stored in a sample refrigerator at 4°C±2°C until extraction. Hexane extracts are stored in a 4°C±2°C until analysis. All extracts are kept refrigerated up to 40 days after extraction. Prior to analysis, all samples and standards are warmed to room temperature.

The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plan. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data would be estimated. The lab will narrate any missed holding times to the client.

IV INTERFERENCES

Sources of interference in this method can be grouped into three broad categories: (1) Contaminated solvents, reagents, or sample processing hardware; (2) Contaminated GC carrier gas, parts, column surfaces, or detector surfaces; (3) Compounds extracted from the sample matrix to which the detector will respond.

Interferences by phthalate esters introduced during sample preparation can pose a major problem. Interferences from phthalate esters can best be minimized by avoiding contact with any plastic materials and checking all solvents and reagents for phthalate contamination. Common flexible plastics contain varying amounts of phthalate esters which are easily extracted or leached from such materials during laboratory operations. Exhaustive cleanup of solvents, reagents, and glassware may be required to eliminate background phthalate ester contamination. These materials may be removed prior to analysis using Method 3630 (silica gel cleanup). See Appendix 2 for other cleanup methods.

The presence of sulfur will result in broad peaks that interfere with the detection of PCBs. Sulfur contamination should be expected with sediment samples. EPA Method 3660 is recommended for removal of elemental sulfur.

Cross contamination can occur whenever high-contamination samples are analyzed. Care should be taken regarding the glassware used for extraction and concentration. The glassware must be washed out with a detergent solution, rinsed with water, acetone, and finally with methylene chloride or hexane.

Some sample matrices may need to be diluted to reduce interference. When this occurs, the reporting limits will be increased to reflect the dilutions. The possibility for instrument (column) damage exists whenever an attempt is made

to run a highly contaminated sample. The analyst must consider available screening method as a way to avoid damage or cross contamination. All decision-making should be documented.

V EQUIPMENT AND SUPPLIES

Analytical Balance: Used to accurately weigh solid samples for preparation (±0.1mg sensitivity).

Analytical system:

System 1

Aglient 6890 GC; Dual column, Dual detector

(2) Agilent 2397A ECD

Column 1: Zebron, Multiresidue-1; 30m x 0.32mm ID x 0.5 um

Column 2: Zebron, Multiresidue-2; 30m x 0.32mm ID x 0.25 um

Agilent 7683 Autosampler

HP Chemstation Software, Rev. B.04.03 (54)-2011

Boiling chips: Solvent extracted, approximately 10/40 mesh (silicon carbide or equivalent).

Crimper: Used to seal 1 mL glass vials with crimp tops.

Decrimper: Used to unseal 1 mL glass vials with crimp tops.

Erlenmeyer flask: 250 mL

Graduated cylinder: 1000 mL

Kuderna-Danish (K-D) apparatus:

a) Concentrator tube: 10 mL, graduated
b) Evaporation flask: 500 mL. Attach to concentrator tube with springs, clamps, or equivalent.
c) Condenser

d) Springs – ½ inch

Microliter syringes: 10µL, 25µL, 50µL, 100µL, 250µL, 500µL, 1000µL, and 5000µL for standard and spike transfers and sample dilutions.

Sample extract vials: 1 mL glass vials with crimp tops and Teflon liners

Sample Spatulas, Stainless Steel: Used in the sample preparation of solid samples

Separation funnels: 2000 mL separation funnel used for water extractions

Ultrasonic bath.

Volumetric Flasks: 10 mL, 50 mL, 100 mL, Class A with ground glass stoppers

Water bath: Heated, with concentric ring cover, capable of temperature control (85°C±5°C)

VI REAGENTS AND STANDARDS

Reagent water should be free of organic contamination. Water is purchased from Sparkletts^{R} (Distilled Drinking Water-Sodium Free).

Organic solvents: Hexane, acetone and methylene chloride are pesticide quality or equivalent. The source and manufacturer may change from time to time; therefore, the brand and lot number are documented in the sample preparation and standard preparation logbooks.

Stock Standards - Certified stock standards are purchased from the following manufacturers:

Chem Service	Accu Standard, Inc.	Supelco Corporation
660 Tower Lane	25 Science Park	595 North Harrison Rd.
West Chester, PA 19381	New Haven, CT 06511	Bellefonte, PA 16823

All standards are stored in a standard refrigerator at 4°C $\pm$ 2°C.

Surrogate Standards are prepared with the following analytes:

Tetrachloro-m-xylene
Decachlorobiphenyl

LCS and Matrix Spike Compounds

Aroclor 1016
Aroclor 1260

Analytical Stock Standards can be prepared using the following list:

Aroclor-1016
Aroclor-1221
Aroclor-1232
Aroclor-1248
Aroclor-1254
Aroclor-1260
Aroclor-1262
Aroclor-1268

Standards and surrogates are purchased from a number of suppliers based on varying concentration and quantity needed. The analyst records details of preparation in the Semi-volatiles Standard Preparation Logbook, with documented standard sources and lot numbers. Appendix 3 provides instructions for standard preparation.

The working standard solutions are good for 6 months or sooner if comparison with an independent source indicates a problem. The expiration date and standard number is recorded in the logbook and on the storage vial.

The surrogate standard is prepared from an independent source. This solution is added to all standards, samples, blanks, and QC Check Samples. This standard is good for 6 months. The expiration date and standard number is recorded in the logbook and on the storage vial.

Appendix 2 gives examples of the volumes used to prepare stock and intermediate standards.

VII QUALITY CONTROL

1. Summary

A summary of the quality control samples, performance criteria, and calibration requirements are given in the following example of an analytical sequence for the testing of an analytical batch.

a) Initial Calibration Standard Curve (minimum of 5 points)

b) Initial calibration verification standard from an independent source, followed by continuing calibration standard

c) LRB or Method Blank
d) LFB or LCS
e) MS
f) MSD
g) Sample 15 to 20
h)

2. Initial Calibration Standard (IC) and Continuing Calibration Check Standard (CCC)

The initial calibration is performed by generating a 6-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at a minimum of five levels*. Due to the various responses of the analytes, it is sometimes necessary to analyze six standards to achieve five levels for each analyte. Level 1 is at or below the limit of quantitation, and the high level standard is below the upper limit of the linear range of the system. Instructions for preparing the calibration standards are detailed in Appendix 2. Normally, the concentrations used to achieve a five point calibration are: 50, 100, 200, 500, 1000, and 2000 ppb. See Section VIII 3.

For each analysis batch the initial calibration must first be verified prior to analyzing any samples. As a general rule, the initial calibration must be verified at the beginning of each shift during which samples are analyzed. The analytical shift begins with the injection of the calibration check standard. The shift ends after *completion* of the analysis of the last sample that can be *injected* within 10 analytical runs of the beginning of the shift. The midpoint (or 500 ppb) level standard used to prepare the linear calibration curve must be used. Percent difference or percent drift criteria for the CCC must be met before continuing the analysis batch and conducting any sample analyses. See Section VIII 4.

4. Laboratory Reagent Blank (LRB) or Method Blank (MB)

An LRB must be prepared and treated exactly as a typical field sample including exposure to all glassware, equipment, solvents, filtration and reagents that are used with field samples. Data produced are used to assess instrument performance of a blank sample and evaluate contamination from the laboratory environment. Values that exceed ½ the LOQ indicate a laboratory or reagent contamination is present. The source of the contamination must be determined prior to conducting any sample analysis.

5. Laboratory Fortified Blank (LFB) or Laboratory Control Sample (LCS)

Prepare a secondary dilution stock using a different stock solution used to prepare the calibration standards. This separate, secondary dilution stock is used as a concentrate to fortify the LCS and MS/MSD. A LCS is required to be analyzed with each analysis batch immediately following the LRB. By analyzing

the LCS initially, a control check is performed on the concentrated solution used to prepare the MS/MSD. If any deviations in the PCBs concentration(s) are present, it will be reflected in the LCS and not exclusively attributed to a matrix upon analysis of the MS/MSD. The percent recovery for PCBs must fall in the acceptable ranges (see Appendix 6) prior to analyzing samples. If the LCS recovery for an analysis batch does not meet these recovery criteria the data are considered invalid, and the source of the problem should be identified and resolved before continuing analyses.

All compounds are spiked; however only the following are reported:

Aroclor-1016
Aroclor-1260

6. Laboratory Fortified Matrix (LFM) or Matrix Spike (MS)

The laboratory must add a known amount of the target analyte to one sample within each analytical batch (of 15-20 samples). Samples which require such pretreatment require a MS to be taken through all sample handling and preparation procedures in order to confirm any matrix effects and that the laboratory performed the extraction step appropriately.

It is recommended that the solutions used to fortify the MS be prepared from different stocks than used to prepare the calibration standards.

The fortified concentration must be equal to or greater than the native sample concentration. Fortified samples that exceed the calibration range must be diluted to be within the linear calibration range. In the event that the fortified level is less than the observed native level of the unfortified matrix, the recovery should not be calculated. The sample should be fortified at a higher level and reanalyzed or a different sample should be chosen for the MS. The MS should not be prepared at a concentration greater than ten times the highest concentration observed in any field sample and should be varied to reflect the range of concentrations expected in field samples. Ideally, the MS fortified spike concentration should be 3-5 times the native concentration.

Calculate the percent recovery for PCBs, corrected for concentrations measured in the unfortified sample, by using the following equation:

$$\%REC = ((C_s-C)/s) \times 100$$

Where,

%REC = Percent Recovery
C_s = measured PCB in the fortified sample
C = measured native PCB sample concentration

s = concentration equivalent of analyte added to the sample

If the recovery for PCB falls outside the acceptance limits and the laboratory's performance for all other quality control performance criteria is acceptable, the accuracy problem encountered with the fortified sample is judged to be matrix related, not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure which may require corrective action.

The following Aroclors are reported for LCS/LCSD and MS/MSD:

Aroclor-1016
Aroclor-1260

7. Duplicate LFM or Matrix Spike Duplicate (MSD)

This quality control sample must be analyzed with each analytical batch (fifteen samples). Calculate the relative percent difference (RPD) of the initial quantitated concentration (I_c) and duplicate quantitated concentration (D_c) using the following formula:

$$RPD = ((I_c-D_c)/([I_c+D_c]/2)) \times 100$$

If the RPD for the duplicate measurement of PCBs falls outside ±15% and if all other quality control performance criteria are met, laboratory precision is out of control for the sample. The precision problem encountered with the fortified sample may judged to be matrix related, depending on the evaluation of other QC data, and not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure that may require corrective action.

8. Quality Control Standard (QCS)

After calibration curves have initially been established or have been reestablished, or as required to meet data quality needs, verify both the calibration and acceptable instrument performance with the preparation and analyses of an external/second source QCS. If the determined concentration is not within ±30% of the stated value, performance of the calibration is unacceptable. The source of the problem must be corrected before continuing with sample analysis.

VIII PROCEDURE

1. Sample Preparation

Matrix-specific batches of 15-20 samples or less are prepared. Matrices are typically defined as soil, water, and other. Due to differences in preparation of solid and liquid samples, various matrices cannot be batched together.

Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

All project-specific plans for matrix spike and duplicate preparation requirements should be considered. Samples from two clients that each requires project-specific matrix spikes can be prepared together; however, two sets of QC (MS/MSD) should be prepared using each client's designated samples.

At least one set of the following QC samples are prepared with each batch (up to 20 samples with the same matrix): method blank (use pre-washed sand for solid matrix and reagent water for liquid matrix), matrix spike, matrix spike duplicate and a laboratory control sample (LCS). A laboratory control sample is a sample, the matrix of which is free any of the target analytes (use pre-washed sand for solid matrix and reagent water for liquid matrix), which is spiked with known amounts of analytes, and processed simultaneously through the same steps of preparation and analysis and under the same conditions as real samples.

All samples are spiked with surrogates prior to extraction. The surrogate recoveries are evaluated based upon the known concentrations added and known sample matrix interferences. The surrogate recovery provides additional evaluation of unknown samples without the use of a matrix spike. Procedures for surrogate standard preparation are listed in Appendix 3. Instructions for extraction of water and soil samples are provided in Appendix 2.

2. Instrument Startup

The gas chromatographic conditions are checked each day prior to use, in accordance with scheduled preventive maintenance measures, as defined in the laboratory QA/QC Manual. These measures include checking and replacing septa and liner, checking all gases, etc. All maintenance requirements are logged into the maintenance logbook assigned to each instrument. GC system operating conditions are set and maintained as listed in Appendix 7.

All sample standards, QC samples and field sample extracts which are to be analyzed, are placed in capped 1 mL vials and placed within the instrument autosampler. The chemist must ensure that the sequence vial number and actual vial placement in the HP 7683 autosampler rack are the same. The autosamplers have a greater sample capacity that can be analyzed with one continuing calibration standard or initial calibration; therefore, multiple CCC standards need to be prepared if multiple batches of field samples, and associated QC are to be loaded within the autosampler. The autosampler capacity is approximately 100 vials.

3. Initial Calibration

The initial calibration is performed by generating a 6-point calibration curve. Calibration point 1 is at or near the reporting limit for the analytes, and Point 6 is near the upper limit of the linear range of the system.

After generating the initial calibration curve, calculate calibration factors (CF) for each analyte. This procedure is performed by the instrument and software using the following equation:

$$CF = \frac{Concentration_{st}}{Area_{st}}$$

The average response factor for each analyte is calculated for the series of calibration standards.

The calibration factors for the initial calibration standards are used to evaluate whether the CFs are constant over the calibration range. Relative Standard Deviation (%RSD) is used to show the linearity of the calibration curve. The value can be calculated using the following equation:

$$\%RSD = \frac{\text{Standard Deviation of the } CF_S \times 100}{\text{Average of the } CF_S}$$

The RSD for a given analyte must be <20% to assume linearity over the calibration range.

If the RSD for any analyte is greater than 20%, the analyst should review the results (area counts, calibration factors and RSD) for those anaytes to ensure that the problem is not associated with just one of the five initial calibration standards. If the problem appears to be associated with a single standard that one standard may be reanalyzed and the RSD recalculated.

A second alternative is to narrow the calibration range be replacing one or more of the higher level calibration standards with a lower concentration standard.

A third option is to use the area ratios versus concentration using first order or higher regression fit of the five calibration points. The regression calculation will generate a correlation coefficient (*r*) that is a measure of the fit of the regression line to the data. A value of 1.0 indicates a perfect fit. In order to be used for quantitative purposes, *r* must be equal to 0.99.

Before establishing retention time windows, made sure that the chromatographic system is functioning reliably and that the operating parameters have been optimized for the analytes and surrogates in the sample matrix to be analyzed.

Record the retention time to three decimal places for each analyte for at least three injections over at least a 72-hour period. Calculate the mean and standard deviation of these peaks.

The width of the retention time (RT) window for each component is defined as ± 3 times the standard deviation of the mean absolute retention time established during the 72-hour period. The retention time range is then calculated based on the lower limit of the RT window for the first eluting component and the upper limit of the RT window for the last eluting component and the upper limit of the RT window for the last eluting component.

4. Continuing Calibration

Sample analysis may precede with incorporation of continuing calibration standard every 10 injections. High and low concentration mixtures of single component analytes are alternated. For each extraction batch of 15 samples, one method blank, a pair of Matrix Spike and Matrix Spike duplicates and one Lab Control Sample (LCS) are extracted and run with the samples.

The CCC standard is checked for retention time shifts and percent difference of the instrument response between the initial calibration and each subsequent analysis of the verification standard as follows:

$$\%\text{Difference} = ((C_c - C_e)/C_e) \times 100$$

Where:
C_e = Expected amount of standard, concentration units
C_c = Calculated amount of standard concentration units

The % difference or % drift calculated for the calibration verification standard must be within $\pm$ 15% for each analyte before any sample analysis may take place.

If a non-linear calibration is used in the initial calibration, then %drift or % difference between the initial calibration and each subsequent verification standard will be used to verify the continuing calibration. The following equation is used for this purpose:

$$\%Drift = \frac{\text{Calculated concentration} - \text{Theoretical concentration}}{\text{Theoretical concentration}} \times 100$$

5. Sample Evaluation

The system uses two analytical columns for generating data; therefore, the second column is used to confirm the positive results. When sample results are confirmed by a second column, the relative percentage difference (RPD) between the two results is calculated. If RPD is less than 40%, and no evidence of chromatographic problems exists, the higher result is reported. If RPD is greater than 40%, the chromatograph is checked for anomalies and results are selected based on the best professional judgment. If no evidence of any chromatographic problems exists, the higher result is reported.

The surrogate recoveries for each analysis will be evaluated until at least 25 to 30 surrogate recoveries are generated. Once sufficient data points are established, a recovery range will be developed. This recovery range will not be changed unless the system parameters are modified to the point that the recoveries cannot meet the tolerance limits. Limits will be evaluated annually at a minimum.

All QC data that exceeds the control limits designated in Appendix 6 must be narrated to the client. The narrative is invaluable to secondary reviewers, such as validators and regulators, in tracking the decision making and corrective action steps employed.

Matrix spikes will be evaluated based on the percent recovery. The recoveries will be compared to the ranges provided in Appendix 6. If the two recoveries were within the ranges provided, the data would be reported as valid. If any of the recoveries are outside of the ranges, the cause will be determined and an explanation provided. In many cases, a recovery problem is limited to the individual sample only, and will not affect the validity of the other samples in the run.

A Lab Control Sample (LCS) is run at the rate of one per matrix per batch. This sample is the QC checks sample prepared and analyzed in the identical manner as the samples. The results of the LCS are compared to criteria dictated in Appendix 6.

If the matrix spike duplicate analysis fails to meet the designated criteria due to its sample matrix, the LCS is used as the means to demonstrate that the system is capable of generating acceptable data. If any analyte falls outside of the criteria established in Appendix 6, the analyst must provide an explanation in the narrative and determine the validity of the individual analyte.

6. Reporting of Results

The following is a summary of the calculation used by the data system, or the analyst to generate the reported data:

Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_{\chi} \times 100}{T}$$

Where,

C_{χ} = the concentration of the analyte spike or surrogate from the analysis.
T = the true value of the spike or surrogate standard added.

Sample concentration is calculated by the following equation(s):

External standard calibration – linear calibration

Aqueous samples

$$C(ppb) = A_{\chi} \times V_t \times D/CF_{avg} \times V_i \times V_s$$

Where,

C(ppb) = The concentration of analyte in the sample.
A_{χ}= Area of the peak of the analyte being measured
CF_{avg}= The calibration factor of the analyte being measured.
D = Dilution factor
V_t = Total volume of the concentrated extract (uL). For purge-and-trap analysis, V_t is not applicable and therefore is set at 1.
V_i = Volume of the extract injected (uL). The injection volume for samples and calibration standards must be the same. For purge-and-trap analysis, V_i is not applicable and therefore is set at 1. If concentration units are used in calculating the calibration factor, then V_i is not used in this equation.
V_s = Volume of the aqueous sample extracted or purged in mL.

Nonaqueous samples

$$C(ppb) = A_{\chi} \times V_t \times D/CF_{avg} \times V_i \times W_s$$

Where,

C(ppb) = The concentration of analyte in the sample.
A_{χ}= Area of the peak of the analyte being measured
CF_{avg}= The calibration factor of the analyte being measured.

D = Dilution factor
V_t = Total volume of the concentrated extract (uL). For purge-and-trap analysis, V_t is not applicable and therefore is set at 1.
V_i = Volume of the extract injected (uL). The injection volume for samples and calibration standards must be the same. For purge-and-trap analysis, V_i is not applicable and therefore is set at 1. If concentration units are used in calculating the calibration factor, then V_i is not used in this equation.
W_s = Weight of the sample extracted or purged in g.

Calculations for a non-linear calibration curve.

In instances where a non-linear relationship between analyte concentration and response is present over the working range, or when similar calibration approaches have not met the acceptance criteria, the instrument data system should be employed to calculate analyte concentrations via second or third order calibration curves. In order to be an acceptable calibration, the coefficient of the determination must be greater than or equal to 0.99.

Standard Deviation is calculated by the following equation:

$$SD = \sqrt{\frac{\sum(xi - Xavg)^2}{N - 1}}$$

Where:
x_i = Analyte values
x_{avg} = Analytes average value
N = number of points

Relative Percent Difference:

$$RPD = (MS\%_{rec} - MSD\%_{rec})/((MS\%_{rec} + MSD\%_{rec})/2)) \times 100$$

Where,

$MS\%_{rec}$ = Matrix Spike Percent Recovery
$MSD\%_{rec}$ = Matrix Spike Duplicate Percent Recovery
RPD = Relative Percent Difference

IX CORRECTIVE ACTION

See Appendix 5 for specific information regarding quality system nonconformances and associated corrective actions.

Corrective measures for chromatographic system maintenance may involve one or more of the following remedial actions. This list is by no means comprehensive and analysts should develop expertise in troubleshooting their specific instruments and analytical procedures. The manufacturers of chromatographic instruments, detectors, columns, and assessories generally provide detailed information regarding the proper operation and limiting factors associated with their products. The reading and reviewing of this information is essential to routine maintenance and repair.

Capillary GC columns

Routine maintenance may compel the analyst to clean and deactivate the glass injection port insert or replace it with a fresh insert that has been cleaned and deactivated with dichlorodimethylsilane. Cut off 0.5 – 1.0 m of the injector end of the column using a 90° cut. Place ferrule onto the column before cutting.

X METHOD PERFORMANCE

Appendix 8 gives the results for the Initial Demonstration of Capability plus LOD (MDL) study results. See Appendix 6 for LOQ (PQL) data.

XI WASTE DISPOSAL AND WASTE PREVENTION

Whenever feasible, laboratory personnel should use pollution prevention techniques to address waste generation. Wastes should be reduced or minimized at the point of generation which includes the use of any reagent, standard, or eluent.

Wastes must be disposed of in accordance with all applicable rules and regulations. Wastes shall be disposed of in the following manner:

Water samples (after extraction): Water waste
Soil samples: Vial waste
Hexane sample extracts: Vial waste
Waste acetone: Solvent waste
Waste hexane: Solvent Waste
Waste methylene chloride: Solvent waste
PCB standard solutions: Solvent waste

XII SAFETY

The toxicity or carcinogenicity of each reagent used in this method has not fully been established. Each chemical should be regarded as a potential health hazard and exposure should be as low as reasonably achievable. Cautions are specifically listed on the corresponding MSDS sheet.

The following chemicals have the potential to be highly toxic or hazardous:

Methylene Chloride: Toxic and suspect carcinogen. Harmful if absorbed through skin, may be fatal if swallowed or inhaled. Avoid contact with eyes, skin, clothing. Use safety glasses and effective ventilation.

Acetone: Toxic, highly flammable. Exposure to acetone may enhance the liver toxicity, causes irritation to eyes, skin, mucous membranes and respiratory tract. Use safety glasses and effective ventilation.

Hexane: Toxic, highly flammable. May cause impaired fertility. Harmful by inhalation. Irritant. May cause CNS depression. Prolonged exposure may cause serious health damage. Use safety glasses and effective ventilation.

GLOSSARY

The following terms are defined for use in this document:

ACCURACY: The closeness of agreement between an observed value and an accepted reference value. When applied to a set of observed values, accuracy will be a combination of a random component and of a common systematic error (or bias) component.

BATCH: A group of samples which are similar with respect to the sampling or the testing procedures being employed and which are processed as a unit. For QC purposes, each group of 15 samples or less will be determined to be one batch.

BIAS: The deviation due to matrix effects of the measured value from a known spiked amount. Bias can be assessed by comparing a measured value to an accepted reference value in a sample of known concentration or by determining the recovery of a known amount of contaminant spiked into a sample (matrix spike). Thus, the bias (B) due to matrix effects based on a matrix spike is calculated as:

$B = (Xs - Xu) - K$

Where:

X_s = measured value for spiked sample,

X_u = measured value for unspiked sample, and

K = known value of the spike in the sample.

Using the following equation yields the percent recovery (%R).

$\%R = 100 (X_S - X_U) / K$

BLANK: see Equipment Rinsate, Method Blank, Trip Blank.

CONTROL SAMPLE: A QC sample introduced into a process to monitor the performance of the system.

DUPLICATE: see Matrix Duplicate, Field Duplicate, Matrix Spike Duplicate.

EQUIPMENT BLANK: see Equipment Rinsate.

EQUIPMENT RINSATE: A sample of analyte-free media which has been used to rinse the sampling equipment. It is collected after completion of decontamination and prior to sampling. This

blank is useful in documenting adequate decontamination of sampling equipment.

PRACTICAL QUANTITATION LIMIT: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL or Limit of Quantitation (LOQ) is generally 2 to 10 times the MDL.

FIELD DUPLICATES: Independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

LABORATORY CONTROL SAMPLE: A known matrix spiked with compound(s) representing the target analytes. This is used to document laboratory performance.

MATRIX: The component or substrate (e.g., surface water, drinking water) which contains the analyte of interest.

MATRIX DUPLICATE: An intralaboratory split sample which is used to document the precision of a method in a given sample matrix.

MATRIX SPIKE: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

MATRIX SPIKE DUPLICATE: Intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.

METHOD BLANK: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting form the analytical process.

For a method blank to be acceptable for use with the accompanying samples, the concentration in the blank of

any analyte of concern should not be higher than the highest of either:

(1) ½ the LOQ, or
(2) Five percent of the regulatory limit for that analyte, or
(3) Five percent of the measured concentration in the sample.

METHOD DETECTION LIMIT (MDL): The minimum concentration of a substance that is measureable and reportable with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte. Also, Limit of Detection (LOD).

PRECISION: The agreement among a set of replicate measurements without assumption of knowledge of the true value. Precision is estimated by means of duplicate/replicate analyses. These samples should contain concentrations of analyte above the MDL, and may involve the use of matrix spikes. The most commonly used estimates of precision are the Relative Standard Deviation (RSD) or the Relative Percent Difference (RPD)

$RSD = (s/x_i) \times 100$

Where:
x_i = the arithmetic mean of the x_l measurements
S = standard deviation

$RPD = 100 \times [(x_1 – x_2)/ \{(x_1 + x_2)/2\}]$

Where:
x_1 = First replicate result
x_2 = Second replicate result

REAGENT BLANK: See Method Blank

REAGENT GRADE: Analytical reagent (AR) grade, ACS reagent grade, and reagent grade are synonymous terms for reagents, which conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

REAGENT WATER: Water that has been generated by any method which would achieve the performance specifications for ASTM Type I

water. For organic analyses, see the definition of organic-free reagent water.

REFERENCE MATERIAL: A material containing known quantities of target analytes in solution or in a homogeneous matrix. It is used to document the bias of the analytical process.

SPLIT SAMPLES: Aliquots of sample taken from the same container and analyzed independently. In cases where aliquots of samples are impossible to obtain, field duplicate samples should be taken for the matrix duplicate analysis. These are usually taken after mixing or compositing and are used to document intra- or inter- laboratory precision.

STANDARD CURVE: A plot of concentrations of known analyte standards versus the instrument response to the analyte. Calibration standards are prepared by successively diluting a standard solution to produce working standards, which cover the working range of the instrument. Standards should be prepared at the frequency specified in the appropriate section. The calibration standards should be prepared using the same type of acid or solvent and at the same concentration as will result in the samples following sample preparation. This is applicable to organic and inorganic chemical analyses.

SURROGATE: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples.

REFERENCES

A sample SOP provided by Qsea Corporation.

SW-846 Method 8082, Revision 0 December 1996
Organochlorine Pesticides by Gas Chromatography

SW-846 Method 8000B, Revision 2, December 1996
Determinative Chromatographic Separations

SW-846 Method 3510C, Revision 3 December 1996
Separatory Funnel Liquid-Liquid Extraction

SW-846 Method 3550B, Revision 2 December 1996
Ultrasonic Extraction

SW-846 Method 3580, Revision 1 July 1992
Waste Dilution

HP 6890 Gas Chromatograph Operating Manual

Appendix 1
Initial Demonstration of Capability

Initial demonstration of proficiency is performed to demonstrate that the system and the analyst can successfully perform the analysis. Four aliquots of the Quality Control Check Sample are prepared and analyzed.

The QC Check Sample standard is purchased from a certified source independent of the calibration standards. The following concentrations and volumes are used:

Standard Name	Initial Conc. µg/L	Volume used µL	Final extract Volume	Sample Final Concentration µg/L
Aroclor 1016 and Aroclor 1260 PCB Surrogate mix	10,000 2000	250 250	5 mL 5 mL	5.0 1.0

Transfer 250 uL of the QC Check Sample concentrate and 250 µL of surrogate standard to 1 Liter of reagent water. Proceed with the extraction, concentration and solvent exchange as detailed in Appendix 2. Transfer 1mL of the extract to a crimp vial and seal the cap.

Repeat the above step three more times until a total of four aliquots of QC Check Sample are prepared.

Analyze the four QC Check Samples and compare the accuracy and precision data with those listed in Appendix 6. If accuracy and precision measurements are within the ranges cited in the table, the system is ready for use and analysis may begin. If the average recovery for any analyte falls outside the range, corrective action must be taken and the analysis repeated. All corrective actions must be noted in the maintenance logbook.

Once an analyst and instrument have passed the recovery criteria for all analytes to be reported by the method, the analyst and instruments are certified as having established initial proficiency with the method.

Appendix 2
Sample Preparation

1. Liquid-liquid extraction of water (separatory funnel)

1.1. Apparatus and materials:

1.1.1. Separatory funnel: 2 L
1.1.2. Drying column: 20 mm I.D. Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.
1.1.3. Erlenmeyer flask: 250 mL
1.1.4. Graduated cylinder
1.1.5. Extraction solvent; Methylene chloride: acetone (1:1,v:v) or methylene chloride for water and hexane: acetone (1:1,v: v) for soil

1.2 Procedure:

1.2.1. For each batch of 15-20 samples one pair of LCS/LCSD, one pair of MS/MSD and one method blank is prepared. Using a 1 L graduated cylinder transfer 1 L of the sample to a 2 L separatory funnel. Add proper amount of spike standard to each of two 1 L distilled water used as matrix. Add proper amount of Lab Control Sample standard to 1 L of distilled water. Add proper amount of surrogate standard to all.

1.2.2. Add 60 ml of methylene chloride to the separatory funnel. Immediately after the funnel is shaked once, vent the funnel and repeat this procedure several times. Then shake the funnel vigorously for 2-3 minutes with periodic venting to release excess pressure.

1.2.3. Let the phases to separate for 10 minutes. collect the solvent extract in an Erlenmeyer flask. If emulsion is present, mechanical techniques are employed to help the phase separation. Repeat the extraction two more times using fresh portions of methylene chloride. Combine the three extracts.

1.2.4. Record all information on the Sample Preparation Logsheet.

2. Ultrasonic Extraction of Soil

2.1 Apparatus and Materials:

2.1.1. A device for grinding or homogenization
2.1.2. Balance – Top loading accurate to .01 g
2.1.3. Ultrasonicator.
2.1.4. Centrifuge
2.1.5. Glass Vials

2.1.6. Sample spatulas – stainless steel

2.2 Sample Handling:

2.2.1 Sediment/soil samples- Decant and discard any water layer on a sediment sample. Mix sample thoroughly, especially composite samples. Discard any foreign objects such as sticks, leaves, or rocks.

2.2.2. Dry waste samples amenable to grinding: grind or otherwise subdivide the waste so that it either pass through a 1-mm sieve or can be extruded through a 1-mm hole. Introduce sufficient sample into the grinding apparatus to yield at least 20g after grinding.

2.2.3. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding.

2.3 Determination of Percent of Dry Weight

2.3.1 When sample results are to be calculated on a dry weight basis, a second portion of sample should be weighed out at the same time as the portion used for analytical determination. Immediately after weighing the sample for extraction, weigh 5-10g of the sample into a crucible. Dry this aliquot overnight at 105C. Allow cooling in a desiccator before weighing. Calculate the % dry weight as follows:

$$\%\ Dry\ weight = \frac{g\ of\ dry\ sample}{g\ of\ sample} \times 100$$

2.4 Extraction method for samples expected to contain low concentrations of organics (less than or equal to 20 mg/kg)

2.4.1. Weigh 20g of sample into a 4-oz glass jar. Add enough sodium sulfate to have a free flowing sample mixture.

2.4.2. Add proper amount of matrix spike standard to 20 g of designated soil sample and its duplicate. Add proper amount of lab control sample standard to 20g of clean sand. Add proper amount of surrogate standard to all.

2.4.3 Immediately add about 40 mL of the extraction solvent or solvent mixture (Hexane:Acetone 1:1).

2.4.4. Extract the mixture in an ultrasonicator for 15 minutes. Decant the extract into a concentrating tube.

2.4.5. Repeat the extraction two or more times with two additional 40 mL portion of the solvent. Decant off the solvent after each ultrasonic extraction. Transfer the entire sample to the concentrating tube.

2.4.5 The extract is ready for cleanup and/or solvent exchange.

2.4.6. If analysis will not be performed immediately, the extract is transferred to a vial with PTFE-line caps and refrigerated.

2.4.7. Record all information on the Sample Preparation Logsheet.

3. Extract Concentration

3.1. Apparatus and Materials:

3.1.1. Kuderna-Danish (K-D) apparatus:

3.1.1.1. Concentrator tube – 10mL, graduated with ground glass stopper.

3.1.1.2. Evaporation flask: 500mL attached to concentrator tube with springs.

3.1.1.3. Snyder column: three ball (macro) and two ball (micro).

3.1.1.4. Springs or clamps

3.1.1.5. Boiling chips – Solvent extracted, approximately 10/40 mesh (silicon carbide) or equivalent.

3.1.2. Water bath – Heated with concentric ring cover, capable of temperature control (+/- 5 °C).

3.1.3. Drying column – 20-mm 1.d, Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

3.1.4. Exchange solvent: Hexane – Pesticide grade

3.2 Procedure

3.2.1 Pass the solvent extract through a drying column containing about 10cm of anhydrous sodium sulfate. Collect the dry extract in an evaporation flask connected to a K-D concentrator. Rinse the Erlenmeyer flask with 10-15 mL of methylene chloride, pass it through the drying column, and add it to the evaporation flask.

3.2.2 Add one or two clean boiling chips to the concentrator tube, and attach it to a three-ball Snyder column. Pre wet the Snyder column by adding 1 ml of Hexane to the top of the column.

3.2.3 Place the K-D apparatus on a hot water bath (80-90 °C) so that the concentrator tube is partially immersed in the hot water. The concentration should be complete in 20-25 minutes. When the apparent volume of liquid is reached to 1 ml, remove the K-D apparatus from water bath and let it drain and cool for 10 minutes.

3.2.4 Increase the temperature of the hot water bath to 95-100 C. Remove the Snyder column; add 5-9 mL Hexane (according to the color of the extract) mix it well and a new boiling chip. Attach a two ball micro Snyder column. Pre wet the column with 1ml hexane. Place the K-D apparatus on the water bath so that the concentrator tube is immersed in the hot water. The concentration is complete in 15-20 minutes. When the apparent volume of the liquid reaches 1 mL, remove the K-D apparatus and rinse its lower joint with 1 mL of hexane into the concentrator tube. Adjust the final volume of the extract to 5 to 10 mL according to the extract color. Transfer the extract to a Teflon-sealed screw-cap vial.

3.2.5 If the extract is clear, proceed with the analysis by transferring 1-2 mL of the extract to a crimp vial, seal the cap and load it to the auto sampler.

3.2.6 If the sample extract is dark, proceed with proper clean up method. Method 3620B (Florisil cleanup) PCB only.

3.2.7 Record all information on the Sample Preparation Logsheet.

4. Florisil Cleanup

Florisil is a magnesium silicate with basic properties; (registered trade name of a U.S. Silica Co.).

Florisil cleanup may be accomplished using a glass chromatographic column packed with Florisil or using solid phase interaction cartridges containing Florisil. Generally, the traditional column chromatography technique uses larger amounts of adsorbent; therefore, has a greater clean up capacity.

4.1. Summary of the Method

This method provides the option of using either standard column chromatography techniques or solid-phase extraction cartridge. Generally, the standard column chromatography techniques use larger amounts of absorbent and therefore have a greater cleanup capacity.

In the standard column cleanup, the column is packed with the required amount of adsorbent, topped with a water adsorbent, and then loaded with the sample to be analyzed. Elution of the analytes is accomplished with suitable solvent(s) that leaves the interfering compounds on the column. The eluate is then concentrated.

The cartridge clean up protocol uses solid-phase extraction cartridges packed with 1-2 g of silica gel (silicic acid) adsorbent. Each cartridge is solvent washed immediately prior to use. Aliquots of sample extracts are loaded into the cartridges, which are then eluted with suitable solvents. The collected fractions may be further concentrated and solvent exchanged.

4.2. Apparatus and Materials

4.2.1. Chromatographic column – 250 mm long x 10 mm ID; with Pyrex Glass wool at bottom and PTFE stop cock.
4.2.2. Beakers – Appropriate size.
4.2.3. Vials – 2,10,25,40 mL glass with PTFE-lined screw – caps or crimp tops.
4.2.4. Erlenmeyer flasks – 50 and 250 mL.
4.2.5. Silica gel for chromatography – 100/200 mesh. Before use, activate at least 16 hours at 130 C in a shallow glass tray, loosely covered with foil.
4.2.6. Sodium sulfate (granular, anhydrous)
4.2.7. Methylene chloride, Hexane, and Acetone – pesticide grade.

4.3. Procedure

4.3.1. Condition the cartridge by adding 4mL of hexane to each cartridge. Allow a few drops of solvent to pass through the manifold to remove air bubbles. Close the valve and allow the solvent to soak the entire sorbent for 5 minutes.

4.3.2. Slowly, open cartridge valves to allow hexane to pass through the cartridges. Close the valve when there is still at least 1 mL of solvent above the sorbet bed. Do not allow cartridge go dry. If cartridges go dry, repeat the conditioning step.

Reduce the sample extract volume to 10mL prior to cleanup for organochlorine pesticides prior to cleanup. The extract solvent

should be hexane. Given the sensitivity of the method, only 1mL of the 10mL extract needs to be subjected to the Forisil cleanup procedure.

4.3.3. Transfer the 1mL of the extract to the cartridge. Open the cartridge valve to allow the extract to pass through the cartridge bed at approximately 2mL/minutes. After the entire extract has passed through the cartridge, but before drying out, rinse the sample vial with 0.5mL of hexane and add it to the cartridge.

4.3.4. After the solvent passed, but before drying, add 5mL acetone/hexane (10:90). Turn the vacuum on. After soaking for 1 minute, slowly open the cartridge valve and collect the eluate into the collection vial. Concentrate the sample to final volume required by the method and exchange with Hexane to 5.0mL final volume.

4.3.5. Record all information on the Sample Preparation Logsheet.

5. Sulfuric Acid/Permaganate Cleanup

This method is used for clean up of sample extracts before analyzing for PCBs. It should not be used for pesticide extracts because it will destroy Aldrin, Dieldrin, Endrin, Endosulfan (I & II) and Endosulfan sulfate. This cleanup procedure will not destroy chlorinated benzenes, chlorinated naphthalenes, and some other chlorinated pesticides.

5.1 Reagents

Sulfuric acid: (1:1,v/v) with water, Reagent grade
Potassium permanganate: $KMnO_4$, 5% in water (w/v), Reagent grade
Hexane: Pesticide grade.

5.2 Procedure

5.2.1 Sulfuric Acid cleanup

5.2.1.1 One or two milliliters of hexane extract are transferred to a 10.0 mL vial. 5 mL of 1:1 sulfuric acid/water solution is added. (This procedure should be carried out in a hood).

5.2.1.2 The vial is tightly capped and mixed in a vortex for one minute. A vortex must be visible in the vial.

5.2.1.3 After the phase separation, the hexane phase should not be cloudy. If the hexane layer is colored, the hexane layer is separated and treated once more with another 5.0 mL 1:1

sulfuric acid/water solution. If the hexane layer is clear, the hexane layer is removed and the acid layer is extracted with one mL hexane and mixed in vortex. This takes care of the residual sample in the acid layer. The hexane layer is removed and added to the first extract and the volume is reduced to the original volume of the sample (1 or 2 mL).

5.2.1.4 If the hexane layer is not clear the permanganate cleanup is followed. This helps to get rid of the residual color.

5.2.1.5 Record all information on the Sample Preparation Logsheet.

5.2.2 Permanganate Cleanup

5.2.2.1 Two 5 mL of 5% potassium permanganate solution is added to the hexane extracts separated from acid cleanup. The mixture is vortexed for 1 minute. After the phase separation, the hexane layer is checked.

5.2.2.2 If it is not clear, the permanganate layer is separated and procedure is repeated with another fresh 5 mL potassium permanganate. If the hexane layer is clear, the hexane layer is removed to another vial and the permanganate layer is extracted with another 1 mL of fresh hexane using a vortex. Both portions of the hexane extracts are mixed and dried using sodium sulfate. The hexane is then reduced to the starting volume of 1 or 2 mL.

5.2.2.3 Record all information on the Sample Preparation Logsheet.

Appendix 3
Standard Preparation

All standard preparations are documented in the Semivolatiles Standards Preparation Logbook. Each entry must include the standard source or manufacturer, the standard lot number, the initial concentration, the final concentration, the solvent used, the date, and the analyst's initials. The expiration date and standard identification number are also recorded in the logbook and on the storage vial. The expiration date for stock and intermediate solutions is three months, although more frequent preparation may be required.

The standards for the calibration curve are prepared by first making primary stock standard solution from the original stock standard. If the concentration is too high for instrumental analysis, a secondary stock solution is prepared. Varying volumes of the standard solution are placed into volumetric flasks containing hexane, and then making each flask to the final volume with hexane.

Table 1 – Primary stock standard solutions*

Standard	Supplier	Cat #	Initial Conc.	Volume Used	Final Volume	Final Conc.
Arochlor 1016/1260 calibration std.	Supelco	46846-U	500µg/mL in Hexane	100 µL	5mL	10,000 µg/L
Arochlor 1016+1260	Chemservice	S-11086J4	10,000 µg/L	500 µL	50mL	10000 µg/L
PCB Surrogate Mix	Chemservice	SM-8080U5	2000 µg/mL in Toluene	250 µL	250 mL	2000 µg/L
Arochlor 1016	Chemservice	F-107 S	100µg/mL in Methanol	100µL	5.0mL	2000µg/L
Arochlor 1260	Chemservice	F-112 S	100µg/mL in Methanol	100µL	5.0mL	2000µg/L
Arochlor 1221	RESTEK	32007	1000µg/mL in Hexane	100µL	10mL	10,000 µg/L
Arochlor 1232	RESTEK	32008	1000µg/mL in Hexane	100µL	10mL	10,000 µg/L
Arochlor 1242	RESTEK	32009	1000µg/mL in Hexane	100µL	10mL	10,000 µg/L
Arochlor 1248	RESTEK	32010	1000µg/mL in Hexane	100µL	10mL	10,000 µg/L
Arochlor 1254	RESTEK	32011	1000µg/mL in Hexane	100µL	10mL	10,000 µg/L
Arochlor 1262	Chemservice	F-293 S	100µg/mL in Methanol	500µL	5.0mL	10,000 µg/L
Arochlor 1268	Chemservice	F-295 S	100µg/mL in Methanol	500µL	5.0mL	10,000 µg/L

*Each standard solution is prepared in a separate volumetric flask using Hexane as solvent.

Table 2- Initial calibration standard preparation:

STANDARD	STANDARD CONCENTRATION µg/L	AMOUNT OF STOCK STANDARD µL (2000µg/L)	TOTAL VOLUME mL
1	50	125	5.0mL
2	100	250	5.0mL
3	200	100	1.0mL
4	500	250	1.0mL
5	1000	500	1.0mL
6	2000	1.0mL	1.0mL

Appendix 4
Method Detection Limit

The method detection limit (MDL) or limit of detection (LOD) is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix.

AETL's limit of detection procedure follows the EPA MDL procedure as described in 40 CFR part 136 Appendix B – Revision 1.11. See the SOP for Determination of LOD and LOQ for specific information regarding the procedures used in the calculation of this value. The LOD study shall incorporate all sample preparation procedures and shall be completed by analyte and matrix. LOD studies shall be conducted each time there is a significant change in the method, for the addition of new analytes, or if there is a significant change in the instrument type.

In brief, detection limit studies are performed using reagent water for aqueous matrices and clean sand for soil and solid matrices. Seven replicate standards are prepared using the calibration standard spiked at a level that is between 3 to 5 times the estimated MDL. The laboratory standard fortified blanks are analyzed and the mean recovery and standard deviation (SDEV) is calculated for each analyte. The MDL is then calculated as follows:

$$MDL = (3.143) \times SDEV$$

The Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL) must be equal to or greater than the LOD and MDL.

Appendix 5
Corrective Action

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Method Blank	One per matrix per batch	Less than ½ of LOQ	1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window
System blanks	As needed	Less than ½ of LOQ	1) This is a corrective action when a contaminated system is identified.
Matrix Spike/ Matrix Spike Duplicate	One per matrix per batch	**%Recovery** **Water**: Aroclor 1016 50-150% Aroclor 1260 50-150% **Soil**: Aroclor 1016 50-150% Aroclor 1016 50-150%	1) Evaluate results against the LCS 2) If the LCS was compliant: narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes.
RPD limits	One per batch	For Water and Soil: RPD < 30%	1) Check calculations 2) Narrate failed RPD to client
Surrogate Spikes	Every sample, method blank QC samples and standard	For Water and Soil : Tetrachloro-m-xylene: 30-150% Decachlorobiphenyl: 30-150%	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Laboratory Control Sample and MS / MSD	One per matrix per batch	Recovery: Within 50-135%; All components	1) Reanalyze LCS 2) If still Non-compliant, re-extract the batch and reanalyze.

Appendix 6

Target Compounds	RT(min.) DETA	RT(min.) DETB	Water %R Limits	Soil %R Limits	RPD Limits	Water LOQ µg/L	Soil LOQ µg/Kg
Aroclor 1016 (PCB-1016)	8.5-14.0	9.1-14.8	50-150	50-150	30	10	50
Aroclor1221 (PCB-1221)						10	100
Aroclor1232 (PCB-1232)						10	50
Aroclor1242 (PCB-1242)						10	50
Aroclor1248 (PCB-1248)						10	50
Aroclor1254 (PCB-1254)						10	50
Aroclor 1260 (PCB-1260)	14.4-21.4	15.3-23.0	50-150	50-150	30	10	50
Aroclor 1262 (PCB-1262)						10	50
Aroclor 1268 (PCB-1268)						10	50
Tetrachloro-m-xylene			30-150	30-150			
Decachlorobiphenyl			30-150	30-150			

Appendix 7
Operating Conditions

Injector Operating Conditions
Injector: split/splitless
Gas: Helium 99.999 purity @ 10.4 psi
Purge flow: 128 ml/min
Purge time: 2.00 min
Total flow: 134 mL/min
Injector Temp: 250°C
Injection volume: 2.00µL

GC operating conditions
Initial Temp: 160°C
Initial Hold: 1 min.
Rate: 45°C/min.
Temp-2: 200°C
Hold -2: 1min.
Rate: 25°C/min.
Temp-3: 300°C
Hold- 3: 4.5min

Column	
Column I	Column II
PHENOMENEX Zebron Multiresidue 1 30m, 0.32mm ID, 0.5 µm	PHENOMENEX Zebron Multiresidue 2 30m, 0.32mm ID, 0.25 µm
Primary (front) column	Confirmation (back) column
Detector	
ECD-1 Temperature: 300°C	**ECD-2** Temperature: 300°C
Flow: 60.0 mL/min Makeup Gas: Nitrogen	Flow: 60.0 mL/min Makeup Gas: Nitrogen

AMERICAN ENVIRONMENTAL TESTING LABORATORY INC.

STANDARD OPERATING PROCEDURE

FOR ANALYSIS OF

SEMIVOLATILE ORGANIC COMPOUNDS BY

GAS CHROMATOGRAPHY / MASS SPECTROMETRY

CAPILLARY COLUMN TECHNIQUE

BY EPA METHOD 8270C

Prepared by

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Laboratory Director

I. PURPOSE:

To measure semivolatile organic compounds in environmental samples using a gas chromatograph equipped with a mass spectrometer detector.

II. SCOPE:

This method is used to determine the concentration of semi volatile organic compounds by gas chromatograph with a mass spectrometer detector (GCMS), and a capillary column. The method is applicable to the determination of organic components in soils, aqueous sludges, caustic liquors, acid liquors, waste solvents, oily wastes, ground waters, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, sediments and hazardous wastes. These matrices are prepared for analysis, by utilizing a variety of extraction techniques: primarily EPA method 3510, 3550, 3580.

Routinely analyzed compounds and laboratory-determined method detection limits are provided in Appendix F, Table 1. The method detection limits have been generated using clean aqueous and solid matrices and are not achievable for many "real" sample matrices. The listed detection limit may vary based on the amount of sample used. The method detection limit for both soil and water is performed at least once a year. Guideline for determination of MDL is provided in Appendix D.

The practical quantitation limit (PQL) of this method is approximately 500 µg/Kg (wet weight) for soil/sediments, and 10 µg/L for ground waters. The PQL will vary based upon the same factors that affect detection limits (dilutions and sample size).

III. RELATED DOCUMENTATION:

This SOP is derived from the following sources:
A sample SOP provided by Qsea Corporation.
SW-846 Method 8270C, Revision 3 December 1996 –Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
SW-846 Method 3510, 3550, 3580
HP 5890 II Gas Chromatograph Operating Manual
HP 5970 Mass Selective Detector Operating Manual

IV. RESPONSIBILITIES:

The section supervisor and organic chemist share responsibility for performance of this SOP.

IV. METHOD SUMMARY:

5.1. The analytical system is as follows:

System 1

HP 5970 MSD

HP 5890 II GC

HP 7673 ALS

HP Target Compound Software

5.2. The liquid sample is prepared for analysis by EPA method 3510. The solid sample is prepared for analysis by EPA method 3550 and waste samples utilize EPA method 3580. When the extraction is complete, Internal Standards are added and the sample extracts are injected to the gas chromatograph. The separated organics are detected and identified by the responses of the detector, and quantitations are calculated by a data system.

5.3. This method utilizes the internal standard method of quantitation. Specifically, six internal standards (sec. 8.5) are assigned to various compounds based on relative retention time.

5.4. Confirmatory information and quantitation is based upon the mass spectra generated by each compound. The primary and secondary ions used for identification are listed in Appendix F, Table 1.

5.5. The experience of the analyst is crucial to the successful application of this method, and only experienced GC/MS analysts may use this method. The analyst must be able to interpret retention times, detector responses, and internal standard responses. Prior to data generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of capability. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000A in SW-846 Revision 3 December 1996 Section 8.6. Specific laboratory instructions for performing this initial demonstration of capability are detailed in Appendix A.

VI. SAMPLE TYPE, HOLDING TIMES, AND PRESERVATION:

6.1. The samples analyzed by this method are waste waters, ground waters, soils, acid and base liquors, sledges, waste solvents, oily wastes, tars, fibrous wastes, filter cakes, spent catalysts and carbons, polymeric emulsions and sediments from various sources. They may contain some solid matter or chemicals that may interfere with the efficiency of the extraction or system. Interference problems require use of professional judgment regarding necessary changes to sample size or sample preparation, and consultation with the client regarding possibly compromised data.

6.2. The maximum holding time from sampling to extraction is seven (7) days for aqueous samples and (14) days for solid samples. The maximum holding time for the extract is 40 days from extraction.

6.3. Aqueous samples should not be preserved in the field. Both solid and aqueous samples should be temperature preserved at 4°C±2°C. All preservation measures should be noted on the chain of custody.

6.4. Soil samples must be collected in adequately cleaned (non-plastic) jars and water samples are collected in 1-liter amber color bottles. The requested volumes are 200 g of solid and three 1-liter bottles of aqueous sample. Data points slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts, respectively.

6.5. The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plans. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data will be estimated. The lab will narrate any missed holding times to the client.

VII. SAMPLE HANDLING FOR ANALYSIS:

7.1. Samples received are stored in a sample refrigerator at 4°C±2°C until analysis. At the time of analysis, all samples and standards are warmed to room temperature.

IIX. REAGENTS AND MATERIALS:

8.1. All chemicals and analytes must be considered hazardous and handled in a cautious manner. MSDS data concerning the chemicals and standards must be on file and reviewed by laboratory personnel.

8.2. Reagent water is free of organic contamination. Water is purchased from Sparkletts (Distilled Drinking Water-Sodium Free).

8.3. Organic solvents: acetone and methylene chloride should be pesticide quality or equivalent. The source and manufacturer may change from time to time; therefore, the brand and lot number must be documented in the sample preparation and standard preparation logs.

8.4. Stock Standards - Certified stock standards are purchased from the following manufacturers:

Chem Service
660 Tower Lane
West Chester, PA 19381

Accu Standard, Inc.
25 Science Park
New Haven, CT 06511

All standards are stored in a standard refrigerator at -15°C $\pm$ 5°C.

8.5. Tuning check standard contains the following analytes
Benzidine
Decafluorotri-Phenyl Phosphine (DFTPP)
P, P'-DDT
Pentachlorophenol

8.6. Internal Standards are prepared using the following analytes:

1,4-Dichloro benzene-d_4
Naphthalene- d_8
Acenaphthene-d_{10}
Phenanthrene-d_{10}
Chrysene- d_{12}
Perylene- d_{12}

8.7. Surrogate Standards are prepared with the following analytes:

2-Fluorophenol
Phenol-d_5
Nitrobenzene-d_5
2-Fluorobiphenyl
2,4,6-Tribromophenol
Terphenyl-d_{14}

8.8. LCS and Matrix Spike Compounds

4-chloro-3-methylphenol
2-chlorophenol
4-Nitrophenol
Acenaphthene
1,4-Dichlorobenzene
2,4-Dinitrotoluene

Pentachlorophenol
Phenol
1,2,4-Trichlorobenzene
N-nitrosodi-n-propylamine
Pyrene

8.9. Analytical Stock Standards can be prepared using the following list:

Aniline
Phenol
Bis(2-chloroethyl)ether
2-Chlorophenol
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Benzyl alcohol
1,2-Dichlorobenzene
N-Nitrosodimethylamine
Bis(2-chloroisopropyl)ether
Methyl methanesulfonate
N-Nitrosodi-n-propylamine
Hexachloroethane
Nitrobenzene
Isophorone
2-Nitrophenol
2,4-Dimethylphenol
Bis(2-chloroethoxy)methane
Benzoic acid
2,4-Dichlorophenol
2,6-Dichlorophenol
Ethyl methanesulfonate
1,2,4-Trichlorobenzene
Naphthalene
Hexachlorobutadiene
4-Chloro-3-methylphenol
2-Methylnaphthalene
2-Methylphenol
Hexachlorocyclopentadiene
4-Methylphenol
2,4,6-Trichlorophenol
3,Methylphenol
2-Chloronaphthalene
2-nitroaniline
Dimethylphthalate
Acenaphthylene
2,6-Dinitrotoluene
3-Nitroaniline
Acenaphthene
2,4-Dinitrophenol
4-Nitrophenol
Diethylphthalate
Fluorene
4-Chlorophenyl phenyl ether
4,6-Dinitro-2-methylphenol
N-Nitrosodiphenylamine
4-Bromophenyl phenyl ether
2,4,5-Trichlorophenol
Hexachlorobenzene
Pentachlorophenol
4-Nitroaniline
Phenanthrene
Anthracene
Di-n-butyl phthalate
2,3,4,6-Tetrachlorophenol
Fluoranthene
Benzidine
Pyrene
Butyl benzyl phthalate
Benz(a)anthracene
3,3’-Dichlorobenzidine
Chrysene
Bis(2-ethylhexyl)phthalate
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene
Benzo(g,h,I)perylene
1,2-Diphenylhydrazine(Azobenzene)
1,4-Dichlorobenzene-d_{14}
Naphthalene-d_8
Acenaphthene-d_{10}
Phenanthrene-d_{10}
Chrysene-d_{12}
Perylene-d_{12}
2-Fluorobiphenyl
2-Fluorophenol
Nitrobenzene- d_5
Phenol- d_6

4-Chloroaniline	Terphenyl- d_{14}
Dibenzofuran	2,4,6-Tribromophenol
2,4-Dinitrotoluene	Di-n-octylphthalate
Pyridine	n-Nitrosodimethylamine

8.10. Standards and surrogates are purchased from a number of suppliers based on varying concentration and quantity needs. All preparations are detailed by the analyst in the Organic Standards Preparation Logbook, with documented standard sources and lot numbers. Appendix B provides instructions for standard, internal standard, and surrogate standard preparations.

IX. SAMPLE PREPARATION AND ANALYSIS PROCEDURES:

9.1. Prepare matrix-specific batches of 15 samples or less. Matrices are typically defined as soil, water, and other. Due to differences in preparation of soils and waters, various matrices cannot be batched together.

9.2. Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

9.3. Consult all project-specific plans for matrix spike and duplicate preparation requirements. Samples from two clients that each requires project-specific matrix spikes can be prepared together; however, two sets of QC will have to be prepared using each client's designated samples.

9.4. Prepare at least one set of the following QC samples with each batch (up to 15 samples with the same matrix): method blank, matrix spike, matrix spike duplicate and LCS.

9.5. All samples are spiked with surrogates prior to extraction. The internal standards are spiked, post-extraction. The internal standards and surrogates are evaluated based upon the known concentrations added and known sample matrix interferences. The internal standard and surrogate recoveries provide additional evaluation of unknown samples without the use of a matrix spike. The internal standards are made to a final analytical concentration of 40 mg/L. The surrogate final concentration is 100mg/L for base/neutral surrogates and 200 mg/L for acid surrogates. Surrogate and internal standard preparation procedures are listed in Appendix B. Appendix C provides instructions for extraction of water & soil samples.

9.6. Apparatus and Materials

Specific to solid samples only:
Balance to accommodate up to 20 grams and accurate to two decimal places
Sample spatulas

Needed for all samples:
1-mL syringe for sample preparation
10 µL syringe for Internal Standard addition

Instruments utilized: (See Section 5.1)

X. HP 7673 LOADING PROCEDURE

10.1. All samples extracts, standards, etc., which are to be analyzed, must be placed in an autosample vial and capped. Make sure that the sequence vial number and actual vial placement in the 7673 autosampler rack are the same.

XI. OPERATING CONDITIONS:

11.1. The typical operating conditions for the gas chromatograph and mass spectrometer are as follows:

System I

GC parameters

Agilent HP-5 MS Semivol, 30m/. 25mm ID/0.5 micron Film
Injector: HP split/splitless
Gas: Helium 99.999 purity @ 80 psi
Injector Temp: 250°C
Detector A: NA
Detector B: 280°C (MSD Transfer Line)

Initial Temp: 40°C
Initial Hold: 5 min.
Rate: 12°C/min.
Temp2: 290°C
Hold 2: 6min.
Rate: 20°C/min.
Temp3: 325°C
Hold 3: 10min

Detector: Agilent Mass Selective Detector 5973N

MS-EM: Variable
Mass Range: 35-500
Scan Rate: 1.73 scans/second
Ionization: Ei 70 EV

XII. INSTRUMENT STARTUP:

12.1. The gas chromatographic conditions are checked each day prior to use, in accordance with scheduled preventive maintenance measures, as defined in the laboratory Quality Assurance Plan. These measures include checking and replacing septa, checking all gases, etc. All maintenance requirements are logged into the maintenance logbook assigned to each instrument.

12.2. The Mass Spectrometer is checked for air leaks daily by the following procedure: the water (mass 18 peak), Nitrogen (mass 28 peak), and Oxygen (mass 32 peak) are examined and compared. If the water mass peak is greater than the oxygen and the nitrogen mass peaks, the system is airtight and ready for use. If the ratios of the oxygen and nitrogen peaks are greater than the water peak, an air leak is possible. The system must be further checked for air leaks and corrective action must be taken prior to proceeding.

XIII. TUNING, CALIBRATION AND SYSTEM EVALUATION:

13.1. The instrument must meet tuning, calibration and contamination criteria prior to engaging in sample analysis. The following instrument startup sequence is employed:

DFTPP Tune Standard check:
Methylene Chloride Blank with Internal Standards
5-point Initial Calibration, containing SPCC and CCC Compounds (ICAL) and additional target compounds
Initial Calibration Verification Standard (ICV) (Second Source)

A run and evaluation criterion for each of these standards and blanks is discussed as below:

13.1.1. A 50 ng injection of the DFTPP tune standard is required to assess hardware tuning, column performance, and injection port inertness. The following mass abundance criteria must be met for the tune standard:

Mass Relative Abundance

Table 1.

51	30-60% of mass 198
68	<2% of mass 69
70	<2% of mass 69
127	40-60% of mass 198
197	<1% of mass 198
198	Base Peak, 100% relative abundance
199	5-9% of mass 198
275	10-30% of mass 198
365	<1% of mass 198
441	Present but less than mass 443
442	>40% of mass 198
443	17-23% of mass 442

13.1.1.1. The chromatogram for the tune standard should be evaluated for possible degradation of the column or injection port problems. Perform column and injection port maintenance as needed. Do not proceed with the calibration until the tune criteria are met.

13.1.1.2. A tune check standard must be run every 12 hours of sample analysis. All the passing criteria must be met before sample analysis.

13.1.1.3. At the beginning of each 12 hr. Shift that base/neutral fraction is to be analyzed for EPA method 8270C/625 the tailing factor for benzidine and pentachlorophenol must be calculated. Calculation of tailing factor is calculated by the Chemstation software and a print out is generated daily. Since the tuning check standard solution contains DDT, it is used to detect the degradation of DDT to DDE and DDD. This calculation is also performed by the software and a print out is generated daily.

13.2. The initial calibration is performed by generating a 5-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at five levels*. Due to the various responses of analytes, it is routinely necessary to analyze six standards to achieve five levels for each analyte. Standards 1 and 2 are at or near the reporting limit for the analytes, and the high level standard is near the upper limit of the linear range of the system.

	Standard Conc
Standard 1	10 mg/L
Standard 2	20 mg/L
Standard 3	50 mg/L
Standard 4	80 mg/L
Standard 5	80 mg/L
Standard 6	120 mg/L

Instructions for preparing these calibration standards and internal standards are defined in Appendix B.

13.2.1.1. A Second Source Standard (ICV) is prepared using the methodology listed in Appendix B. This standard is prepared from a second independent source that may also be used as the MS and LCS spiking solution, if volume permits. The ICV standard is run as a standard.

13.3. PROCEDURE FOR SYSTEM EVALUATION: Initial Calibration

13.3.1. After generating the initial curve, calculate response factors (RF) for each analyte. This procedure is performed by the instrument software using the following equation:

$$RF = \frac{Area_{std} \times Conc_{InternalStd}}{Area_{InternalStd} \times Conc_{std}} \equiv \frac{A_s C_{IS}}{A_{IS} C_s}$$

13.3.2. The System Performance Check Compounds (SPCC) must be assessed for attaining the minimum average relative response factors. The SPCC compounds must have minimum response factors as follows:

SPCC	RRF_{MIN}
N-nitroso-di-n-propylamine	≥0.050
Hexachlorocyclopentadiene	≥0.050
2,4-Dinitrophenol	≥0.050
4-Nitrophenol	≥0.050

13.3.3. Failure of any of these four SPCC compounds to meet minimum RRF criteria prohibits proceeding with sample analysis until the cause for poor response is determined. The following is a summary of the systematic problems indicated by each of the SPCC analytes:

Compound	System Performance
N-nitroso-di-n-propylamine	Standard deterioration
Hexachlorocyclopentadiene	Column deterioration
2,4-Dinitrophenol	Active sites in column
4-Nitrophenol	injection port contamination

13.3.4. If the SPCC criteria are met, use the response factors to evaluate whether the RFs are constant over the calibration range. This is done by generating the Percent Relative Standard Deviation (%RSD). The computer system calculates the value by using the following equation:

$$\%\,RSD = \frac{\text{Standard Deviation of the RFs}}{\text{Average of the RFs}} \times 100$$

13.3.5. The %RSD among RFs of each analyte for the calibration check compounds (CCCs) must be less than 30%.

Calibration Check Compounds (CCCs)	
Acenaphthene	4-chloro-3-methylphenol
1,4-Dichlorobenzene	2,4-dichlorophenol
Hexachlorobutadiene	2-Nitrophenol
N-nitrosodiphenylamine	Phenol
Di-n-octylphthalate	Pentachlorophenol
Fluoranthene	2,4,6-Trichlorophenol
Benzo(a)pyrene	

13.3.6. The CCCs are chosen for monitoring because they are representative of the list of compounds being tested. Their satisfactory performance assures the analyst that the system is operating properly. Often if the %RSD criteria are exceeded, it indicates a possible leak in the system that requires attention. If the 30% RSD criteria (sec. 7.3.5.3 8270C) is met for the CC compounds, then all other analytes are evaluated against 15% RSD criteria.

13.3.7. If the %RSD is less than 15% for all other calibrated compounds, the RF can be considered invariant and the average RF can be used for calculations.

13.3.8. If the %RSD of any compound is greater than 15%, the analyst may use the area ratios versus concentration using first order or higher regression fit of the five calibration points. This approach should not be used if review of the data indicates a possible error

in standard preparation. If standard preparation is the cause of the problem, new standards must be made and the calibration curve rerun. Professional judgment of the analyst is required before regression calculation can be used, since its use will be subject to increased scrutiny by data reviewers.

13.3.9. If the %RSD values are acceptable for all analytes, check the ICV standard and internal standards against the initial calibration for relative retention time and response compliance.

13.3.10. The response for each internal standard must be within –50% - +100% response to the average response of the internal standard during calibration. If the response is greater than these criteria, the system must be inspected for malfunctions and the appropriate corrections made. Sample analysis cannot proceed until the variation in response is fixed.

13.3.11. The retention time of the internal standards must not drift more than 30 seconds from the average retention time developed during the initial calibration. If the retention time drifts greater than 30 seconds, the chromatographic system must be inspected for malfunctions and corrections made. Sample analysis cannot proceed until the retention time drift is corrected.

13.3.12. Finally, check the reagent blank for contamination and carry over. Phthalates are common laboratory contamination in extracted samples and method blanks.

13.3.13. After all of the conditions above have been satisfied the analysis of samples may begin. All adjustments and troubleshooting processes must be documented in the maintenance logbook. Reference to manufacturer supplied solutions, i.e. operation manuals, maintenance manuals, etc. must also be documented in the maintenance logbook.

XIV. SAMPLE ANALYSIS:

14.1 Sample analysis may proceed with incorporation of the following standards every 12 hours of run time:

DFTPP Tune Standard
Continuing Calibration Verification (CCV) Standard

14.1.1. The DFTPP standard is checked for adherence to mass abundance requirements as detailed in 13.1.1. When method 625 is used for analysis of aquous samples, the tailing factor for benzidine and pentachlorophenol must be less than 3.0
Degradation of DDT to DDE and DDD should not exceed 20%.

14.1.2. The Continuing Calibration Verification (CCV) is checked for CCC %difference, SPCC minimum RFs, internal response values and retention time shifts. All analytes other than CCCs are also checked for %drift or %difference.

14.1.2.1. Analytes are checked for %drift or %difference by the following equation, which is performed by the instrument software:

$$\%\ Drift = \frac{\left[C_{True} - C_{Measured}\right]}{C_{True}} \times 100$$

14.1.2.2. If any CCC compound is determined to have a %drift that exceeds 20%, corrective action is required. First a fresh verification standard is run. If the analyte fails again, the initial calibration is considered invalid and a new 5-point curve must be generated.

14.1.2.3. CCV response factors for SPCC analytes are compared against the average response factors generated in the initial calibration. Minimum response factors of 0.050 must be obtained for these compounds before continuing.

14.1.2.4. CCV internal standard response value and retention times are checked against the limits established by the initial calibration as discussed in 13.3.10. and 13.3.11. These tolerance limits must be met before proceeding.

XV. SAMPLE EVALUATION:

15.1. Data is evaluated by both the analytical group and QA group, prior to being released to the client. This section refers to analytical group evaluations only.

15.2. All samples are spiked with internal standards and surrogates, and these spikes serve as the best indicator for data acceptability. Evaluate the internal standards and surrogates for recovery and retention time compliance.

15.3. The response for each internal standard must be 50% to 150% of the average response of the internal standard during calibration. If the response is greater than this criteria, the system must be inspected for malfunctions and the appropriate corrections made. Sample analysis cannot proceed until the variation in response is fixed.

15.3.1. Low internal standards cause a high bias on sample detections. Non-detect results are unaffected. Surrogates are evaluated for culmination of this bias.

15.3.2. High internal standards cause a low bias on sample detections and non-detections. Surrogates are evaluated for culmination of this bias.

15.4. The retention time of the internal standard is monitored. The retention times of the internal standard must not vary more than ±0.5 minutes from the average. If the retention time variance is exceeded, the system is considered out of control and corrective action is needed. All analysis performed on the out-of-control system should be repeated, if possible. If this is not possible, the data will be reported and the deviation narrated.

15.5. The relative retention times (RRT) of the individual components must not vary by more than ±0.06 minutes. If this drift occurs, the analyst must make a professional judgment regarding the effect of the shift on data validity. If compliant data is not generated, the deviation must be reported to the client. The cause for RT shift must be corrected.

15.6. The surrogate recoveries for each blank, QC Check Sample, set of standards, and samples will be evaluated against recovery limits (see Appendix E) until sufficient data points are established, in order for a recovery range will be developed. This recovery range will not be changed unless the system parameters are modified to the point that the recoveries cannot meet the tolerance limits. Limits will be evaluated annually at a minimum.

15.7. Environmental samples often have contamination and interference. The most common interfering compounds are hydrocarbons, which can often be detected in advance by an oily appearance or screening technique. The client must be contacted in all cases involving interfering compounds such that guidance can be provided for analysis, and problems communicated regarding elevated quantitation limits. The amount of common laboratory contaminants, such as phthalates, and chloride, should be no greater than the reporting limit on any given day. The judgement of the analyst is critical to this evaluation.

15.8. Contamination by carryover can occur whenever high-concentration samples are analyzed. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of a solvent blank to check for carry over. Samples suspected to have contributions from carryover must be subject to re-analysis. The

column may also require conditioning between runs or after a series of runs to remove contamination.

15.9. All data that exceeds the criteria must be narrated to the client. The narrative is invaluable to secondary reviewers, such as validators and regulators, in tracking the decision-making and corrective action steps employed.

15.10. It is possible that some sample matrices may need to be diluted to reduce interferences. When this occurs, the reporting limits will be increased to reflect the dilutions. The possibility for instrument damage exists whenever an attempt is made to run a sample with severe interferences. The analyst must consider available screening methods as a way to avoid damage or cross-contamination. All decision-making should be documented.

15.11. Due to the variety of sample concentration ranges, the matrix spiking concentration has been set at 100 mg/L for Base/neutral compounds and 200 mg/L for acid compounds. It may be changed to meet any regulatory or project-specific requirements. Periodically, the samples will be spiked with all target compounds using the SSS solution. Only those analytes listed in section 8.7 will be evaluated for matrix spiking purposes. The remaining compounds are used for historical data and evaluation of system performance.

15.12. Matrix Spikes will be evaluated based upon the percent recovery (see Appendix E). If the recoveries were within the provided ranges, the data would be reported as valid. If any of the recoveries are outside of the ranges, the sample would be analyzed a second time and the results compared. The cause will be determined and an explanation will be provided. In many cases a recovery problem is limited to the individual sample only, and will not affect the validity of the other samples in the run.

15.13. The spiked sample recovery analysis will be calculated for percent recovery. If a sample recovery is outside of the limits, the analyst will evaluate the reason for the outlier. If the sample has a history of analytical matrix problems, the percent recovery range may be changed for that matrix only. The evaluation requires the analysis of a minimum of five-sample spike analysis. The evaluation will be updated after the analysis of 10 new spike sample analysis.

15.14. An LCS is run at the rate of one per matrix per batch. This sample is the QC-check sample prepared and analyzed in the identical manner as the samples. The results of the LCS are compared to criteria of Appendix F for the compounds in section 8.7. All other compounds, if spiked, are for reference only. LCS for aqueous samples is run on organic free reagent water and for soil samples is run on Ottawa sand.

15.15. If the matrix spike and matrix spike duplicate analysis fail to meet the designated criteria due to the sample matrix, the LCS is used as the means to demonstrate that

the system is capable of generating acceptable data. If any analyte falls outside of the criteria established the analyst must provide an explanation in the narrative and determine the validity of the individual analyte.

15.16. The Mass Spectral fragmentation data must be examined when identifying the compounds. The system provides a report that allows the analyst to examine the relative fit and purity of each identified compound to the mass spectral library. If the spectral fit or purity is less than 50% or 0.5 for any compound, the analyst will examine the mass spectra and determine if the compound identification is accurate. The professional judgment of the analyst will prevail.

XVI. REPORTING OF RESULTS:

16.1 The following is a summary of the calculation used by the computer to generate the reported data:

16.1.1. Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_x}{T} \times 100$$

Where:
C_x = Is the concentration of the analyte spike, surrogate, or internal standard from the analysis.
T = The true value of the spike, surrogate, and internal standard added.

16.1.2. Sample Concentration is calculated by the following equation:

$$C_{(\mu g/L)} = \frac{A_x \times I_s}{A_{IS} \times RF}$$

Where:
C = The concentration of the analyte sample.
A_x = Area of the characteristic ion of the analyte being measured.
I_s = Concentration of the internal standard.
A_{IS} = Area of the characteristic ion of the internal standard.
RF = The response factor of the analyte being measured.

16.1.3. Standard Deviation is calculated by the following equation:

$$SD = \sqrt{\frac{\sum_{N}\left(X_i - X_{Avg}\right)^2}{N-1}}$$

Where:
X_i = analyte values
X_{Avg} = Analytes average value
N = Number of points

6.1.4. Relative Percent Difference:

$$\%RPD = \left| \frac{\left[Conc_{MS} - Conc_{MSD}\right]}{\left[\frac{Conc_{MS} + Conc_{MSD}}{2}\right]} \right| \times 100$$

Where:
MS = Matrix Spike
MSD = Matrix Spike Duplicate
100 = Conversion factor to %

Appendix A

Initial Demonstration of Proficiency

The sample analysis and system verification is performed to demonstrate that the system and the analyst can successfully perform the analysis. This is accomplished by running four aliquots of the Quality Control Check Sample in the same manner that samples are run.

A.1. The QC Check Sample is prepared by Adding 1 mL of the of matrix spike standard plus 1 mL of surrogate standard to 1 Liter of ultra pure water and extract per EPA method 3510.

A.2. Analyze and reduce data.

A.3. Extract and analyze a method blank with the LCS batch.

A.4. Compare the four LCS recoveries. If average recoveries of analytes are within acceptable limits, the system is ready to use and analysis may begin. If the average recovery for any analyte falls outside the range, corrective action must be taken and the analysis repeated for the failed analytes. All corrective action must be noted in the Maintenance Logbook.

A.5. Once an analyst and instrument have passed the recovery criteria for all analytes to be reported by the method, the analyst and instrument are certified as having established initial proficiency with the method.

Appendix B

The standards, surrogates, internal standards, initial calibration verification, and spiking solutions are prepared as follows:

B.1. The standards for the calibration curve are prepared by first making one intermediate standard at 200mg/L in methylene chloride that includes all compounds. From the 200 mg/L standard, serial dilutions which result in 1 mL of each of the following standard concentrations are prepared: 10, 20, 50, 80, 100, 120 mg/L. It is recommended to make 10 mL of the 50 mg/L standard for use as the daily calibration check standard.

B.2. A minimum of 5 standards is used to calibrate the system. All standards must be within the linear range of the system. A reagent blank should be run in addition to the standards.

B.3. An initial calibration verification (ICV) standard should be analyzed with each initial calibration. The ICV is prepared using the same procedures as those for the standards. The ICV is prepared from an independent source.

B.4. The intermediate solutions are good for one year. The expiration date and standard number is recorded in the logbook and on the storage vial.

B.5. To prepare the surrogate standard: Add 1 mL of a 5,000 mg/L Base/Neutral surrogate standard plus 1 mL of a 10,000 mg/L acid surrogate standard to a 50 mL volumetric flask and bring to volume with methylene chloride. The resulting surrogate standard solution is 100 mg/L for Base/Neutral compounds and 200 mg/L for Acid compounds. Add 1 mL of final surrogate standard to sample prior to extraction.

B.6. To prepare the matrix-spiking standard, follow the surrogate standard preparation procedure (B.5.). (Use matrix spike standard instead of the surrogate standard.)

Appendix C

C.1. Liquid-liquid extraction of water (separatory funnel)

C.1.1. Apparatus and materials

- Separatory funnel: 2 L
- Drying column: 20 mm I.D. Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.
- Erlenmeyer flask: 250 ml
- Graduated cylinder
- Extraction solvent; methylene chloride: acetone (1:1,v:v) or methylene chloride

C.1.2. Procedure:

C.1.2.1. Using a 1 L graduated cylinder transfer 1 L of the sample to a 2 L separatory funnel. Add proper amount of spike standard to each of 3 one liter distilled water used as matrix. Add proper amount of surrogate standard to all. Make all samples acidic by adding (1:1, v:v) sulfuric acid. Check the pH by pH paper. Adjust to PH<2

C.1.2.2. Add 60 ml of methylene chloride to the separatory funnel. Shake the funnel once, vent the funnel and repeat this procedure several times. Then shake the funnel vigorously for 2-3 minutes with periodic venting to release excess pressure.

C.1.2.3. Let the phases to separate for 10 minutes. Collect the solvent extract in an Erlenmeyer flask. If emulsion is present, mechanical techniques are employed to help the phase separation. Repeat the extraction two more times using fresh portions of methylene chloride. Combine the three extracts.

C.1.2.4. Repeat steps C.1.2.2 & C.1.2.3, but make the water samples basic with 10 M Sodium Hydroxide. Adjust the pH to >11. Combine all the extracts.

C.2. Ultrasonic extraction of soil

C.2.1. Apparatus and materials:

- A device for grinding or homogenization
- Balance – Top loading accurate to 10 g.

- Ultrasonicator
- Centrifuge
- Glass Vials
- Sample spatulas – stainless steel

C.3. Sample handling:

C.3.1. Sediment/soil samples- Decant and discard any water layer on a sediment sample. Mix sample thoroughly, especially compo sited samples. Discard any foreign objects such as sticks, leaves, or rocks.

C.3.2. Dry waste samples amenable to grinding: grind or otherwise subdivide the waste so that it either passed through a 1-mm sleeve or can grinding apparatus to yield at least 2g after grinding.

C.3.3. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding.

C.3.4. Determination of percent of dry weight-when sample results are to be calculated on a dry weight basis, a second portion of sample should be weighed out at the same time as the portion used for analytical determination. Immediately after weighing the sample for extraction, weight 5-10g of the sample into a tarred weighing. Calculate the % dry weight as follows:

$$\%DryWeight = \frac{gofDrySample}{gofSample} \times 100$$

C.3.5. Extraction method for samples expected to contain low concentrations of organics (less than or equal to 20 mg/kg)

C.3.5.1. Weigh 20g of sample into a 4-oz glass jar. Add enough sodium sulfate to have a free flowing sample mixture.

C.3.5.2. Add proper amount of matrix standard solution to matrix spike, and spike duplicate and add proper amount of surrogate standard to all.

C.3.5.3. Immediately add 100 ml of the appropriate extraction solvent or solvent mixture.

C.3.5.4. Extract the mixture in an ultrasonicator for 15 minutes. Decant the extract into a centrifuge bottle and centrifuge at low speed to remove particles.

C.3.5.5. Repeat the extraction two more times with two additional 100 ml portion of the solvent. Decant off the solvent after each ultrasonic at low speed and then decant the solvent from the bottle.

C.3.6. Extraction method for samples expected to contain high concentrations of organics (greater than 20mg/kg).

C.3.6.1. Transfer 2g of sample to a 40ml glass vial. Wipe the mouth the vial with a tissue to remove any sample material. Record the exact weight of the sample taken. Cap the vial before proceeding with the next sample to avoid any cross contamination.

C.3.6.2. Add 2g of anhydrous sodium sulfate to the sample and mix well. Add proper amount of surrogate spiking solution to sample mixture. For amount of matrix spiking and surrogate standard solution.

C.3.6.3. Immediately add the necessary volume of solvent to bring the final volume to 10 ml considering the added volume of surrogate and matrix spike standard. Sonicate the vial in the ultrasonicator for 15 minutes.

C.3.6.4. Centrifuge the vial and collect a volume appropriate for the sensitivity of the determinative method. It is advisable to collect a standard volume for such samples to simplify the final calculation.

C.3.6.5. The extract is ready for cleanup and/or analysis

C.3.6.6. If analysis will not be performed immediately, the extract is transferred to a vial with PTFE-line caps and refrigerated.

C.4. Extract Concentration:

C.4.1. Apparatus and Materials:

- Kuderna-Danish (K-D) apparatus:
- Concentrator tube–10 ml, graduated with ground glass stopper.

- Evaporation flask: 500ml attached to concentrator tube with springs.
- Snyder column: three ball (macro) and two ball (micro).
- Springs or clamps
- Boiling chips-Solvent extracted, approximately 10/40 mesh (silicon carbide) or equivalent.
- Water bath – Heated with concentric ring cover, capable of temperature control (+/-5 C).
- Drying column –20-mm 1.d, Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

C.4.2. Pass the solvent extract through a drying column containing about 10cm of anhydrous sodium sulfate. Collect the dry extract in an evaporation flask connected to a K-D concentrator. Rinse the Erlenmeyer flask with 20-25 ml of methylene chloride, pass it through the drying column, and add it to the evaporation flask.

C.4.3. Add one or two clean boiling chips to the concentrator tube, and attach it to a three-ball Snyder column. Pre-wet the Snyder column by adding 1ml of methylene chloride to the top of the column.

C.4.4. Place the K-D apparatus on a hot water bath (80-90° C) so that the concentrator tube is partially immersed in the hot water. The concentration should be complete in 10-20 minutes. When the apparent volume of liquid is reached to 1ml, remove the K-D apparatus from water bath and let it drain and cool for 10 minutes. Transfer the extract to 2.0 ml crimp vial quantitatively

C.4.5. If the extract is clear, proceed with the analysis by adding 10 µL of the internal standard to each 1ml of the extract.

C.5. Sample Analysis

C.5.1. Add 10 µL of a 4000 mg/L internal standard to the 1 mL final volume sample extract (ISTD concentration in extract is 40 mg/L).

C.5.2. Analyze sample

C.5.3. If any internal standards or surrogates are outside control limits reanalyze the sample extract to confirm results.

C.5.4. If any target analytes are outside the calibration range dilute and reanalyze. (Make sure internal standard concentration is 40 mg/L in the diluted extract.

APPENDIX D
Method Detection Limit

Method detection limit is the lowest concentration of a substance that can be identified, measured and reported with 99% confidence that the analyte concentration is greater than zero.

Making 7 replicates of a certain concentration of calibration standard in water for aqueous matrices and clean sand for soil and solid matrices performs Method detection limit. The seven replicates of each matrix are then extracted using the exact same procedure used for extracting sample. The final 1mL extracts are analyzed and the standard deviation is calculated for each analyte. To obtain the method detection limit, the standard deviation is multiplied by 3.143. The PQL is about 2-3 times the method detection limit.

Appendix E

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria		Corrective Action
Method blank	One per matrix per batch	Less than detection limit		1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window 3) Common laboratory contaminants are subject to a 10x window (acetone and methylene chloride)
System blanks	As needed	*		1) This is a corrective action when a contaminated system is identified
Matrix Spike/Matrix Spike Duplicate	One per matrix per batch	Water*	Soil*	1) Evaluate results against the LCS 2) If the LCS was compliant; narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes
RPD Limits		*		1) Check calculations 2) Narrate failed RPD to client
Surrogate spikes	Every sample, method blank and standard	Water*	Soil*	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Internal standard	Every sample, method blank and standard	Within RT windows and response windows of continuing calibration ISs.		1) Evaluate system 2) Reanalyze sample 3) Report both analyses to the client
Laboratory control sample	One per matrix per batch	*		1) Reanalyze LCS 2) If still non-compliant, reprep batch and reanalyze

*See Appendix F

Appendix F

Table 1

Target Analyte Compound	CAS Number	RT Minutes	RPD Water, Soil	Water Limits	Soil Limits	Quant Ion	Secondary Ions	Water MDL µg/L	Soil MDL mg/Kg	Water RDL µg/L	Soil RDL mg/Kg
Aniline		11.13				93	66,65	2.00	0.100	10.0	0.500
Phenol		11.17	42,35	12-89	26-90	94	65,66	1.00	0.100	10.0	0.500
Bis(2-chloroethyl)ether		11.28				93	6395	4.00	0.100	10.0	0.500
2-Chlorophenol		11.35	40,50	27-123	25-102	128	64,130	2.00	0.100	10.0	0.500
1,3-Dichlorobenzene		11.65				146	148,111	2.00	0.100	10.0	0.500
1,4-Dichlorobenzene		11.77	28,27	36-97	28-104	146	148,111	2.00	0.100	10.0	0.500
Benzyl alcohol		12.14				108	79,77	2.00	0.100	10.0	0.500
1,2-Dichlorobnzene		12.17				146	148,111	2.00	0.100	10.0	0.500
N-Nitrosomethylethylamine		5.50				88	42,43,56	10.0	0.100	50.0	0.500
Bis(2-chloroisopropyl)ether		12.45				45	77,121	2.00	0.100	10.0	0.500
Methyl methanesulfonate		8.68				80	79,65,95	2.00	0.100	10.0	0.500
N-Nitrosodi-n-propylamine		12.83	38,38	41-116	41-126	70	42,101,130	2.00	0.100	10.0	0.500
Hexachloroethane		12.84				117	201,199	2.00	0.100	10.0	0.500
Nitrobenzene		13.09				77	123,65	2.00	0.100	10.0	0.500
Isophorone		13.63				82	95,138	2.00	0.100	10.0	0.500
2-nitrophenol		13.78				139	109,65	2.00	0.100	10.0	0.500
2,4-Dimethylphenol		13.90				122	107,121	2.00	0.100	10.0	0.500
Bis(2-chloroethoxy)methane		14.09				93	95,123	2.00	0.100	10.0	0.500
Benzoic acid		14.23				122	105,77	2.00	0.400	10.0	1.00
2,4-Dichlorophenol		14.31				162	164,98	2.00	0.100	10.0	0.500
2,6-Dichlorophenol		14.81				162	164,98	2.00	0.100	10.0	0.500
Ethyl methanesulfonate		10.28				79	109,97,45,65	2.00	0.100	10.0	0.500
1,2,4-Trichlorobenzene		14.47	28,23	39-98	38-107	180	182,145	2.00	0.100	10.0	0.500
Naphthalene		14.61				128	129,127	2.00	0.100	10.0	0.500
Hexachlorobutadiene		14.98				225	223,227	2.00	0.100	10.0	0.500
4-Chloro-3-methylphenol		15.84				107	144,142	2.00	0.100	10.0	0.500
2-Methylnaphthalene		16.12				142	141	2.00	0.100	10.0	0.500
2-Methylphenol		12.42				107	108,77,79,90	2.00	0.100	10.0	0.500
Hexachlorocyclopentadiene		16.60				237	235,272	2.00	0.100	10.0	0.500
4-Methylphenol		12.76				107	108,77,79,90	2.00	0.100	10.0	0.500
2,4,6-Trichlorophenol		16.80				196	198,200	2.00	0.100	10.0	0.500
2-Chloronaphthalene		17.19				162	127,164	2.00	0.100	10.0	0.500
2-nitroaniline		17.51				65	92,138	2.00	0.100	10.0	0.500
Dimethyl phthalate		17.96				163	194,164	2.00	0.100	10.0	0.500
Acenaphthylene		18.12				152	151,153	2.00	0.100	10.0	0.500
2,6-Dinitrotoluene		18.99				165	63,89	2.00	0.100	10.0	0.500
3-Nitroaniline		18.44				138	108,92	2.00	0.100	10.0	0.500
Acenaphthene		18.54	31,19	46-118	31-137	154	153,152	2.00	0.100	10.0	0.500
2,4-Dinitrophenol		18.65				184	63,154	2.00	0.100	10.0	0.500
4-Chloroaniline		14.80				127	129,65,92	2.00	0.100	10.0	0.500
Dibenzofuran		18.89				168	139	2.00	0.100	10.0	0.500
2,4-Dinitrotoluene		18.99	38,47	24-96	28-89	165	63,89	2.00	0.100	10.0	0.500
4-Nitrophenol		18.81	50,50	10-80	11-114	139	109,65	2.00	0.100	10.0	0.500
Diethyl phthalate		19.50				149	177,150	2.00	0.100	10.0	0.500
Fluorene		19.65				166	165,167	2.00	0.100	10.0	0.500
4-Chlorophenyl phenyl ether		19.61				204	206,141	2.00	0.100	10.0	0.500

Appendix F
Table 1 (Cont…)

Target Analyte Compound	CAS Number	RT Minutes	RPD Water, Soil	Water Limits	Soil Limits	Quant Ion	Secondary Ions	Water MDL µg/L	Soil MDL mg/Kg	Water RDL µg/L	Soil RDL mg/Kg
4,6-Dinitro-2-methylphenol		19.91				198	51,105	2.0	0.100	10.0	0.500
N-Nitrosodiphenylamine		19.92				169	168,167	2.0	0.100	10.0	0.500
4-Bromophenyl phenyl ether		20.67				248	250,141	2.0	0.100	10.0	0.500
2,4,5-Trichlorophenol		16.89				196	198,97,132,99	2.0	0.100	10.0	0.500
Hexachlorobenzene		21.03				284	142,249	2.0	0.100	10.0	0.500
Pentachlorophenol		21.40	50,47	9-103	17-109	266	264,268	2.0	0.100	10.0	0.500
4-Nitroaniline		19.84				138	65,108,92,80,39	2.0	0.100	10.0	0.500
Phenanthrene		21.74				178	179,176	2.0	0.100	10.0	0.500
Anthracene		21.84				178	176,179	2.0	0.100	10.0	0.500
Di-n-butyl phthalate		22.98	40,47	11-117	29-135	149	150,104	2.0	0.100	10.0	0.500
2,3,4,6-Tetrachlorophenol		19.25				232	131,230,166,234,168	2.0	0.100	10.0	0.500
Fluoranthene		24.36				202	101,203	2.0	0.100	10.0	0.500
Benzidine		24.62				184	92,185	5.0	0.500	50.0	5.0
Pyrene		24.86	31,36	26-127	35-142	202	200,203	2.0	0.100	10.0	0.500
Butyl benzyl phthalate		26.23				149	91,206	2.0	0.100	10.0	0.500
Benz(a)anthracene		27.32				228	229,226	2.0	0.100	10.0	0.500
3,3'-Dichlorobenzidine		27.29				252	254,126	2.0	0.100	10.0	0.500
Chrysene		27.44				228	226,229	2.0	0.100	10.0	0.500
Bis(2-ethylhexyl)phthalate		27.32				149	167,279	2.0	0.100	10.0	0.500
Benzo(b)fluoranthene		29.49				252	253,125	2.0	0.100	10.0	0.500
Benzo(k)fluoranthene		29.54				252	253,125	2.0	0.100	10.0	0.500
Benzo(a)pyrene		30.21				252	253,125	2.0	0.100	10.0	0.500
Indeno(1,2,3-cd)pyrene		33.21				276	138,227	2.0	0.100	10.0	0.500
Dibenz(a,h)anthracene		33.18				278	139,279	2.0	0.100	10.0	0.500
Benzo(g,h,I)perylene		34.02				276	138,277	2.0	0.100	10.0	0.500
1,2-Diphenylhydrazine(Azobenzene)		19.96				77	105,182	2.0	0.100	10.0	0.500
Internal Standards											
1,4-Dichlorobenzene-d_{14}		11.73				152	150,115				
Naphthalen-d_8		14.55				136	68				
Acenaphthene-d_{10}		18.45				164	162,160				
Phenanthrene-d_{10}		21.68				188	94,80				
Chrysene-d_{12}		27.37				240	120,236				
Perylene-d_{12}		30.31				264	260,265				
Surrogates											
2-Fluorobiphenyl		16.97		43-116	30-115	172	171	2.0	0.100	10.0	0.500
2-Fluorophenol		8.98		21-100	25-121	112	64	2.0	0.100	10.0	0.500
Nitrobenzene- d_5		13.02		35-114	23-120	82	128,54	2.0	0.100	10.0	0.500
Phenol- d_6		11.14		10-9	24-113	99	42,71	2.0	0.100	10.0	0.500
Terphenyl- d_{14}		25.16		33-141	18-137	224	122,212	2.0	0.100	10.0	0.500
2,4,6-Tribromophenol		20.21		10-123	19-122	330	231,233	2.0	0.100	10.0	0.500
Not routinely analyzed											

Appendix G

DEFINITIONS

The following terms are defined for use in this document:

ACCURACY:

The closeness of agreement between an observed value and an accepted reference value. When applied to a set of observed values, accuracy will be a combination of a random component and of a common systematic error (or bias) component.

BATCH:

A group of samples which behave similarly with respect to the sampling or the testing procedures being employed and which are processed as a unit. For QC purposes, if the number of samples in a group is greater than 15, then each group of 15 samples or less will all be handled as a separate batch.

BIAS:

The deviation due to matrix effects of the measured value from a known spiked amount. Bias can be assessed by comparing a measured value to an accepted reference value in a sample of known concentration or by determining the recovery of a known amount of contaminant spiked into a sample (matrix spike). Thus, the bias (B) due to matrix effects based on a matrix spike is calculated as:

$$B = (Xs - Xu) - K$$

Where:

X_s = measured value for spiked sample,
X_u = measured value for unspiked sample, and
K = known value of the spike in the sample.

Using the following equation yields the percent recovery (%R).

$$\%R = 100 (X_S - X_U) / K$$

BLANK: see Equipment Rinsate, Method Blank, Trip Blank.

CONTROL SAMPLE: A QC sample introduced into a process to monitor the performance of the system.

DATA QUALITY OBJECTIVES (DQOs): A statement of the overall level of uncertainty that a decision-maker is willing to accept in results derived from environmental data. This is qualitatively distinct from quality measurements such as precision, bias, and detection limit.

DATA VALIDATION: The process of evaluating the available data against the project DQOs to make sure that the objectives are met. Data validation may be very rigorous, or cursory, depending on project DQOs. The available data reviewed will include analytical results, filed QC data and lab QC data, and may also include field records.

DUPLICATE: see Matrix Duplicate, Field Duplicate, Matrix Spike Duplicate.

EQUIPMENT BLANK: see Equipment Rinsate.

EQUIPMENT RINSATE: A sample of analyte-free media which has been used to rinse the sampling equipment. It is collected after completion of decontamination and prior to sampling. This blank is useful in documenting adequate decontamination of sampling equipment.

PRACTICAL QUANTITATION LIMIT (PQL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting.

FIELD DUPLICATES: Independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

LABORATORY CONTROL SAMPLES: A known matrix spiked with compound(s) representative of the target analytes. This is used to document laboratory performance.

MATRIX: The component or substrate (e.g., surface water, drinking water) which contains the analyte of interest.

MATRIX DUPLICATE: An intralaboratory split sample which is used to document the precision of a method in a given sample matrix.

MATRIX SPIKE: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

MATRIX SPIKE DUPLICATE: Intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.

METHOD BLANK: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting form the analytical process.

For a method blank to be acceptable for use with the accompanying samples, the concentration in the blank of any analyte of concern should not be higher than the highest of either:

(1) The method detection limit, or
(2) Five percent of the regulatory limit for that analyte, or
(3) Five percent of the measured concentration in the sample.

METHOD DETECTION LIMIT (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

ORGANIC-FREE REAGENT WATER: For volatiles, all references to water in the methods refer to water in which an interferant is not observed at the method detection limit of the compounds of interest.

PRECISION: The agreement among a set of replicate measurements without assumption of knowledge of the true value. Precision is estimated by means of duplicate/replicate analyses. These samples should contain concentrations of analyte above the MDL, and may involve the use of matrix spikes. The most commonly used estimates of precision are the relative standard deviation (RSD) or the coefficient of variation (CV),

$$RSD = CV = 100S / \bar{x}$$

Where:
x = the arithmetic mean of the x_I measurements, and S = variance; and the relative percent difference (RPD) when only two samples are available.

$$RPD = 100 [(x_1 - x_2)/ \{x_1 + x_2)/2\}]$$

PROJECT: Single or multiple data collection activities that are related through the same planning sequence.

QUALITY ASSURANCE PROJECT PLAN (QAPjP): An orderly assemblage of detailed procedures designed to produces date of sufficient quality to meet the data quality objectives for a specific data collection activity.

REAGENT BLANK: See Method Blank

REAGENT GRADE: Analytical reagent (AR) grade, ACS reagent grade, and reagent grade are synonymous terms for reagents, which conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

REAGENT WATER: Water that has been generated by any method which would achieve the performance specifications for ASTM Type II water. For organic analyses, see the definition of organic-free reagent water.

REFERENCE MATERIAL: A material containing known quantities of target analytes in solution or in a homogeneous matrix. It is used to document the bias of the analytical process.

SPLIT SAMPLES: Aliquots of sample taken from the same container and analyzed independently. In cases where aliquots of samples are impossible to obtain, field duplicate samples should be taken for the matrix duplicate analysis. These are usually taken after mixing or compositing and are used to document intra - or inter laboratory precision.

STANDARD ADDITION: The practice of adding a known amount of an analyte to a sample immediately prior to analysis. It is typically used to evaluate interference.

STANDARD CURVE: A plot of concentrations of known analyte standards versus the instrument response to the analyte. Calibration standards are prepared by successively diluting a standard solution to produce working standards, which cover the working range of the instrument. Standards should be prepared at the frequency specified in the appropriate section. The calibration standards should be prepared using the same type of acid or solvent and at the same concentration as will result in the samples following sample preparation. This is applicable to organic and inorganic chemical analyses.

SURROGATE: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples.

TRIP BLANK: A sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping

and field handling procedures. This type of blank is useful in documenting contamination of volatile organic samples.

AETL, 8310
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AMERICAN ENVIRONMENTAL TESTING LABORATORY INC.

STANDARD OPERATING PROCEDURE

FOR ANAYLYSIS OF

POLYNUCLEAR AROMATIC HYDROCARBONS

BY

EAP METHOD 8310

Prepared by:

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Laboratory Director

1. SCOPE:

This method is used to determine the concentration of certain polynuclear aromatic hydrocarbons using a high performance liquid chromatography apparatus with UV and Fluorescence detectors. The method is applicable to soils, ground waters, waste water, aqueous sludge, waste solvents, tars, fibrous wastes, filter cakes, spent carbons, spent catalysts, sediments and hazardous matrices.

Routinely analyzed compounds and laboratory determined method detection limits are provided in Appendix F, Table 1. The method detection limits have been generated using clean aqueous and solid matrices and are not achievable for many "real" sample matrices. The listed detection limit may vary based on the amount of sample used.

The estimated quantity limit (EQL) of this method is 20ug/kg (wet weight) for soil/sediments and 0.2ug/L for ground waters. The EQL will vary with the factors that affect detection limits (dilutions and sample size).

2. RELATED DOCUMENTATION:

SW-846 method 8310, Revision 0, September 1986 – Poly Nuclear Aromatic Hydrocarbons by High Performance Liquid chromatography
Hewlett Packard 1100 series operating manual
Hewlett Packard 1100 series pumping system operating manual
Hewlett Packard 1100 Variable Wavelength detector operating manual
Agilent G1321 A Fluorescence detector operating manual

3. RESPONSIBLITIES:

Responsibility for performance of the SOP is shared by the Section Supervisor and Organic Chemist.

4. METHOD SUMMARY:

4.1 The analytical system consists of the following parts:

- 4.1.1 Auto Sampler – Predetermined amount of sample extract is injected through a sampling loop.
- 4.1.2 Mobile-phase reservoirs and solvent treatment systems – Four 1 Liter solvent reservoirs equipped with helium sparger for removing dissolved gases.
- 4.1.3 Pumping system – Quaternary pump capable of producing pressure up to 250 Bar.
- 4.1.4 Column oven with Reverse phase packed column.
- 4.1.5 Variable Wavelength and fluorescence detectors.

4.2 The final extract (in this case 25μL) is injected to the column through a sampling loop. The pressurized mobile phase passes through a reverse phase column and the components are separated by means of gradient elution. The separated compounds are detected and identified by responses of the detectors and quantities are calculated by a data system.

4.3 This method utilizes the external method of quantitation.

4.4 Confirmatory information and quantitation is based on the retention time of each component and confirmation by a second detector.

4.5 The experience of the analyst is crucial to the successful application of this method and only experienced analysts may use this method. The analyst must be able to interpret the chromatograms. Prior to data generation the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of capability. This demonstration which utilizes repeat quality control (QC) check sample analysis is described in method 8000B in SW-846 Revision 2 December 1996 Section 8.4. Specific laboratory instructions for performing this initial demonstration of capability are detailed in Appendix A.

5. SAMPLE TYPE, HOLDING TIME, AND PRESERVATION

5.1 The samples analyzed by this method are wastewaters, ground waters, soils, sludge, waste solvents, oily wastes, tars, fibrous wastes, filter cakes, and sediments from various sources. Some samples may contain non-target compounds which interfere by responding to either UV or Fluorescence detectors by shifting the baseline. General cleanup of the solvent extract reduces the interference. Instruction for silica gel cleanup is described in Appendix D. Interference problems require use of professional judgement regarding necessary changes to sample size and sample dilution and consultation with the client regarding possibly compromised data.

5.2 The maximum holding time from sampling to extraction is seven days for water and 14 days for soil samples. Extraction to analysis should be performed within 40 days after extraction for both water and soil samples. The holding time for soil samples is fourteen days from collection. Both solid and aqueous samples should be temperature preserved to 4^0C. All preservation measures should be noted on the chain of custody.

5.3 Water samples must be collected in 1L pre-cleaned amber glass bottles. The analyst requires 20-30 g of solid samples. This is to be collected in pre-cleaned jars. Data points slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts respectively.

5.4 Samples received for PAHs analysis are stored in a sample refrigerator at 4^0C until analysis. At the time of analysis, all samples and standards are warmed to room temperature.

5.5 The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plans. Client requests for analysis after holding

time expiration should be made in writing and the client made aware that data will be estimated. The lab will narrate any missed holding times to the client.

6. REAGENTS AND MATERIALS.

6.1 All chemicals and analytes must be considered hazardous and handled in a cautious manner. MSDS data concerning the chemicals and standards must be on file and reviewed by laboratory personnel.

6.2 Reagent water is free of organic contamination. Water used as mobile phase is provided through purchase of HPLC grade water. Reagent water used is Sparkletts^{TM} distilled drinking water. The condition of non-pure system is checked daily and documented.

6.3 Sodium sulfate – Granular, anhydrous sodium sulfate. Purify by heating to 400^0 C
for four hours in a shallow tray, or by per-cleaning the sodium sulfate with methylene chloride. If the sodium sulfate is pre-cleaned with methylene chloride, a method blank must be analyzed, demonstrating that there is no interference from sodium sulfate.

6.4 Glass wool: Pyrex glass wool. Prewashed with 50mL acetone followed by 50mL of methylene chloride.

6.5 Extraction/exchange/mobile phase solvents:

6.5.1 Methylene chloride CH_2Cl_2 – HPLC grade, boiling point 39^0C.

6.5.2 Acetonitrile, CHCN – HPLC grade, boiling point 81.6^0C.

6.5.3 Water – HPLC grade.

The source and manufacturer may change from time to time; therefore, the brand and lot number must be documented in the sample preparation and standard preparation logs.

6.6 Stock standard – Certified stock standards are purchased from the following manufacturers:

Supelco, Inc.	Chemservice
Supelco Park,	660 Tower Lane, P.O. Box 599
Bellefonte, PA 16823-0048	West Chester, PA 19381-0599

6.7 Analytical Stock Standard is prepared using the following analytes:

Acenaphthene	Chrysene
Acenaphthylene	Dibenzo(a,h)anthracene
Anthracene	Fluoranthene
Benzo(a)anthracene	Fluorene
Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Naphthalene
Benzo(g,h,I)perylene	Phenanthren

Benzo(k)fluoranthene Pyrene

Stock used at the time of SOP generation is Polynuclear Aromatic Hydrocarbons mixture-550 Catalog # PNA-550JM @ 2000ug/mL of each component.

6.8 Calibration verification stock standard contains the following analytes with the corresponding concentration :

Component	ug/mL
Acenapthene	1000
Acenaphthylene	2000
Anthracene	100
Benzo(a)anthracene	100
Benzo(b)fluoranthene	200
Benzo(k)fluoranthene	100
Benzo(ghi)eprylene	200
Benzo(a)pyrene	100
Chrysene	100
Dibenzo(a,h)anthracene	200
Fluoranthene	200
Fluorene	200
Indeno(1,2,3-cd)pyrene	100
Naphthalene	1000
Phenanthrene	100
Pyrene	100

Solvent: acetonitrile

Stock used at the time of SOP generation is Supelco Catalog # 48743 @ the above concentrations.

6.9 Standards and surrogate are purchased from a number of suppliers based on varying concentration and quality needs. All preparations are detailed by the analyst in the organic standards preparation log book with documented standard sources and lot numbers.

6.10 The standards for the calibration curve are prepared by first making primary stock standard solution from the original stock standard. If the concentration is still high, a secondary stock solution is prepared. Varying volumes of the standard solution are placed into five 5mLs volumetric flasks containing acetonitrile, then making each flask to the final 5mL volume with acetonitrile.

6.10.1 A minimum of 5 standards are used to calibrate the system. All standards must be within the linear range of the system. A reagent blank must be run in addition to the standards.

6.11 An initial calibration verification standard should be analyzed with each initial calibration. The ICV standard is prepared using the same procedure as those for standards. The ICV standard is prepared from an independent source.

6.12 The working standard solutions are good for 6 months or sooner if comparison with an independent source indicates a problem. The expiration date and standard number is recorded in the log book and on the storage vial.

6.13 The surrogate standard is made by making an intermediate standard of 20 µg/mL. This solution is added to all standards, samples, blanks, and QC Check Samples. This standard is good for 6 months. The expiration date and standard number is recorded in the log book and on the storage vial.

6.14 Table 1 & 2 are examples of the volumes used to prepare stock and intermediate standards:

6.14.1 Table 1 – Primary stock standard solutions*

Standard	Supplier	Cat #	Initial Conc. µg/mL	Volume Used/wt	Final Volume mL	Final Conc. µg/mL
TLC PAH	CHEM SERV	PNA-550JM	200	100 µl	10	2.00
P-Terphenyl-d_{14}	Supelco	44-2734	2000	100mg	50	2000
PAH mixture	Supelco	48743	100→ 2000	1.25 mL	50	2.5-50

*Each standard solution is prepared in a separate volumetric flask using acetonitrile or methylene chloride as a solvent.

6.14.2 Table 2 – Intermediate standard solutions:

Standard	Used as	Initial Conc.	Volume Used	Final Volume mL	Final Conc.
TLC PAH	Calibration Standard	2000 µg/L	1mL	10	200µg/L
P-Terphenyl-d_{14}	Surrogate Standard	2000 µg/mL	2 mL	200	20µg/mL
PAH mixture	Calibration Verification Std.	2.5-50 µg/mL	200 µL	10	50-1000 µg/L

7. SAMPLE PREPARATION AND ANALYSIS PROCEDURES

7.1 Prepare matrix specific batches of 15-20 samples. Matrices are defined as soil, water and other. Due to difference in extraction and preparation of soils and waters, various matrices cannot be batched together.

7.2 Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

7.3 Consult all project-specific plans for matrix spike and duplicate preparation requirements. Samples from two clients that each require project specific matrix

spikes can be prepared together; however, two sets of MS/MSD will have to be prepared using each client's designated samples.

7.4 At least one set of the following QC samples are preparedwith each batch: method blank, matrix spike, matrix spike duplicate and lab control sample (LCS).

7.5 All samples are spiked with surrogate. Surrogate is evaluated upon the known concentrations added and known matrix interference. Surrogate standard preparation procedure is listed in sections 6.14.1 & 6.14.2.

7.6 Extraction – Appendix B provides instructions for extraction of water and soil samples.

7.7 Concentration and solvent exchange – Appendix C provides instructions for concentration of extracts using Kuderna-Danish Apparatus.

7.8 Silica gel clean up – Appendix D provides instructions for silica gel clean up of polluted samples

8. OPERATING CONDITIONS

8.1 The operating conditions for the HPLC are as follows:

8.1.1 Column: reverse phase 201 TP, 4.6 mm x 15 cm

8.1.2 Mobile phase: Acetonitrile/Water

8.1.3 Gradient: 60 – 100% acetonitrile over 33 minutes.

8.1.4 Column Temperature 30 C.

8.1.5 Variable Wavelength Detector: Wavelength 230nm

8.1.6 Fluorescence Detector time table:

Time Table:

Time [min]	Excitation [nm]	Emission [nm]	PmtGain
4.5	260	350	13
7.16	227	310	10
9.44	260	360	9
10.57	260	460	10
11.70	260	460	11
12.60	260	440	13
13.50	260	380	10
17.00	260	440	9
18.40	260	420	8
19.30	260	420	9
20.30	260	420	11
21.70	260	400	11
22.80	260	495	11
24.50	260	350	9

9 INSTRUMENT START-UP

9.1 The detectors and pump are turned on at least 30 minutes before the first sample is run.

9.2 The mobile phases are to be degassed properly. The channels should be checked carefully for the presence of any tiny bubble. If so, each channel should be purged separately to pass the bubbles.

9.3 The column temperature and pump pressure should be stabilized before the analysis.

9.4 The mobile phase used for HPLC must be accurately pressurized before it enters the injector. The rate of delivery depends on the column used (1.5mL/min at the time of SOP generation). Flow rates should be checked by collecting column effluent in a graduated cylinder. Most pumping systems are capable of changing solvent concentration during analysis (i.e. gradient elution). Gradients are generated by either high pressure mixing of two injector or by proportional mixing of the solvents before they are pumped. In either case, solvent mixing can cause changes in the solubility of dissolved gasses, the formation of bubbles in the mobile phase, or non-reproductive gradients.

9.5 Air bubbles result in erratic baseline. Therefore, HPLC solvents should be degassed prior to use.

9.5 Non-reproducible gradients can result in significant changes in retention times from run to run.

10 CALIBRATION AND SYSTEM EVALUATION

10.1 The instrument must meet calibration and contamination criteria prior to engaging in sample analysis. The following instrument startup sequence is employed:
Raegent Blank
5-Point Initial Calibration
Initial Calibration Verification Standard (ICV)
Run and Evaluation Criteria for each of these standards and blanks is discussed below:

10.1.1 The initial calibration is performed by generating a 5-point calibration curve for each analyte. Standards 1 and 2 are at or near the reporting limit for the analytes, and the high level is near the upper limit of the linear range of the system.

STANDARD	STANDARD CONCENTRATION µg/L	AMOUNT OF STOCK STANDARD (at 2000/sl) µL	TOTAL VOLUME mL
1	20	100	10
2	50	250	10
3	100	250	5
4	200	100	1
5	400	200	1
6	600	300	1
7	1000	500	1
8	2000	--	1

10.1.2 An Initial Calibration Verification (ICV) standard is prepared using the methodology given in section 6.14.1. This standard is prepared from an independent source that may also be used as the MS and LCS spiking solution. The ICV is run as a sample.

10.1.3 A matrix blank must be run and prepared from the reagents used for the sample. This blank is also run as a sample, without zeroing.

10.2 Procedure

10.2.1 After generating the initial curve, calculate calibration factors (CF) for each analyte. This procedure is performed by the instrument and software using the following equation:

$$CF = \frac{Concentration_{st}}{Area_{st}}$$

10.2.2 The average response factor for each analyte is calculated for the calibration standards.

10.2.3 The response factors for ICV standard are used to evaluate whether the Rfs are constant over the calibration range. This is done by generating the Relative Standard Deviation (%RSD). The value can be calculated using the following equation :

$$\%RSD = \frac{Standard\ Deniation\ of\ the\ RFS \times 100}{Average\ of\ the\ RFs}$$

10.2.4 The RSD for all of the analytes must be <20% (Section 7.5.1.1 SW846 8000 methods for Non-MS Detection methods)

11 SAMPLE ANALYSIS AND EVALUATION

11.1 Sample analysis may proceed with incorporation of continuing calibration standard every 10 samples for each extraction batch of 15-20 samples, one method blank, a pair of matrix spike and matrix spike duplicate and one lab control sample are extracted and run with the samples.

11.1.5 The CCV standard is checked for retention time shifts and % difference of the instrument response between the initial calibration and each subsequent alaysis of the verification standard.

$$\%difference = \frac{CF_V - CF}{CF} \times 100$$

where: CF_v = calibration factor from verification standard
CF = mean-calibration factor from initial calibration

11.1.6 The % difference or % drift calculated for the calibration verification standard must be within ± 15% for each analyte before any sample analysis may take place.

12 SAMPLE EVALUATION

12.1 Data is evaluated by both the analytical group, and QA group, prior to being released to the client. This section refers to analytical group evaluations only.

12.1.2 All samples are spiked with surrogate standard. Evaluate the surrogate recovery and retention time compliance according to Appendix E.

12.1.3 The surrogate recoveries for each blank, QC Check Sample, set of standards and samples will be evaluated until at least 25 to 30 surrogate recoveries are generated. Once sufficient data points are established, a recovery range will be developed. this recovery range will not be changed unless the system parameters are modified to the point that the recoveries cannot meet the tolerance limits. Limits will be evaluated annually at a minimum.

12.1.4 Cross contamination can occurs whenever high-contamination samples are analyzed. Care should be taken regarding the equipment's used for extraction and concentration. The glassware must be washed out with a detergent solution, rinsed with acentone, and finally with methylene chloride.

12.1.5 All data that exceeds the criteria designated in Appendix E, must be narrated to the client. The narrative is invaluable to secondary reviewers, such as validators and regulators, in tracking the decision making and corrective action steps employed.

12.1.6 It is possible some sample matrices may need to be diluted to reduce interference. When this occurs, the reporting limits will be increased to reflect the dilutions. The possibility for instrument (column) damage exists whenever an attempt is made to run a sample. The analyst must consider available screening method as a way to avoid damage or cross contamination. All decision making should be documented.

12.1.7 Matrix spikes will be evaluated based on the percent recovery. The recoveries will be compared to the ranges provided in Appendix E. If the two recoveries are within the ranges provided, the data would be reported as valid. If any of the recoveries are outside of the ranges, the cause will be determined and an explanation provided. In many cases, a recovery problem is limited to the individual sample only, and will not affect the validity of the other samples in the run.

12.1.8 A Lab Control Sample (LCS) is run at the rate of one per matrix per batch. This sample is the QC check sample prepared and analyzed in the identical manner as

the samples. The results of the LCS are compared to criteria dictated in Appendix E.

12.1.9 If the matrix spike/matrix spike duplicate analysis fails to meet the designated criteria due to its sample matrix, the LCS is used as the means to demonstrate that the system is capable of generating acceptable data. If any analyte falls outside of the criteria established in Appendix E, the analyst must provide an explanation in the narrative and determine the validity of the individual anlyte.

13 REPORTING OF RESULTS :

13.1 The following is a summary of the calculation used by the computer, or the analyst to generate the reported data:

13.1.5 Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_{\chi} \times 100}{T}$$

Where:

C_{χ} = The concentration of the analyte spike or surrogate from the analysis.

T = The true value of the spike or surrogate standard added.

13.1.6 Sample concentration is calculated by the following equation :

$$C(\mu g/L) = A_{\chi} \times RF \times Dil$$

Where:

C= The concentration of the analyte sample.

A_{χ}= Area of the characteristic target analyte being measured

RF= The response factor of the analyte being measured.

13.1.7 Standard Deviation is calculated by the following equation:

$$SD = \sqrt{\frac{\sum(Xi - Xavg)^2}{N-1}}$$

Where:

X_i = Analyte values

X_{avg} = Analytes average value

N = Number of points

13.1.8 Relative Percent Differnce:

$$\%RPD = \frac{\left| MS\%rec - MSD\%rec \right|}{\frac{MS\%rec + MSD\%rec}{2}} \times 100$$

Where:

$MS\ \%_{rec}$ = Matrix Spike Percent Recovery
$MSD\ \%_{rec}$ = Matrix Spike Duplicate Percent Recovery
100 = Conversion factor to

APPENDIX A

The system verification is performed to demonstrate that the system and the analyst can successfully perform the analysis. This is accomplished by running four aliquots of the Quality Control Check Sample in the same manner that samples are run.

A.1 The QC Check Sample standard is purchased from a certified source. The following concentrations and volumes are used:

Standard Name	Initial Conc. µg/ml	Volume used µL µg/L	Final extract Volume mL	Final Conc. µg/L
PAH Mixture	2.5-50	200	10	50-1000
P-Terphenyl-d_{14}	20.0	200	10	400

A.3. Transfer 200µL of the QC Check Standard concentrate and 200µL of surrogate standard to 1 Liter of reagent water. Proceed with the extraction, concentration and solvent exchange as detailed in Appendices B, C, and D. Transfer 1mL of the extract to a crimp vial and seal the cap.

A.4. Repeat step A.3 three more times until a total of four aliquots of QC Check Sample are prepared.

A.5. Analyze the four QC Check Samples and compare the recoveries with the Appendix E Table 1. If average recoveries of anlytes are within the ranges cited in the table, the system is ready for use and analysis may begin. If the average recovery for any analyte falls outside the range, corrective action must be taken and the analysis repeated for the failed analytes. All corrective actions must be noted in the Maintenance logbook.

A.6. Once an analyst and instrument have passed the recovery criteria for all analytes to be reported by the method, the analyst and instruments are certified as having established initial proficiency with the method.

APPENDIX B

B.1. Liquid-liquid extraction of water (separatory funnel)

B.1.1. Apparatus and materials:

C.1.1.1. Separatory funnel: 2 L

C.1.1.2. Drying column: 20 mm I.D. Pyrex chromatorgraphic column with pyrex glass wool at bottom and a Teflon stopcock.

C.1.1.3. Erlenmeyer flask: 250 mL

C.1.1.4. Graduated cylinder

C.1.1.5. Extraction solvent; Mthylene chloride: acetone (1:1,v:v) or methylene chloride

B.1.2 Procedure:

B.1.2.1. Using a 1 L graduated cylinder transfer 1 L of the sample to a 2 L separatory funnel. Add correct amount of spike standard to each of two 1-Liter distilled waters used as matrix. Add correct amount of surrogate standard to all.

B1.2.2. Add 80 ml of methylene chloride to the separatory funnel. Immediately after the funnel is shaked once, vent the funnel and repeat this procedure several times. then shake the funnel vigorously for 2-3 minutes with periodic venting to release excess pressure.

B1.2.3. Let the phases to separate for 10 minutes. collect the solvent extract in an Erlenmeyer flask. If emulsion is present, mechanical techniques are employed to help the phase separation. Repeat the extraction two more times using fresh portions of methylene chloride. Combine the three extracts.

B.2. Ultrasonic extraction of soil

B.2.1 Apparatus and materials:

B.2.1.1. A device for grinding or homogenization

B.2.1.2. Balance – Top loading accurate to .01 g

B.2.1.3. Ultrasonicator.

B.2.1.4. Centrifuge

B.2.1.5. Glass Vials

B.2.1.6. Sample spatulas – stainless steel

B.3.1 Sample handling:

B.3.1.1. Sediment/soil samples- Decant and discard any water layer on a sediment sample. Mix sample thoroughly, especially composited samples. Discard any foreign objects such a s sticks, leaves, or rocks.

B.3.1.2. Dry waste samples amenable to grinding: grind or otherwise subdivide the waste so that it either passed through a 1-mm sleeve or can be extruded through a 1-mm hole. Introduce sufficient sample into the grinding apparatus to yield at least 20g after grinding.

B.3.1.3. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding.

B.3.2 Determination of percent of dry weight- When sample results are to be calculated on a dry weight basis, a second portion of sample should be weighed out at the same time as the portion used for analytical determination. Immediately after weighing the sample for extraction, weigh 5-10g of the sample into a tared crucible. Dry this aliquot overnight at 105C. Allow to cool in a desiccator before weighing. Calculate the % dry weight as follows:

$$\%\ dry\ weight = \frac{g\ of\ dry\ sample}{g\ of\ sample} \times 100$$

B.3.3 Extraction method for samples expected to contain low concentrations of organics (less than or equal to 20 mg/kg)

B.3.3.1. Weigh 20g of sample into a 4-oz glass jar. Add enough sodium sulfate to have a free flowing sample mixture.

B.3.3.2 Add correct amount of matrix standard solution, matrix spike, and spike duplicate. Add correct amount of lab control sample standard to 20g of clean sand. Add correct amount of surrogate standard to all.

B.3.3.3 Add 50 mL of the appropriate extraction solvent or solvent mixture.

B.3.3.4. Extract the mixture in an ultrasonicator for 15 minutes. Decant the extract into a centrifuge bottle and centrifuge at low speed to remove particles.

B.3.3.5. Repeat the extraction two or more times with two additional 50mL portion of the solvent. Decant off the solvent after each ultrasonic extraction. Transfer the entire sample to the centrifuge bottle. Centrifuge at low speed and then decant the solvent from the bottle.

B.3.4. Extraction method for samples expected to contain high concentrations of organics (greater than 20mg/kg).

B.3.4.1. Transfer 2g of sample to a 40mL glass vial. Wipe the mouth of the vial with a tissue to remove any sample material. Record the exact weight of

the sample taken. Cap the vial before proceeding with the next sample to avoid any cross contamination.

B.3.4.2. Add 2g of anhydrous sodium sulfate to the sample and mix well. Add surrogate spiking solution to sample mixture. For the sample in each analytical batch selected for spiking, add correct amount of matrix spiking and surrogate standard solution.

B.3.4.3. Immediately add necessary volume of solvent to bring the final volume to 10mL considering the added volume of surrogate and matrix spike standard. Sonicate the vial in the ultrasonicator for 15 minutes.

B.3.4.4. Centrifuge the vial and collect a volume appropriate for the sensitivity of the determinative method. It is advisable to collect a standard volume for such samples to simplify the final calculation.

B.3.4.5 The extract is ready for cleanup and/or solvent exchange.

B.3.4.6. If analysis will not be performed immediately, the extract is transferred to a vial with PTFE-line caps and refrigerated.

APPENDIX C:
Extract Concentration

C.1. Apparatus and Materials:

C.1.1. Kuderna-Danish (K-D) apparatus:

C.1.1.1. Concentrator tube – 10mL, graduated with ground glass stopper.

C.1.1.2. Evaporation flask: 500mL attached to concentrator tube with springs.

C.1.1.3. Snyder column: three ball (macro) and two ball (micro).

C.1.1.4. Springs or clamps

C1.1.5. boiling chips – Solvent extracted, approximately 10/40 mesh (silicon carbide) or equivalent.

C.1.2. Water bath – Heated with concentric ring cover, capable of temperature control (+/- 5 C).

C.1.3. Drying column – 20-mm 1.d, Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

C.1.4. Exchange solvent: Acetonitrile – HPLC grade

C.2. Pass the solvent extract through a drying column containing about 10cm of anhydrous sodium sulfate. Collect the dry extract in an evaporation flask connected to a K-D concentrator. Rinse the Erlenmeyer flask with 20-25 mL of methylene chloride, pass it through the drying column, and add it to the evaporation flask.

C.3. Add one or two clean boiling chips to the concentrator tube, and attach it to a three ball Snyder column. Pre-wet the Snyder column by adding 1 ml of methylene chloride to the top of the column.

C.4. Place the K-D apparatus on a hot water bath (80-90 C) so that the concentrator tube is partially immersed in the hot water. The concentration should be complete in 10-20 minutes. When the apparent volume of liquid is reached to 1 ml, remove the K-D apparatus from water bath and let it drain and cool for 10 minutes.

C.5. Increase the temperature of the hot water bath to 95-100 C. Remove the Snyder column, add 5-9 mL acetonitrile (according to the color of the extract) and a new boiling chip. Attach a two ball micro Snyder column. Pre-wet the column with 1ml acetonitrile. Place the K-D apparatus on the water bath so that the concentrator tube is immersed in the hot water. The concentration is complete in 15-20 minutes. When the apparent volume of the liquid reaches 1 mL, remove the K-D apparatus and rinse its lower joint with 0.5 mL of acetonitrile into the concentrator tube. Adjust the final volume of the extract to 5 to 10 mL according to the extract color. Transfer the extract to a Teflon-sealed screw-cap vial.

C.6. If the extract is clear, proceed with the analysis by transferring 1-2 mL of the extract to a crimp vial, seal the cap and load it to the auto sampler.

C.7. If the sample extract is dark, proceed with the silica gel clean up.

APPENDIX D:
Silica Gel Clean up

D.1 Summary of the method: This method provides the option of using either standard column chromatography techniques or solid-phase extraction cartridge. Generally, the standard column chromatography techniques use larger amounts of absorbent and therefore, have a great cleanup capacity.

D.1.1 In the standard column cleanup, the column is packed with the required amount of adsorbent, topped with a water adsorbent, and then loaded with the sample to be analyzed. Elution of the analytes is accomplished with suitable solvent(s) that leaves the interfering compounds on the column. The eluate is then concentrated.

D1.2. The cartridge clean up protocol uses solid-phase extraction cartridges packed with 1-2 g of silica gel (silicic acid) adsorbent. Each cartridge is solvent washed immediately prior to use. Aliquots of sample extracts are leaded onto the cartridges, which are then eluted with suitable solvents. The collected fractions may be further concentrated and solvent exchanged.

D.2. Apparatus and materials

D.2.1. Chromatographic column – 250 mm long x 10 mm ID; with Pyrex Glass wool at bottom and PTFE stop cock.
D.2.2. Beakers – Appropriate size.
D.2.3. Vials – 2,10,25,40 mL glass with PTFE-lined screw – caps or crimp tops.
D.2.4. Erlenmeyer flasks – 50 and 250 mL.
D.2.5. Silica gel for chromatography – 100/200 mesh. Before use, activate at least 16 hours at 130 C in a shallow glass tray, loosely covered with foil.
D.2.6. Sodium sulfate (granular, anhydrous)
D.2.7. Cyclohexane – HPLC grade.
D.2.8. Pentane – HPLC grade.

D.3. Clean up procedure:

D.3.1. The extract solvent (in this case methylene chloide) must be exchanged to cyclohexane. the exchange is performed by adding 4 mL of cyclohexane following reduction of the sample extract to 1-2 mL using an appropriate concentration technique. The final extract volume is 2.0 mL.

NOTE: When the volume of solvent is reduced below 1 mL, semi-volatile analytes may be lost. If the extract goes to dryness, the extraction must be repeated.

D.3.2. Prepare a slurry of 10 g of activated silica gel in methylene chloride and place this into a 10 mm ID chromatographic column. Top the column to settle the silica gel

and elute the methylene chloride. Add 1 to 2 cm of anhydrous sodium sulfate to the top of the silica gel.

D.3.3. Pre-elute the column with 40 mL of pentane, the rate for all elutions should be about 2 mL/min.
Discard the eluate and just prior to exposure of the sodium sulfate layer to the air, transfer the 2 mL cyclohexane smaple extact onto the column using an additional 2 mL cyclohexane to complete the transfer. Just prior to exposure of the sodium sulfate layer to the air, add 25 mL of pentane and continue the elution of the column. Discard the pentane eluate.

D.3.4. Elute the column with 25 mL of methylene chloride/pentane (2:3)(v/v) into a flask for concentration. Concentrate the collected fraction to whatever volume required (1-10mL). Finally exchange the solvent with acetonitrile.

APPENDIX E

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Method Blank	One per matrix per batch	Less than detection limit	1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window
System blanks	As needed	Less than detection limit	1) This is a corrective action when a contaminated system is identified.
Matrix Spike/Matrix Spike Duplicate	One per matrix per batch	Water: Naphthalene 60-120 Bezo(a)pyrene 70-120 Bezo(a)anthracene 70-120 Soil: Naphthalene 65-125 Bezo(a)pyrene 75-125 Bezo(a)anthracene 75-125	1) Evaluate results against the LCS 2) If the LCS was compliant: narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes.
RPD limits	One per batch	RPD 15 for matrix soil 15 for matrix water	1) Check calculations 2) Narrate failed RPD to client
Surrogate Spikes	Every sample, method blank and standard	For water and soil P-terphenyl-d_{14} 75-125	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Laboratory Control Sample	One per matrix per batch	%R within 75-125	1) Reanalyze LCS 2) If stil Non-compliant, re-prep batch and reanalyze.

Appendix F

Table 1 (Cont…)

Not routinely analyzed	CAS Number	RT minutes	Average[1] Range for X µg/L	SD[2] of Recovery µg/L	% Recovery[3] Range	Quant Ion	Secondary Ions	Water MDL µg/L	Soil MDL µg/Kg	Water RDL µg/L	Soil RDL µg/Kg
Acenaphthene	83-32-9	7.710						0.091	5.30	0.2	20
Acenaphthylene	208-96-8	6.251						0.078	5.54	0.2	20
anthracene	120-12-7	10.534						0.097	11.0	0.2	20
Benzo(a)anthracene	56-55-3	15-668						0.049	6.70	0.2	20
Benzo(a) pyrene	50-32-8	20.583						0.074	7.70	0.2	20
Benzo(b) Fluoranthene	205-99-2	18.536						0.037	8.60	0.2	20
Benzo(g,h,I)Perylene	191-24-2	24.289						0.129	20.0	0.2	20
Benzo(k)fluoranthene	207-08-9	19.542						0.034	9.60	0.2	20
Chrysene	218-01-9	16.276						0.057	6.70	0.2	20
dibenzo(a,h)anthracene	53-70-3	22.760						0.079	12.0	0.2	20
Fluoranthene	206-44-0	11.879						0.064	7.50	0.2	20
Fluorene	86-73-7	8.042						0.091	7.80	0.2	20
Indeno(1,2,3-cd)Pyrene	193-38-5	25.631						0.103	7.20	0.2	20
Naphthalene	91-20-3	5.587						0.080	11.0	0.2	20
Phenanthrene	85-01-8	9.318						0.140	7.60	0.2	20
Pyrene	129-00-0	12.775						0.198	5.20	0.2	20

AMERICAN ENVIRONMENTAL TESTING LABORATORY INC.

STANDARD OPERATING PROCEDURE

FOR ANALYSIS OF

ORGANOCHLRINE PESTICEDES

BY

GAS CHROMATOGRAPHY / ELECTRON CAPTURE

CAPILLARY COLUMN TECHNIQUE

EPA METHOD 8081A

Prepared by

Ziba Hosseini

Ziba Hosseini
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Approved by

C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

I. PURPOSE:

To measure pesticides residues in environmental samples using a gas chromatograph equipped with double column and double Electron Capture detectors.

II. SCOPE:

This method is used to determine the concentrations of organochlorine pesticides by gas chromatograph with Electron Capture detector (ECD), and two capillary columns. The method is applicable to the determination of pesticides residues in soils, aqueous sludge, caustic liquors, acid liquors, waste solvents, oily wastes, ground waters, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, sediments and hazardous wastes. These matrices are prepared for analysis, by utilizing a variety of extraction techniques: primarily EPA method 3510 (separatory funnel liquid-liquid extraction, 3550(ultrasonic extraction), and 3541(automated soxhlet extraction).

Routinely analyzed compounds and laboratory-determined method detection limits are provided in Appendix F, Table 1. The method detection limits have been generated using clean aqueous and solid matrices and are not achievable for many "real" sample matrices. The listed detection limit may vary based on the amount of sample used. The method detection limit for both soil and water is performed at least once a year. Guideline for determination of MDL is provided in Appendix D.

The practical quantitation limit (PQL) of this method is approximately 2-4 µg/Kg (wet weight) for soil/sediments, and 0.1-0.2 µg/L for ground water samples. The PQL will vary based upon the same factors that affect detection limits (dilutions and sample size).

III. RELATED DOCUMENTATION:

This SOP is derived from the following sources:
SW-846 Method 8081A, Revision 1 December 1996 –Organochlorine Pesticides by Gas Chromatography/Electron Capture Detector (GC/ECD)
SW-846 Extraction Methods 3510 and3550
HP 6890 Volume II Gas Chromatograph Operating Manual

IV. RESPONSIBILITIES:

The section supervisor and organic chemist share responsibility for performance of this SOP.

IV. METHOD SUMMARY:

5.1. The analytical system is as follows:

System 1

Agilent 2397A ECD; dual detector

HP 6890 GC; dual column

Agilent 7683 ALS

HP Chemstation Software Rev. B.04.03 (54)-2011

5.2. The liquid sample is prepared for analysis by EPA method 3510C. The solid sample is prepared for analysis by EPA method 3550 and waste samples utilize EPA method 3580. Depending on the nature of interference different cleanup methods may be applied. Florisil cleanup (EPA Method3620B) and silica gel cleanup (EPA Method 36230) are usually used. Cleanup methods are fully described in Appendix D of this SOP. When the extraction is complete, the sample extracts are injected to the gas chromatograph. The separated peaks are detected and identified by the responses of the detector, and quantitations are calculated by a data system.

5.3. This method utilizes the external standard method of quantitation.

5.4. Two analytical columns joined to a single injection port are used. Therefore a second column and a second detector confirm all the positive results.

5.5. The experience of the analyst is crucial to the successful application of this method, and only experienced GC analysts may use this method. The analyst must be able to interpret retention times, detector responses, and peak shapes. Prior to data generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of capability. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000A in SW-846 Revision 3 December 1996 Section 8.6. Specific laboratory instructions for performing this initial demonstration of capability are detailed in Appendix A of this SOP.

VI. SAMPLE TYPE, HOLDING TIMES, AND PRESERVATION:

6.1. The samples analyzed by this method are waste waters, ground waters, soils, acid and base liquors, sludge, waste solvents, oily wastes, tars, fibrous wastes, filter cakes, spent catalysts and carbons, polymeric emulsions and sediments from various sources. They may contain some solid matter or chemicals that may interfere with the efficiency of the extraction or system. Interference problems require use of professional judgement regarding necessary changes to sample size or sample preparation and/or cleanup, and consultation with the client regarding possibly compromised data.

6.2. The maximum holding time from sampling to extraction is seven (7) days for aqueous samples and (14) days for solid samples. The maximum holding time from extraction to analysis is 40 days. Extracts must be refrigerated in the dark before analysis. If the aqueous samples are not extracted within 72 hours of collection, the pH should be adjusted to 5.0-9.0 with either sulfuric acid (to lower the pH) or sodium hydroxide solution (to increase the pH). If the water is known to have residual chlorine, and aldrine is to be determined, then it should be preserved with sodium thiosulfate solution.

6.3. Aqueous samples should not be preserved in the field. Both solid and aqueous samples should be temperature preserved at 4°C$\pm$2°C. All preservation measures should be noted on the chain of custody.

6.4. Soil samples must be collected in adequately cleaned (non-plastic) jars and water samples are collected in 1-liter amber color bottles. The requested volumes are
6.5. 200 Grams of solid and three 1-liter bottles of aqueous sample. Data points slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts, respectively.

6.5. The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plan. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data would be estimated. The lab will narrate any missed holding times to the client.

VII. SAMPLE HANDLING FOR ANALYSIS:

7.1. Samples received are stored in a sample extract refrigerator at 4°C$\pm$2°C until analysis. At the time of analysis, all samples and standards are warmed to room temperature.

IIX. REAGENTS AND MATERIALS:

8.1. All chemicals and analytes are considered hazardous and handled with care. Material Safety Data Sheets (MSDS) data concerning the chemicals and standards are kept on file and reviewed by laboratory personnel.

8.2. Reagent water is free of organic contamination. Water is purchased from Sparkletts^{R} (Distilled Drinking Water-Sodium Free).

8.3. Organic solvents: Hexane, acetone and methylene chloride are pesticide quality or equivalent. The source and manufacturer may change from time to time; therefore, the brand and lot number are documented in the sample preparation and standard preparation logbooks.

8.4. Stock Standards - Certified stock standards are purchased from the following manufacturers:

Chem Service	Accu Standard, Inc.	Restek Corporation
660 Tower Lane	25 Science Park	110 Benner Circle
West Chester, PA 19381	New Haven, CT 06511	Bellefonte, PA 16823

All standards are stored in a standard refrigerator at 4°C $\pm$ 2°C.

8.5. Surrogate Standards are prepared with the following analytes:

Tetrachloro-m-xylene
Decachlorobiphenyl

8.6. LCS and Matrix Spike Compounds

Aldrin	Endrin
4,4'-DDT (DDT)	Heptachlor
Dieldrin	Gamma-Hexachlorocyclohexane (Gamma-BHC,Lindane)

8.7. Analytical Stock Standards can be prepared using the following list:

Aldrin	Endrin Aldehyde
Chlordane	Endrin Ketone
Alpha-Chlordane	Gamma-Chlordane
4,4'-DDD (DDD)	heptachlor
4,4'-DDE (DDE)	Heptachlor epoxide
4,4'-DDT (DDT)	Alpha-Hexachlorocyclohexane (Alpha-BHC)
Dieldrin	Belta-Hexachlorocyclohexane (Betta-BHC)
Endosulfan I	Delta-Hexachlorocyclohexane(Delta-BHC)
Endosulfan II	Gamma-Hexachlorocyclohexane(Gamma-BHC, Lindane)
Endosulfan sulfate	Methoxychlor
Endrin	Toxaphene

8.8. Standards and surrogates are purchased from a number of suppliers based on varying concentration and quantity needed. The analyst records the details of preparation in the Standard Preparation Logbook, with documented standard sources and lot numbers. Table 1 and 2 provides instructions for standard preparation.

Table 1 – Primary stock standard solutions*

Standard	**Supplier**	**Cat #**	**Initial Conc.** µg/mL	**Volume Used µL**	**Final Volume mL**	**Final Conc. µg/L**
Organochlorine Pesticides Cal std.	CHEM SERV	M-OCP5081 T4	1000 in t-Butylmethyl ether	100	10	10,000
Organochlorine Pesticides QC	CHEM SERV	M-OCPMSB99	Varied con. in Acetone	250	50	1000-2500
Organochlorine Pesticides 2nd source std.	Accu Standard	M-8081-SC	1000 in Acetone:Toluene	50	10	10,000
Organochlorine Pesticides Surrogate std.	CHEM SERV	M-SM8080U5	2000 in toluene	250	250	2000
Toxaphene Cal std.	RESTEK	32005	1000 in Hexane	100	10	10,000
Toxaphene 2nd source std	Accu Standard	P-093S-H-10X	1000 in Hexane	100	10	10,000

*Each standard solution is prepared in a separate volumetric flask using Hexane as solvent.

Table 2- Initial calibration standard preparation:

A. Secondary stock standard solution:

Cal Standard Working solution	Standard Concentration µg/L	AMOUNT OF STOCK STANDARD µL	TOTAL VOLUME mL
1	1000	1000	10

B. Calibration Curve

STANDARD	STANDARD CONCENTRATION µg/L	AMOUNT OF STOCK STANDARD µL	TOTAL VOLUME mL
1	2	50	25
2	4	100	25
3	`10	250	25
4	20	200	10
5	50	500	10
6	100	500	5
7	200	1000	5

8.9. IX. SAMPLE PREPARATION AND ANALYSIS PROCEDURES:

9.1. Matrix-specific batches of 20 samples or less are prepared. Matrices are typically defined as soil, water, and other. Due to differences in preparation of solid and liquid samples, various matrices cannot be batched together.

9.2. Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

9.3. All project-specific plans for matrix spike and duplicate preparation requirements should be considered. Samples from two clients that each require project-specific matrix spikes can be prepared together; however, two sets of QC (MS/MSD) would have to be prepared using each client's designated samples.

9.4. At least one set of the following QC samples are prepared with each batch (up to 20 samples with the same matrix): method blank, matrix spike, matrix spike duplicate and LCS.

9.5. All samples are spiked with surrogates prior to extraction. The surrogate recoveries are evaluated based upon the known concentrations added and known sample matrix interferences. The surrogate recovery provides additional evaluation of unknown samples without the use of a matrix spike. Procedures for surrogate

standard preparation are listed in Section 6.13. Instructions for extraction of water & soil samples are provided in Appendix B & C.

9.6. **Apparatus and Materials**

Specific to solid samples only:
Balance to accommodate up to 100 grams and accurate to two decimal places
Sample spatulas-stainless steel
Ultrasonicator

Needed for all samples:
1.0-mL; 500µL &100µL syringe for sample preparation

Instruments utilized: (See Section 5.1)

X. HP 7683 LOADING PROCEDURE

10.1. All sample extracts, standards, etc., which are to be analyzed, are placed in an autosampler vial and capped. The chemist makes sure that the sequence vial number and actual vial placement in the 7683 autosampler rack are the same.

XI. OPERATING CONDITIONS:

11.1. The typical operating conditions for the gas chromatograph and Electron CaptureDetector are as follows:

System I

Injector:

Both system use the same injector
Injector: HP split/splitless 7683
Gas: Helium 99.999 purity @ 10.4 psi
Purge flow: 128 ml/min
Purge time: 2.00 min
Total flow: 134 mL/min
Injector Temp: 250°C
Injection volume: 2.00µL

Column :

Column I Column II

Zebron, Multiresidue-1
30m, 0.32mm ID, 0.5 µm Film
Primary (front) column

Zebron, Multiresidue-2
30m, 0.32mm ID, 0.25 µm Film
Confirmation (back) column

Zebron Guard Column 5mx0.32mm

Both column 1 and column 2 use the same GC operating conditions

GC operating conditions:

Initial Temp: 160°C
Initial Hold: 1 min.
Rate: 45°C/min.
Temp-2: 200°C
Hold-2: 1 min.
Rate:3 25°C/min.
Temp-3: 300°C
Hold- 3: 4.5min

Detector:

ECD-1
Temperature: 300°C
Flow: 60.0 mL/min
Makeup Gas: Nitrogen

ECD-2
Temperature: 300°C
Flow: 60.0 mL/min
Makeup Gas: Nitrogen

XII. INSTRUMENT STARTUP:

12.1. The gas chromatographic conditions are checked each day prior to use, in accordance with scheduled preventive maintenance measures, as defined in the laboratory Quality Assurance Plan. These measures include checking and replacing septa and liner, checking all gases, etc. All maintenance requirements are logged into the maintenance logbook assigned to each instrument.

XIII. CALIBRATION AND SYSTEM EVALUATION

13.1 The instrument must meet calibration and contamination criteria prior to engaging in sample analysis. The following instrument startup **sequence** is employed:

- Reagent Blank
- At least 5-Point Initial Calibration
- Initial Calibration Verification Standard (ICV) (2^{nd} source standard)

Evaluation Criteria for each of these standards and blanks is discussed as follow:

Standards and surrogate are purchased from a number of suppliers based on varying concentration and quality needs. The analyst details all preparations in the organic standard preparation logbook with documented standard sources and lot numbers.

The standards for the calibration curve are prepared by first making primary stock standard solution from the original stock standard. If the concentration is still high, a secondary stock solution is prepared. Varying volumes of the standard solution are placed into volumetric flasks containing hexane, and then making each flask to the final volume with hexane.

A minimum of 5 standards is used to calibrate the system. All standards must be within the linear range of the system. A reagent blank must be run in addition to the standards.

13.2 An ICV (Initial Calibration Verification) standard should be analyzed with each initial calibration. The ICV standard is prepared using the same procedure as those for standards. The ICV standard is prepared from an independent source.

13.3 The working standard solutions are good for 6 months or sooner if comparison with an independent source indicates a problem. The expiration date and standard number is recorded in the logbook and on the storage vial.

13.4 The surrogate standard is prepared from an independent source. This solution is added to all standards, samples, blanks, and QC Check Samples. This standard is good for 6 months. The expiration date and standard number is recorded in the logbook and on the storage vial.

13.5 Table 1 & 2; section8.8 are examples of the volumes used to prepare stock and intermediate standards.

13.6 The initial calibration is performed by generating a 7-point calibration curve. Calibration points 1 and 2 are at or near the reporting limit for the analytes, and the high level is near the upper limit of the linear range of the system.

13.7 An Initial Calibration Verification (ICV) standard is prepared using the methodology given in section 6.14.1. This standard is prepared from an independent

source, which may also be used as the MS and LCS spiking solution. The ICV is run as a sample.

13.8 A matrix blank must be run. It should be prepared from the reagents used for the sample. This blank is also run as a sample.

14.0 **Procedure**

14.1 After generating the initial calibration curve, calculate calibration factors (CF) for each analyte. This procedure is performed by the instrument and software using the following equation:

$$CF = \frac{Concentration_{st}}{Area_{st}}$$

14.2 The average response factor for each analyte is calculated for the calibration standards.

14.3 The response factors for ICV standard are used to evaluate whether the Rfs are constant over the calibration range. Relative Standard Deviation (%RSD) is used to show the linearity of the calibration curve. The value can be calculated using the following equation:

$$\%RSD = \frac{\text{Standard Deviation of the RFS x 100}}{\text{Average of the RFs}}$$

14.4 The RSD for all of the analytes must be <20 (Section 7.4.5.2. of Method 8081A SW846, Revision 1 Dec 1996.

15. SAMPLE ANALYSIS AND EVALUATION

15.1.1 Sample analysis may proceed with incorporation of continuing calibration standard every 10 injections. High and low concentration mixtures of single component analytes are alternated. For each extraction batch of 15-20 samples, one method blank, a pair of Matrix Spike and Matrix Spike duplicates and one Lab Control Sample (LCS) are extracted and run with the samples.

15.1. The CCV standard is checked for retention time shifts and % difference of the instrument response between the initial calibration and each subsequent alaysis of the verification standard.

$$\%difference = \frac{CF_V - CF}{CF} \times 100$$

Where: CF_v = calibration factor from verification standard
CF = mean-calibration factor from initial calibration

15.1.2. The % difference or % drift calculated for the calibration verification standard must be within $\pm$ 15% for each analythe before any sample analysis may take place.

If a non-linear calibration is used in the initial calibration, then %drift or % difference between the initial calibration and each subsequent verification standard will be used to verify the continuing calibration. The following equation is used for this purpose (section 7.7.1 & 7.7.2 of Method 8000 SW846 revision 2):

$$\%Drift = \frac{Calculatedconcentration - Theoreticalconcentration}{Theoreticalconcentration} x100$$

16. SAMPLE EVALUATION

16.1. Both the analytical group, and QA group evaluate data, prior to being released to the client. This section refers to analytical group evaluations only.

16.1.2. All samples are spiked with surrogate standard. The surrogate recovery and retention times are evaluated according to Appendix F.

16.1.3. The system uses two channels for generating data. Therefore a second channel should confirm the positive results. When sample results are confirmed by a second column, the relative percentage difference (RPD) between the two results is calculated. If RPD is less than 40%, and no evidence of chromatographic problems, the higher result is reported. If RPD is greater than 40%, the chromatograph is checked for anomalies and results are selected based on the best professional judgement. If no evidence of any chromatographic problems, the higher result is reported.

16.1.4. The surrogate recoveries for each blank, QC Check Sample, set of standards and samples will be evaluated until at least 25 to 30 surrogate recoveries are generated. Once sufficient data points are established, a recovery range will be developed. This recovery range will not be changed unless the system parameters are modified to the point that the recoveries cannot meet the tolerance limits. Limits will be evaluated annually at a minimum.

16.1.5. Cross contamination can occurs whenever high-contamination samples are analyzed. Care should be taken regarding the glassware used for extraction and concentration. The glassware must be washed out with a

detergent solution, rinsed with water, acetone, and finally with methylene chloride or hexane.

16.1.6. All data that exceeds the control limits designated in Appendix F, must be narrated to the client. The narrative is invaluable to secondary reviewers, such as validators and regulators, in tracking the decision making and corrective action steps employed.

16.1.7. Some sample matrices may need to be diluted to reduce interference. When this occurs, the reporting limits will be increased to reflect the dilutions. The possibility for instrument (column) damage exists whenever an attempt is made to run a highly contaminated sample. The analyst must consider available screening method as a way to avoid damage or cross contamination. All decision-making should be documented.

16.1.8. Matrix spikes will be evaluated based on the percent recovery. The recoveries will be compared to the ranges provided in Appendix F. If the two recoveries were within the ranges provided, the data would be reported as valid. If any of the recoveries are outside of the ranges, the cause will be determined and an explanation provided. In many cases, a recovery problem is limited to the individual sample only, and will not affect the validity of the other samples in the run.

16.1.9. A Lab Control Sample (LCS) is run at the rate of one per matrix per batch. This sample is the QC checks sample prepared and analyzed in the identical manner as the samples. The results of the LCS are compared to criteria dictated in Appendix F.

16.1.10. If the matrix spike duplicate analysis fails to meet the designated criteria due to its sample matrix, the LCS is used as the means to demonstrate that the system is capable of generating acceptable data. If any analyte falls outside of the criteria established in Appendix E, the analyst must provide an explanation in the narrative and determine the validity of the individual anlyte.

17. REPORTING OF RESULTS:

17.1 The following is a summary of the calculation used by the computer, or the analyst to generate the reported data:

17.1.1 Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_{\chi} \times 100}{T}$$

Where: C_{χ} = the concentration of the analyte spike or surrogate from the analysis.
T = the true value of the spike or surrogate standard added.

17.1.2 Sample concentration is calculated by the following equation:

$$C\ (\mu g/L) = A_{\chi} \times RF \times Dilution$$

Where: C= the concentration of the analyte sample.
A_{χ}= Area of the target compounds
RF= the response factor of the target compound being measured.

17.1.3 Standard Deviation is calculated by the following equation:
Where: xi = Analyte values
x avg = Analytes average value
N = number of points

$$SD = \sqrt{\frac{\sum(xi - Xavg)^2}{N-1}}$$

17.1.4 Relative Percent Difference:

$$\%RPD = \frac{Con_{MS} + Con_{MSD}}{2} \times 100$$

Where: MS = Matrix Spike
MSD = Matrix Spike Duplicate
100 = Conversion factor to %

APPENDIX A

Initial Demonstration of Proficiency

Initial demonstration of proficiency is performed to demonstrate that the system and the analyst can successfully perform the analysis. Four aliquots of the Quality control Check Samples are prepared and analyzed similar to real sample.

A.1 The QC Check Sample standard is purchased from a certified source. The following concentrations and volumes are used:

Standard Name	Initial Conc. µg/L	Volume used µL	Final extract Volume	Sample Final Concentration µg/L
Pesticide Mixture Pesticide Surrogate Mix	1000-2500	200 250	5mL	40-100 100

A.3. Transfer 200µL of the QC standard mix and 250µL of surrogate standard to 1 Liter of reagent water. Proceed with the extraction, concentration and solvent exchange as described in Appendices B, C, and D. Transfer 1mL of the extract to a crimp vial and seal the cap.

A.4. Repeat step A.3 three more times until a total of four aliquots of QC Check Sample are prepared.

A.5. Analyze the four QC Check Samples and compare the recoveries with the Appendix F Table 1. If average recoveries of anlytes are within the ranges cited in the table, the system is ready for use and analysis may begin. If the average recovery for any analyte falls outside the range, corrective action must be taken and the analysis repeated. All corrective actions must be noted in the Maintenance logbook.

A.6. Once an analyst and instrument have passed the recovery criteria for all analytes to be reported by the method, the analyst and instruments are certified as having established initial proficiency with the method.

APPENDIX B

B.1. Liquid-liquid extraction of water (separatory funnel)

B.1.1. Apparatus and materials:

C.1.1.1. Separatory funnel: 2 L

C.1.1.2. Drying column: 20 mm I.D. Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

C.1.1.3. Erlenmeyer flask: 250 mL

C.1.1.4. Graduated cylinder

C.1.1.5. Extraction solvent; Mthylene chloride: acetone (1:1,v:v) or methylene Chloride for water and hexane: acetone (1:1,v: v) for soil

B.1.2 Procedure:

B.1.2.1. For each batch of 15-20 samples one pair of LCS/LCSD, one pair of MS/MSD and one method blank is prepared.
Using a 1 L graduated cylinder transfer 1 L of the sample to a 2 L separatory funnel. Add proper amount of spike standard to each of two 1 L distilled water used as matrix. Add proper amount of Lab Control Sample standard to 1 L of distilled water. Add proper amount of surrogate standard to all.

B1.2.2. Add 60 ml of methylene chloride to the separatory funnel. Immediately after the funnel is shaked once, vent the funnel and repeat this procedure several times. Then shake the funnel vigorously for 2-3 minutes with periodic venting to release excess pressure.

B1.2.3. Let the phases to separate for 10 minutes. Collect the solvent extract in an Erlenmeyer flask. If emulsion is present, mechanical techniques are employed to help the phase separation. Repeat the extraction two more times using fresh portions of methylene chloride. Combine the three extracts.

B.2. Ultrasonic extraction of soil

B.2.1 Apparatus and materials:

B.2.1.1. A device for grinding or homogenization
B.2.1.2. Balance – Top loading accurate to .01 g
B.2.1.3. Ultrasonicator.
B.2.1.4. Centrifuge
B.2.1.5. Glass Vials
B.2.1.6. Sample spatulas – stainless steel

B.3.1 Sample handling:

B.3.1.1. Sediment/soil samples- Decant and discard any water layer on a sediment sample. Mix sample thoroughly, especially composite samples. Discard any foreign objects such as sticks, leaves, or rocks.

B.3.1.2. Dry waste samples amenable to grinding: grind or otherwise subdivide the waste so that it either pass through a 1-mm sieve or can be extruded through a 1-mm hole. Introduce sufficient sample into the grinding apparatus to yield at least 20g after grinding.

B.3.1.3. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding.

B.3.2 Determination of percent of dry weight: When sample results are to be calculated on a dry weight basis, a second portion of sample should be weighed out at the same time as the portion used for analytical determination. Immediately after weighing the sample for extraction, weigh 5-10g of the sample into a crucible. Dry this aliquot overnight at 105C. Allow cooling in a desiccator before weighing. Calculate the % dry weight as follows:

$$\%\ Dry\ weight = \frac{g\ of\ dry\ sample}{g\ of\ sample} \times 100$$

B.3.3 Extraction method for samples expected to contain low concentrations of organics (less than or equal to 20 mg/kg)

B.3.3.1. Weigh 20g of sample into a 4-oz glass jar. Add enough sodium sulfate to have a free flowing sample mixture.

B.3.3.2 Add proper amount of matrix spike standard to 20 g of designated soil sample and its duplicate. Add proper amount of lab control sample standard to 20g of clean sand. Add proper amount of surrogate standard to all.

B.3.3.3 Immediately add about 40 mL of the extraction solvent or solvent mixture (Hexane : Acetone 1:1).

B.3.3.4. Extract the mixture in an ultrasonicator for 15 minutes. Decant the extract into a concentrating tube.

B.3.3.5. Repeat the extraction two or more times with two additional 40 mL portion of the solvent. Decant off the solvent after each ultrasonic extraction. Transfer the entire sample to the concentrating tube.

B.3.4.5 The extract is ready for cleanup and/or solvent exchange.

B.3.4.6. If analysis will not be performed immediately, the extract is transferred to a vial with PTFE-line caps and refrigerated.

APPENDIX C:

Extract Concentration

C.1. Apparatus and Materials:

C.1.1. Kuderna-Danish (K-D) apparatus:

C.1.1.1. Concentrator tube – 10mL, graduated with ground glass stopper.

C.1.1.2. Evaporation flask: 500mL attached to concentrator tube with springs.

C.1.1.3. Snyder column: three ball (macro) and two ball (micro).

C.1.1.4. Springs or clamps

C1.1.5. Boiling chips – Solvent extracted, approximately 10/40 mesh (silicon carbide) or equivalent.

C.1.2. Water bath – Heated with concentric ring cover, capable of temperature control (+/- 5 C).

C.1.3. Drying column – 20-mm 1.d, Pyrex chromatographic column with Pyrex glass wool at bottom and a Teflon stopcock.

C.1.4. Exchange solvent: Hexane – Pesticide grade

C.2. Pass the solvent extract through a drying column containing about 10cm of anhydrous sodium sulfate. Collect the dry extract in an evaporation flask connected to a K-D concentrator. Rinse the Erlenmeyer flask with 10-15 mL of methylene chloride, pass it through the drying column, and add it to the evaporation flask.

C.3. Add one or two clean boiling chips to the concentrator tube, and attach it to a three-ball Snyder column. Pre-wet the Snyder column by adding 1 ml of Hexane to the top of the column.

C.4. Place the K-D apparatus on a hot water bath (80-90 °C) so that the concentrator tube is partially immersed in the hot water. The concentration should be complete in 20-25 minutes. When the apparent volume of liquid is reached to 1 ml, remove the K-D apparatus from water bath and let it drain and cool for 10 minutes.

C.5. Increase the temperature of the hot water bath to 95-100 C. Remove the Snyder column; add 5-9 mL Hexane (according to the color of the extract) mix it well and a new boiling chip. Attach a two ball micro Snyder column. Pre-wet the column with 1ml hexane. Place the K-D apparatus on the water bath so that the concentrator tube is immersed in the hot water. The concentration is complete in 15-20 minutes. When the apparent volume of the liquid reaches 1 mL, remove the K-D apparatus and rinse its lower joint with 1 mL of hexane into the concentrator tube. Adjust the final volume of the extract to 5 to 10 mL according to the extract color. Transfer the extract to a Teflon-sealed screw-cap vial.

C.6. If the extract is clear, proceed with the analysis by transferring 1-2 mL of the extract to a crimp vial, seal the cap and load it to the auto sampler.

C.7. If the sample extract is dark, proceed with proper clean up method. Method 3620B (Florisil cleanup).

APPENDIX D

Florisil cleanup

Florisil is a magnesium silicate with basic properties; (registered trade name of a U.S. Silica Co.).

Florisil cleanup may be accomplished using a glass chromatographic column packed with Florisil or using solid phase interaction cartridges containing Florisil. Generally, the traditional column chromatography technique uses larger amounts of adsorbent; therefore, has a greater clean up capacity.

D.1. **Summary of the method:**

This method provides the option of using either standard column chromatography techniques or solid-phase extraction cartridge. Generally, the standard column chromatography techniques use larger amounts of absorbent and therefore, have a great cleanup capacity.

In the standard column cleanup, the column is packed with the required amount of adsorbent, topped with a water adsorbent, and then loaded with the sample to be analyzed. Elution of the analytes is accomplished with suitable solvent(s) that leaves the interfering compounds on the column. The eluate is then concentrated.

The cartridge clean up protocol uses solid-phase extraction cartridges packed with 1-2 g of silica gel (silicic acid) adsorbent. Each cartridge is solvent washed immediately prior to use. Aliquots of sample extracts are loaded into the cartridges, which are then eluted with suitable solvents. The collected fractions may be further concentrated and solvent exchanged.

D.2. **Apparatus and materials:**

D.2.1. Chromatographic column – 250 mm long x 10 mm ID; with Pyrex Glass wool at bottom and PTFE stop cock.
D.2.2. Beakers – Appropriate size.
D.2.3. Vials – 2,10,25,40 mL glass with PTFE-lined screw – caps or crimp tops.
D.2.4. Erlenmeyer flasks – 50 and 250 mL.
D.2.5. Silica gel for chromatography – 100/200 mesh. Before use, activate at least 16 hours at 130 C in a shallow glass tray, loosely covered with foil.
D.2.6. Sodium sulfate (granular, anhydrous)
D.2.7. Methylene chloride, Hexane, and Acetone – pesticide grade.

D.3. Procedure:

D.3.1. Condition the cartridge by adding 4mL of hexane to each cartridge. Allow a few drops of solvent to pass through the manifold to remove air bubbles. Close the valve and allow the solvent to soak the entire sorbent for 5 minutes.

D.3.2. Slowly, open cartridge valves to allow hexane to pass through the cartridges. Close the valve when there is still at least 1 mL of solvent above the sorbet bed. Do not allow cartridge go dry. If cartridges go dry, repeat the conditioning step.

Reduce the sample extract volume to 10mL prior to cleanup for organochlorine pesticides prior to cleanup. The extract solvent should be hexane. Given the sensitivity of the method, only 1mL of the 10mL extract needs to be subjected to the Forisil cleanup procedure.

D.3.3. Transfer the 1mL of the extract to the cartridge. Open the cartridge valve to allow the extract to pass through the cartridge bed at approximately 2mL/minutes. After the entire extract has passed through the cartridge, but before drying out, rinse the sample vial with 0.5mL of hexane and add it to the cartridge.

D.3.2. After the solvent passed, but before drying, add 5mL acetone/hexane (10:90). Turn the vacuum on. After soaking for 1 minute, slowly open the cartridge valve and collect the eluate into the collection vial. Concentrate the sample to final volume required by the method and exchange with Hexane to 5.0mL final volume.

APPENDIX E
Method Detection Limit

Method detection limit is the lowest concentration of a substance that can be identified, measured and reported with 99% confidence that the analyte concentration is greater than zero.

Method detection limit is performed by making 7 replicates of a certain concentration of calibration standard in water for aquous matrices and clean sand for soil and solid matrices. The seven replicates of each matrix are than extracted using the exact same procedure used for extracting sample. The final 5 ml extract are analyzed and the standard deviation is calculated for each analyte. To obtain the method detection limit, the standard deviation is multiplied by 3.143. The PQL is about 2-3 times the method detection limit.

Table 1

Not routinely analyzed	CAS Number	RT(min.) DETA	RT(min.) DETB	Average[1] Range for X µg/L	SD[2] of Recovery µg/L	% Recovery [3] Range	Water MDL µg/L	Soil MDL µg/Kg	Water RDL µg/L	Soil RDL µg/Kg
Aldrin	309-00-2	6.879	5.81			40-125	0.025	0.491	0.10	2.0
Gamma Chlordane	57-74-9	7.599	6.702				0.017	0.452	0.10	4.0
Alpha-chlordane	5103-71-9	7.669	6.773				0.016	0.560	0.10	4.0
4,4"-DDD (DDD)	72-54-8	8.329	7.537				0.023	0.661	0.20	4.0
4,4"-DDE(DDE)	72-55-9	7.825	6.969			40-135	0.021	0.623	0.20	4.0
4,4"-DDT(DDT)	50-29-3	8.648	7.78				0.031	0.850	0.20	4.0
Dieldrin	60-57-1	7.995	7.126			40-135	0.022	0.501	0.20	4.0
Endosulfan I	959-98-8	7.729	6.841				0.014	0.491	0.10	2.0
Endosulfan II	33213-65-9	8.447	7.703				0.030	0.395	0.20	4.0
Endosulfan sulfate	1031-07-8	8.839	8.084				0.016	0.497	0.20	4.0
Endrin	72-20-8	8.221	7.413			40-135	0.041	1.116	0.20	4.0
Endrin Aldehyde	7421-93-4	8.587	7.876				0.038	0.595	0.20	4.0
Endrin ketone	53494-70-5	9.446	8.604				0.018	0.698	0.20	4.0
Heptachlor	76-44-8	6.495	5.439			40-135	0.020	0.581	0.10	2.0
Heptachlor epoxide	1024-57-3	7.335	6.420				0.023	0.437	0.10	2.0
Alpha-Hexachlorocyclohexane(alpha-BHC)	319-84-6	5.364	4.479				0.019	0.599	0.10	2.0
Beta- Hexachlorocyclohexane(beta-BHC)	319-85-7	6.074	5.373				0.059	1.612	0.10	2.0
delta- Hexachlorocyclohexane(delta-BHC)	319-86-8	6.372	5.687				0.024	0.510	0.10	2.0
gamaHexachlorocyclohexane(gammaBHC)	58-89-9	5.803	4.964			40-135	0.035	0.639	0.10	2.0
Methoxychlor	72-43-52	9.176	8.318				0.023	1.438	1.00	10.0
Toxaphene	8001-35-2								10.0	170

APPENDIX F

Corrective Action

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Method Blank	One per matrix per batch	Less than ½ of detection limit	1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window
System blanks	Ass needed	Less than detection limit	1) This is a corrective action when a contaminated system is identified.
Matrix Spike/Matrix Spike Duplicate MS/MSD	One per matrix per batch	**%Recovery** **Water**: Aldrin 50-135 4,4'-DDT 50-135 Dieldrin 50-135 Endrin 50-135 Heptachlor 50-135 Lindane 50-135 **Soil**: Aldrin 40-135 4,4'-DDT 40-135 Dieldrin 40-135 Endrin 40-135 Heptachlor 40-135 Lindane 40-135	1) Evaluate results against the LCS 2) If the LCS was compliant: narrate failed MS to client 3) Otherwise, re-prep and reanalyze batch including spikes.
RPD limits	One per batch	%RPD less than 30% for soil and water	1) Check calculations 2) Narrate failed RPD to client
Surrogate Spikes	Every sample, method blank QC samples and standard	For water and soil : 2,4,5-Tetrachloro-m-xylene 30-150% Decachlorobiphenyl	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Laboratory Control Sample and MS / MSD	One per matrix per batch	Recovery: Within 40/50-135%; All the component in MS/MSD	1) Reanalyze LCS 2) If still Non-compliant, re-extract the batch and reanalyze.

STANDARD OPERATING PROCEDURE

FOR

TPH GASOLINE

BY

METHOD 8015G

Prepared by

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1. SCOPE AND APPLICATION

1.1. Method 8015M is used to determine the concentration of various non-halogenated volatile organic compounds by gas chromatography.

1.2. This method is applicable to the analysis of petroleum hydrocarbons including Gasoline Range Organics (GRO) that appear between the range of 2-methylpentane and 1,2,4-trimethylbenzene on the chromatogram. For specific projects Gasoline Range Organic compounds in the range of C4-C12 can be included. Non-TPH compounds can interfere with this analysis.

1.3. The quantitation limit for this method is 50 µg/L for water and 100 µg /Kg for soil.

1.4. This method can also be used as screening tool to obtain semi-quantitative data for the prevention of sample overload during quantitative analysis on a GC/MS system.

1. SUMMARY OF METHOD

1.1. This method provides gas chromatographic conditions for the detection of certain non-halogenated volatile organic compounds.

2.2. The sample is placed into an Archon or EST autosampler. An inert gas is bubbled through a liquid media in the sparging tube. The purgeable organics are then transferred with the inert gas to trap where they are concentrated. When the transfer is complete, the trap is heated and the purgeable organics are transferred to the gas chromatograph and separated. The separated organics are detected and identified by the responses of the detector, which are further quantitated and calculated by a data system.

2.3. Fused silica capillary column and temperature program is used in the gas chromatograph to separate the organic compounds. Detection is achieved by a flame ionization detector (FID).

2.4. This method is restricted for used by, or under the supervision of analysts experienced in the use of gas chromatographs and skilled in the interpretation of gas chromatograms. Prior to the generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of capability. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000B in SW-846 Revision 2, Dec. 1997 Section 8.4. Specific laboratory instruction for performing this initial demonstration of capability are detailed in section 14.

3. INTERFERENCES

3.1. When analyzing for volatile organics, samples can be contaminated by diffusion of volatile organics through the sample container septum during shipment and storage. A trip blank prepared from organic-free reagent water and carried through sampling and subsequent storage and handling must serve as a check on such contamination.

3.2. Contamination by carryover can occur whenever high-concentration and low-concentration samples are analyzed in sequence. To reduce the potential for carry-over, the sample syringe or purging device must be rinsed out between samples with an appropriate solvent. whenever an unusually concentrated sample is encountered it should be followed by injection of a reagent water blank to check for cross contamination.

3.2.1. Clean purging tubes and all glassware with a detergent solution, rinse with distilled water, and rinse with methanol between analyses. Clean syringes or autosamplers by flushing all surfaces that contact samples using appropriate solvents.

3.2.2. After running polluted samples, it is very important to decontaminate the transfer line between the Archon or EST autosampler and OI analytical concentrator and between concentrator and GC.

3.2.3. Program the sequence and purge all the contaminated positions. Make sure to wipe the purge tube with a kimwipe after purging.

3.2.4. The next step is to clean the autosampler trap. Bake the trap at 200°C for 15 minutes.

3.3. The flame ionization detector (FID) is a non-selective detector, therefore, non-target compounds present in the samples will interfere with the analyses.

4. SAMPLE COLLECTION, PRESERVATION, AND HANDLING

4.1. Samples analyzed by this method are waste waters, ground waters, soils, sludge's, waste solvents, oily wastes, spent catalysts and carbons, and sediments from various sources.

4.2. Samples should be stored in vials with PTFE-lined caps with no headspace at 4 C in an area free of solvent fumes. The requested amounts are 30 g of solid and three 40 ml vials of aqueous samples. If a bubble is present in a vial, observe the cap and septum to ensure that a proper seal was made at time of sampling. If the sample was improperly sealed, the sample should be discarded.

4.3. The maximum holding time from sampling to analysis is 14 days for preserved water samples and seven days for non-preserved water samples. The maximum holding time for solid samples is 14 days from collection. The lab will attempt to meet all holding times.

4.4. Aqueous samples should be preserved in the field with concentrated hydrochloric acid to a pH of less than 2.

5. MATERIALS AND REAGENTS

5.1. All chemicals and analytes must be considered hazardous and handled with care. MSDS data concerning the chemicals and standards must be on file and reviewed y laboratory personnel.

5.2. Reagent water is free of organic contamination. The reagent water used in the lab is distilled drinking water supplied by Sparkletts.

5.3. Methanol – Methanol should be purge and trap grade and demonstrated to be free of interference's by method blank analysis. The source and manufacturer may change from time. to time, therefore, the brand and lot number must be documented in the sample preparation logs.

5.4. Trap Material – The traps are purchased from different manufacturers. The trap type and manufacturer used at the time of SOP generation is as follows:
OI No. 7 or equivalent.

5.5. Stock Standards: Certified stock standards are purchased from known manufacturers based on varying concentration and quantity needed. The standards for calibration, calibration verification and surrogate are prepared by first making primary stock standard solution from the original stock standard. For working standards, a secondary stock solution is prepared. Varying volumes of the primary standard solution are transferred into 10 or 100ml volumetric flasks containing appropriate solvent, and then diluted to mark with the solvent. All preparations are detailed by the analyst in the organic standard preparation log book, with documented standard sources and lot number.

5.5.1 A minimum of 5 standards is used to calibrate the system. All standards must within the linear range of the system. A reagent blank must be run in addition to the standards.

5.5.2 An initial calibration verification standard should be analyzed with each initial calibration. The ICV standard is prepared using the same procedures as those for standards. The ICV standard is prepared from an independent source.

5.5.3 The stock standard solution expiration date is 6 months after preparation, if kept with minimum headspace and refrigerated properly. Fresh standards should be prepared if the drift from the staring standard exceeds 15%. The working standard solutions should be monitored more frequently. If comparison with an independent

source indicates a problem, it should be replaced. The expiration date and standard number is recorded in the logbook and on the storage vial.

5.5.3.1 Table 1 is an example of the volumes used to prepare stock standard solutions.

Table 1

Standard	Supplier	Cat #	Initial Conc.	Volume used mL	Final volume mL	Final conc. µg/mL
Gasoline	Supelco	47516-U	20 mg/ml	0.25	5.0	1000
α,α,α-tri-fluoro toluene	AccuStandard	M-602-SS-10x	2000 µg/mL	1.25	10	250
4-bromo-fluorobenzene	Supelco	4-8083	2000 µg /mL	1.25	10	250

5.5.3.2 Table 2 is an example of the volumes used to prepare working standard solutions.

Table 2

Standard	Supplier	Initial Conc. mg/ml	Volume used mL	Final volume ml	Final conc. µg/ml
Gasoline	AccuStandard	5.00	1.0	5.0	1000

6. APPARATUS AND MATERIALS

6.1. Balance – Top loading, accurate to two decimal points.
6.2. Sample spatulas – stainless steel.
6.3. Syringe – 5 and 10 mL Luer lock gas tight.
6.4. Microsyringe – Hamilton 702 N or equivalent
6.5. Sparge tubes – 5.0 mL.
6.6. Autosampler
6.6.1. 16-port autosampler Archon or EST
6.6.2. Purge and trap concentrator-4560 O.I.Corporation, equipped with OI-7 trap equivalent
6.7. Gas chromatograph – Hewlett Packard 5890, equipped with FID and PID detectors in series.
6.7.1. Column – 30 meter J & W scientific, DB-5, .53mm I.D., 1.5 micron film thickness.

6.8. Data System –ChemStation

7. SAMPLE PREPARATION AND ANALYSIS PROCEDURES

7.1. Prepare matrix-specific batches of 15 samples. Matrices are typically defined as soil, water and other. Due to differences in preparation of soils and waters, various matrices cannot be batched together. Samples must be analyzed quantitated using a calibration curve generated specific to the matrix.

7.2. Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

7.3. Consult all project-specific plans for matrix spike and duplicate preparation requirements. Samples from two clients that each requires project-specific matrix spikes can be prepared together, however, two sets of QC will have to be prepared using each client's designated samples.

7.4. Prepare at least one set of the following QC samples with each batch-method blank, matrix spike/matrix spike duplicate and lab control sample (LCS).

7.5. Samples, standards, and QC samples are placed into various positions of the autosampler. The positions and sample identifications are logged into the sample analyses log book and computer system.

7.6. Solid samples-Prepare the 5-mg in 40 ml vial or 5035 kit with reagent water. Using a certified balance, weigh 1-5 g of sample in the purging tube and record the exact weight. Try to minimize the amount of time the sample is exposed to air.

7.6.1. Solids requiring extraction- Weigh the appropriate amount (1-10) g of solid material into the extraction vessel. Add 10 mL of methanol. Shake and leave to settle. Withdraw the desired amount of methanol extract (μLs). Transfer this amount of extract into a sample syringe containing 5-mL of reagent water. Add internal standard/surrogate standard mix and introduce into a sparging tube attached to the autosampler via the sparging tube valve.

7.6.2. Liquid samples-Allow the sample to come to ambient temperature. Put sample in 40 ml vial in Archon or EST autosampler, and internal standard/surrogate standard mix and introduce automatically by autosampler into sample.

7.6.3. Liquid samples requiring dilution- Dilution may be made in volumetric flasks (10-100mL). Intermediate dilutions may be necessary for extremely large dilutions. Calculate the approximate volume of organic-free reagent water to be added to the

volumetric flask selected and add slightly less than this quantity of organic-free reagent water to the flask. Inject the proper aliquot of sample using a syringe. Aliquots of less than 1 mL are not recommended. Dilute the sample to the mark with organic-free reagent water. Cap the flask, invert, and shake three times. Repeat this procedure for additional dilutions. Fill a 5-mL syringe with the diluted sample. Add proper amount of surrogate spiking solution. Transfer to the purge vessel.

8. OPERATING CONDITIONS

8.1. Purge and Trap Sample Concentrator
Trap – OI-7 (or equivalent)
Purge Gas: Helium 99,99970 purity

Purge Flow: 40mL/min.

Purge program:

Purge Time: 11 min.
Desorb Temp: 180°C
Desorb Time: 2 min.
Bake Temp: 200°C
Bake Time: 15 min.

8.2. Gas Chromatograph

Column: J&W, DB-5, 30m x 0.53mm ID x 1.5 micron film thickness
Carrier Gas: Helium 99.99970 purity
Carrier Gas Flow Rate: 10mL/min.
Injector Temp: 180°C
Signal 1: FID detector, range 2
Signal 2: PID detector, range 4

Temperature Program:

Initial Temp: 45°C
Initial Time: 2 min.
Rate: 8°C /min.
Final Temp: 180°C
Final Time: 1.5 min.

8.3 Flame Ionization Detector

Air Flow: 400ml/min
Make up gas: Helium @ 10ml/min
Reaction gas: Hydrogen @ 40 mL/min.

8. 4 PID Detector

Reactor base temperature: 220°C
Lamp intensity: 6

9. INITIAL CALIBRATION

The calibration of Gasoline Range Organics is markedly different from that of single component analytes. The response used for calibration must represent the entire area of the chromatogram within the retention time range or the fuel type, including the unresolved complex mixture that lies below the individual peaks.

9.1 The initial calibration is performed by generating a 5-point calibration curve. Standards 1 and 2 are at or near the reporting limit, and the upper limit of the linear range of the system.

9.1.1 Add following volume of working standard (prepared as in section 5.5.3.1) To 40 mL vial containing reagent water.

Water	Standard Concentration	Volume of Stock Standard (1000µg/mL)
Standard 1	50 µg/L	2.0 µL
Standard 2	100 µg/L	4.0 µL
Standard 3	250 µg/L	10.0 µL
Standard 4	1000 µg/L	40.0 µL
Standard 5	2000 µg/L	80.0 µL
Standard 6	3000 µg/L	120 µL

Soil standards are prepared in 5.0 gr clean soil in 40 ml vial.

Soil	Standard Concentration	Volume of Stock Standard (1000µg/mL)
Standard 1	100 µg/kg	0.5 µL
Standard 2	250 µg/kg	1.25 µL
Standard 3	1000 µg/kg	5.00 µL
Standard 4	2000 µg/kg	10.0 µL
Standard 5	3000 µg/kg	15.0 µL
Standard 6	5000 µg/kg	25.0 µL

9.1.2 Determine the area of the response as described in section 10. Calculate the response factor as follows:

$$RF = \frac{A_x \times Cis}{A_{IS} \times Cx}$$

where:

Cx = The concentration of the analyte sample.

A_x = Area response of the analyte being measured.

Cis = Concentration of the internal standard.

A_{is} = Area response of the internal standard.

9.2 Calibration linearity: The linearity of the calibration must be assessed. If the percent relative standard deviation (%RSD) of the response factors is less than 20% over the working range, linearity through the origin can be assumed, and the average calibration factor can be used in place of a calibration curve. The % RSD is calculated by using the following equation:

$$\%RSD = \frac{\text{Standard Deviation of the RFs} \times 100}{\text{Average of the RFs}}$$

10. RETENTION TIME WINDOWS

10.1 Before establishing retention time windows, made sure that the chromatographic system is functioning reliably and that the operating parameters have been optimized for the analytes and surrogates in the sample matrix to be analyzed.

10.2. The retention time range for Gasoline Range Organics is defined during initial calibration. Two specific gasoline components are used to establish the range, 2-methylpentane and 1,2,4-trimethylbenzene. Use the following procedure to establish the retention time windows.

10.2.1. Make three injections of the component mentioned in section 10.2 over a 72-hour period.

10.2.2. Record the retention time for each analyte to three decimal places. Calculate the mean and standard deviation of these peaks.

10.2.3. The width of the retention time window for each component is defined as $\pm$3 times the standard deviation of the mean absolute retention time established during the 72-hour period. The retention time range is then calculated based on the lower limit of the RT window for the first eluting component and the upper limit of the RT window for the last eluting component and the upper limit of the RT window for the last eluting component.

11. CALIBRATION VERIFICATION

11.1. The calibration curve and retention times must be verified at the beginning of each 12-hour work as a minimum requirement. Verification is accomplished by the measurement of one standard (normally mid-point) that contain all of the target analytes and surrogates when individual target analytes are being analyzed. Verification is accomplished by the measurement of the fuel standard and the hydrocarbon retention time standard when petroleum hydrocarbons are being analyzed.

11.2. Linearity of calibration is performed by calculation of the percent drift or percent difference of the instrument response between the initial calibration and each subsequent analysis of the verification standard.

$$\%difference = \frac{CFv - \overline{CF}}{\overline{CF}} \times 100$$

where:

CFv = Calibration factor from verification standard.
CF = Mean calibration factor from initial calibration.

11.3. If the response for any analyte is within $\pm$15% of the response obtained during the initial calibration, then the initial calibration is considered still valid, and analyst may continue to use the mean CF values from the initial calibration to quantitate sample results. If the response varies from the predicted response by more than +1-15%, corrective action must be taken to restore the system or a new calibration curve must be prepared.

11.4. All n-alkanes in the calibration verification analysis must fall within previously established retention time windows. If the retention times does not fall within the +/- 3s window, corrective action must be taken to restore the system or a new calibration curve must be prepared for that compound.

11.5. Solvent blanks and any method blanks should be run with calibration verification analyzes to confirm that laboratory contamination does not cause false positives.

12. SAMPLE ANALYSIS

12.1. Samples are analyzed in a matrix specific batch of 15 samples. The sequence starts with daily calibration verification, followed by method blank, samples, and QC samples. Additional analysis of the verification standard (S) throughout a 12 hour

shift are strongly recommended, especially when running samples that contain visible concentrations of oily material.

12.2. Samples are analyzed with the same instrument configuration as is used during calibration. At least two sample vials (for the water samples) are required. After opening the first vial, therefore creating headspace, the second vial should be used for any dilution or reanalysis.

12.3. Sample concentrations are calculated by comparing sample response data with the initial calibration of the system. If sample response exceeds the limits of the initial calibration range, a dilution of the sample must be analyzed. For volatile organic aqueous samples, the dilution must be performed on a second aliquot of the sample which has been properly sealed and stored at 4°C. Extracts should be diluted so that the response is in the upper half of the calibration range. Computer reproduction of chromatograms, manipulated to ensure all peaks are on scale over a 100 fold range, are acceptable as long as calibration limits are not exceeded.

13. CALIBRATIONS

13.1. The concentrations of analytes in the sample may be determined by calculating the amount of standard purged, from the peak response, using the calibration curve or the mean RF from the initial curve.

13.2. Since gasoline contains a large number of compounds that will produce well-resolved peaks in a GC/FID chromatogram, it contain many other components that are not chromatographically resolved. This unresolved complex mixture results in the "bump" in the chromatogram that is characteristic of these fuels. In addition, although the resolved peaks are important for the identification of the specific fuel type, the area of the unresolved complex mixture contributes a significant portion of the area of the total response

13.3. For the analysis of gas range organics, sum the area of all peaks eluting between 2-methylpentane and 1,2,4-trimethylbenzene. This area is used to calculate the GRO concentration. Column bleed subtraction is not generally required for gas range organics.

13.4. Use the following equation for calculation of aqueous samples:

$$C\mu g / L = \frac{Ax \times Cis}{Ais \times CF} \times DF$$

C = Concentration of the sample
Ax= Area response of the sample
Ais = Area response of the internal standard
DF = Dilution Factor
RF = mean response factor from the initial calibration

13.5. Use the following equation for calculation of non-aqueous samples:

$$C\mu g / kg = \frac{Ax \times Cis}{Ais \times CF} \times DF$$

C = Concentration of the sample
Ax= Area response of the sample
Ais = Area response of the internal standard
DF = Dilution Factor

14. QUALITY CONTROL

14.1. Initial demonstration of proficiency-whenever new staff is trained or significant changes in instrumentation are made, initial demonstration of proficiency has to be performed. This is accomplished by running four aliquots of the Quality Control Check Sample in the same manner that samples are run.

14.1.1. The QC Check Sample is prepared by making an intermediate standard (as mentioned in section 5.5.3.2.)

14.1.2. Add 40µL of 1000µg/ml standard in 40 ml vial with distilled water to achieve 1000µg/l for water. For soil, we add 5.0 µL of 1000 µg/ml standard and 5.0gr clean soil in 40 ml vial to achieve 1000 µg/kg standard.

14.1.3. Analyze the four samples in section 14.1.2. and compare the recoveries acceptance criteria listed in the method. If average recoveries are within the ranges cited in the table, the system is ready to use.

14.2. Sample Quality Control for Preparation and Analysis:

14.2.1. QC samples includes the analysis of a method blank, matrix spike, matrix spike duplicate and a Laboratory Control Sample (LCS) in each analytical batch and the addition of surrogates to each field sample and QC sample.

14.2.2. A Lab Control Sample (LCS) is included with each analytical batch. The LCS consists of an aliquot of a clean (Control) matrix similar to the sample matrix and of the same weight or volume. The LCS is spiked with the same analytes at the same concentrations as the matrix spike. When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

14.2.3. Surrogate recoveries. The surrogate recovery date from individual samples is evaluated versus the surrogate. Control limits developed by the laboratory. Percent recoveries are compared with the table in Appendix A.

Standard Operating Procedure for the Determination of Volatile Organic Compounds by EPA Method 8260B

for the
Volatiles Laboratory
of

American Environmental Testing Laboratory, Inc.
2834 North Naomi Street
Burbank, CA 91504

Tel: (818) 845-8200 Fax: (818) 845-8840

AETL Control # _____

Reviewed By:

C. Razmara 01/15/2015

_____ _____
Cyrus Razmara Ph.D. - Laboratory Director Date

Isabel Nazarian 01/15/2015

_____ _____
Isabel Nazarian Date

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I SCOPE AND APPLICATION

This method is used to determine purgeable organics using an autosampler, purge and trap concentrator, gas chromatograph with a capillary column, and a mass spectrometer detector. The method is applicable to the determination of purgeable organics in air and/or air sampling media, waters, soils, aqueous sludges, caustic liquors, acid liquors, waste solvents, oily wastes, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, sediments and hazardous wastes. Method 8260B can be used to quantify most volatile organic compounds that have boiling points below 200^0 C and that are insoluble or slightly soluble in water. These matrices are prepared for analysis, by utilizing a variety of extraction techniques, primarily EPA methods 5030B and 5035.

The Laboratory Supervisor and Chemist share responsibility for performance of this SOP. The experience of the analyst is crucial to the successful application of this method, and only experienced GC/MS analysts may use this method. The analyst must be able to interpret retention times, detector responses, and internal standard responses. Prior to data generation, the analyst must demonstrate analytical proficiency and system performance by successfully completing the initial demonstration of proficiency. This demonstration, which utilizes repeat quality control (QC) check sample analysis is described in Method 8000B in SW-846, Third Edition, Final Update III, December 1996, Section 8.4. Specific instructions for performing the initial demonstration of proficiency are detailed in Appendix 1.

Method Detection Limit (MDL) or Limit of Detection (LOD): Routinely analyzed compounds and laboratory-determined method detection limits are provided in Appendix 9. Detection limits are determined by conducting a method detection limit study as detailed in Appendix 4. The method detection limits have been generated using clean aqueous and solid matrices and are not achievable for many “real” sample matrices. The listed detection limit may vary based on the amount of sample used.

Practical Quantitation Limit (PQL) or Limit of Quantitation (LOQ): The practical quantitation limit (PQL) of this method is approximately 10 µg/kg (wet weight) for soil/sediments, and 5 µg/L for water (see Appendix 6). The PQL will vary based upon the same factors that affect detection limits (dilutions and sample size).

II SUMMARY OF METHOD

The sample is placed into a purge vessel, usually 5 milliliters (mL) of aqueous sample or 5 grams (g) of solid sample plus 5 mL of reagent water. An inert gas is bubbled through the sample in the purge vessel. The purgeable organics are

then transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. When purging is complete, the trap is heated and backflushed with the inert gas to desorb the purgeable organics onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables, which are then detected with a mass spectrometer. The separated organics are detected by the responses of the detector, identified by retention time and mas spectrum, and quantitations are calculated by integration of the peak area via a data system.

This method utilizes the internal standard method of quantitation. Specifically, four internal standards are assigned to various compounds based on relative retention time.

Confirmatory information and quantitation is based upon the mass spectra generated by each compound. The primary and secondary ions used for identification are listed in Appendix 6.

III SAMPLE COLLECTION, PRESERVATION, AND STORAGE

The maximum holding time from sampling to analysis is fourteen (14) days for preserved water samples and seven (7) days for non-preserved water samples. The maximum holding time for solid samples is fourteen (14) days from collection. Samples collected using EPA method 5035 have a holding time of 48 hours.

Aqueous samples should be preserved in the field with concentrated hydrochloric acid to a pH of less than 2. Aqueous samples that are suspected to contain residual chlorine should be preserved with sodium thiosulfate (10 mg per 40 mL vial). Both solid and aqueous samples should be temperature preserved to 4C°$\pm$2°C. All preservation measures should be noted on the chain of custody.

Samples must be collected in adequately cleaned jars and vials with PTFE-lined caps. The requested volumes are 200 grams of solid and two 40 mL vials of aqueous sample. Samples slated for duplicate or MS/MSD determinations must be provided to the lab in duplicate and triplicate amounts, respectively.

The laboratory will attempt to meet all holding time requirements, as dictated by this method and project-specific plans. Client requests for analysis after holding time expiration should be made in writing and the client made aware that data will be estimated. The lab will narrate any missed holding times to the client.

Samples received for purgeable organic analysis are stored in a sample refrigerator at 4°C+2°C until analysis. At the time of analysis, all samples and standards are warmed to room temperature.

IV INTERFERENCES

The samples analyzed by this method are waste waters, ground waters, soils, acid and base liquors, sludges, waste solvents, oily wastes, tars, fibrous wastes, filter cakes, spent catalysts and carbons, polymeric emulsions and sediments from various sources. They may contain some solid matter or chemicals that may interfere with the efficiency and or selectivity of the analytical system. Interference problems require use of professional judgment regarding necessary changes to sample size or sample preparation.

Major contaminant sources are volatile materials in the laboratory and impurities in the purging gas and in the sorbent trap. Use of *non*-polytetrafluoroethylene (PTFE or Teflon) thread sealants, plastic tubing, or flow controllers with rubber components should be avoided, since such materials out-gas organic compounds which will be concentrated in the trap during the purge operation. Analyses of reagent blanks provide information about the presence of contaminants. When potential interfering peaks are noted in the blanks, the analyst should change the purge gas source and filter.

Contamination may occur when a sample containing low concentrations of volatile organic compounds is analyzed immediately after a sample containing high concentrations of volatile organic compounds. A technique to prevent this problem is to rinse the purging apparatus and sample syringes with two portions of organic-free water between samples. A non-contaminated system is established by the analysis of a reagent blank free of target analytes.

For samples containing large amounts of water-soluble materials, suspended solids, high boiling compounds, or high concentrations of analytes, it may be necessary to wash the purging device with a soap solution, rinse it with analyte-free water, and then dry the purging device in an oven at 105°C. This is especially the case for 25 mL purging vessels where some analytes exhibit poor purging efficiencies. In extreme cases, the entire purge-and-trap system may need to be cleaned and rinsed. Analysis of reagent blanks after cleaning procedures should be run to ensure the proper performance of the instrument system.

Special precautions must be taken to analyze for methylene chloride. The analytical and sample storage areas should be isolated from all atmospheric sources of methylene chloride; otherwise, random background levels will result.

Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride and freons) through the septum seal of the sample container into the sample during shipment and storage. A trip blank prepared from organic-free water and carried through the sampling, handling, and storage procedures can serve as a check on contamination.

Some contamination (semi-volatile compound) may be eliminated by baking out the column between analyses. A post-run bake out temperature program may be necessary to ensure that semi-volatiles are volatilized. A portion of the column may need to be removed in the case of extreme contamination. Changing the injection liner will also reduce the potential of cross contamination from less volatile analytes.

V EQUIPMENT AND SUPPLIES

Analytical Balance: Used to accurately weigh solid samples for preparation (±0.1mg sensitivity).

Analytical column: J & W DB-VRX or equivalent; 60m x 0.25 mm ID x 1.4 um film thickness.

Gas Syringes: 5 mL gas-tight syringes for sample preparation

Microliter syringes: 10µL, 25µL, 50µL, 100µL, 250µL, 500µL, 1000µL, 5000µL, and 10000µL for standard and spike transfers and sample dilutions.

Sample Vials: 40 mL glass vials with screw tops and Teflon liners

Sample Spatulas, Stainless Steel: Used in the sample preparation of solid samples

Volumetric Flasks: 10 mL, 50 mL, 100 mL, Class A with ground glass stoppers

The analytical systems are as follows:

System 1	System 2	System 3
HP 5972 MSD	HP 5972 MSD	HP 5972 MSD
HP 5890 GC	HP 5890 II GC	HP 5890 II GC
OI 4560 Concentrator	Tekmar LSC 2000 Concentrator	OI 4560 Concentrator
EST Centurion Autosampler	EST Centurion Autosampler	ARCHON Autosampler
HP Chemstation Software	HP Chemstation Software	HP Chemstation Software

System 5	System 6
Aglient 5973 MSD	HP 5971 MSD
Aglient 6850 GC	HP 5890 II GC
OI Analytical Eclipse 4660 Concentrator	Encon Evolution Concentrator
ARCHON Autosampler	EST Centurion Autosampler
HP Chemstation Software	HP Chemstation Software

VI REAGENTS AND STANDARDS

Methanol: Methanol must be purge and trap grade and demonstrated to be free of contaminants by method blank analysis. The source and manufacturer may change from time to time; therefore, the brand and lot number must be documented in the sample preparation and standard preparation logs.

Reagent Water: Water free of organic contamination. Water is purchased from Sparkletts (Distilled Drinking Water-Sodium Free).

Trap Material: Supelco K trap (Vocarb 3000) or equivalent.

Calibration Standards: Purchased from a number of suppliers based on varying concentration and quantity needs. Primarily they are purchased from the following manufacturers:

Supelco, Inc.
Supelco Park
Bellefonte, PA 16823-0048

AccuStandard, Inc.
25 Science Park
New Haven, CT 06511

Quality Control Standards: Certified stock standards are purchased from the following manufacturers:

Supelco, Inc.
Supelco Park
Bellefonte, PA 16823-0048

AccuStandard, Inc.
25 Science Park
New Haven, CT 06511

All standards are stored in a standard refrigerator at -10°C $\pm$ 5°C.

Standard solutions are purchased containing the following compounds:

Acetone	Benzene
Bromobenzene	Bromochloromethane
Bromodichloromethane	Bromoform
Bromomethane	2-Butanone
n-Butylbenzene	sec-Butylbenzene
tert-Butylbenzene	Carbon disulfide
Carbon tetrachloride	Chlorobenzene
Chloroethane	2-Chloroethyl vinyl ether
Chloroform	Chloromethane
2-Chlorotoluene	4-Chlorotoluene
1,2-Dibromo-3-Chloropropane	Dibromochloromethane
1,2-Dibromoethane	Dibromomethane

1,2-Dichlorobenzene	1,3-Dichlorobenzene
1,4-Dichlorobenzene	Dichlorodifluoromethane
1,1-Dichloroethane	1,2-Dichloroethane
1,1-Dichloroethene	cis 1,2-Dichloroethene
trans 1,2-Dichloroethene	1,2-Dichloropropane
1,3-Dichloropropane	2,2-Dichloropropane
1,1-Dichloropropene	cis,1,3-Dichloropropene
trans1,3-Dichloropropene	Ethylbenzene
Hexachlorobutadiene	2-Hexanone
Isopropylbenzene	P-Isopropyltoluene
MTBE	4-Methyl-2-Pentanone
Methylene chloride	Naphthalene
n-Propylbenzene	Styrene
1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane
Tetrachloroethene	Toluene
1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene
1,1,1-Trichloroethane	1,1,2-Trichloroethane
Trichloroethene	Trichlorofluoromethane
1,2,3-Trichloropropane	1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene	Vinyl acetate
Vinyl chloride	o-Xylene
m,p-Xylenes	
1,1,2-Trichloro-1,2,2-trifluoroethane	
Ethyl alcohol (Ethanol)	
Ethyl-tert-butyl ether (ETBE)	
Diisopropyl ether (DIPE)	
tert-Amyl methyl ether (TAME)	
tert-Butyl alcohol (TBA)	

Internal Standard Stock Solutions are purchased containing the following compounds:

Pentafluorobenzene	1,4-Difluorobenzene
Chlorobenzene-d5	1,4-Dichlorobenzene-d4

Surrogate Standard Stock Solutions are purchased containing the following compounds:

4-Bromofluorobenzene	Dibromofluoromethane
Toluene-d8	1,2-Dichloroethane-d_4

Quality Control Standards: Purchased containing the same compounds as the calibration standards but obtained from a separate source. These standards are

used to prepare the laboratory control sample (LCS), matrix spike (MS), matrix spike duplicate (MSD) and Quality Control Standard (QCS).

All preparations are recorded by the Chemist in the Volatiles Standards Preparation Logbook, with documented standard sources and lot numbers. Appendix 2 provides instructions for preparing the tune check standard, the internal and surrogate standard mix, the calibration standards, and the laboratory control and matrix spike standard solutions. The primary and working standard solutions expire 3 months after receipt or preparation and should be replaced immediately if comparison with an independent source or any other nonconformance indicates a problem. See the Standards Preparation and Storage SOP for further details.

VII QUALITY CONTROL

A summary of the quality control samples, performance criteria, and calibration requirements are given in the following example of an analytical sequence for the testing of an analytical batch.

1. Summary

a) BFB Tuning Check Standard (see section VIII 3)
b) Initial Calibration Standard Curve (minimum of 5 points; see section VIII 4): 5, 10, 25, 50, 100, 200 ppb
or
Continuing Calibration Standard (see section VIII 5): 50 ppb
c) LRB or Method Blank
d) LFB or LCS
e) MS
f) MSD
g) Sample 1-12

2. BFB Tuning Check Standard

Each GC/MS system must be hardware-tuned to meet the criteria in Appendix 8 for a 50ng purging of 4-bromofluorobenzene. Analyses must not begin until these criteria are met. The mass spectrum must be taken in a straightforward manner. Use the guidelines as follows: Three scans (the apex and the scans immediately preceding and following the apex) are averaged. Background subtraction is required and must be accomplished using a single scan no more than 20 scans prior to the elution of BFB. Do not subtract part of the BFB peak. Use identical mass spectrometer settings to analyze all standards, blanks, QC samples, and samples within a 12 hour analysis shift defined as beginning with the injection time of a successful BFB analysis. Another 12-hour analysis shift will require an additional and successful BFB analysis.

3. Initial Calibration Standard (IC) and Continuing Calibration Check Standard (CCC)

The initial calibration is performed by generating a 5-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at a minimum of five levels*. Due to the various detection limits of the analytes, it is sometimes necessary to analyze more than five standards to achieve five levels for each analyte. Level 1 is at or below the limit of quantitation, and the high level standard is below the upper limit of the linear range of the system. Instructions for preparing the calibration standards are detailed in Appendix 2. Normally, the concentrations used for the seven data points used to achieve a five-point calibration are: 1, 5, 10, 25, 50, 100, and 200 ppb. See Section VIII 4.

For each analysis batch the calibration must initially be verified prior to analyzing any samples. As a general rule, the initial calibration must be verified at the beginning of each 12-hour shift during which samples are analyzed. The 12-hour analytical shift begins with the injection of the calibration check standard (or tuning standard in GC/MS methods). The shift ends after *completion* of the analysis of the last sample that can be *injected* within 12 hours of the beginning of the shift. The midpoint (or 50 µg/L and 50 µg/Kg) level standard used to prepare the linear calibration curve must be used. Percent difference or percent drift criteria for the CCC must be met before continuing the analysis batch and conducting any sample analyses. See Section VIII 5.

4. Laboratory Reagent Blank (LRB) or Method Blank (MB)

An LRB must be prepared and treated exactly as a typical field sample including exposure to all glassware, equipment, solvents, filtration and reagents that are used with field samples. Data produced are used to assess instrument performance of a blank sample and evaluate contamination from the laboratory environment. Values that exceed ½ the LOQ indicate a laboratory or reagent contamination is present. The source of the contamination must be determined prior to conducting any sample analysis.

5. Laboratory Fortified Blank (LFB) or Laboratory Control Sample (LCS)

Prepare a secondary dilution stock using a different stock solution used to prepare the calibration standards. This separate, secondary dilution stock is used as a concentrate to fortify the LCS and MS/MSD. A LCS is required to be analyzed with each analysis batch immediately following the LRB. By analyzing the LCS initially, a control check is performed on the concentrated solution used to prepare the MS/MSD. If any deviations in the VOC concentration(s) are present, it will be reflected in the LCS and not exclusively attributed to a matrix upon analysis of the MS/MSD. The percent recovery for VOCs must fall in the range of 75-125% prior to analyzing samples. If the LCS recovery for an analysis

batch does not meet these recovery criteria the data are considered invalid, and the source of the problem should be identified and resolved before continuing analyses.

If a large number of analytes are in the LCS, it becomes statistically likely that a few will be outside control limits. However, this may not indicate that the analytical system is out of control. See Section 3.6.3 of the QA/QC manual for more details on multi-analyte LCS samples.

All compounds are spiked; however only the following are reported:

Benzene
Toluene
Chlorobenzene
Trichloroethene
1,1-Dichloroethene

6. Laboratory Fortified Matrix (LFM) or Matrix Spike (MS)

The laboratory must add a known amount of the target analyte to one sample within each analytical batch (of >15 samples). Samples which require such pretreatment require a MS to be taken through all sample handling and preparation procedures in order to confirm any matrix effect and that the laboratory performed the pretreatment step appropriately.

It is recommended that the solutions used to fortify the MS be prepared from an independent stock than used to prepare the calibration standards.

The fortified concentration must be equal to or greater than the native sample concentration. Fortified samples that exceed the calibration range must be diluted to be within the linear calibration range. In the event that the fortified level is less than the observed native level of the unfortified matrix, the recovery should not be calculated. The sample should be fortified at a higher level and reanalyzed or a different sample should be chosen for the MS. For normal drinking waters, the MS typically should be prepared in the range of 50 µg/L. The MS should not be prepared at a concentration greater than ten times the highest concentration observed in any field sample and should be varied to reflect the range of concentrations expected in field samples. Ideally, the MS fortified spike concentration should be 3-5 times the native concentration.

Calculate the percent recovery for VOC, corrected for concentrations measured in the unfortified sample, by using the following equation:

$$\%REC = ((C_s\text{-}C)/s) \times 100$$

Where,

%REC = Percent Recovery
C_s = measured VOC in the fortified sample
C = measured native VOC sample concentration
s = concentration equivalent of analyte added to the sample

If the recovery for VOC falls outside 75-125% and the laboratory's performance for all other quality control performance criteria is acceptable, the accuracy problem encountered with the fortified sample is judged to be matrix related, not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure which may require corrective action.

If a large number of analytes are in the MS, it becomes statistically likely that a few will be outside control limits. However, this may not indicate that the analytical system is out of control. See Section 3.6.4 of the QA/QC manual for more details on multi-analyte MS samples.

All compounds are spiked; however only the following are reported:

Benzene
Toluene
Chlorobenzene
Trichloroethene
1,1-Dichloroethene

7. Duplicate LFM or Matrix Spike Duplicate (MSD)

This quality control sample must be analyzed with each analytical batch (fifteen samples). Calculate the relative percent difference (RPD) of the initial quantitated concentration (I_c) and duplicate quantitated concentration (D_c) using the following formula:

$$RPD = ((I_c-D_c)/([I_c+D_c]/2)) \times 100$$

If the RPD for the duplicate measurement of VOC falls outside ±15% and if all other quality control performance criteria are met, laboratory precision is out of control for the sample. The precision problem encountered with the fortified sample may judged to be matrix related, depending on the evaluation of other QC data, and not system related and should be noted as such by data qualifier or in the case narrative. Repeated failure indicates potential problems with the procedure that may require corrective action.

8. Quality Control Standard (QCS)

After calibration curves have initially been established or have been reestablished, or as required to meet data quality needs, verify both the calibration and acceptable instrument performance with the preparation and analyses of an external/second source QCS. If the determined concentration is not within ±30% of the stated value, performance of the calibration is unacceptable. The source of the problem must be corrected before continuing with sample analysis.

VIII PROCEDURE

1. Sample Preparation

Matrices are typically defined as soil, water and other. Due to differences in preparation of soils and waters, various matrices cannot be batched together. Solid samples must be analyzed using a heated purge, and they must be quantitated using a calibration curve generated using a heated purge. Aqueous samples are generally processed unheated and quantitated against an unheated calibration curve. It is permissible to apply a heated calibration curve to liquid samples, so long as the aqueous samples are heated as well.

Difficult matrices from a given client are best processed together to contain the contamination and QC problems.

Matrix-specific batches contain 15 samples or less. Each batch must include the following QC samples: Method blank, matrix spike, matrix spike duplicate, and laboratory control sample.

Routinely, the internal standards and surrogates are mixed into one solution, which is injected into every standard, blank, and sample. The internal standards and surrogates are evaluated based upon the known concentrations added and known sample matrix interferences. The internal standard and surrogate recoveries provide additional QC evaluation of field samples without the use of a matrix spike.

2. Instrument Startup

The gas chromatographic conditions are checked each day prior to use, in accordance with scheduled preventive maintenance measures, as defined in the laboratory preventative maintenance logbooks. These measures include checking and replacing septa, checking all gases, etc. A maintenance logbook assigned to each instrument.

The mass spectrometer is checked for air leaks weekly by the following procedure: The water (mass 18 peak), nitrogen (mass 28 peak), and oxygen (mass 32 peak) are examined and compared. If the water mass peak is greater than the oxygen and the nitrogen mass peaks, the system is airtight and ready for use. If the ratios of the oxygen and nitrogen peaks are greater than the water peak, an air leak is possible. The system must be further checked for air leaks and corrective action must be taken prior to proceeding.

All adjustments and troubleshooting processes must be documented in the maintenance logbook. Reference to manufacturer supplied solutions, i.e. operation manuals, maintenance manuals, etc. must also be documented in the maintenance logbook.

The typical operating conditions for the sample concentrator, gas chromatograph, and mass spectrometer are listed in Appendix 7.

The following procedure describes the instrument control procedures for the acquisition of data for BFB tuning standards, calibration standards, quality control samples, and field samples.

After standards, QC samples, and field samples have been prepared, load the instrument autosampler. All samples should be in 40 mL vials and should be placed in sequential order and grouped by analysis batch. The autosamplers have a greater sample capacity that can be analyzed in one 12-hour analytical shift; therefore, multiple tuning standards, calibration standards, and quality control samples need to be prepared if multiple batches of field samples are to be loaded within the autosampler. The autosampler capacity is approximately 50 vials.

Create an instrument sequence. Within the ChemStation application, bring up the Environmental window. Go to menu option Sequence and select Load Sequence. Choose a template or the previous sequence to load. Next, from the menu option Sequence, select Edit Sample Log Table and edit (sample) Type, Vial (number), Data File (ID), Method (GC/MS method), and Sample Name. Select OK when the sequence editing is complete. Return to menu option Sequence and select Save and then select Load and Run Sequence. Select OK to ready the instrument for autosampler prompt or ready signal.

Create an autosampler sequence.

ARCHON: Select Method on autosampler keypad. Enter an established instrument Method Number for either water or soil analysis and select Enter. (The – key will move the user “up” the menu or to the previous menu selection). Select Enter on autosampler keypad for the next menu option of Edit Method. Select Auto on the key pad to start the autosampler, but first edit the following

options as they appear (selected by the Enter key), and the appropriate value should be kept or changed according to requirements of the analytical batch:

Parameter	Soil Method	Water Method
Sample Type*	Soil	Water
First Vial	Beginning Vial Number	Ending Vial Number
Last Vial	Beginning Vial Number	Ending Vial Number
Sample Volume	05	05
Dilution Factor	-	NO
Rinse Volume	00	05
# Rinses	00	02
Standard 1 (Y/N)	YES**	YES**
Standard 2 (Y/N)	NO	NO
Pre Heat Stir (Y/N)	NO	-
Stir (Y/N)	NO	NO
Water Stir Time	-	0.0
Water Settle Time	-	0.0
Syringe Flushes	01	01
Preheat	YES	-
Preheat Temp	040	-
Preheat Time	01.0	-
Purge Time (m)	011.0	-
Desorb Time (m)	02.0	02.0
Operation Mode	Remote	Remote
Cycle Timer	00.0	00.0
Aux Timer	00.0	00.0
Link to Method	XX***	XX***

* Select by using keypad arrows

** Select NO for BFB tuning standard analyses

*** Number of method to be used after last vial of the current method has been analyzed. To be used where soil and water batches are both loaded within the autosampler and continuous analysis is desired.

PRECEPT II: Select the TEKLINK Precept Icon. Select menu option Instrument and select Edit Schedule. Edit the following options as they appear (selected by the Tab key), and the appropriate value should be kept or changed according to requirements of the analytical batch:

Parameter	Water/Soil
Start	Beginning Vial Number
Stop	Ending Vial Number

Dilution	1	
Blanks	None (Options: None/Every/End)	
#Blanks	1	
Samples per Vial	1	
Runs per Sample	1	
Matrix Spike	None	(BFB tuning standard)
	IS1	(Standards, QC samples, and field samples)
	IS1/IS2	(MS/MSD samples)

After editing the autosampler routine select Send. Next, select OK. To begin analyses select Step.

To generate reports for standards, QC samples, and field samples, use the following procedure. Within the ChemStation application, bring up the Data Analysis window. Go to the menu option File, and select Load Data File. (Select the desired sequence and also the data file ID corresponding to the sample of interest). Next, select the menu option Quant and select Qedit Quant Results. (The initial calibration option should be selected, if not, select such and generate a new quant report using the last step in this paragraph). Edit the quantitation of each compound. A cursor is selected for manual integrations. Select Qdel to remove a compound from the generated report (if qualitiative and quantitative criteria were not met). When finished editing the file select Qedit menu option and select Exit and Save Changes. Then, select menu option Quant and select Generate Report.

3. Tuning

A tune check must be analyzed and must meet all criteria before any calibration standards, QC samples and/or field samples are analyzed. These criteria must be demonstrated each 12-hour shift during which samples are analyzed. In detail, A 50 ng purge of the BFB tune check standard is required to assess hardware tuning, column performance, and injection port inertness. The mass abundance criteria found in 8 must be met as a requirement for acceptable mass spectrometer performance.

The chromatogram for the tune standard should be evaluated for possible degradation of the column or injection port problems. Column and injection port maintenance are performed as needed.

To generate a report for the BFB tuning standards, use the following procedure. Select File as the menu option from the Environmental window within the Chem Station application. Select Load Data File (select the desired sequence and also the data file ID corresponding to the sample of interest). Next, select the menu option Tuner and select Evaluate BFB.

At this point, the Autofind BFB to Screen option should be chosen to obtain a data system generated spectrum. The tabulated mass spectral data results, including the indication of criteria pass/fail will be listed on the data system monitor. If this spectrum passes all criteria select the Tuner option again, select Evaluate BFB, and select Autofind BFB to Printer. Check the hardcopy to verify that the tune passes all criteria and save the hardcopy in a folder (titled with the sequence name which is denoted by date) to begin collection and organization of all data associated with the specific tune.

If the Autofind option does not yield a spectrum that passes criteria, select the Tuner menu option and select Evaluate BFB option again. Select Evaluate BFB to Screen to prepare for manual determination of a BFB spectrum. Find the BFB peak by double-right clicking on the apex of the peak near the expected retention time of the tuning standard. Once the apex peak has been chosen, select a background spectrum, to the left of the peak, no more than approximately 20 scans away from the apex. Select the Tuner menu option and select Subtract.

At this point, the Evaluate BFB to Screen option should be chosen to obtain the manually generated spectrum. The tabulated mass spectral data results, including the indication of criteria pass/fail will be listed on the data system monitor. If this spectrum passes all criteria select the Tuner option again, select Evaluate BFB, and select Evaluate BFB to Printer. Check the hardcopy to verify that the tune passes all criteria and save the hardcopy in a folder (titled with the sequence name which is denoted by date) to begin collection and organization of all data associated with the specific tune. If this tune fails, additional apex and background spectrums may be attempted in finding a spectrum that meets all tuning criteria, with the condition that all spectrum selections and manipulations are done in a straightforward manner.

Initial Calibration

Prior to performing a 5-point calibration, a tune check must be run and pass the acceptance criteria. A water blank, prepared from the reagent water used for dilutions, is also run prior to the calibration standards to confirm the system is free of contamination. This blank is run as a sample.

The initial calibration is performed by generating a 5-point calibration curve for each analyte to be reported. *Every analyte to be reported must be run at five levels*. Due to the various detection limits of the analytes, it is sometimes necessary to analyze more than five standards to achieve five levels for each analyte. Level 1 is at or below the reporting limit, and the high level standard is below the upper limit of the linear range of the system. Instructions for preparing the calibration standards are detailed in Appendix 2. Normally, the concentrations used for the seven data points used to achieve a five point calibration are: 1 μg/l, 5 μg/l, 10 μg/l, 25 μg/L, 50 μg/L, 100 μg/L, and 200 μg/L

A second reagent blank is run after the 200 µg/L calibration standard to document how much, if any, carry-over occurs after that concentration.

An initial calibration quality control standard (QCS) is prepared as detailed in Appendix 2. This standard is prepared from a second source that is also used as the matrix spike and laboratory control sample spiking solution. The QCS standard is run after the 5-point initial calibration.

After generating the initial calibration curve, the response factors (RF) for each analyte is calculated. This procedure is performed by the instrument software using the following equation:

$$RF = \frac{Area_{Std} \times Conc_{InternalStd}}{Area_{InternalStd} \times Conc_{Std}} \equiv \frac{A_S C_{IS}}{A_{IS} C_S}$$

The System Performance Check Compounds (SPCC), listed below, must be assessed for attaining minimum average response factors. The SPCC compounds must have minimum mean response factors as follows:

SPCC	RF_{MIN}
Chloromethane	0.10
1,1,2,2 Tetrachloroethane	0.30
Chlorobenzene	0.30
Bromoform	0.10
1,1-Dichloroethane	0.10

Failure of any of these five SPCC compounds to meet minimum response factor criteria prohibits proceeding with sample analysis until the cause for poor response is determined. The following is a summary of the systematic problems indicated by each of the SPCC analytes:

Compound	System Performance
Chloromethane	Lost if flow is too high
1,1,2,2-Tetrachloroethane	Degrades if lines are contaminated
Chlorobenzene and Bromoform	Poor purge if flow is too slow; also affected by cold spots in transfer line or active sites in line or column
1,1-Dichloroethene	Will degrade if lines are contaminated

If the SPCC criteria are met, use the response factors to evaluate whether the RFs are constant over the calibration range. This is done by calculating the

percent Relative Standard Deviation (%RSD). The data system calculates the value by using the following equation:

$$RSD = \frac{\text{Standard Deviation of the RFs}}{\text{Average of the RFs}} \times 100$$

The RSD for the calibration check compounds (CCC) must be equal or less than 30%. These compounds are as follows:

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl Chloride

The CCCs are chosen for monitoring because they are representative of the list of compounds being tested. Their satisfactory performance assures the analyst that the system is operating properly. Often if the RSD criteria are exceeded, it indicates a possible leak in the system that requires attention. If the 30% RSD criteria are met for the CCC compounds, then all other analytes are evaluated against 15% RSD criteria as follows.

If the %RSD is less than 15% for all other calibrated compounds, the RF can be considered invariant and the average RF can be used for calculations.

Given the large number of analytes it is likely that some analytes may exceed the 15% acceptance limit for the RSD for a given calibration. If the RSD for any analyte is greater than 15%, the analyst should review the results (area counts, response factors and RSD) for those anaytes to ensure that the problem is not associated with just one of the five initial calibration standards. If the problem appears to be associated with a single standard that one standard may be reanalyzed and the RSD recalculated.

A second alternative is to narrow the calibration range be replacing one or more of the higher level calibration standards with a lower concentration standard.

A third option is to use the area ratios versus concentration using first order or higher regression fit of the five calibration points. The regression calculation will generate a correlation coefficient (*r*) that is a measure of the fit of the regression line to the data. A value of 1.0 indicates a perfect fit. In order to be used for quantitative purposes, *r* must be equal to 0.99.

If the RSD values are acceptable for all analytes, quantitate the QCS standard against the 5-point initial calibration. All target compound recoveries must be within 70%-130% of the expected value. If any target compounds do not meet the criteria, reanalyze the standard.

To evaluate initial calibration curves with the data system, first acquire and generate reports for all six initial calibration runs. Select the File menu option and select Load Data File (choose a file corresponding to one of the IC standards). Next, select the InitCal menu option and select Update Levels. Select the appropriate concentration level within the window (1, 5, 10, 25, 50, 100, 200) and then select Do Update. Repeat this procedure for all the initial calibration standards.

4. Continuing Calibration

The initial calibration curve of each target compound is checked and verified every 12 hours of analysis time. This is done by analyzing a 50 µg/L Continuing Calibration Check standard. The CCC standard is checked for minimum SPCC RFs, CCC percent difference, internal standard response, and retention time shifts. The CCC must meet the following criteria in order to proceed with sample analysis:

The System Performance Check Compounds must be assessed for attaining the minimum average relative response factors. Each SPCC compound in the calibration verification standard must meet its minimum response factor (see Section VIII 4). This is the same check that is applied during the initial calibration.

The response factor is calculated for each compound. These response factors are then compared to the average response factor of the initial calibration and the percent difference is calculated. The percent difference for the Calibration Check Compounds must be equal to or less than 20%.

CCC analytes that have a linear regression calibration are checked for %Drift by the following equation:

$$\%Drift = \frac{\left[C_{True} - C_{Measured}\right]}{C_{True}} \times 100$$

As stated above, the % Drift should be equal to or less than 15%.

Where,

C_{True} = Prepared Concentration of Calibration Standard
$C_{Measured}$ = Reported Concentration of Calibration Standard

To evaluate continuing calibration standards with the data system, first acquire and generate reports for the calibration run. Select the File menu option and select Load Data File (choose the file corresponding to the CCC standard). Next, select the ConCal menu option and select Evaluate Data File as Continuing Calibration to Screen. Evaluate CCC and SPCC criteria as stated above and verify the CCC and SPCC analyte status as to the number of compounds failed at the bottom of the tabulated report. If the CCC passes all criteria, select the ConCal menu option and select Evaluate Data File as Continuing Calibration to Printer. Check the hardcopy to verify that the CCC passes all criteria and save the hardcopy in a folder (titled with the sequence name which is denoted by date) to continue collection and organization of all data associated with the specific calibration standard.

5. Method Blank Analysis

Analyse and check the method blank for contamination. It is common to have environmental contamination such as methylene chloride and acetone. When contamination of this type is found, the results are documented so that a history of routine levels can be established. Presence of these common laboratory contaminants must be narrated to the client. If analytes other than common laboratory contaminants are detected, the source must be located. Analysis cannot continue until the criteria for a contaminant-free blank is met. The analysis of samples cannot be “blank corrected”.

6. Sample Evaluation

Evaluate the following for quality control performance and sample analyte qualitative and quantitative identification.

A) Quality Control Procedures

The peak area response for each internal standard must be 50% to 200% of the mid-point standard level response of the most recent initial calibration. If the response for any internal standard changes by more than the above factor from that in the mid-point standard level of the most recent initial calibration sequence, then the chromatographic system must be inspected for malfunctions and corrections must be made, as required.

If the retention time for any internal standard changes by more than 30 seconds from that in the mid-point standard level of the most recent initial calibration sequence, then the chromatographic system must be inspected for malfunctions and corrections must be made, as required.

The surrogate recoveries for all analyses will be evaluated against 75%-125% recovery.

B) Qualitative Analysis

The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other.

The relative retention times (RRT) of the individual components must not vary by more than ±0.06 RRT units. If this drift occurs, the cause for RRT shift must be corrected. In cases where reanalysis is not possible, the analyst must make a professional judgment regarding the effect of the shift on data validity

The mass spectral data must be examined when identifying the compounds. The relative abundance of the secondary ions in the mass spectrum of a sample should agree within 30% compared to the abundance of the ions in the calibration standard.

The system provides a report that allows the analyst to examine the relative fit and purity of each identified compound to the mass spectral library. If the spectral fit or purity is less than 50% the analyst will examine the mass spectra and determine if the compound identification is accurate.

Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times. Sufficient GC resolution is achieved if the height of the valley between two isomer peaks is less than 25% of the sum of the two peak heights. Otherwise structural isomers are identified as isometric pairs.

Identification is hampered when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When GC peaks obviously represent more than one sample component, appropriate selection of analyte spectra and background spectra is important.

For sample containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the specific client's project plan. Use the following guidelines for making tentative identifications:

1) Relative intensities of major ions in the reference spectrum (ions greater than 10% of the base peak) should be present in the sample spectrum.

2) The relative intensities of the major ions should agree within ±20%.

3) Molecular ions present in the reference spectrum should be present in the sample spectrum.

4) Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds.

5) Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks.

C) Quantiative analysis

Once a compound has been identified, the quantitation of that compound will be based on the integrated abundance from the primary characteristic ion. The internal standard used shall be the one nearest the retention time of that of a given analyte.

If the RSD of a compound's response factor is 15% or less, then the concentration in the sample may be determined using the average response factor from the initial calibration data; otherwise, the concentration is calculated by equations for linear or non-linear calibrations.

Where applicable, the concentration of any non-target analyte identified in the sample should be estimated. The same formulae should be used with the following modifications: The areas A_x and A_{is} should be from the total ion chromatograms, and the response factor should be assumed to be 1 (see Section VIII 7). The resulting concentration should be reported indicating: (1) that the value is an estimate, and (2) which internal standard was used to determine concentration. Use the nearest internal standard free of interferences.

7. Reporting of Results

The following is a summary of the calculations used by the data system to generate the reported data:

Percent Recovery (P) is calculated by the following equation:

$$P = \frac{C_x - C_u}{T} \times 100$$

Where

C_x = The concentration of the analyte spike, surrogate, or internal standard from the analysis.
C_u = The concentration in the unspiked sample. C_u= 0 for surrogates and internal standards.
T = The true value of the spike, surrogate, and internal standard added.

Sample Concentration is calculated by the following equation(s):

Internal standard calibration – linear calibration

Aqueous samples

$$C(ppb) = A_\chi \times C_{is} \times V_i \times D/RF_{avg} \times A_{is} \times V_s \times 1000$$

Where,

C(ppb) = The concentration of analyte in the sample.
A_χ= Area of the peak of the analyte being measured
A_{is} = Area of the internal standard peak or quantitation ion
RF_{avg}= The response factor of the analyte being measured.
D = Dilution factor
C_{is} = Concentration of the internal standard in the concentrated extract or volume purged in µg/L.
V_i = Volume of the extract injected (µL). The injection volume for samples and calibration standards must be the same. For purge-and-trap analysis, V_i is not applicable and therefore is set at 1. If concentration units are used in calculating the calibration factor, then V_i is not used in this equation.
V_s = Volume of the aqueous sample extracted or purged in mL.

Nonaqueous samples

$$C(ppb) = A_\chi \times C_{is} \times V_i \times D/RF_{avg} \times A_{is} \times W_s \times 1000$$

Where,

C(ppb) = The concentration of analyte in the sample.
A_χ= Area of the peak of the analyte being measured
A_{is} = Area of the internal standard peak or quantitation ion
RF_{avg}= The response factor of the analyte being measured.
D = Dilution factor
C_{is} = Concentration of the internal standard in the concentrated extract or volume purged in µg/L.
V_i = Volume of the extract injected (µL). The injection volume for samples and calibration standards must be the same. For purge-

and-trap analysis, V_i is not applicable and therefore is set at 1. If concentration units are used in calculating the calibration factor, then V_i is not used in this equation.
W_s = Weight of the sample extracted or purged in g.

Calculations for a non-linear calibration curve.

In instances where a non-linear relationship between analyte concentration and response is present over the working range, or when similar calibration approaches have not met the acceptance criteria, the instrument data system should be employed to calculate analyte concentrations via second or third order calibration curves. In order to be an acceptable calibration, the coefficient of the determination must be greater than or equal to 0.99.

Standard Deviation is calculated by the following equation:

$$SD = \sqrt{\frac{\sum_{N}\left(X_i - X_{Avg}\right)^2}{N-1}}$$

Where

X_i = analyte values
X_{Avg} = Analytes average value
N = Number of points

Relative Percent Difference is calculated by the following equation:

$$\%RPD = \left| \frac{\left[Conc_{MS} - Conc_{MSD}\right]}{\left[\frac{Conc_{MS} + Conc_{MSD}}{2}\right]} \right| \times 100$$

Where,

RPD = Relative Percent Difference
$Conc_{MS}$ = Matrix Spike Concentration
$Conc_{MSD}$ = Matrix Spike Duplicate Concentration

8. ARCHON Autosamplers

The ARCHON can be used for soil or water samples. For water samples, the 40 mL vials are placed in the autosampler, which automatically withdraws 5 mL of

sample, adds the Internal Standard and Surrogate Mix, and transfers the sample to the front panel purge vessel on the concentrator.

Water samples may also be run on without using the ARCHON autosampler. The samples may be directly injected into the front panel purge vessel on the concentrator. In this case the Internal Standard and Surrogate Mix are added manually. After the bake cycle is complete the sample is withdrawn and the purge vessel rinsed three times with reagent water.

Soil samples are weighed into a 40 mL vial and placed in the ARCHON autosampler. The autosampler adds 5 mL of reagent water plus the Internal Standard and Surrogate Mix. The soil sample is then heated to 40°C and purged directly in the vial.

Soil samples for method 5035 are first weighed for final weight and then directly placed in ARCHON autosampler. The autosampler adds 5 mL of reagent water plus the Internal Standard and Surrogate Mix. The soil sample is then heated to 40°C and purged directly from the vial.

IX CORRECTIVE ACTION

See Appendix 5 for specific information regarding quality system nonconformances and associated corrective actions.

Corrective measures for chromatographic system maintenance may involve one or more of the following remedial actions. This list is by no means comprehensive and analysts should develop expertise in troubleshooting their specific instruments and analytical procedures. The manufacturers of chromatographic instruments, detectors, columns, and assessories generally provide detailed information regarding the proper operation and limiting factors associated with their products. The reading and reviewing of this information is essential to routine maintenance and repair.

Capillary GC columns

Routine maintenance may compel the analyst to clean and deactivate the glass injection port insert or replace it with a fresh insert that has been cleaned and deactivated with dichlorodimethylsilane. Cut off 0.5 – 1.0 m of the injector end of the column using a 90° cut. Place ferrule onto the column before cutting.

Additional maintenance may compel the analyst to replace gas traps and backflush the column with solvent according to the manufacturer's instructions. If these procedures fail to eliminate the degradation problem, it may be necessary to deactivate the metal injector body and/or replace the column.

Metal (GC) injector body

Turn off the oven and remove the analytical column when the oven has cooled. Remove the glass injection port insert. Lower the injection port temperature to room temperature. Inspect the injection port and remove any noticeable foreign material.

Place a beaker beneath the injection port inside the GC oven. Using a wash bottle, serially rinse the entire inside of the port with acetone and then toluene, catching the rinsate in the beaker.

Prepare a solution of deactivating agent (dichlorodimethylsilane) following manufacturer's directions. After all metal surfaces inside the injector body have been thoroughly coated with the deactivation solution; serially rinse the injector body with toluene, methanol, acetone, and hexane. Reassemble the injector and replace the GC column.

X METHOD PERFORMANCE

Appendix 9 gives the results for the Initial Demonstration of Capability plus LOD (MDL) and LOQ (PQL) data.

XI WASTE DISPOSAL AND WASTE PREVENTION

Whenever feasible, laboratory personnel should use pollution prevention techniques to address waste generation. Wastes should be reduced or minimized at the point of generation which includes the use of any reagent, standard, or eluent.

Wastes must be disposed of in accordance with all applicable rules and regulations. Wastes shall be disposed of in the following manner:

Water samples: Water waste
Soil samples: Vial waste
Methanol extract samples: Vial waste
Methanol: Solvent waste
VOA Standard Solutions: Solvent waste
ARCHON rinsate waste: Water waste

XII SAFETY

The toxicity or carcinogenicity of each reagent used in this method has not fully been established. Each chemical should be regarded as a potential health hazard and exposure should be as low as reasonably achievable. Cautions are specifically listed on the corresponding MSDS sheet.

The following chemicals have the potential to be highly toxic or hazardous:

Methanol: Toxic and highly flammable. Toxic by inhalation, ingestion or skin absorption. May be a reproductive hazard. Ingestion may be fatal. Risk of very serious, irreversible damage if swallowed. Exposure may cause eye, kidney, heart and liver damage. Chronic or substantial acute exposure may cause serious eye damage, including blindness. Irritant. Narcotic. Use safety glasses and effective ventilation.

GLOSSARY

The following terms are defined for use in this document:

ACCURACY: The closeness of agreement between an observed value and an accepted reference value. When applied to a set of observed values, accuracy will be a combination of a random component and of a common systematic error (or bias) component.

BATCH: A group of samples which are similar with respect to the sampling or the testing procedures being employed and which are processed as a unit. For QC purposes, each group of 15 samples or less will all be handled as a separate batch.

BIAS: The deviation due to matrix effects of the measured value from a known spiked amount. Bias can be assessed by comparing a measured value to an accepted reference value in a sample of known concentration or by determining the recovery of a known amount of contaminant spiked into a sample (matrix spike). Thus, the bias (B) due to matrix effects based on a matrix spike is calculated as:
B = (Xs – Xu) – K
Where:
X_s = measured value for spiked sample,
X_u = measured value for unspiked sample, and
K = known value of the spike in the sample.

Using the following equation yields the percent recovery (%R).

$$\%R = 100 (X_S – X_U) / K$$

BLANK: see Equipment Rinsate, Method Blank, Trip Blank.

CONTROL SAMPLE: A QC sample introduced into a process to monitor the performance of the system.

DUPLICATE: see Matrix Duplicate, Field Duplicate, Matrix Spike Duplicate.

EQUIPMENT BLANK: see Equipment Rinsate.

EQUIPMENT RINSATE: A sample of analyte-free media which has been used to rinse the sampling equipment. It is collected after completion of decontamination and prior to sampling. This

blank is useful in documenting adequate decontamination of sampling equipment.

PRACTICAL QUANTITATION LIMIT: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL or Limit of Quantitation (LOQ) is generally 2 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting.

FIELD DUPLICATES: Independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

LABORATORY CONTROL SAMPLE: A known matrix spiked with compound(s) representing the target analytes. This is used to document laboratory performance.

MATRIX: The component or substrate (e.g., surface water, drinking water) which contains the analyte of interest.

MATRIX DUPLICATE: An intralaboratory split sample which is used to document the precision of a method in a given sample matrix.

MATRIX SPIKE: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

MATRIX SPIKE DUPLICATE: Intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.

METHOD BLANK: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting form the analytical process.

For a method blank to be acceptable for use with the accompanying samples, the concentration in the blank of any analyte of concern should not be higher than the highest of either:

(1) ½ the LOQ, or
(2) Five percent of the regulatory limit for that analyte, or
(3) Five percent of the measured concentration in the sample.

METHOD DETECTION LIMIT (MDL): The minimum concentration of a substance that is measureable and reportable with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte. Also, Limit of Detection (LOD).

PRECISION: The agreement among a set of replicate measurements without assumption of knowledge of the true value. Precision is estimated by means of duplicate/replicate analyses. These samples should contain concentrations of analyte above the MDL, and may involve the use of matrix spikes. The most commonly used estimates of precision are the Relative Standard Deviation (RSD) or the Relative Percent Difference (RPD)

$RSD = (s/x_i) \times 100$

Where:
x_i = the arithmetic mean of the x_I measurements
S = standard deviation

$RPD = 100 \times [(x_1 – x_2)/ \{(x_1 + x_2)/2\}]$

Where:
x_1 = First replicate result
x_2 = Second replicate result

REAGENT BLANK: See Method Blank

REAGENT GRADE: Analytical reagent (AR) grade, ACS reagent grade, and reagent grade are synonymous terms for reagents, which conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

REAGENT WATER: Water that has been generated by any method which would achieve the performance specifications for ASTM Type I

water. For organic analyses, see the definition of organic-free reagent water.

REFERENCE MATERIAL: A material containing known quantities of target analytes in solution or in a homogeneous matrix. It is used to document the bias of the analytical process.

SPLIT SAMPLES: Aliquots of sample taken from the same container and analyzed independently. In cases where aliquots of samples are impossible to obtain, field duplicate samples should be taken for the matrix duplicate analysis. These are usually taken after mixing or compositing and are used to document intra - or inter laboratory precision.

STANDARD CURVE: A plot of concentrations of known analyte standards versus the instrument response to the analyte. Calibration standards are prepared by successively diluting a standard solution to produce working standards, which cover the working range of the instrument. Standards should be prepared at the frequency specified in the appropriate section. The calibration standards should be prepared using the same type of acid or solvent and at the same concentration as will result in the samples following sample preparation. This is applicable to organic and inorganic chemical analyses.

SURROGATE: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples.

TRIP BLANK: A sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organic samples.

REFERENCES

SW-846 Method 8260B, Revision 2, December 1996
Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry

SW-846 Method 8000C, Revision 3, March 2003
Determinative Chromatographic Separations

SW-846 Method 5030B, Revision 2, December 1996
Purge and Trap for Aqueous Samples

SW-846 Method 5035, Revision 0, December 1996
Closed System Purge and Trap and Extraction for Volatile Organics in Soil and Waste Samples

HP 5890 II Gas Chromatograph Operator's Manual

HP 5973 Mass Selective Detector Operator's Manual

HP 5972 Mass Selective Detector Operator's Manual

HP 5971 Mass Selective Detector Operator's Manual

Tekmar LSC 2000 Purge & Trap Operator's Manual

OI 4560 Purge & Trap Operator's Manual

ARCHON Autosampler System Operator's Manual

EST Centurion Autosampler Manual

ENCON Evolution Concentrator Manual

Appendix 1
Initial Demonstration of Capability

The initial demonstration of capability is performed to demonstrate that the system and the analyst can successfully perform the test method. This is accomplished by running four aliquots of the Quality Control Check Sample as described below.

1. Prepare a QC standard in methanol at a concentration of 25 µg/mL. The QC standard must be made from a separate source than the calibration standards.

2. Add 10 µL of the QC standard to 5 mL of organic-free reagent water in a 5 mL gas-tight syringe. Add 10 µL of the internal standard and surrogate mix. Inject the into the purge & trap vessel through the valve on the system. Repeat three more times until a total of four QC check samples are analyzed.

3. For the soil matrix, weigh 5 grams of organic-free sand into a purge vessel. Repeat step 2 except add the 5 mL of the QC check sample to the purge vessel containing the sand. Repeat three more times until a total of four QC check samples are analyzed.

4. Calculate the average recovery in µg/L, and the standard deviation of the recovery for each analyte. If average recoveries of analytes fall within the acceptance limits of 70%-130%, and the percent relative standard deviation is less than 20%, the system is ready to use and analysis may begin. If the average recovery for any analyte falls outside the range, corrective action must be taken and the analysis repeated for the failed analytes. All corrective action must be noted in the Maintenance Logbook.

5. Once an analyst and instrument have passed the recovery criteria for all analytes to be reported by the method, the analyst and instrument are certified as having established initial proficiency with the method.

Appendix 2
Sample Preparation

Aqueous samples

Aqueous samples are prepared by withdrawing five milliliters of sample from the sample container using a gas-tight syringe. The Internal standard and surrogate mix is added to the sample. The sample is then placed on the autosampler. All samples must be analyzed such that all target analytes are within the calibration range. The analyst must dilute samples as necessary to achieve this. Water samples are diluted by withdrawing an aliquot using a gas-tight syringe and injecting this aliquot into a volume of reagent water that will bring the total volume to five milliliters.

Solid samples

A solid, sludge, or any other type of sample that can not be injected like a liquid, must be weighed. The top portion of the sample is discarded and a representative sample is withdrawn from the container. Using a certified balance, exactly weigh 5 ± 0.2 grams of sample into the purge vessel. The purge vessel is immediately placed on the autosampler, which minimizes loss of analytes and the possibility of contamination.

A 5 mL gas-tight syringe is filled with reagent water and spiked with 10 µL the internal standard and surrogate mix. The contents are then injected into the purge vial and then placed on the autosampler.

Soil samples may be run at low level by reducing the sample weight. The minimum weight is 1.0 grams. Further dilution may be performed by methanol extraction as required.

Record all information on the Sample Preparation Logsheet.

Solids requiring extraction (medium or high level analysis)

The appropriate amount (1-10 g) of solid material is weighed into a 40-mL VOA vial. Ten (10) mL of methanol are added. The extract is shaken and allowed to settle. The extract may be centrifuged if necessary. A minimum of 5 µL and a maximum of 100 µL of extract may be used. The desired amount of methanol extract is injected into a gas-tight syringe containing 5 mL of reagent water spiked with the internal standard and surrogate mix. The contents are injected into the purge vessel through the 3-port valve or the autosampler is used. If 5 µL of extract diluted to 5 mL is over calibration range of the instrument, a secondary dilution of the methanol extract may be prepared in methanol until a concentration within the calibration range of the instrument is reached.

Record all information on the Sample Preparation Logsheet.

Appendix 3
Standard Preparation

All standard preparations are documented in the Volatiles Standards Preparation Logbook. Each entry must include the standard source or manufacturer, the standard lot number, the initial concentration, the final concentration, the solvent used, the date, and the analyst's initials. The expiration date and standard identification number are also recorded in the logbook and on the storage vial. The expiration date for stock and intermediate solutions is three months, although more frequent preparation may be required.

The Tune Check, the Internal and Surrogate Standard Mix, the Calibration Standards, and the Laboratory Control and Matrix Spike solution are prepared as follows:

1. The Tune Check Stock Standard is prepared by diluting 1 mL of a 2000 µg/mL 4-Bromofluorobenze standard to 10 mL with methanol. The final concentration is 200 µg/mL .

2. The Tune Check Working Standard is prepared by diluting 1.25 mL of the Tune Check Stock Standard to 10 ml with methanol. The final concentration is 25 µg/mL.

3. The Internal Standard and Surrogate Mix is prepared from a 2000 µg/mL 8260 Internal Standard Mix and a 2000 µg/mL 8240/60 Surrogate Standard Mix. One hundred twenty five (125) µL of each standard is diluted to 10 mL with methanol. The final concentration is 25 µg/mL. Ten (10) µL of this solution is added to all standards, samples, blanks, and QC check samples to give a final concentration of 50 µg/L.

4. The Calibration Standard is used for the initial 5-point calibration curve and the continuing calibration verification. The standard is prepared from nine separate stock standards that contain all the target compounds (listed in Appendix 6) at 2000 µg/mL in methanol. One hundred twenty five (125) µL of each standard is added to a 10 mL volumetric flask, and diluted to 10 mL with methanol. The final concentration is 25 µg/mL.

5. This standard is then used to prepare the various concentrations for the calibration curve. The amounts indicated in Table 1 below are injected into 5 mL of reagent water in a gas-tight syringe. Each level is also spiked with 10 µL of the Internal and Surrogate Standard Mix.

Table 1

Levels	Amt of 25ppm Calibration Standard	Final Conc
Level 1	0.2 µL	1 µg/L
Level 2	1.0 µL	5 µg/L
Level 3	2.0 µL	10 µg/L
Level 4	5.0 µL	25 µg/L
Level 5	10 µL	50 µg/L
Level 6	20 µL	100 µg/L
Level 7	40 µL	200 µg/L

6. The Laboratory Control Sample and Matrix Spike solution is prepared from a separate source than the Calibration Standard. It is used to prepare the Laboratory Control Sample and the Matrix Spikes. This standard is also used to perform the initial demonstration of proficiency and the initial calibration verification via Quality Control Sample analysis. The standard is prepared from five separate stock standards that contain all the target compounds (listed in Appendix 6) at 2000 µg/mL in methanol. One hundred twenty five (125) µL of each standard are diluted to 10 mL with methanol. The final concentration is 25 µg/mL.

Appendix 4
Method Detection Limit (MDL) Study

The method detection limit (MDL) or limit of detection (LOD) is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix.

AETL's limit of detection procedure follows the EPA MDL procedure as described in 40 CFR part 136 Appendix B – Revision 1.11. See the SOP for Determination of LOD and LOQ for specific information regarding the procedures used in the calculation of this value. The LOD study shall incorporate all sample preparation procedures and shall be completed by analyte and matrix. LOD studies shall be conducted each time there is a significant change in the method, for the addition of new analytes, or if there is a significant change in the instrument type.

In brief, detection limit studies are performed using reagent water for aqueous matrices and clean sand for soil and solid matrices. Seven replicate standards are prepared using the calibration standard spiked at a level that is between 3 to 5 times the estimated MDL. The laboratory standard fortified blanks are analyzed and the mean recovery and standard deviation (SDEV) is calculated for each analyte. The MDL is then calculated as follows:

$$MDL = (3.143) \times SDEV$$

The Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), must be equal to or greater than the LOD and MDL

Appendix 5
Corrective Action

The following table lists the criteria and corrective action for the QC samples. These limits are evaluated at least yearly and may be adjusted to reflect updated laboratory-established limits.

QC Sample	Frequency	Acceptance Criteria		Corrective Action
Method blank	One per matrix per batch	Less than ½ LOQ		1) Evaluate magnitude of sample results against the concentration of the method blank; if sample results exceed 3x the blank level, narrate to the client 2) Otherwise, re-prep and reanalyze batch if sample detections are within 3x window 3) Common laboratory contaminants are subject to a 10x window (acetone and methylene chloride)
System blanks	As needed	Less than ½ LOQ		1) This is a corrective action when a contaminated system is identified
Matrix Spike /Matrix Spike Duplicate	One per matrix per batch	Water 75%-125%	Soil 75%-125%	1) Evaluate results against the LCS 2) If the LCS was compliant; narrate failed MS to client 3) If the LCS was non-compliant, re-prep and reanalyze batch including spikes
RPD Limits	One per batch	RPD <15% for water, < 25% for soil		1) Check calculations 2) Narrate failed RPD to client
Surrogates	Every sample, method blank and standard	Water 75%-125%	Soil 75%-125%	1) Check calculations 2) Check LCS; if LCS recoveries within limits, narrate outlying surrogate(s) to client
Internal standards	Every sample, method blank and standard	Within 30 second RT window and response window of 50% to 200% of initial calibration internal standard (midpoint).		1) Evaluate system 2) Reanalyze sample 3) Report both analyses to the client
Laboratory Control Sample	One per matrix per batch	%Recovery within 75%-125% for 80% of compounds		1) Reanalyze LCS 2) If still non-compliant, reprep batch and reanalyze

Appendix 6

Compound	RT Minutes	RPD Limits Water, Soil	Water %R Limits	Soil %R Limits	Quant Ion	Secondary Ions	Water LOQ µg/L	Soil LOQ µg/Kg
Dichlorodifluoromethane	5.00				85	87	5	10
Chloromethane	5.32				50	52	5	30
Vinyl chloride	5.68				62	64	5	30
Bromomethane	6.46				94	96	5	30
Chloroethane	6.77				64	66	5	30
Trichlorofluoromethane	7.95				101	103	5	30
1,1-Dichloroethene	9.06	15	75-125	75-125	96	61, 63	5	10
Freon 113	9.62				151	101	5	10
Acetone	8.13				58	43	5	50
Carbon disulfide	9.89				76	78	5	10
Methylene chloride	9.38				84	49,86	5	10
trans-1,2-Dichloroethene	10.80				96	61, 98	5	10
Methyl–tert-butyl-ether	11.04	15	75-125	75-125	73	57	5	10
1,1-Dichloroethane	11.30				63	65, 83	5	10
Vinyl acetate	11.62				43	86	5	50
2,2-Dichloropropane	12.99				77	97	5	10
cis-1,2-Dichloroethene	12.43				96	61, 98	5	10
2-Butanone	12.17				72	43	5	50
Bromochloromethane	12.75				128	49, 130	5	10
Chloroform	12.85	15	75-125	75-125	83	85	5	10
1,1,1-Trichloroethane	14.24	15	75-125	75-125	97	99, 61	5	10
Carbon Tetrachloride	14.90				117	119	5	10
1,1-Dichloropropene	14.58				75	110, 77	5	10
Benzene	14.97	15	75-125	75-125	78	77,50	5	10
1,2-Dichloroethane	14.06				62	98	5	10
Trichloroethene	16.09	15	75-125	75-125	95	97, 130,132	5	10
1,2-Dichloropropane	16.02				63	112	5	10
Dibromomethane	15.96				93	95, 174	5	10
Bromodichloromethane	16.18				83	85, 127	5	10
2-Chloroethyl vinyl ether	16.89				63	65,106	5	50
cis-1,3-Dichloropropene	17.26				75	77, 39	5	10
4-Methyl–2-pentanone	17.44				43	100,58,85	5	50
Toluene	18.52	15	75-125	75-125	91	92	5	10
trans-1,3-Dichloropropene	17.97				75	77, 39	5	10
1,1,2-Trichloroethane	18.22				83	97, 85	5	10
Tetrachloroethene	19.67				164	166,129,131	5	10
1,3-Dichloropropane	18.60				76	78	5	10
2-Hexanone	18.84				43	58,57,100	5	50
Dibromochloromethane	19.04				129	127,131	5	10
1,2-Dibromoethane	19.43				107	109, 188	5	10
Chlorobenzene	20.72	15	75-125	75-125	112	77, 114	5	10
1,1,1,2-Tetrachloroethane	20.60				131	133	5	10
Ethylbenzene	21.01	15	75-125	75-125	91	106	5	10
m,p-Xylene	21.30	15	75-125	75-125	106	91	5	20
o-Xylene	21.95	15	75-125	75-125	106	91	5	10
Styrene	21.84				104	103,78,51	5	10

Appendix 6, continued

Compound	RT Minutes	RPD Limits Water, Soil	Water %R Limits	Soil %R Limits	Quant Ion	Secondary Ions	Water LOQ µg/L	Soil LOQ µg/Kg
Bromoform	21.54				173	171,175	5	50
Isopropylbenzene	22.53				105	120	5	10
Bromobenzene	22.99				156	77, 158	5	10
1,1,2,2-Tetrachloroethane	21.96				83	131,85,168	5	10
1,2,3-Trichloropropane	22.19				75	77	5	10
n-Propylbenzene	23.25				91	120	5	10
2-Chlorotoluene	23.43				91	126	5	10
4-Chlorotoluene	23.56				91	126	5	10
1,3,5-Trimethylbenzene	23.70				105	120	5	10
tert-Butylbenzene	24.20				119	91,134	5	10
1,2,4-Trimethylbenzene	24.37				105	120	5	10
sec-Butylbenzene	24.57				105	134	5	10
1,3-Dichlorobenzene	24.75				146	148,111	5	10
p-Isopropyltoluene	24.86				119	134, 91	5	10
1,4-Dichlorobenzene	24.86				146	148,111	5	10
1,2-Dichlorobenzene	25.50				146	148,111	5	10
n-Butylbenzene	25.59				91	92,134	5	10
1,2-Dibromo-3-chloropropane	26.35				75	155,157	5	50
1,2,4-Trichlorobenzene	29.03				180	182,145	5	10
Hexachlorobutadiene	29.65				225	223, 227	5	30
Naphthalene	29.59				128	128,129	5	10
1,2,3-Trichlorobenzene	30.05				180	182, 145	5	10
Internal Standards								
Pentafluorobenzene	13.88				168	99,137		
1,4-Difuorobenzene	15.40				114	63,88		
Chlorobenzene-d5	20.67				82	117,119		
1,4-Dichlorobenzene-d4	24.81				152	115, 150		
Surrogates								
Dibromofluoromethane	13.07		75-125	75-125	113	111,79		
4-Bromofluorobenzene	22.62		75-125	75-125	95	174,176		
Toluene-d8	18.41		75-125	75-125	98	100, 42		
1,2-Dichloroethane-d4	13.93		75-125	75-125	65	67,102		

Appendix 7
Instrument Operating Conditions

Operating Conditions

Column: J&W, DB-VRX,
60m/. 25mm ID/1.4 micron film

Trap(s):
OI: #10; Tenax/Silica Gel/ Carbon Molecular Sieve Tekmar K; Carbopack B, Carboxen 1000, Carboxen 1001

Injector: Zero dead volume

Gas: Helium 99.99970 purity @ 100 psi

Injector Temp: 120°C

Detector B (MSD): 280°C

Initial Temp: 45°C
Initial Hold: 8 min.
Rate: 12°C/min.
Temp1: 190°C
Hold1: 2 min.
Rate2: 6°C /min.
Temp2: 225°C
Hold 2: 7 min.

MS-EM: Variable
Mass Range: 35-260
Scan Rate: 1.4 scans/second
Ionization: 70 EV minimum

Purge Flow: 40mL/min.
Head Pressure: 10 psi
Purge Time: 11 min.
Dry Purge: 1 min.
Desorb Preheat: 120°C
Desorb Temp: 260°C
Desorb Time: 2 min.
Bake Temp: 260°C
Bake Time: 20 min.

Appendix 8
GC/MS Tuning Criteria

Mass Relative Abundance

Target Mass	Performance Criteria
50	15-40% of mass 95
75	30-60% of mass 95
95	Base Peak 100%
96	5-9% of mass 95
173	< 2% of mass 174
174	> 50% of mass 95
175	5-9% of mass 174
176	> 95% but < 101% of mass 174
177	5-9% of mass 176

Appendix 9
Method Performance

Compound	#1	#2	#3	#4	Mean	Mean Criteria	% RSD	%RSD Criteria
Acetone								
Benzene								
Bromobenzene								
Bromochloromethane								
Bromodichloromethane								
Bromoform								
Bromomethane								
2-Butanone								
n-Butylbenzene								
Sec-Butyl benzene								
Tert-Butylbenzene								
Carbon Disulfide								
Carbon Terachloride								
Chlorobenzene								
Chloroethane								
2-Chloroethyl Vinyl Ether								
Chloroform								
Chloromethane								
2-Chlorotoluene								
4-Chlorotoluene								
1,2-Dibromo-3-chloropropane								
Dibromochloromethane								
1,2-Dibromoethane								
Dibromomethane								
1,2-Dichlorobenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
Dichlorodifluoromethane								
1,1-Dichloroethane								
1,2-Dichloroethane								
1,1-Dichloroethene								
Cis-1,2-Dichloroethene								
Trans-1,2-Dichloroethene								
1,2-Dichloropropane								
1,3-Dichloropropane								
2,2-Dichloropropane								
1,1-Dichloropropene								
Cis-1,3-Dichloropropene								
Trans-1,3-Dichloropropene								
Ethylbenzene								
Hexachlorobutadiene								
2-Hexanone								
Isopropylbenzene								
p-Isopropyltoluene								
4-Methyl-2-pentanone								
Methyl-tert-butyl-ether								

Compound	#1	#2	#3	#4	Mean	Mean Criteria	%RSD	%RSD Criteria
Methylene Chloride								
Naphthalene								
n-Propylbenzene								
Styrene								
1,1,1,2-Tetrachloroethane								
1,1,2,2-Tetrachloroethane								
Tetrachloroethene								
Toluene								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,3,5-Trimethylbenzene								
Vinyl Acetate								
Vinyl Chloride								
o-Xylene								
M,p-Xylene								
Freon 113								

B A & R LABORATORIES STANDARD OPERATING PROCEDURES

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A & R Laboratories

Standard Operating Procedure

Mobile Lab Operations

Revision 2.0

Sept. 30, 2015

Appoved by 

QA/QC Manager: _____ **Jenny J.**

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1. Scope and Application

1.1. This is a checklist of the tasks to be preformed daily by the mobile lab chemist

2. Pre-Departure Tasks

2.1. Print job information sheet and directions to the site.

2.2. Review the required analysis and matrices listed in the information sheet and start appropriate instrument calibration.

2.3. Check mobile lab supplies for proper containers, extraction solvents, COCs, gloves, water or other supplies that might be needed.

2.4. Check that the vapor sampling pump is charged for vapor jobs.

2.5. Check He, Air and H_2 tank levels.

2.6. If a large number of samples are expected bring an ice chest and ice for more storage.

2.7. Check oil level on generator(s) and main engine.

2.8. Check radiator water level on generator(s) and main engine.

2.9. Check battery water level on generator(s) and main engine.

2.10. Visually check tires for wear and low pressure. If low tire pressure is suspected check with a gauge.

2.11. Turn off air conditioners or heaters.

2.12. Start main engine then start generator(s). Note: Diesel engines may need to be preheated.

2.13. Wait until generators are running smooth, and then turn off breakers at the main panel to the mobile lab power.

2.14. Disconnect power, network and phone lines.

2.15. Turn air conditioners or heaters back on.

3. Travel Tasks

3.1. Drive safely and slow. Sharp turns and sudden stops may cause instrument damage or stall generator(s).

3.2. Stop for fuel as necessary. Keep all receipts for purchases of fuel, water, and other supplies.

4. Site Arrival Tasks

4.1. Let client know you have arrived and ask about parking or safety issues.

4.2. Confirm the requested analysis and matrices then go check the daily calibration.

4.3. Record the arrival time on the excursion log.

4.4. Analyze a method or ambient blank.

4.5. Assign the project an A & R Laboratories mobile lab job number and enter this into the excursion log/sample log.

4.6. Enter the lab and refrigerator temperatures.

4.7. Plug in the scale if needed and record the weight of the test masses into the excursion log/sample log.

4.8. Start a new chain of custody (COC)

4.8.1. Enter the mobile lab job number onto the top right hand corner.

4.8.2. Have the client enter the billing and reporting addresses.

4.8.3. Have the client log in samples to the chain of custody.

4.8.4. If the client provides samples to be run at the fixed lab do the following.

4.8.4.1. Mark the fixed lab analysis clearly and differently (e.g. X vs. *.)

4.8.4.2. Mark the turn around time needed.

4.8.4.3. Check that hold times can be met with the fixed lab, especially for 24hr or less hold times such as Methane and H2S Gas.

4.8.4.4. Call the fixed lab and request a fixed lab job number then place this number on the COC before giving the COC to the client.

4.8.4.5. Upon arrival to the lab place the samples in the appropriate fridge and photocopy the COC for the log in person.

4.8.4.6. This also applies to a pending analysis (i.e. run lead on the highest TPH)

4.8.4.7. If it is unknown if a fixed lab analysis will be added these steps will be taken care of by the fixed lab.

4.8.4.8. If a client knows that some samples will be only for the fixed lab, these samples can be logged on a separate COC with the fixed lab job number only.

4.9. Enter the project, sample, and analysis information into the excursion log/sample log as samples are added to the COC.

4.10. Proceed with sample analysis and/or sampling. Follow DTSC 2015 guidelines for vapor analysis, keep a copy of these guidelines in the mobile laboratory for reference. For water analysis use the in-house VOC SOP if you have an autosampler, if not, put your samples directly on the concentrator for analysis.

4.10.1. Ask the client or driller for the bore size, screen size, and well depths, open the soil gas purge time file and enter the screen size, bore radius, well depth(s), bulb volume, flow rate, tubing radius and any other appropriate information.

4.10.2. Shut-In Test: Prior to purge or sampling, a shut-in test should be conducted to check for leaks. Connect the vacuum pump system with the 250 ML sampling glass bulb, vacuum, then close the valve. Observe the vacuum gauge for at least one minute or longer. If there is any observable loss of vacuum, the fittings are adjusted until the vacuum in the sample train does not have noticeable dissipate.

4.10.3. Collect the sample at least 2 hours after the well was placed. Take your pump, glass bulb, and tracer compound and connect the bulb to the well

4.10.4. Make sure sampling pump flows at the appropriate rate, connect the pump to the bulb, turn pump on, open bulb and well. Place glove with tracer compound at the site of the well. Pump for the amount of time calculated for 3 purge volumes unless a different purge volume is requested by the client. Close well and bulb, turn off pump and bring sample glass bulb back to the mobile laboratory

4.10.5. Analyze the sample by using a syringe to collect 5cc or 50cc (the amount of sample volume taken depends on the contamination level of the site) from the sampling glass bulb and push that onto the concentrator during purging.

4.10.6. Keep track of time sampled, the time injected onto concentrator, and the volume injected for each sample on your sample log/excursion log. Note any dilutions made on your sample log/excursion log as well.

4.11. Provide the client printed results as needed. Make sure to double check every result and stamp any printouts “preliminary results.” Do not discuss results with anyone but the client unless told otherwise by the client

4.12. Without approval, do not provide the clients with chromatograms or any additional information that does not appear on the normal sample report.

5. Site Departure Tasks

5.1. Provide the client with a preliminary lab report of all the results. If they are not all finished yet then do one of the following.

5.1.1. If the project continues the next day this could be provided the following morning.

5.1.2. If you are not returning on the following day get a fax or email address to send the remaining results.

5.1.3. Let the client know when to expect the remaining results.

5.2. Provide the client with a business card in case they need to contact you.

5.3. Prepare any samples or ending QA/QC samples to be run on the drive back or at fixed lab arrival.

5.4. Record the departure time in the excursion log/sample log.

6. Fixed Lab Arrival Tasks

6.1. Turn off air conditioners or heaters.

6.2. Connect power, network and phone lines.

6.3. Turn on breakers at the main panel to the mobile lab power.

6.4. Turn air conditioners or heaters back on.

6.5. Continue to run any remaining samples or QA/QC samples.

6.6. Fax, call or email the client any additional sample data acquired during the travel time.

6.7. Transfer soil and/or water samples to the fixed lab refrigerator

6.8. Photocopy and place COCs in the login area for the fixed lab analysis if needed.

6.9. Restock the mobile lab with supplies if needed for the next day.

6.10. Synchronize the briefcase with the network server.

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B HEALTH AND SAFETY PLAN

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Site Specific Health and Safety Plan

Preliminary Environmental Assessment

Proposed Oxnard High School District High School No. 8

1853 Camino Del Sol

Oxnard, California

SEPTEMBER 2018

Oxnard Union High School District

309 South K Street, Oxnard, CA 93030

Site Specific Health and Safety Plan

Preliminary Environmental Assessment

Proposed Oxnard High School District High School No. 8

1853 Camino Del Sol

Oxnard, California

SEPTEMBER 2018

Prepared for:

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California Professional Geologist 5963
California Certified Engineering Geologist 1906
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REVISION NO.	DATE	REVISION NOTES

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Table 5-2 Monitoring Action Levels
Table 6-1 Summary of Required PPE

ATTACHMENTS

Attachment A Daily Tailgate Safety Meeting and Site Log Form (HST-2 and SSC-1)
Attachment B Safe Drilling Practices (SWP 5-4 and 5-5)
Attachment C Tetra Tech Heat and Cold Stress Procedures (SWP 5-15, 5-16, and 5-26)
Attachment D General Safe Work Practices for Field Work (SWP 5-1)
Attachment E Heat Illness Prevention Checklist
Attachment F Route to Hospital

1.0 Introduction

This document presents the health and safety procedures that are intended to guide field activities conducted on behalf of the Oxnard Union High School District (OUHSD) for the Proposed Oxnard High School District High School No. 8 (the Site). The Site is located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030 zip code area. The Site is a 50 acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25 acre property in the City of Oxnard, California. The provisions of this Site-Specific Health and Safety Plan (HASP) apply to employees of Tetra Tech, Inc. (Tetra Tech) and its subcontractors. Employees of the Federal, State, and local agencies, and the client are expected to observe the safety rules and regulations as established by their respective organizations, in addition to the requirements of this document (Tetra Tech is not responsible for enforcement of the conditions of this plan on these employees). The HASP is intended to provide health and safety procedures for work conducted as a part of the Tetra Tech work plan and/or standard procedures.

2.0 Key Personnel, Responsibilities, and Training

2.1 Key Personnel and Responsibilities

Project Manager: Jim Steele, Tetra Tech

Tetra Tech shall approve the HASP and ensure its implementation in the field. Tetra Tech is responsible for distributing the plan to all field personnel and to an authorized representative of each firm that has a subcontract with Tetra Tech to conduct onsite work. The PM is also responsible for implementing the provisions of this plan and its addenda. Implementation includes review of HASP requirements, review of field personnel compliance with Tetra Tech medical examination requirements, review of the provisions of this plan with Tetra Tech (and its subcontractors) field personnel involved with the project, provision for safety equipment, and submission of the requisite health and safety documents, including the forms in Attachment A, to the PM and Site Safety and Health Officer (SSHO) upon request.

Site Manager: Jason Dane, Tetra Tech

Tetra Tech will be responsible for the overall coordination and management of the field activities.

Site Safety and Health Officer: Jason Dane, Tetra Tech

The Tetra Tech SSHO is responsible for developing, onsite implementation, and enforcing this HASP. The SSHO's responsibilities include, but are not limited to, (1) maintaining safety equipment supplies, (2) verifying that all project personnel have met the training and medical surveillance requirements, (3) periodically inspecting the work area to ensure HASP compliance, (4) performing air quality measurements, (5) directing decontamination operations and emergency response operations until public emergency personnel arrive onsite, (6) setting up work zone limits, and (7) reporting all accidents, incidents, and infractions of safety rules and requirements to the PM and the Project Health and Safety Manager.

Alternate Site Safety and Health Officer: Jim Steele, Tetra Tech

The Tetra Tech alternate SSHO will perform the requirements of the SSHO when the primary SSHO is not onsite during project work.

2.2 Training and Medical Surveillance

All Tetra Tech and subcontractor personnel assigned to the project have, or will have, completed all training and medical surveillance requirements as required by 29 CFR 1910.120 and company policy.

No visitors will be allowed to enter the working zones without approval of the Site Manager (SM). The SM will be informed of all visitors expected to enter the working zones. Visitors who have no specific responsibility in the work zone will be restricted from entering the work zones.

Visitors and observers to the Site will receive the same information that is discussed at the daily tailgate meeting or an equivalent overview by the SSHO or designee. Visitors/observers will stay outside the exclusion zone and remain within the boundaries of the clear zone. Any visitor requesting to observe work within the exclusion zone must wear the appropriate PPE and fully comply with the HASP. If respiratory protection is necessary within the exclusion zone, visitors must provide documentation that they have been given medical clearances and respiratory fit testing within the past year.

3.0 Work and Site Description

3.1 WORK DESCRIPTION

This Preliminary Environmental Assessment (PEA) is being performed for the OUHSD for the Proposed High School No. 8 construction project (Figure 1). The field sampling assessment will consist of two parts: a direct push drilling program to collect soil gas, soil, and groundwater samples, and a surface soil sampling assessment. The direct push drilling program and surface sampling assessment will be conducted simultaneously. This approach will allow the soil sampling strategy to be modified based on the results of the soil gas sampling, if appropriate. The sampling strategy will not be modified without the approval of California Department of Toxic Substances Control (DTSC). The following subsections describe the rationale and scope of sampling for each item of environmental concern identified for the Site. The Site ground surface is relatively flat and will be in the process of being planted in strawberries during implementation of the PEA sampling program.

Tetra Tech will install soil gas monitoring probes at 25 locations at the Site (SV-1 through SV-25) as shown on Figure 2 to assess potential leakage of hydrogen sulfide and methane gas from the underlying oil bearing zones of the Oxnard Oil Field. There is a potential that volatile organic compound (VOCs) and gasoline range total petroleum hydrocarbons (TPHg) from motor fuel formerly stored in ASTs and USTs in the adjacent Maulhardt Ranch farm yard and residence area and in the Tin Shed have impacted soil gas at the Site. Tetra Tech will install soil gas monitoring probes at 5 locations at the Site (SV-26 through SV-30) as shown on Figure 2 to assess potential VOC and TPHg impacts to soil gas at the Site. Each soil gas location will include nested probe stations to sample soil gas from 5 feet and 15 feet below ground surface (bgs).

Following guidelines recommended in *Interim Guidance for Sampling Agricultural Fields for School Sites* (Ag Guidance) (DTSC 2008), surface soil samples will be collected on an approximate grid pattern at a density of approximately 1.2 sample locations per acre for a total of 60 locations: SS-1 through SS-60 (Figure 2). The 60 surface soil samples collected for organochlorine pesticides (OCP) analysis will be combined into 15 composite samples. Fifteen of the 60 surface soil samples will be selected for arsenic analysis in accordance with the Ag Guidance (DTSC 2008). In addition, 15 of the 60 surface soil samples will be selected for semivolatile organic compounds (SVOCs), poloyaromatic hydrocarbons (PAHs), and total petroleum hydrocarbons diesel extended (TPHde) analysis. The surface soil samples will be collected from 0 to 0.5 foot bgs. Surface soil sample SS-61 will be collected from 0 to 0.5 foot bgs from the soil beneath the pole-mounted electrical transformer located onsite adjacent to Camino Del Sol for polychlorinated biphenyl (PCB) analysis (Figure 2).

One hydropunch direct push groundwater sample will be collected from the upper two feet of the water table in each of the 5 direct-push borings (SV-26 through SV-30) located in the area of the Site adjacent to the Maulhardt Ranch residential and farmyard areas to assess for potential VOC and TPHg impacted groundwater (Figure 2). For this FSP it was assumed that groundwater will be encountered at 20 feet bgs.

3.2 SITE DESCRIPTION

Type: Spill ☐ Fire ☐ HW Site ☐ Industrial Facility ☐ Other ☑

Physical Description and Location: The Site is a 50 acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25 acre property in the City of Oxnard, California. The geographic coordinates of the Site are approximately Latitude 34° 12′ 23.08″ North, Longitude 119° 9′ 31.40″ West. Surface elevations at the Site are approximately 63 feet above mean sea level.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use. The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial

development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978).

Based on the Geologic Map of the Oxnard 7.5' Quadrangle, Ventura County, California the Site is underlain at the ground surface by Holocene deltaic alluvial fan deposits composed predominantly of clay with interbeds of sand and occasional gravel that were deposited by the Santa Clara River and extend to approximately 70 feet bgs. These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

The Site is located in the northern portion of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit. The Oxnard Plain Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Basin are grouped into three major units including 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System, and 3) the Lower Aquifer System. The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer zone and extends to depths of approximately 75 feet bgs. Groundwater is generally expected within approximately 10 feet of the surface. However, groundwater may be shallower during periods of high precipitation or in heavily irrigated areas.

History: The current site owners of the Site are Maulhard Family as represented by Lynn and Richard Maulhardt. The OUHSD is in the process of negotiating acquisition of the school site with transfer of ownership. The review of historical aerial photographs and maps, and interviews with the current owners, indicate the Site and adjacent areas have been used for agricultural production (row crops) since at least the 1860s. The site is located within the Oxnard Oil Field, however no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on 107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. The Oxnard Oil Field produces oil from depths of over 2,000 feet. Several plugged abandoned oil wells are located within one quarter mile of the Site. The nearest plugged and abandoned well is Maulhardt Community No. 11A, located approximately 850 feet south southwest of the Site on Imperial Street near the intersection of San Luis Street. Plugged and abandoned well Maulhardt Community No. 10 is located approximately 870 feet west of the Site just north of Camino Del Sol. Plugged and abandoned well Maulhardt Community No. 3 is located approximately 1,350 feet west southwest of the Site on North Lombard Street. Plugged and abandoned well Maulhardt Community No. 7 is located approximately 1,500 feet west northwest of the Site. Plugged and dry well Standard Schoelle No. 1 is located approximately 1,570 feet north east of the Site on Ribera Place. Plugged dry well A. Pfeiler Est. No. 1 is located approximately 1,600 feet northwest of the Site in West Village Park. Plugged and abandoned well Maulhardt No. 9 is located approximately 1,750 feet east of the Site. Numerous other abandoned wells are present further south and east of the site but were not described in this report.

Tetra Tech completed a Phase I Environmental Site Assessment (Phase I ESA) for the Site in March 2017 (Tetra Tech 2018) under California Department of Toxic Substances Control (DTSC) oversight to identify Recognized Environmental Concerns (RECs) with the objective of obtaining a "No Further Action" designation from DTSC for the Site. The following three RECs were identified for assessment in this PEA:

- Potential methane, and hydrogen sulfide (H_2S) toxic gas in near surface soil due to the underlying Oxnard Oil Field; and
- Potential OCPs, toxic metal (arsenic), and semi-volatile organic compounds in surface soil (approximately 0 – 2 feet bgs) due to former crop production activities.

Planned Development: A Site Plan prepared by WLC Architects dated February 19, 2018. The Site Plan shows the proposed new school site improvements as:

- An Administrative/Library Media Building occupying a foot print of 33,257 square feet (ft2);
- A Performing Arts Center occupying a foot print of 27,182 ft2;
- A Gymnasium Facility occupying a foot print of 42,638 ft2;
- A Multi-Purpose Building occupying a foot print of 15,773 ft2;
- An Academic Classrooms and Labs occupying a foot print of 37,438 ft2;
- A Pool Facility Shower and Lockers occupying a foot print of 1,387 ft2;
- A 162,100 ft2 Stadium, Stadium Team Rooms & Support Space occupying a foot print of 5,700 ft2 with 17,300 ft2 of home bleachers space and 10,600 ft2 of visitor bleacher space;
- A Child Care Facility occupying a foot print of 3,000 ft2;
- Approximately 269,800 ft2 of paved parking and access road along Camino Del Sol;
- Two Baseball Athletic Fields;
- Two Softball Athletic Fields;
- A Soccer Field;
- Paved Basketball Courts; and
- Paved Tennis Courts.

The proposed buildings will be of wood, metal frame, or concrete tilt-up construction with concrete slab-on-grade foundations. No other structures are planned. The proposed grading plan for the project and finish floor elevations were not provided to Tetra Tech for the preparation of this proposal. It is anticipated that the final grade will be similar to the existing grade and that the grading required to achieve the building pad subgrade will be minor and necessary only to provide adequate foundation and slab support and positive drainage away from the structures.

Status: Active ☑ Inactive ☐

Surrounding Population: The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood

is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue.

Have Nearby People Been Evacuated? Yes ☐ No ☑

Evacuation Initiated By: N/A

Evacuation Distance: N/A

Topography: Low Relief

Receiving Waters: Santa Clara River

Site Plan/Sketch Attached: Yes ☑ No ☐

Background Material Attached: Yes ☐ No ☑

4.0 Hazard Evaluation

The following subsections include potential hazards that may be present at the Site or created as a result of the operations being conducted at the site. The hazard evaluation shall be applied to the PEA field work as listed in Table 4.1.

4.1 KNOWN OR SUSPECTED PHYSICAL HAZARDS

There are a variety of physical hazards that may be present during the field activities. These hazards are described in greater detail in Table 4-1 below.

Table 4-1
Hazard Evaluation

Task	Hazards	Preventive Measures
PHYSICAL HAZARDS		
Drilling	Contact with heavy machinery, drill rig	Trained experienced operator, equipment inspected prior to use; when necessary, appropriate work methods and water mist will be utilized to keep dust down. Borehole locations may need to be relocated in the field based on their proximity to subsurface utilities. Underground Service Alert (dial "811") will be contacted and a service ticket will be acquired 48 hours in advance of any intrusive work to be performed at the site. Only project personnel in work area. Keep hands and feet away from moving machinery. Loose clothing or jewelry will not be worn in areas where it could get caught in moving machinery. Modified level D PPE, including steel-toed boots, will be worn during sampling activities. Hard hats will be worn whenever an overhead hazard is present. Use spotters. Review and comply with Tetra Tech's Safe Drilling Practices (Attachment B) and 8 CCR 2946.
Soil and groundwater sample collection / handling	Physical contact with soil and groundwater	Level D PPE with nitrile gloves during sampling tasks, adhere to good personal hygiene and work methods to prevent dermal contact and keep hands clean.
Heat stress	Heat stress	Personnel should take rest breaks, as necessary, and drink electrolyte-replacement fluids. Review and comply with Attachment C, Tetra Tech Heat Stress Safe Work Practices and Prevention of Sun Exposure.
Cold stress	Cold stress	The SSHO will take steps to reduce cold exposure including a designated area/shelter to warm up during breaks and implementing a work/warm-up schedule, minimizing the length of time of exposure and maximizing the work activities during the warmest parts of the day. Personnel should take adequate rest breaks and drink warm, replacement fluids. Review and comply with Tetra Tech's General Safe Work Practices for Cold Stress provided in Attachment C.

Table 4-1
Hazard Evaluation

Task	Hazards	Preventive Measures
General	Noise hazards	Prior to any noise-producing activities onsite, such as operation of heavy equipment (drill rig), the SSHO will notify all personnel of the potential exposure to high noise levels. Hearing protection such as earplugs will be available at the Site for use by personnel working in high noise areas. This protection will be mandatory for all personnel who are exposed to noise levels in excess of 85 decibels during Site activities. The SSHO will designate appropriate hearing protection based on noise levels and length of exposure.
General	Back pains and strains	Proper lifting techniques shall be used when lifting objects. In addition, the SSHO will reiterate proper procedures for lifting heavy objects.
	Slip/trip/fall, vehicles	Good housekeeping practices. Clear area before working. Level D PPE at all times. Equipment and working personnel will not be allowed to encroach the control boundary. Establish traffic and Site control protocols. Place traffic cones when working in traffic areas and a person to direct traffic around the work zone, if necessary. Review and comply with Attachment D, Tetra Tech General Safe Work Practices for Field Work.
	Dermal/eye hazards	All personnel are required to wear the appropriate PPE protection level to prevent dermal/eye hazards from dust and soil.

4.2 KNOWN OR SUSPECTED CHEMICAL HAZARDS

Conditions Identified in the Phase I ESA

According to the Proposed Highschool No. 8 Phase I ESA (Tetra Tech 2018) the following potential chemical hazards were identified in the area of the Site where the Geotechnical drilling will occur:

1. Potential toxic soil gas (methane and H_2S) from potential formation leakage from the Oxnard Oil Field;
2. Potential residual organochlorine pesticides (OCPs) absorbed in soil from former agricultural production activities;
3. Potential arsenic in pesticides formerly used in agricultural production activities; and
4. Potential VOCs absorbed in soil from former use of fuel oil in smudge posts for frost abatement agricultural production activities.
5. Potential SVOCs, VOCs, and TPH dissolved in groundwater from former storage of fuels in former aboveground and underground storage tanks.

Maulhardt Ranch Operations

The Maulhardt Ranch and Site area will be undergoing preparation to plant strawberries fumigation by Westcoast Berry Farms at the same time that the drilling field work is performed. This poses a potential physical hazard to field operations. It was agreed at a planning meeting at the Site on July 2, 2018, that the farm work would be sequenced so that it would not be performed concurrently in areas where field sampling operations were being performed, and that the drilling operations would be only on existing site roads at the location shown Figure 2. The Tetra Tech Health and Safety Officer shall coordinate Westcoast Berry Farms daily to insure that proper field coordination occurs to ensure that field operations are performed in manner that does not conflict with farm operations

General

Other hazards and safety-related issues, such as Site conditions and planned daily activities, will be discussed and documented in the daily tailgate safety meeting (Appendix A). The initial tailgate safety meeting will include a discussion of the requirements outline in this HASP.

Hazard Level:	High	☐	Moderate	☐	Low	☑	Unknown	☐	
Hazard Type:	Liquid	☑	Solid	☑	Sludge	☐	Vapor/Gas	☑	
Characteristics:	Corrosive	☐	Ignitable	☑	Toxic	☑	Reactive	☑	
Volatile	☑	Radioactive	☐	Bio. Agent	☐				
Exposure Routes:	Inhalation	☑	Ingestion	☑	Contact	☑			

MSDS Sheets attached for informational purposes only: Yes ☐ No ☑

Methane Gas

Methane is a colorless, odorless gas that may be present in oil fields. It is not a toxicological hazard; however, it can potentially represent a safety concern for potential fire or explosion hazard and in confined spaces pose an asphyxiation hazard. Fire or explosion hazards are greatest at methane concentrations between the lower explosive limit (LEL) of 5 percent (%) by volume and upper explosive limit (UEL) of 15%. Methane can cause suffocation by simple asphyxiation at high concentrations by displacing available oxygen in the atmosphere. Initial effects of oxygen deficiency can be observed in individuals exposed to atmospheres containing 4% methane, which may reduce available oxygen to 17%. Earliest observed effects include deteriorated night vision, increased breathing volume, and accelerated heartbeat (ATSDR 2001). This methane concentration assumes that no other asphyxiants, such as carbon dioxide, are present to further reduce available oxygen. The recommended exposure limit is 10 ppm. Based on review of the soil vapor assessment performed for the adjacent Rio Rosales PEA in 2002 (ENSR International [ENSR] 2002) that assessed the same potential methane gas hazard posed by the Oxnard Oil Field, it is not likely that methane gas will be encountered at hazardous concentrations at the Site.

Hydrogen Sulfide Gas (H_2S)

Hydrogen sulfide (H_2S) is a colorless gas that has a strong rotten egg-like odor at low non-life threatening concentrations that can be encountered in oil fields. H_2S gas causes a wide range of health effects. Workers are primarily exposed to H_2S by breathing it. The effects depend on how much H_2S you breathe and for how long. Exposure to very high concentrations can quickly lead to death. H_2S is a highly flammable, explosive gas, and can cause possible life-threatening situations if not properly handled. In addition, H_2S gas burns and produces other toxic vapors and gases, such as sulfur dioxide. The NIOSH Recommended Exposure Limit (REL) for H_2S is 10 ppm and the NIOSH Immediately Dangerous to Life and Health (IDLH) level is 100 ppm.

The OSHA PELs are 20 ppm (General Industry Ceiling Limit), 50 ppm (General Industry Peak Limit), 10 ppm (Construction 8-hour Limit), and 10 ppm (Shipyard 8-hour Limit). The LEL for H_2S gas is 4.5 percent (%) by volume and UEL is 45.5 %. Based on review of the soil vapor assessment performed for the adjacent Rio Rosales PEA in 2002 (ENSR 2002) that assessed the same potential H_2S gas hazard posed by the Oxnard Oil Field, it is not likely that H_2S gas will be encountered at hazardous concentrations at the Site.

Organochlorine Pesticides

This class of compounds causes irritation of the upper respiratory tract and tongue, lips, and face, may cause tremor, apprehension, dizziness, or confusion by skin absorption, and malaise, fatigue, headache, and convulsions if ingested. The permissible exposure limit (PEL, Cal-OSHA) for these compounds is as low as 0.1 milligram per cubic meter (mg/m^3). These compounds may have been released to the Site for crop production prior to 1972. Some of these compounds are known or suspected human carcinogens. They have a low vapor pressure and will not likely be volatilized if contacted during assessment activities. The likely exposure route is through dermal contact and inhalation of soil dust. Based on experience at similar sites, any OCPs used at the Site were applied to plants at the ground surface and will be limited to the soil encountered from the ground surface to approximately 2 feet below ground surface.

Arsenic

Arsenic as an example of metals – Acute lead exposure can lead include vomiting, abdominal pain and diarrhea. These are followed by numbness and tingling of the extremities, muscle cramping and death, in extreme cases. Long-term exposure to high levels of inorganic arsenic (e.g. through drinking-water and food) are usually observed in the skin, and include pigmentation changes, skin lesions and hard patches on the palms and soles of the feet (hyperkeratosis) and may be a precursor to skin cancer. In addition to skin cancer, long-term exposure to arsenic may also cause cancers of the bladder and lungs. There is no NIOSH REL for arsenic. The OSHA PEL is a time weighted average of 0.5 milligrams per cubic meter. The likely exposure route is through dermal contact and inhalation of soil dust. Based on experience at similar sites, any arsenic used at the Site was applied to plants at the ground surface and will be limited to the soil encountered from the ground surface to approximately 2 feet below ground surface.

TPH

Petroleum hydrocarbons such as diesel, lube oil, and hydraulic oil may cause irritation of the eyes, skin, and mucous membranes. Symptoms include headache, fatigue, blurred vision, dizziness, slurred speech, confusion, and convulsions. Exposure may lead to possible liver and kidney damage.

VOCs

VOCs in general cause irritation to eyes, skin, and upper respiratory system. If inhaled, they may cause dizziness, headache, nausea, or difficulty in breathing. Acute vapor exposures to VOCs can cause symptoms ranging from coughing to transient anesthesia and central nervous system depression.

SVOCs

Long-term exposure to SVOCs can lead to cancer. The mean air odor threshold for naphthalene is 0.084 ppm. Because of the low odor threshold, respirator breakthrough may occur even when concentrations are below the PEL. The potential source for these SVOCs is from fuel oil formerly used in smudge pots for periodic frost abatement in citrus orchards that formerly occupied the Site (prior to the 1970s). The entire Site was regraded between 2001 and 2003 when strawberry cultivation was initiated. Therefore, any residual fuel oil SVOCs in the Site soils are likely to be degraded, dispersed, and adsorbed onto soil. The likely exposure route is through dermal contact and inhalation of soil dust. Based on experience at similar sites, any smudge pot fuel oil used

at the Site was released to the ground surface in limited quantities and will be limited to the soil encountered from the ground surface to approximately 2 feet below ground surface.

4.3 POTENTIAL EXPOSURE LIMITS

The following exposure limits are based upon some of the compounds potentially present at the Site.

Table 4-2

Exposure Limits for Compounds Potentially Present at the Site

Compounds	10 % Lower Explosive Limit	OSHA		Immediately Dangerous to Life or Health (IDLH)	NIOSH	
		Permissible Exposure Limit (PEL, 8-hr TWA)	Ceiling (C) or Short-Term Exposure Limit (STEL)		Recommended Exposure Limit (REL, 10-hr TWA)	Ceiling (C) or Short-Term Exposure Limit (STEL)
TPH	-	-	-	-	-	-
Arochlor 1254 (PCBs)	-	0.5 mg/m^3 (skin)*	-	5 mg/m^3	0.001 mg/m^3	-
Endosulfan (OCP)	-	-	-		0.1 mg/m^3	-
Benzene (VOC)	-	1 ppm	5 ppm (STEL)	500 ppm	0.1 ppm	1 ppm (STEL)
Toluene (VOC)	-	10 ppm*	300 ppm (C)	500 ppm	100 ppm	150 ppm (STEL)
PCE (VOC)	-	25 ppm*	100 ppm (STEL)*	150 ppm	-	-
TCE(VOC)	-	25 ppm*	200 ppm (C)	200 ppm	25 ppm	-
1,2-DCE (VOC)	-	200 ppm	-	1,000 ppm	200 ppm	-
Naphthalene (SVOC)	-	10 ppm	-	250 ppm	10 ppm	15 ppm (STEL)
Arsenic	-	0.50 mg/m^3	-	-	-	-
Methane	0.5%	0.10 ppm	-	100 ppm	10 ppm	
H_2S	0.45%	0.10 ppm	-	100 ppm	10 ppm	-

Notes:

* = California OSHA measurement

- = not established

mg/m^3 = milligrams per cubic meter

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

PCBs = polychlorinated biphenyl

ppm = parts per million

SVOC = semivolatile organic compound

TWA = time-weighted average

5.0 Monitoring

Various types of monitoring, including air, noise, and heat stress monitoring will be conducted during field work, as appropriate.

5.1 AIR MONITORING

The results of the Tetra Tech Phase I ESA for the Site (Tetra Tech 2018) indicates that the surficial soil (from the ground surface to approximately 2 feet bgs) may be impacted with OCPs, arsenic, and SVOCs absorbed onto it. During drilling activities, the ambient air within the breathing zones of the workers will be monitored for dust generation by drilling and other activities to mitigate the inhalation hazard posed by OCPs, arsenic, and SVOCs absorbed onto soil. If dust generation occurs, the soils in the work area will be moistened with the potable carried by the HSA and CPT drilling rigs to suppress it. Groundwater occurs between 5 and 10 feet bgs and the surface and near surface soils at the Site are generally moist due to crop irrigation. It is anticipated that HSA drilling soil dust generation will be minimal.

During field activities, the ambient air within the breathing zones of the workers will be monitored. Air monitoring will be conducted in the field using an organic vapor analyzer, equipped with a photo-ionization detector (PID) (MicroPID/Minirae 3000 or equivalent). The PID will be calibrated with isobutylene and zeroed with hydrocarbon free air following the manufacturer's instructions. Since benzene has the most stringent PEL (1 ppm), benzene will provide the criteria for PPE upgrade activities. Since these benzene has the most stringent action level, and has the potential to be detected, it has been chosen for field monitoring to be conservative. VOCs in the breathing zone during drilling and soil sampling will be monitored and recorded at a minimum frequency of one reading approximately every 15 minutes.

During field activities, the ambient air within the breathing zones of the workers will be monitored for the percentage of methane and H_2S a Lantec GEM 2000 and compared to 5 percent the Lower Explosive Limits for these gases. If 5 percent the Lower Explosive Limit for either methane and H_2S is encountered, work will cease, the area will be evacuated, and vapor suppression controls will be implemented until the gas concentrations are reduced to less than 5 percent the LEL. The methane and H_2S concentrations will be monitored breathing zone during drilling and soil sampling at a minimum frequency of one reading approximately every 15 minutes.

5.2 NOISE MONITORING

In most cases, high noise levels at a work site are caused by heavy equipment (drill rigs) or sources associated with the work site, such as factory equipment and vehicles. When noise levels are suspected to equal or exceed an 8-hour time-weighted average (TWA) of 85 decibels on an A-weighted scale in slow response mode (85 dBA), the SSHO will evaluate the work area to characterize the noise source and exposure levels. A sound level meter may be used for the evaluation or the SSHO may use the simple rule-of-thumb test to determine if noise levels are in excess of 85 dBA. The test requires the SSHO to determine how loud he or she must speak to be heard at an arm's length from another person. If the SSHO must raise his or her voice to be heard, the average noise level likely exceeds 85 dBA.

When employees are exposed to sound levels that exceed the action level of 85 dBA, hearing protection must be worn and will be available onsite. The protection may be ear plugs or muffs and must provide sufficient attenuation to limit noise.

5.3 HEAT STRESS MONITORING

The stress of working in a hot environment can cause a variety of illnesses, including heat exhaustion or heatstroke, which can be fatal. PPE can significantly increase heat stress. To reduce or prevent heat stress,

frequent rest periods and controlled beverage consumption to replace body fluids and salts will be provided as required under 8 CCR 3395. At least one or more areas with shade will be available to employees when temperatures exceed 85 degrees Fahrenheit for direct blockage of sunlight. A heat illness prevention checklist (provided as Attachment E) will be utilized to determine the shade and water requirements for personnel. Additionally, quantitative physiological monitoring for heat stress will be conducted. Physiological monitoring for heat stress includes heart rate as a primary indicator and oral temperature as a secondary indicator. Monitoring will begin when the ambient air temperatures reach 70°F. To determine the initial monitoring frequency for Levels C and D protection, after a work period of moderate exertion, use the following guidelines provided in Table 5-1.

Table 5-1
Heat Stress Monitoring Frequencies

Adjusted Temperature[1]	Level D PPE	Level C PPE
90°F or above	After 45 minutes	after 15 minutes
87.5° to 90°F	After 60 minutes	after 30 minutes
82.5° to 87.5°	After 90 minutes	after 60 minutes
77.5° to 82.5°F	After 120 minutes	after 90 minutes
72.5° to 77.5°F	After 150 minutes	after 120 minutes

[1]Adjusted air temperature (°F) = observed temp + (13 x percent sunshine)

The following procedures and action levels are to be used for the physiological monitoring of heat stress:

Heart rate: Heart rate (HR) will be measured by the radial pulse during 30 seconds as early as possible in the resting period. The heart rate at the beginning of the rest period should not exceed 110 beats per minute (bpm). If the HR is in excess of the above value, the next work period will be shortened by 33% while the length of the rest period stays the same. If the heart rate is in excess of 110 bpm at the beginning of the next rest period, the following work cycle will be further shortened by 33%.

Personnel will be trained to recognize the symptoms of heat stress and the appropriate action to take. Even though physiological monitoring is not always necessary, it is essential that personnel understand the significance of heat stress and how to recognize it.

Some of the symptoms that indicate heat exhaustion are:

- Clammy skin
- Weakness, fatigue
- Lightheadedness
- Confusion
- Slurred speech
- Fainting
- Rapid pulse

- Nausea (vomiting)

If these conditions are noted, the following steps should be performed:

1. Remove the victim to a cool and uncontaminated area;
2. Remove protective clothing; and
3. Give water to drink, if conscious.

Symptoms that indicate heat stroke include:

- Staggering walk;
- Mental confusion;
- Hot, dry skin, temperature rise (yet person may feel chilled);
- Convulsions;
- Incoherent, delirious; and
- Unconsciousness.

If heat stroke conditions are noted, immediately perform the following steps:

1. Remove victim to a cool, uncontaminated area.
2. Cool the victim, whole body, with water, compresses and/or rapid fanning.
3. Give water to drink, if conscious.

Transport the victim to the designated medical facility for further cooling and monitoring of body functions. **HEAT STROKE IS A MEDICAL EMERGENCY**!

Radioactivity: N/A Total Organic Vapors: N/A

Dust Monitoring: Yes ☑ No ☐ Note: Visual evaluation of potential soil cuttings dust generation during HSA drilling in surface and near surface soils. CPD sounding does not generate significant air-born soil particle dust.

5.4 ACTION LEVELS

Table 5-2
Monitoring Action Levels

Contaminant	**Activity**	**Monitoring Device**	**Minimum Frequency**	Action Level	**Action**
Benzene	Drilling and all sampling activities	PID	15 min	1 -25 ppm	Modified Level D
		PID	15 min	25 - 50 ppm	Upgrade to Level C PPE and monitor for Benzene with the PID.
		PID	15 min	> 50 ppm	Stop work, evacuate area, implement vapor suppression controls.

Table 5-2
Monitoring Action Levels

Contaminant	Activity	Monitoring Device	Minimum Frequency	Action Level	Action
Methane	Drilling and all sampling activities	Lantech 2000	15 min	0.5% LEL	Stop work, evacuate area, implement vapor suppression controls.
H_2S	Drilling and all sampling activities	Lantech 2000	15 min	0.45% LEL	Stop work, evacuate area, implement vapor suppression controls.
Noise	Heavy equipment activities	Noise Level Meter	As deemed necessary by SSHO	> 85 dBA	Don hearing protection.
Heat	All field activities	Heart rate and air temperature	Monitor at start of rest periods	Air temp > 70°F Heart rate at 110 beats per minute	Follow work/rest regimens as necessary and drink liquids (water/electrolyte-replacement fluids) throughout the workday.

Notes:
ºF = degrees Fahrenheit
dBA = decibels
min = minutes
LEL = Lower Explosive Limit
PID = photo-ionization detector
PPE = personal protective equipment
ppm = parts per million

5.5 MONITORING RECORD-KEEPING

The SSHO and PM will be responsible for establishing and maintaining records of all required monitoring as described below:

- Employee name and task description;
- The date, time, pertinent task information, such as drilling location and meter reading, and relevant comments written in an instrument logbook that will be available for inspection at all times;
- A description of the analytical methods and equipment used and calibration data;
- Type of personal protective equipment worn; and
- Any engineering controls used to reduce exposure.

5.6 EQUIPMENT CALIBRATION

All monitoring equipment will be calibrated daily in accordance with manufacturer's recommendations before use by the SSHO or designee. Re-calibration will take place if the monitoring equipment becomes contaminated from high levels of methane gas or other COPC's.

6.0 Personnel Protection

Use of personal protective equipment will be required for protection of Site personnel during the implementation of specific tasks. A summary of the required PPE is provided in Table 6-1 below.

Minimum Level of Protection: A ☐ B ☐ C ☐ D ☑

Respiratory Protection: SCBA ☐ Airline ☐ Air-Purifying ☐ Not Required ☑

If Air-Purifying: Canister ☐ Cartridge ☑

Canister/Cartridge Type: Organic Vapor/Acid Gases Cartridges/P100 Filter (cartridges must be changed daily) if upgrade to Level C occurs.

Suit Type: Work Clothes Boot Type: Steel-Toe

Protection Type: Level D Eye Protection Type: Safety Glasses

Glove Type(s): Nitrile gloves

Other Protective Dress: Hard hat and high-visibility vest.

Justification for Level of Protection (state decision criteria): Based on hazard level.

Change in Level of Protection: Upgraded ☑ Downgraded ☐

Up or Downgraded to: B ☐ C ☑ D ☐

Reason Upgrade to Level C if PCE/TCE is greater than 25 ppm in the Breathing Zone as determined by PID monitoring (Refer to Action Levels in Table 5-2).

Specific Changes Made: Wear air-purifying respirator with combination cartridges for upgrades due to VOCs, Tyvek suit, North Silver shield gloves or equivalent, and boot covers or rubber boots with a boot wash-station.

Heat/Cold Stress Monitoring: Yes ☑ No ☐

Additional Site-Specific Procedures: Utilize Tetra Tech's Heat Stress Safe Work Practices (from Tetra Tech's Corporate Health and Safety Manual, October 2008) which is included as Attachment C. Ensure employees drink plenty of water and take breaks during work activities.

Table 6-1
Summary of Required PPE

Equipment Type	Level C Protection	Level D Protection
Respiratory Protection	No	No
Air Purifying	N/A	N/A
Canister/Cartridge Type	N/A	N/A
Suit Type	Tyvek	Work clothes
Boot Type	Steel-toe/shank	Steel-toe/shank
Head Protection	Hard hat when overhead hazards present	Hard hat when overhead hazards present
Glove Type	North Silvershield (or equivalent)	Leather/latex/nitrile
Eye Protection Type	Safety glasses/goggles	Safety glasses/goggles
Hearing Protection	Muff type or foam inserts	Muff type or foam inserts when warranted

7.0 Decontamination / Site Control Procedures

If necessary, decontamination will be performed for personnel and/or equipment to prevent contaminant migration and to protect project personnel.

7.1 DECONTAMINATION

Sketch of Site Zones Attached: Yes ☐ No ☑

Will be established in the field: Exclusion, decontamination, and support zones will be established at the Site. Work zones will be delineated using traffic cones and barrier tape. Only authorized employees will be allowed to enter the work area.

Decontamination Equipment: Material for the decontamination of hands and sampling equipment will include non-phosphate detergent (Liquinox), water, buckets, drums, and scrubbers.

Personnel Decontamination Procedures: Personnel will be required to properly remove and dispose of contaminated gloves. Hands and arms will be washed after each sampling event, prior to any break, and at the end of each shift.

Equipment Decontamination Procedures: Reusable sampling equipment will be decontaminated between sampling events to prevent cross contamination.

7.2 RESIDUALS MANAGEMENT

Type of Residuals: Disposable Gear/Clothing ☑ Decon. Materials ☐ Soils ☑ Water ☐

Wastes: Solid ☑ Liquid ☐ Gas ☐

Type of Containers: Drums ☐ Bags ☐ Tank ☐ Cylinders ☐ 5-Gallon Bucket☐

Disposal Methods: Only the HSA drilling will generate soil cuttings. The results of the Tetra Tech Phase I ESA for the Site (Tetra Tech 2018) indicates that the surficial soil (from the ground surface to approximately 2 feet bgs) may be impacted with OCPs, arsenic, and SVOCs. The soil beneath the surface soils is considered to be noncontaminated. Unless field logging indicates contaminated soil conditions have been encountered in soils below 2 feet depth, the soil cuttings from below approximately 2 feet bgs will be considered to be noncontaminated and suitable for backfilling the HSA borings in accordance with the boring permit obtained from the City of Oxnard (City of Oxnard 2018) from the total boring depth to approximately 2 feet bgs. The soil cuttings generated from above 2 feet bgs will be used to backfill the boring from 0 to 2 feet bgs. Disposable PPE and equipment will be bagged, sealed, and properly disposed.

8.0 Emergency Information and Emergency/Contingency Plan

Although it is unlikely that a catastrophic event (fire, explosion, chemical release) or severe medical emergency will occur during field investigation activities, this emergency action plan has been prepared and will be implemented by the PM and SSHO, if such critical situations arise.

The SSHO will be onsite during Site activities. The PM and the SSHO will be responsible for initiating the emergency action plan and alerting any required medical and emergency services. When emergency situations occur, which are handled onsite without the assistance of offsite personnel, the SM will be informed immediately of the emergency at hand, no matter how insignificant it may seem to personnel involved.

All emergency actions as well as emergency and non-emergency accidents/injuries will be documented by the SM, or other competent individual under the direction of the PM, in accordance with all applicable regulations. The regulatory agency PM will be notified and a written report will be provided to the regulatory agency. Additional onsite requirements will include, but not be limited to:

- All field personnel will be instructed regarding the use of all field safety equipment prior to the start of work.
- All personnel will be instructed in emergency communication procedures appropriate to the project.
- A first aid kit will be onsite during any field operations.
- A cellular phone will be available at the Site.
- At least one of the field crew (Site Safety Officer/Manager) will be trained to perform First Aid and CPR.

8.1 CONTINGENCY PLAN FOR EMERGENCIES

Emergency routes and meeting locations are onsite, in various locations depending upon work areas, and will be finalized by the SSHO in the field and conveyed to all field personnel during the daily tailgate safety meeting (Attachment A) prior to the start of work.

In the event of an illness or accident resulting in physical injury, call 911 immediately and perform first aid commensurate with training and seriousness of the injury only in the event of a life threatening injury. Severely injured personnel are to be transported only by emergency service personnel and/or by ambulance personnel, unless a life-threatening condition is judged to exist that must be addressed immediately. If emergency or ambulance personnel transport injured personnel to the hospital, the hospital will be selected at the discretion of the emergency or ambulance personnel. The hospital selected may or may not be the hospital listed in *Subsection 8.4* of this document. At the hospital, a physician's attention is mandatory regardless of how serious the injury appears.

The PM and SSHO are to be notified by the field inspector, as soon after the injury as practical, regarding the nature of the accident. A written report is also to be prepared and submitted by the field inspector to the PM and SSHO within 24 hours of the accident. If the field inspector is unable to make the report (due to injury), an individual designated by the SSHO shall make the report.

In the event of a fire or explosion, notify the fire department immediately by dialing 911.

In the event of any accident involving serious injury of sufficient magnitude, work at the site shall *cease* until the PM and SSHO (or a designee) has completed a review of the events and site conditions and has authorized work to resume.

8.2 SPILL CONTAINMENT PROCEDURES

Any spills/leaks from drilling equipment or sampling equipment will be properly contained with absorbent and cleaned up immediately. The OUHSD will be notified of any impacts. General housekeeping activities will be used to minimize any potential for spillage of soils or water from investigation activities on site.

8.3 EMERGENCY CONTACT NUMBERS

Contact information for emergency medical, fire, and other agency and support to be used at this Site in the event of a catastrophic event or emergency are provided below.

Police/Fire Department	911
Poison Control Center	(800) 222-1222
Underground Service Alert	(800) 227-2600
Centers for Disease Control	(800) 311-3435
National Response Center	(800) 424-8802
St. John's Regional Medical Center	(805) 988-2500

8.4 MEDICAL FACILITY INFORMATION:

The closest Medical Center is St. John's Regional Medical Center, 1600 N Rose Ave, Oxnard, CA 93030. A route to hospital map is provided in Attachment F. The directions from the Site to the St. John's Regional Medical Center are:

1. Depart Site by turning right and proceed approximately 500 feet west on Camino Del Sol and turn right onto Rose Avenue;
2. Proceed approximately 0.6 mile north on Rose Avenue, turn right onto Socorro Way;
3. Proceed approximately 0.1 mile East on Socorro Way, turn left onto the St. John's Regional Medical Center property and proceed approximately 0.1 mile north and
4. Turn right into the to the St. John's Regional Center Emergency Room entrance driveway. Follow signs in the driveway to the emergency room e.

8.5 TETRA TECH RESOURCES

Tetra Tech, Inc.	(805) 681-3100
Project Manager – cellular (Jim Steele)	(805) 895-4120
Site Manager – cellular (Jason Dane)	(805) 342-7941
Site Safety and Health Officer – cellular (Jason Dane)	(805) 342-7941
Health and Safety Technical Reviewer and Manager – cellular (Mike Aberthal)	(210) 287-3526

8.6 OTHER RESOURCES

U.S. EPA-ERT.	(201) 321-6660
Centers for Disease Control (Day)	(404) 639-3534
Centers for Disease Control (Night)	(404) 639-2888
National Response Center	(800) 424-8802
Superfund / RCRA Hotline.	(800) 424-9346
TSCA Hotline	(800) 424-9065

National Pesticide Information Service	(800) 845-7633
Bureau of Alcohol, Tobacco, and Firearms (Explosives)	(800) 424-9555
Westcoast Berry Farms	
Forman: Glenn Imato	(805) 947-7256
Assistant Forman: Salvador Hernandez	(805) 307-6654

8.7 CONFINED-SPACE ENTRY

Confined-space entry procedures applicable? Yes ☐ No ☑

If yes, attach copy of confined-space entry procedures and permit.

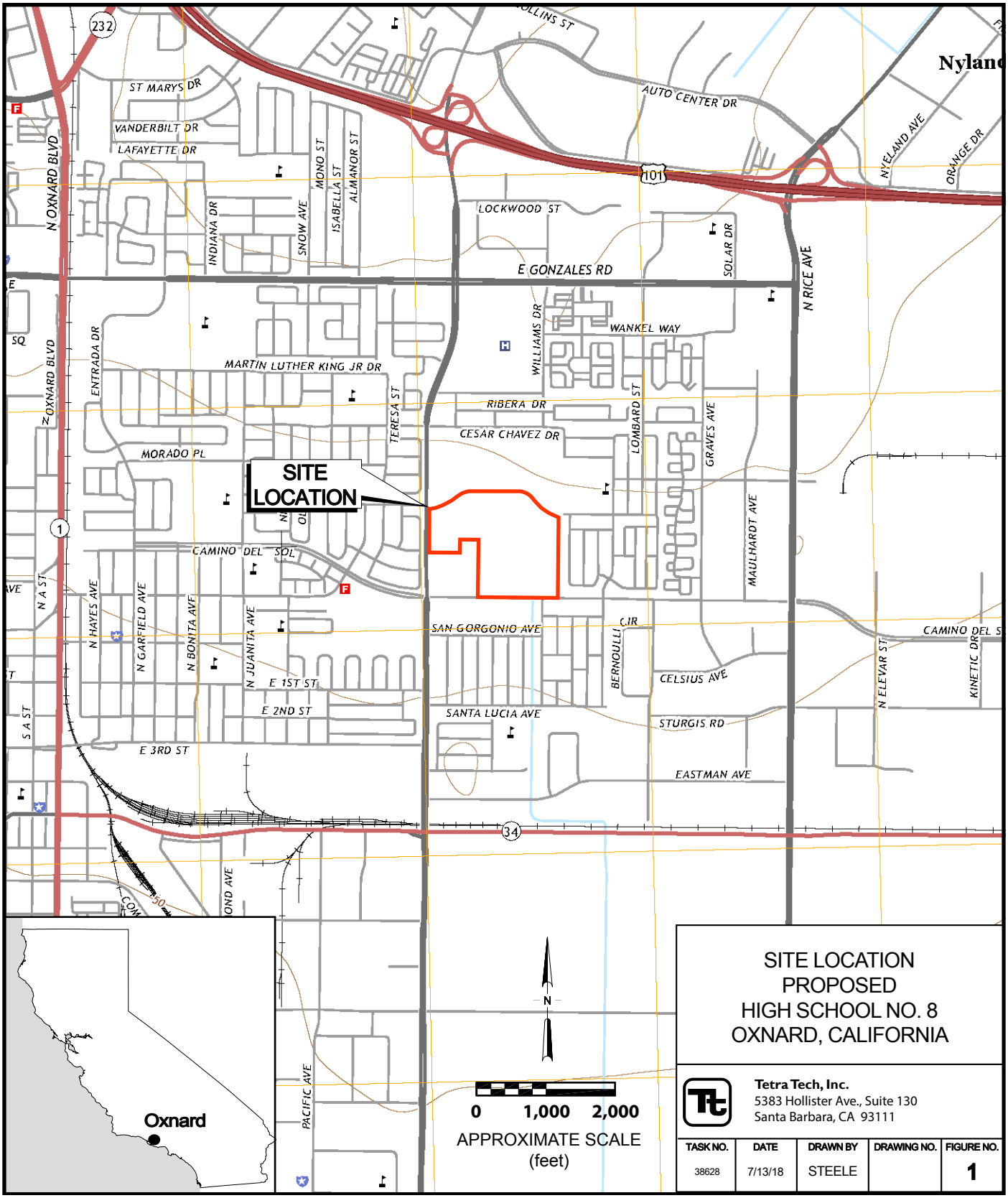
9.0 References

ENSR International (ENSR)
2002 *Results of the Preliminary Environmental Assessment, Environmental Oversight Agreement HAS-A-99/007, Proposed Permanent Rio Rosales Elementary School Site Located at Jacinto Drive and Kohala Street, Oxnard, California.*

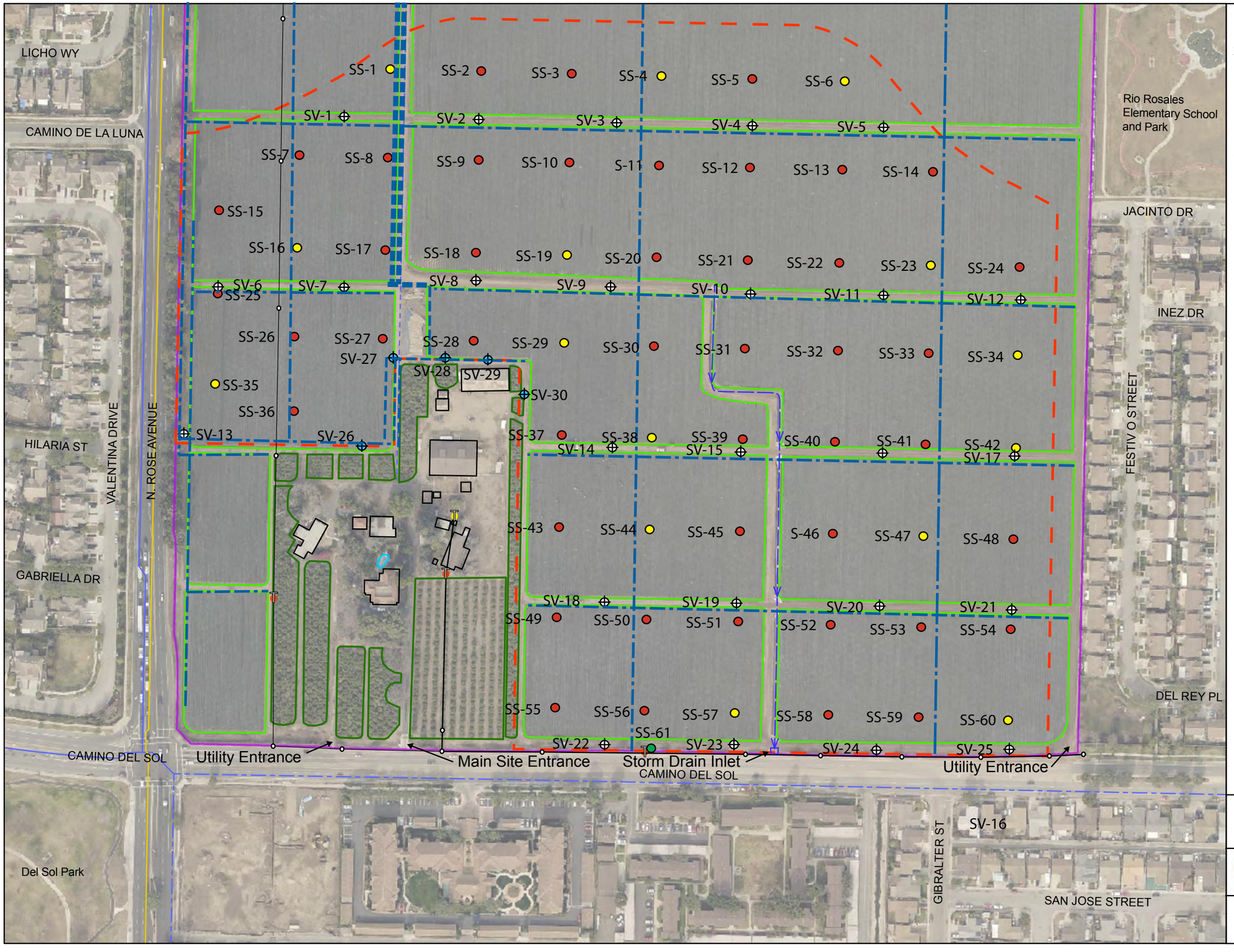
City of Oxnard
2018 Well/Borehole Permit Application 18-4045. August 9.

Tetra Tech, Inc. (Tetra Tech)
2018 *Final Phase I Environmental Site Assessment, Proposed High School No. 8 Site APN 214-002-059 on North Rose Avenue, Oxnard, California 93030*. March 29.

WLC Architects
2018 Site Plan. .



Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:
All features, including PEA sample, building, utility, and boundary locations are approximate.
As - Arsenic
OCP - Oganochlorine Pesticide
PAH - Polyaromatic Hydrocarbon
PCB- Polychlorinated Biphenyl
SVOC - Semivolatile Organic Compond
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

N

0 100 200 400 Feet

Background imagery: Ventura County, 2016

PROPOSED PEA SAMPLING PLAN
PROPOSED HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
38186	07/24/2018	tr/JS	10045	2

ATTACHMENT A

DAILY TAILGATE SAFETY MEETING AND SITE LOG FORM

TETRA TECH, INC.

DAILY TAILGATE SAFETY MEETING FORM

This form describes the requirements and responsibilities for implementing an incident and injury-free workplace by providing guidance on the daily tailgate safety meeting discussion.

Daily tailgate safety meetings shall be held in a safe location at the start of each work day, shift or task change. The daily tailgate safety meetings shall review the planned work activities for the day, discuss and resolve the risks and mitigations, discuss any health, safety, security and environment (HSSE) concerns and raise the HSSE consciousness of each worker before they start work.

The Site Manager (SM) or Site Safety and Health Officer (SSHO) will decide on the location of the daily tailgate safety meetings based on the overall safety of the individuals attending the meeting. Maintaining minimal background noise and establishing more comfortable areas for the meeting location is also preferred. Ultimately, the weather and surrounding environment could be the most limiting factor on the location of the meeting.

For this project, the Project Manager (PM) will:

- Verify that all work activities for this project are consistent with Document Control Number (DCN) 01-05, Health and Safety Management System, as well as any associated practices and permit requirements.
- Carry out all duties specified in the Health and Safety Management System.
- Ensure that all site personnel involved in a work activity are competent and correctly prepared for the work they will perform.
- Verify or delegate the responsibility to verify that the daily toolbox meeting is carried out.

For this project, the SM will:

- Carry out all duties specified by the PM, as consistent with DCN 01-05.
- Conduct or supervise all work identified and agreed upon in the scope of work.
- Participate in the daily tailgate safety meeting whenever the scope of work requires a permit to work.
- Verify in the daily tailgate safety meeting, the specific roles and responsibilities of the SM and SSHO are clearly understood by all members of the workforce.

For this project, the SSHO will:

- Carry out all duties specified by the PM, as consistent with DCN 01-05.
- Be accountable for the safe, responsible and reliable delivery of all work activities.
- Lead or designate an alternative conductor to lead the daily tailgate safety meeting.
- Verify in the daily tailgate safety meeting that workers have a clear understanding of the scope of work, hazards, controls and mitigations of the project.
- Verify in the daily tailgate safety meeting, the specific procedures and policies relevant to the project and are clearly understood by all members of the workforce.

Either the SSHO or SM will facilitate the daily tailgate safety meeting each day. At least one, if not both individuals shall have a thorough understanding of the following:

- Tetra Tech's hazard/risk assessment process
- The site-specific HASP.

- The contract scope of work.
- The subcontractors on site and their health and safety officer.
- Site requirements of the client.

These meetings prior to starting work shall include, but are not limited to:

- The completion of the daily tailgate safety meeting form.
- A review of relevant Health and Safety Plan (HASP) elements.
    - Reviews of the HASP shall be performed when updated, modified or when deemed necessary by the SSO or FTL.
- A review of all applicable permits.
- Any applicable Hazard Communication (HAZCOM) information review, including MSDSs, and labels.
- A review of 'Stop Work' procedures and responsibilities.
- Address any risks arising from the site walk, including but not limited to, equipment and materials use and location.
- Complete and review a Job Safety Analysis (JSA), appropriate Safe Work Practices (SWP) and applicable Activity Hazard Analysis (AHA) for the tasks to be completed.
- Implement the controls set forth in the JSA, SWP and AHA. Verify that all parties on site have a complete understanding of the work plan and controls that are in place.
- In addition, allocate resources and complete permits.

TETRA TECH, INC.

DAILY TAILGATE SAFETY MEETING FORM (Continued)

Date: _____ Time: _____ Project No.: _____

Client: _____ Site Location: _____

Site activities planned for today: _____

Does each job and task have a valid SWP, AHA, or JSA associated with it? Yes ☐ No ☐

Has everyone signed off on the HASP? Yes ☐ No ☐

Have newly identified risks been controlled and documented? Yes ☐ No ☐

Do not proceed unless the answer to all the above questions is Yes.

Current weather conditions: _____

Safety Topics Discussed
Review of Stop Work Authority
Are there multiple operations on site? Yes ☐ No ☐ If yes, describe.
Does the work activity require a MoC? Yes ☐ No ☐ If yes, has the MoC been authorized by the PM? Yes ☐ No ☐
Permits required? Yes ☐ No ☐ If yes, list permits covered in safety meeting.
Protective clothing and equipment for activities planned for today:
Chemical, physical, and biological hazards identified for activities planned for today:
Equipment hazards identified for activities planned for today:
Review of emergency procedures from HASP (including muster point locations):

C ENVIRONMENTAL DATA RESOURCES REPORT

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.2s
September 21, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1853 CAMINO DEL SOL
OXNARD, CA 93030

COORDINATES

Latitude (North):	34.2064120 - 34° 12' 23.08''
Longitude (West):	119.1587240 - 119° 9' 31.40''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	301108.0
UTM Y (Meters):	3786954.8
Elevation:	63 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619402 OXNARD, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140901
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1853 CAMINO DEL SOL
OXNARD, CA 93030

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	ECLIPSE BERRY RANCH	1853 CAMINO DEL SOL	FINDS		TP
A2	MAULHARDT FARMS	1853 CAMINO DEL SOL	VENTURA CO. BWT, HAZNET		TP
3	VINEYARD PLAZA CLEAN	1944 CAMINO DEL SOL	EDR Hist Cleaner	Higher	60, 0.011, East
4	SUPERIOR CARPET CLEA	633 URSULA DR	EDR Hist Cleaner	Higher	477, 0.090, NW
5	RIO ROSALES	KOHALA/JACINTO STREE	ENVIROSTOR, SCH	Higher	628, 0.119, NE
6	ARENALES/KOHALA PROP	765 KOHALA ST	LUST, SLIC, CDL	Higher	669, 0.127, ENE
7	CONTINENTAL HERITAGE	275 ROSE AVENUE	UST	Lower	954, 0.181, SSW
B8	MC CASLIN OIL CO.	2425 COLONIA RD	SWEEPS UST, CA FID UST	Higher	1250, 0.237, WNW
B9	MCCASLIN OIL COMPANY	2425 COLONIA RD.	ENVIROSTOR, LUST, HIST UST, HIST CORTESE	Higher	1250, 0.237, WNW
B10	MAULHARDT FARM	1953 E COLONIA RD	HIST UST	Higher	1250, 0.237, WNW
11	WILMA PACIFIC INC.	BERNOULLI CIR	LUST	Higher	1478, 0.280, East
12	OXNARD FIRE STATION	1450 COLONIA AVE	LUST	Higher	1493, 0.283, West
C13	EXXON (SANCHEZ)	121 ROSE AVE	LUST	Lower	1531, 0.290, SSW
C14	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C15	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C16	MOBIL OIL SS #18-P7C	121 ROSE AVE.	LUST	Lower	1531, 0.290, SSW
C17	EXXON (SANCHEZ)	121 ROSE	HIST CORTESE	Lower	1531, 0.290, SSW
D18	OXNARD (CITY) TREATM	PERKINS RD	LUST, HIST CORTESE	Lower	2087, 0.395, West
D19	OXNARD (CITY)	300 MARQUITA N	LUST	Lower	2095, 0.397, West
D20	OXNARD (CITY)	300 MARQUITA N	LUST	Lower	2095, 0.397, West
21	STANDARD PACIFIC OF	1191 COLONIA ROAD	LUST, UST, HIST CORTESE	Higher	2168, 0.411, West
22	NISHIMORI FARMS / CA	SOUTHEAST OF WILLIAM	SLIC	Higher	2281, 0.432, NNE
23	JONES INTERCABLE	721 MAULHARDT AVE	LUST, HIST CORTESE	Higher	2476, 0.469, East
E24	MAUL-GRAVES LEASING	833 MAULHARDT	LUST, HIST UST, HIST CORTESE	Higher	2573, 0.487, ENE
E25	CERTIFIED FREIGHT LI	965 MAULHARDT AVE‘	LUST	Higher	2575, 0.488, ENE
E26	SYSTEM 99	965 MAULHARDT AVE	LUST, HIST UST	Higher	2575, 0.488, ENE
27	MISSION LINEN	505 MAULHARDT AVE	LUST, DRYCLEANERS, HIST CORTESE	Higher	2580, 0.489, East
28	SA RECYCLING	521 N RICE AVE	ENVIROSTOR, SWRCY, NPDES, WDS	Higher	3308, 0.627, East
29	RAMONA SCHOOL SITE	804 COOPER ROAD	ENVIROSTOR, SCH	Lower	3416, 0.647, WSW
30	THE PROCTER & GAMBLE	800 N RICE AVE	RCRA-LQG, ENVIROSTOR, TRIS, ICIS, US AIRS, FINDS,...	Higher	3429, 0.649, ENE
31	TELEFLEX CONTROL SYS	1950 WILLIAMS DRIVE	ENVIROSTOR	Higher	3497, 0.662, NNE
32	MAULHARDT OIL LEASE	N. OF STURGIS ROAD-W	ENVIROSTOR	Lower	3603, 0.682, ESE
33	PACIFICA HIGH SCHOOL	600 EAST GONZALES RO	ENVIROSTOR, SCH, EMI	Higher	4668, 0.884, NW
34	OXNARD METALS INC.	1441 MOUNTAIN VIEW	ENVIROSTOR	Lower	4861, 0.921, SSW
35	SOUTH COAST AREA TRA	301 E THIRD STREET	ENVIROSTOR, HIST UST, NPDES, WDS	Lower	5049, 0.956, WSW
36	COSTCO WHOLESALE NO	2001 E VENTURA BLVD	RCRA-LQG, ENVIROSTOR, FINDS, ECHO, HAZNET, MED...	Higher	5128, 0.971, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
ECLIPSE BERRY RANCH 1853 CAMINO DEL SOL OXNARD, CA 93030	FINDS Registry ID:: 110065529280	N/A
MAULHARDT FARMS 1853 CAMINO DEL SOL OXNARD, CA 93030	VENTURA CO. BWT Facility Id: FA0034801 HAZNET GEPAID: CAC002114376	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-CESQG ---- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System
US ENG CONTROLS ---- Engineering Controls Sites List
US INST CONTROL ---- Sites with Institutional Controls

Federal ERNS list

ERNS ---- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---- Underground Storage Tank Listing
AST ---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing
VCP ---- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database

HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
HIST Cal-Sites Historical Calsites Database
CDL Clandestine Drug Labs
Toxic Pits Toxic Pits Cleanup Act Sites
US CDL National Clandestine Laboratory Register

Local Land Records

LIENS Environmental Liens Listing
LIENS 2 CERCLA Lien Information
DEED Deed Restriction Listing

Records of Emergency Release Reports

HMIRS Hazardous Materials Information Reporting System
CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing
SPILLS 90 SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR RCRA - Non Generators / No Longer Regulated
FUDS Formerly Used Defense Sites
DOD Department of Defense Sites
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR Financial Assurance Information
EPA WATCH LIST EPA WATCH LIST
2020 COR ACTION 2020 Corrective Action Program List
TSCA Toxic Substances Control Act
TRIS Toxic Chemical Release Inventory System
SSTS Section 7 Tracking Systems
ROD Records Of Decision
RMP Risk Management Plans
RAATS RCRA Administrative Action Tracking System
PRP Potentially Responsible Parties
PADS PCB Activity Database System
ICIS Integrated Compliance Information System
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS Material Licensing Tracking System
COAL ASH DOE Steam-Electric Plant Operation Data
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
RADINFO Radiation Information Database
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS Incident and Accident Data

EXECUTIVE SUMMARY

CONSENT Superfund (CERCLA) Consent Decrees
INDIAN RESERV Indian Reservations
FUSRAP Formerly Utilized Sites Remedial Action Program
UMTRA Uranium Mill Tailings Sites
LEAD SMELTERS Lead Smelter Sites
US AIRS Aerometric Information Retrieval System Facility Subsystem
US MINES Mines Master Index File
ABANDONED MINES Abandoned Mines
UXO Unexploded Ordnance Sites
DOCKET HWC Hazardous Waste Compliance Docket Listing
ECHO Enforcement & Compliance History Information
FUELS PROGRAM EPA Fuels Program Registered Listing
CA BOND EXP. PLAN Bond Expenditure Plan
Cortese "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings CUPA Resources List
DRYCLEANERS Cleaner Facilities
EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
ICE ICE
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
MED WASTE VENTURA Medical Waste Program List
MINES Mines Site Location Listing
MWMP Medical Waste Management Program Listing
NPDES NPDES Permits Listing
PEST LIC Pesticide Regulation Licenses Listing
PROC Certified Processors Database
Notify 65 Proposition 65 Records
UIC UIC Listing
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants
EDR Hist Auto EDR Exclusive Historic Gas Stations

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF Recovered Government Archive Solid Waste Facilities List
RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/31/2017 has revealed that there are 11 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIO ROSALES Facility Id: 56010011 Status: No Further Action	***KOHALA/JACINTO STREE***	***NE 0 - 1/8 (0.119 mi.)***	***5***	***10***
MCCASLIN OIL COMPANY Facility Id: 56290158 Status: Refer: Other Agency	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
SA RECYCLING Facility Id: 56730054 Status: Refer: Other Agency	***521 N RICE AVE***	***E 1/2 - 1 (0.627 mi.)***	***28***	***52***
THE PROCTER & GAMBLE Facility Id: 56260002 Status: Refer: Other Agency	***800 N RICE AVE***	***ENE 1/2 - 1 (0.649 mi.)***	***30***	***59***
TELEFLEX CONTROL SYS Facility Id: 60001505 Status: No Action Required	1950 WILLIAMS DRIVE	NNE 1/2 - 1 (0.662 mi.)	31	137
PACIFICA HIGH SCHOOL Facility Id: 56010006 Status: No Further Action	***600 EAST GONZALES RO***	***NW 1/2 - 1 (0.884 mi.)***	***33***	***139***
COSTCO WHOLESALE NO Facility Id: 71003264 Status: Refer: Other Agency	***2001 E VENTURA BLVD***	***NNE 1/2 - 1 (0.971 mi.)***	***36***	***152***

Lower Elevation	Address	Direction / Distance	Map ID	Page
RAMONA SCHOOL SITE	***804 COOPER ROAD***	***WSW 1/2 - 1 (0.647 mi.)***	***29***	***57***

Facility Id: 56820003 Status: No Action Required				
MAULHARDT OIL LEASE Facility Id: 56130041 Status: No Further Action	N. OF STURGIS ROAD-W	ESE 1/2 - 1 (0.682 mi.)	32	138
OXNARD METALS INC. Facility Id: 56500003 Status: No Further Action	1441 MOUNTAIN VIEW	SSW 1/2 - 1 (0.921 mi.)	34	146
SOUTH COAST AREA TRA Facility Id: 71002921 Status: Refer: Other Agency	***301 E THIRD STREET***	***WSW 1/2 - 1 (0.956 mi.)***	***35***	***148***

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 17 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARENALES/KOHALA PROP Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Facility Id: SR030 Status: Case Closed	***765 KOHALA ST***	***ENE 1/8 - 1/4 (0.127 mi.)***	***6***	***14***
MCCASLIN OIL COMPANY Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: C-89133 Status: Case Closed Facility Id: 89133 Status: Case Closed Global Id: T0611100537 Global ID: T0611100537	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
WILMA PACIFIC INC. Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: 930300461 Status: Case Closed Global ID: T0611100064	BERNOULLI CIR	E 1/4 - 1/2 (0.280 mi.)	11	21
OXNARD FIRE STATION Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: 05003 Status: Case Closed Global Id: T0611184371	1450 COLONIA AVE	W 1/4 - 1/2 (0.283 mi.)	12	22
STANDARD PACIFIC OF Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 06/12/2017	***1191 COLONIA ROAD***	***W 1/4 - 1/2 (0.411 mi.)***	***21***	***38***

Status: Completed - Case Closed
Facility Id: 930300343
Status: Case Closed
Global Id: T0611100061
Global ID: T0611100061

JONES INTERCABLE ***721 MAULHARDT AVE*** ***E 1/4 - 1/2 (0.469 mi.)*** ***23*** ***41***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-88111
Status: Case Closed
Facility Id: 88111
Status: Case Closed
Global Id: T0611100351
Global ID: T0611100351

MAUL-GRAVES LEASING ***833 MAULHARDT*** ***ENE 1/4 - 1/2 (0.487 mi.)*** ***E24*** ***43***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-87010
Status: Case Closed
Facility Id: 87010
Status: Case Closed
Global Id: T0611100174
Global ID: T0611100174

CERTIFIED FREIGHT LI 965 MAULHARDT AVE‘ ENE 1/4 - 1/2 (0.488 mi.) E25 46
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Global Id: T0611108154

SYSTEM 99 ***965 MAULHARDT AVE*** ***ENE 1/4 - 1/2 (0.488 mi.)*** ***E26*** ***48***
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Facility Id: 87011
Status: Case Closed

MISSION LINEN ***505 MAULHARDT AVE*** ***E 1/4 - 1/2 (0.489 mi.)*** ***27*** ***49***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Facility Id: C-87052
Status: Case Closed
Facility Id: 87052
Status: Case Closed
Global Id: T0611100196
Global ID: T0611100196

Lower Elevation	Address	Direction / Distance	Map ID	Page

EXXON (SANCHEZ) 121 ROSE AVE SSW 1/4 - 1/2 (0.290 mi.) C13 24
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008
Facility Id: C-87095

Status: Case Closed
Facility Id: 87095
Status: Case Closed
Global ID: T0611100224

MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C14	25
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Facility Id: 01026 Status: Case Closed				
MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C15	25
Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Global Id: T0611195678 Global Id: T0611100224				
MOBIL OIL SS #18-P7C	121 ROSE AVE.	SSW 1/4 - 1/2 (0.290 mi.)	C16	31
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-01026 Status: Pollution Characterization Global ID: T0611195678				
OXNARD (CITY) TREATM	***PERKINS RD***	***W 1/4 - 1/2 (0.395 mi.)***	***D18***	***33***
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-89075 Facility Id: C-87045 Status: Case Closed Global ID: T0611100484 Global ID: T0611100191				
OXNARD (CITY)	300 MARQUITA N	W 1/4 - 1/2 (0.397 mi.)	D19	35
Database: VENTURA CO. LUST, Date of Government Version: 05/29/2008 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: 90007 Status: Case Closed Global Id: T0611100594				
OXNARD (CITY)	300 MARQUITA N	W 1/4 - 1/2 (0.397 mi.)	D20	37
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: C-90007 Status: Case Closed Global ID: T0611100594				

SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the SLIC list, as provided by EDR, has revealed that there are 2 SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARENALES/KOHALA PROP	***765 KOHALA ST***	***ENE 1/8 - 1/4 (0.127 mi.)***	***6***	***14***
Database: SLIC, Date of Government Version: 06/12/2017 Facility Status: Completed - Case Closed Global Id: T0611182768				
NISHIMORI FARMS / CA	SOUTHEAST OF WILLIAM	NNE 1/4 - 1/2 (0.432 mi.)	22	40
Database: SLIC, Date of Government Version: 06/12/2017				

Facility Status: Completed - Case Closed
Global Id: T10000001010

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CONTINENTAL HERITAGE	275 ROSE AVENUE	SSW 1/8 - 1/4 (0.181 mi.)	7	15
Database: VENTURA CO. UST, Date of Government Version: 02/27/2017 Facility Id: D 532 Facility Status: inactive				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

SCH: This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category. depending on the level of threat to public health and safety or the. environment they pose.

A review of the SCH list, as provided by EDR, and dated 07/31/2017 has revealed that there is 1 SCH site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIO ROSALES	***KOHALA/JACINTO STREE***	***NE 0 - 1/8 (0.119 mi.)***	***5***	***10***
Facility Id: 56010011 Status: No Further Action				

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MC CASLIN OIL CO.	***2425 COLONIA RD***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B8***	***15***

Status: A
Tank Status: A
Comp Number: 1374

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MCCASLIN OIL COMPANY	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
MAULHARDT FARM	1953 E COLONIA RD	WNW 1/8 - 1/4 (0.237 mi.)	B10	20
Facility Id: 00000033070				

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MC CASLIN OIL CO.	***2425 COLONIA RD***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B8***	***15***
Facility Id: 56000456				
Status: A				

Other Ascertainable Records

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 7 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MCCASLIN OIL COMPANY	***2425 COLONIA RD.***	***WNW 1/8 - 1/4 (0.237 mi.)***	***B9***	***16***
Reg Id: C-89133				
Reg Id: 56290158				
STANDARD PACIFIC OF	***1191 COLONIA ROAD***	***W 1/4 - 1/2 (0.411 mi.)***	***21***	***38***
Reg Id: 930300343				
JONES INTERCABLE	***721 MAULHARDT AVE***	***E 1/4 - 1/2 (0.469 mi.)***	***23***	***41***
Reg Id: C-88111				
MAUL-GRAVES LEASING	***833 MAULHARDT***	***ENE 1/4 - 1/2 (0.487 mi.)***	***E24***	***43***
Reg Id: C-87010				
MISSION LINEN	***505 MAULHARDT AVE***	***E 1/4 - 1/2 (0.489 mi.)***	***27***	***49***
Reg Id: C-87052				

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON (SANCHEZ)	121 ROSE	SSW 1/4 - 1/2 (0.290 mi.)	C17	33

Reg Id: C-87095

OXNARD (CITY) TREATM	***PERKINS RD***	***W 1/4 - 1/2 (0.395 mi.)***	***D18***	***33***

Reg Id: C-90007

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there are 2 EDR Hist Cleaner sites within approximately 0.125 miles of the target property.

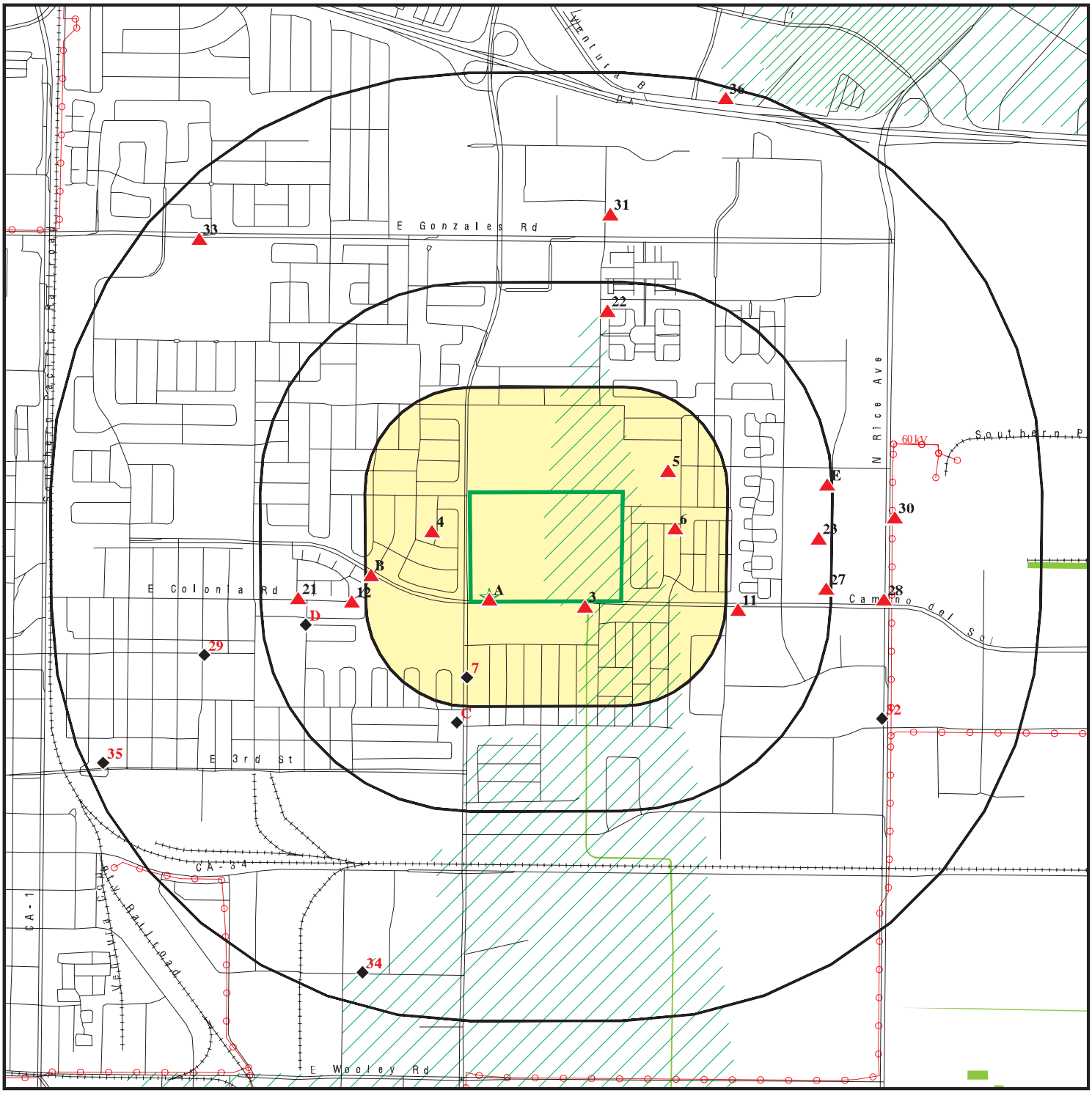
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VINEYARD PLAZA CLEAN	1944 CAMINO DEL SOL	E 0 - 1/8 (0.011 mi.)	3	9
SUPERIOR CARPET CLEA	633 URSULA DR	NW 0 - 1/8 (0.090 mi.)	4	9

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
WILMA PACIFIC INC.	LUST
CITY OF OXNARD	SLIC
NAVARRO SITE	SLIC
SANTA CLARA/MAXWELL SWIFT/CONNOLLY	ENVIROSTOR

OVERVIEW MAP - 5046760.2S



0 1/4 1/2 1 Miles

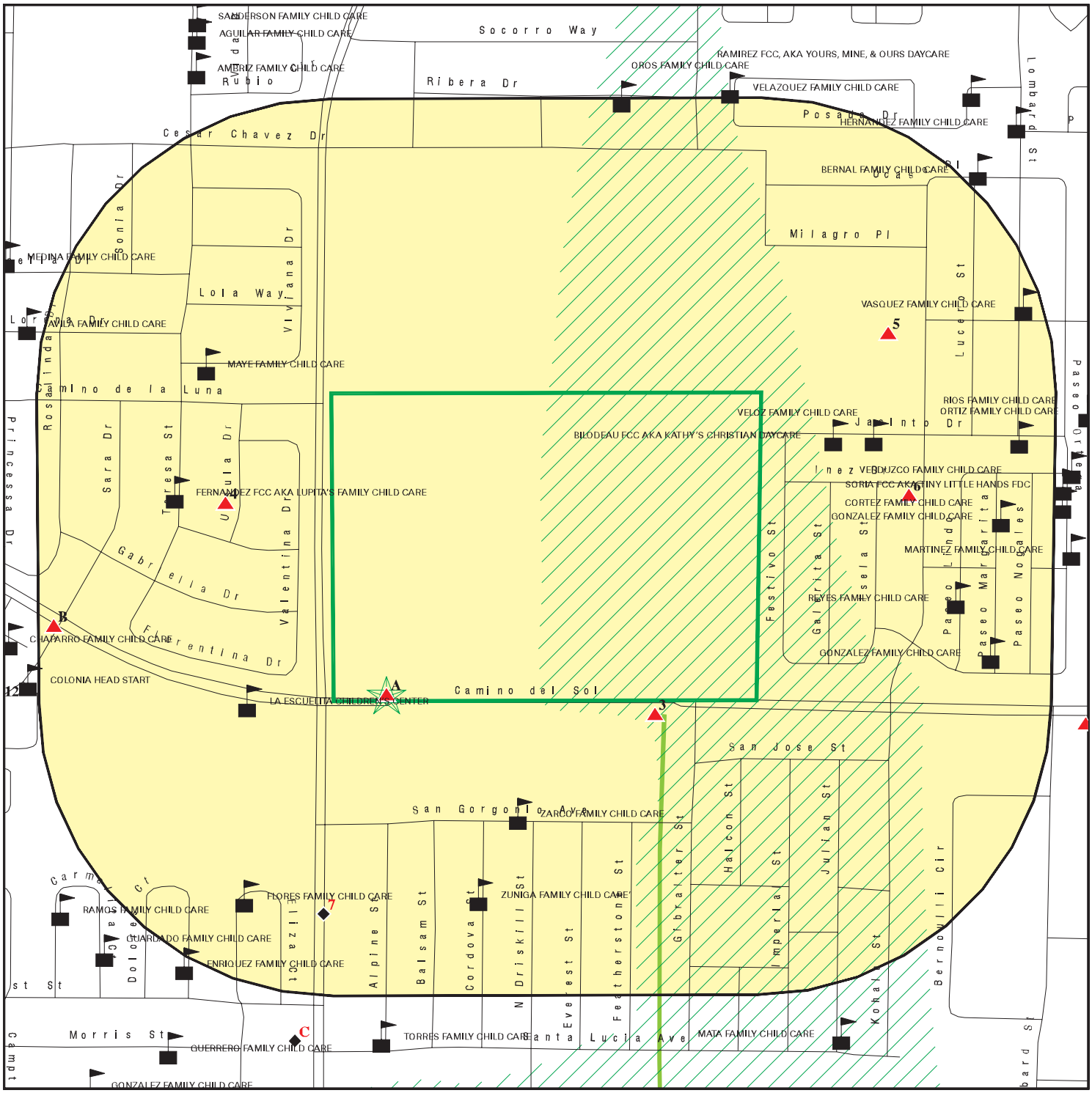
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Oxnard High School #8	CLIENT: Tetra Tech, Inc.
ADDRESS: 1853 Camino Del Sol Oxnard CA 93030	CONTACT: Jason Dane
LAT/LONG: 34.206412 / 119.158724	INQUIRY #: 5046760.2s DATE: September 21, 2017 2:08 pm

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DETAIL MAP - 5046760.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Oxnard High School #8	CLIENT: Tetra Tech, Inc.
ADDRESS: 1853 Camino Del Sol Oxnard CA 93030	CONTACT: Jason Dane
LAT/LONG: 34.206412 / 119.158724	INQUIRY #: 5046760.2s DATE: September 21, 2017 2:09 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	1	0	9	NR	11
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	2	15	NR	NR	17

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	1	1	NR	NR	2
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		1	0	NR	NR	NR	1
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	1	NR	NR	NR	1
HIST UST	0.250		0	2	NR	NR	NR	2
CA FID UST	0.250		0	1	NR	NR	NR	1
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP	1	NR	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
VENTURA CO. BWT	TP	1	NR	NR	NR	NR	NR	1
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
HAZNET	TP	1	NR	NR	NR	NR	NR	1
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	1	6	NR	NR	7
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MED WASTE VENTURA	TP		NR	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		2	NR	NR	NR	NR	2
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		3	4	10	22	9	0	48

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **ECLIPSE BERRY RANCH # 9** **FINDS** **1023263462**
Target **1853 CAMINO DEL SOL** **N/A**
Property **OXNARD, CA 93030**

Site 1 of 2 in cluster A

Actual: 63 ft.

FINDS:

Registry ID: 110065529280

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A2 **MAULHARDT FARMS** **VENTURA CO. BWT** **S112898150**
Target **1853 CAMINO DEL SOL** **HAZNET** **N/A**
Property **OXNARD, CA 93030**

Site 2 of 2 in cluster A

Actual: 63 ft.

VENTURA CO. BWT:
Facility ID: FA0034801
Program: BUSINESS PLAN - FARM

HAZNET:
envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD982444481
TSD County: Not reported
Waste Category: Other organic solids
Disposal Method: Recycler
Tons: .4000
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD028409019
TSD County: Not reported
Waste Category: Unspecified oil-containing waste
Disposal Method: Treatment, Tank

MAULHARDT FARMS (Continued) **S112898150**

Tons: .9382
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

envid: S112898150
Year: 1999
GEPAID: CAC002114376
Contact: MAULHARDT FARMS
Telephone: 8054855728
Mailing Name: Not reported
Mailing Address: 1853 CAMINO DEL SOL
Mailing City,St,Zip: OXNARD, CA 930300000
Gen County: Not reported
TSD EPA ID: CAD008252405
TSD County: Not reported
Waste Category: Unspecified solvent mixture
Disposal Method: Recycler
Tons: .4587
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Ventura

---

3 **VINEYARD PLAZA CLEANERS** **EDR Hist Cleaner** **1020115129**
East **1944 CAMINO DEL SOL** **N/A**
< 1/8 **OXNARD, CA 93030**
0.011 mi.
60 ft.

Relative: Higher

EDR Hist Cleaner

Actual: 63 ft.

Year:	Name:	Type:
2011	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC
2012	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC
2013	VINEYARD PLAZA CLEANERS	Drycleaning Plants, Except Rugs, NEC

---

4 **SUPERIOR CARPET CLEANING** **EDR Hist Cleaner** **1018874491**
NW **633 URSULA DR** **N/A**
< 1/8 **OXNARD, CA 93030**
0.090 mi.
477 ft.

Relative: Higher

EDR Hist Cleaner

Actual: 66 ft.

Year:	Name:	Type:
2008	SUPERIOR CARPET CLEANING	Carpet And Upholstery Cleaning

5
NE
< 1/8
0.119 mi.
628 ft.

RIO ROSALES
KOHALA/JACINTO STREET
OXNARD, CA 93030

ENVIROSTOR
SCH

S107737155
N/A

Relative:
Higher

Actual:
70 ft.

ENVIROSTOR:

Facility ID:	56010011
Status:	No Further Action
Status Date:	06/26/2002
Site Code:	304101
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	9.63
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	37
Senate:	19
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	34.2254
Longitude:	-119.1713
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE Silver DDD Toxaphene Thallium and compounds Beryllium and compounds DDT
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL, SV
Alias Name:	RIO ROSALES ELEM. SCH./PLAYGROUND (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEM. SCH./PLYGRD (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEMENTARY SCH. & PLAYGROUND
Alias Type:	Alternate Name
Alias Name:	RIO SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	RIO SD-RIO ROSALES/VCA
Alias Type:	Alternate Name
Alias Name:	304101
Alias Type:	Project Code (Site Code)
Alias Name:	56010011
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	07/06/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	06/26/2002

RIO ROSALES (Continued) **S107737155**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 04/02/2001
Comments: PEA Workplan

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 06/21/1995
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/05/1996
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 12/10/1997
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/20/1998
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 11/30/1999
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/13/2000
Comments: Phase 1 for Northeast Corner of Kohala & Jacinto

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/01/2000
Comments: Phase 1

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 06/26/2002
Comments: Not reported

Future Area Name: Not reported

RIO ROSALES (Continued) **S107737155**

Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	56010011
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	9.63
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	304101
Assembly:	37
Senate:	19
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	06/26/2002
Restricted Use:	NO
Funding:	School District
Latitude:	34.2254
Longitude:	-119.1713
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE, DDE, Silver, DDD, Toxaphene, Thallium and compounds, Beryllium and compounds, DDT
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL, SV
Alias Name:	RIO ROSALES ELEM. SCH./PLAYGROUND (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEM. SCH./PLYGRD (PROP)
Alias Type:	Alternate Name
Alias Name:	RIO ROSALES ELEMENTARY SCH. & PLAYGROUND
Alias Type:	Alternate Name
Alias Name:	RIO SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	RIO SD-RIO ROSALES/VCA
Alias Type:	Alternate Name
Alias Name:	304101
Alias Type:	Project Code (Site Code)
Alias Name:	56010011
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

RIO ROSALES (Continued) **S107737155**

Completed Document Type: Environmental Oversight Agreement
Completed Date: 07/06/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/26/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 04/02/2001
Comments: PEA Workplan

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 06/21/1995
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/05/1996
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 12/10/1997
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/20/1998
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 11/30/1999
Comments: Other Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/13/2000
Comments: Phase 1 for Northeast Corner of Kohala & Jacinto

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 03/01/2000
Comments: Phase 1

RIO ROSALES (Continued) **S107737155**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	06/26/2002
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

---

6 **ARENALES/KOHALA PROPERTY (CLAN/METH LAB)** **LUST** **S108240600**
ENE **765 KOHALA ST** **SLIC** **N/A**
1/8-1/4 **OXNARD, CA 93030** **CDL**
0.127 mi.
669 ft.

Relative:
Higher

Actual:
68 ft.

VENTURA CO. LUST:

Region:	VENTURA
Facility ID:	SR030
Status:	Case Closed

SLIC:

Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	08/13/2007
Global Id:	T0611182768
Lead Agency:	VENTURA COUNTY
Lead Agency Case Number:	SR0003008
Latitude:	34.208868
Longitude:	-119.150998
Case Type:	Cleanup Program Site
Case Worker:	EKO
Local Agency:	VENTURA COUNTY
RB Case Number:	Not reported
File Location:	Local Agency Warehouse
Potential Media Affected:	Under Investigation
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

CDL:

Facility ID:	2006-11-004
Date:	11/10/2006
Labtype:	Illegal Drug lab
Lab Type:	Illegal Drug Lab (L) - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

7
SSW
1/8-1/4
0.181 mi.
954 ft.

CONTINENTAL HERITAGE CORP.
275 ROSE AVENUE
OXNARD, CA

UST **U002244199**
N/A

Relative:
Lower

Actual:
61 ft.

VENTURA CO. UST:
Facility ID: D 532
Facility Status: inactive

B8
WNW
1/8-1/4
0.237 mi.
1250 ft.

MC CASLIN OIL CO.
2425 COLONIA RD
OXNARD, CA

Site 1 of 3 in cluster B

SWEEPS UST
CA FID UST **S101596327**
N/A

Relative:
Higher

Actual:
65 ft.

SWEEPS UST:
Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000002
Tank Status: A
Capacity: 12000
Active Date: Not reported
Tank Use: UNKNOWN
STG: P
Content: Not reported
Number Of Tanks: 4

Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000003
Tank Status: A
Capacity: 12000
Active Date: Not reported
Tank Use: UNKNOWN
STG: P
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 1374
Number: 9
Board Of Equalization: 44-030808
Referral Date: 09-30-92
Action Date: 09-30-92
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 56-000-001374-000004

MC CASLIN OIL CO. (Continued) **S101596327**

Tank Status:	A
Capacity:	12000
Active Date:	Not reported
Tank Use:	UNKNOWN
STG:	P
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	1374
Number:	9
Board Of Equalization:	44-030808
Referral Date:	09-30-92
Action Date:	09-30-92
Created Date:	02-29-88
Owner Tank Id:	Not reported
SWRCB Tank Id:	56-000-001374-000005
Tank Status:	A
Capacity:	Not reported
Active Date:	Not reported
Tank Use:	UNKNOWN
STG:	P
Content:	Not reported
Number Of Tanks:	Not reported

CA FID UST:

Facility ID:	56000456
Regulated By:	UTNKA
Regulated ID:	6194
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	2425 COLONIA RD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	OXNARD
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

B9 **MCCASLIN OIL COMPANY** **ENVIROSTOR** **S102432868**
WNW **2425 COLONIA RD.** **LUST** **N/A**
1/8-1/4 **OXNARD, CA 93030** **HIST UST**
0.237 mi. **HIST CORTESE**
1250 ft. **Site 2 of 3 in cluster B**

Relative:
Higher

Actual:
65 ft.

ENVIROSTOR:

Facility ID:	56290158
Status:	Refer: Other Agency
Status Date:	08/31/1995
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical

MCCASLIN OIL COMPANY (Continued) **S102432868**

Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 37
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.23333
Longitude: -119.1736
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: * CONTAMINATED SOIL * WASTE OIL & MIXED OIL
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: COLONIA PETROLEUM PRODUCTS
Alias Type: Alternate Name
Alias Name: CAD981413776
Alias Type: EPA Identification Number
Alias Name: 56290158
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/01/1995
Comments: Database Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 03/02/1984
Comments: Facility identified via drive-by. Many rusted & dented drums. Black stains & pools of liquid seen. Drums scatter- ed on unpaved ground, sitting in liquid. Ground photos taken.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0611100537
Latitude: 34.2337844
Longitude: -119.1738569

MCCASLIN OIL COMPANY (Continued) **S102432868**

Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/13/1998
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-89133
LOC Case Number:	89133
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100537
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100537
Status:	Completed - Case Closed
Status Date:	10/13/1998
Global Id:	T0611100537
Status:	Open - Case Begin Date
Status Date:	09/25/1989
Global Id:	T0611100537
Status:	Open - Remediation
Status Date:	11/03/1997
Global Id:	T0611100537
Status:	Open - Site Assessment
Status Date:	09/25/1989

Regulatory Activities:

Global Id:	T0611100537
Action Type:	ENFORCEMENT
Date:	09/25/1989
Action:	* Historical Enforcement
Global Id:	T0611100537
Action Type:	Other
Date:	09/25/1989
Action:	Leak Reported
Global Id:	T0611100537
Action Type:	Other
Date:	09/25/1989
Action:	Leak Discovery

MCCASLIN OIL COMPANY (Continued) **S102432868**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-89133	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	89133	
Case Type:	Groundwater	
Abatement Method Used at the Site:		ETVSCD
Global ID:	T0611100537	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	9/25/1989	
Date Leak First Reported:		9/25/1989
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	9/25/1989	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		10/13/1998
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		3599.436185184064139069221631 4
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		9/25/1989
Preliminary Site Assessment Began:		9/25/1989
Pollution Characterization Began:		9/25/1989
Remediation Plan Submitted:		11/3/1997
Remedial Action Underway:		11/3/1997
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		9/25/1989
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	MACVALLEY OIL CO	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2063318 / -1	
Local Agency Staff:	KCK	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	

MCCASLIN OIL COMPANY (Continued) **S102432868**

Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 89133
Status: Case Closed

HIST UST:
File Number: 0002CABD
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CABD.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-89133

Region: CORTESE
Facility County Code: 56
Reg By: CALSI
Reg Id: 56290158

B10 **MAULHARDT FARM** **HIST UST** **U001579799**
WNW **1953 E COLONIA RD** **N/A**
1/8-1/4 **OXNARD, CA 93030**
0.237 mi.
1250 ft. **Site 3 of 3 in cluster B**

Relative:
Higher

Actual:
65 ft.

HIST UST:
File Number: 0002CD25
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CD25.pdf
Region: STATE
Facility ID: 00000033070
Facility Type: Other

MAULHARDT FARM (Continued) **U001579799**

Other Type:	FARM
Contact Name:	L.E. MAULHARDT
Telephone:	8054858019
Owner Name:	RICHARD F. MAULHARDT
Owner Address:	1853 E. COLONIA RD
Owner City,St,Zip:	OXNARD, CA 93030
Total Tanks:	0002
Tank Num:	001
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	002
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

11
East
1/4-1/2
0.280 mi.
1478 ft.

WILMA PACIFIC INC.
BERNOULLI CIR
OXNARD, CA 93030

LUST **S102441310**
N/A

Relative:
Higher

Actual:
67 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	930300461	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	Not reported	
Case Type:	Soil	
Abatement Method Used at the Site:		Not reported
Global ID:	T0611100064	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	LOMBARD	
Enforcement Type:	Not reported	
Date Leak Discovered:	5/20/1987	
Date Leak First Reported:		5/20/1987
Date Leak Record Entered:	5/27/1987	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	5/20/1987	
Date Case Last Changed on Database:		10/30/1997
Date the Case was Closed:		6/1/1988

WILMA PACIFIC INC. (Continued) **S102441310**

How Leak Discovered:	Tank Closure
How Leak Stopped:	Not reported
Cause of Leak:	UNK
Leak Source:	Tank
Operator:	Not reported
Water System:	Not reported
Well Name:	Not reported
Approx. Dist To Production Well (ft):	3725.1702194793204625533509837
Source of Cleanup Funding:	Tank
Preliminary Site Assessment Workplan Submitted:	Not reported
Preliminary Site Assessment Began:	Not reported
Pollution Characterization Began:	Not reported
Remediation Plan Submitted:	Not reported
Remedial Action Underway:	Not reported
Post Remedial Action Monitoring Began:	Not reported
Enforcement Action Date:	Not reported
Historical Max MTBE Date:	Not reported
Hist Max MTBE Conc in Groundwater:	Not reported
Hist Max MTBE Conc in Soil:	Not reported
Significant Interim Remedial Action Taken:	Not reported
GW Qualifier:	Not reported
Soil Qualifier:	Not reported
Organization:	Not reported
Owner Contact:	Not reported
Responsible Party:	WILMA PACIFIC INC.
RP Address:	2801 TOWNSGATE ROAD, WESTLAKE VILLAGE, CA 94015
Program:	LUST
Lat/Long:	34.2037948 / -1
Local Agency Staff:	EHD
Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	LETTER FROM ALLAN PATTON ASKED THAT THIS SITE BE LISTED AS CLOSED AS VCEH HAS CLOSED THE CASE. VC LUFT HAS NO RECORD OF THIS CASE.

12
West
1/4-1/2
0.283 mi.
1493 ft.

OXNARD FIRE STATION #5 **LUST** **S106874567**
1450 COLONIA AVE **N/A**
OXNARD, CA 93030

Relative:
Higher

Actual:
63 ft.

LUST:

Region:	STATE
Global Id:	T0611184371
Latitude:	34.235355
Longitude:	-119.17253
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/30/2006
Lead Agency:	VENTURA COUNTY
Case Worker:	GLT
Local Agency:	VENTURA COUNTY
RB Case Number:	C05003
LOC Case Number:	05003
File Location:	Local Agency

OXNARD FIRE STATION #5 (Continued) **S106874567**

Potential Media Affect: Soil
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611184371
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Global Id: T0611184371
Contact Type: Local Agency Caseworker
Contact Name: GINA TERESA
Organization Name: VENTURA COUNTY
Address: 800 S. VICTORIA AVENUE
City: VENTURA
Email: gina.teresa@ventura.org
Phone Number: Not reported

Status History:
Global Id: T0611184371
Status: Completed - Case Closed
Status Date: 10/30/2006

Global Id: T0611184371
Status: Open - Case Begin Date
Status Date: 11/24/2004

Regulatory Activities:
Global Id: T0611184371
Action Type: Other
Date: 01/04/2005
Action: Leak Reported

Global Id: T0611184371
Action Type: REMEDIATION
Date: 11/24/2004
Action: Excavation

Global Id: T0611184371
Action Type: ENFORCEMENT
Date: 04/11/2005
Action: Technical Correspondence / Assistance / Other - #2

Global Id: T0611184371
Action Type: Other
Date: 11/24/2004
Action: Leak Discovery

Global Id: T0611184371
Action Type: Other

OXNARD FIRE STATION #5 (Continued) **S106874567**

Date: 11/24/2005
Action: Leak Stopped

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 05003
Status: Case Closed

C13 **EXXON (SANCHEZ)** **LUST** **S103684224**
SSW **121 ROSE AVE** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.290 mi.
1531 ft. **Site 1 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87095	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	87095	
Case Type:	Groundwater	
Abatement Method Used at the Site:		EDFPVE
Global ID:	T0611100224	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	8/12/1987	
Date Leak First Reported:		8/12/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	8/12/1987	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		9/28/1998
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2304.74689473699987982835478931
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		8/12/1987
Preliminary Site Assessment Began:		2/13/1992
Pollution Characterization Began:		2/13/1992
Remediation Plan Submitted:		4/15/1994
Remedial Action Underway:		6/3/1997
Post Remedial Action Monitoring Began:		4/2/1998
Enforcement Action Date:		8/13/1987
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported

EXXON (SANCHEZ) (Continued) **S103684224**

Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: EXXON COMPANY USA
RP Address: Not reported
Program: LUST
Lat/Long: 34.2027208 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87095
Status: Case Closed

C14 **MOBIL OIL SS #18-P7C** **LUST** **S105974873**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA**
0.290 mi.
1531 ft. **Site 2 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 01026
Status: Case Closed

C15 **MOBIL OIL SS #18-P7C** **LUST** **S103625603**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA 93032**
0.290 mi.
1531 ft. **Site 3 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST:
Region: STATE
Global Id: T0611195678
Latitude: 34.2024
Longitude: -119.159865
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 11/27/2007
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: OXNARD, CITY OF
RB Case Number: C01026
LOC Case Number: 01026
File Location: Local Agency Warehouse
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611195678
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611195678
Status: Completed - Case Closed
Status Date: 11/27/2007

Global Id: T0611195678
Status: Open - Case Begin Date
Status Date: 07/30/2001

Global Id: T0611195678
Status: Open - Remediation
Status Date: 12/09/2003

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 12/03/2001

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 12/28/2001

Global Id: T0611195678
Status: Open - Site Assessment
Status Date: 11/10/2003

Global Id: T0611195678
Status: Open - Verification Monitoring
Status Date: 02/22/2002

Regulatory Activities:
Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/30/2003
Action: * Historical Enforcement - #L07

Global Id: T0611195678
Action Type: RESPONSE
Date: 05/19/2006
Action: Other Workplan

Global Id: T0611195678
Action Type: RESPONSE
Date: 08/31/2006

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Action: Soil and Water Investigation Report

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/27/2003
Action: * Historical Enforcement - #L06

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 06/17/2003
Action: * Historical Enforcement - #L03

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/25/2003
Action: * Historical Enforcement - #L04

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/16/2003
Action: Technical Correspondence / Assistance / Other

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/07/2004
Action: * Historical Enforcement - #L08

Global Id: T0611195678
Action Type: RESPONSE
Date: 02/12/2007
Action: Unknown

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/02/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 03/21/2005
Action: * Historical Enforcement - #L09

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/28/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 11/04/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/01/2005
Action: * No Action

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/12/2006
Action: Site Visit / Inspection / Sampling

Global Id: T0611195678
Action Type: Other
Date: 08/30/2001
Action: Leak Reported

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/01/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/10/2006
Action: File review - #L11

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 11/21/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 05/22/2006
Action: Technical Correspondence / Assistance / Other - #L12

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 08/02/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/20/2006
Action: LOP Case Closure Summary to RB - #CLR

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 07/20/2006
Action: Technical Correspondence / Assistance / Other - #L13

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/25/2006
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 01/01/2007
Action: File Review - Closure

Global Id: T0611195678
Action Type: RESPONSE

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Date: 12/16/2003
Action: Other Report / Document

Global Id: T0611195678
Action Type: REMEDIATION
Date: 12/09/2003
Action: Monitored Natural Attenuation

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 12/18/2006
Action: Technical Correspondence / Assistance / Other - #P&A

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/14/2007
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/11/2006
Action: File review - #CLR2

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/08/2003
Action: * Historical Enforcement - #L05

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 02/22/2007
Action: Notification - Preclosure - #Inv

Global Id: T0611195678
Action Type: RESPONSE
Date: 04/30/2004
Action: Monitoring Report - Quarterly

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 04/30/2004
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/15/2005
Action: * Historical Enforcement - #L10

Global Id: T0611195678
Action Type: RESPONSE
Date: 09/02/2003
Action: Soil and Water Investigation Report

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 09/13/2006
Action: Technical Correspondence / Assistance / Other - #L14

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Global Id: T0611195678
Action Type: Other
Date: 07/30/2001
Action: Leak Discovery

Global Id: T0611195678
Action Type: RESPONSE
Date: 04/30/2005
Action: Monitoring Report - Quarterly

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 10/24/2005
Action: * No Action

Global Id: T0611195678
Action Type: ENFORCEMENT
Date: 08/12/2009
Action: Staff Letter - #GWM

Global Id: T0611195678
Action Type: Other
Date: 07/30/2001
Action: Leak Stopped

Region: STATE
Global Id: T0611100224
Latitude: 34.2027643
Longitude: -119.1597969
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 09/28/1998
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: C-87095
LOC Case Number: 87095
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611100224
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100224

MOBIL OIL SS #18-P7C (Continued) **S103625603**

Status: Completed - Case Closed
Status Date: 09/28/1998

Global Id: T0611100224
Status: Open - Case Begin Date
Status Date: 08/12/1987

Global Id: T0611100224
Status: Open - Remediation
Status Date: 04/15/1994

Global Id: T0611100224
Status: Open - Remediation
Status Date: 06/03/1997

Global Id: T0611100224
Status: Open - Site Assessment
Status Date: 08/12/1987

Global Id: T0611100224
Status: Open - Site Assessment
Status Date: 02/13/1992

Global Id: T0611100224
Status: Open - Verification Monitoring
Status Date: 04/02/1998

Regulatory Activities:
Global Id: T0611100224
Action Type: Other
Date: 08/12/1987
Action: Leak Reported

Global Id: T0611100224
Action Type: Other
Date: 08/12/1987
Action: Leak Discovery

Global Id: T0611100224
Action Type: ENFORCEMENT
Date: 08/13/1987
Action: * Historical Enforcement

C16 **MOBIL OIL SS #18-P7C** **LUST** **S105693321**
SSW **121 ROSE AVE.** **N/A**
1/4-1/2 **OXNARD, CA 93032**
0.290 mi.
1531 ft. **Site 4 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-01026
Status: Pollution Characterization
Substance: Gasoline

MOBIL OIL SS #18-P7C (Continued) **S105693321**

Substance Quantity:	Not reported	
Local Case No:	01026	
Case Type:	Undefined	
Abatement Method Used at the Site:		Not reported
Global ID:	T0611195678	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	FIRST ST.	
Enforcement Type:	None Taken	
Date Leak Discovered:	7/30/2001	
Date Leak First Reported:		8/30/2001
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	7/30/2001	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		Not reported
How Leak Discovered:	Tank Closure	
How Leak Stopped:	Close Tank	
Cause of Leak:	UNK	
Leak Source:	UNK	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2229.126208754776926651380312
Source of Cleanup Funding:		UNK
Preliminary Site Assessment Workplan Submitted:		12/3/2001
Preliminary Site Assessment Began:		12/28/2001
Pollution Characterization Began:		11/10/2003
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		2/22/2002
Enforcement Action Date:		Not reported
Historical Max MTBE Date:		2/22/2002
Hist Max MTBE Conc in Groundwater:		150
Hist Max MTBE Conc in Soil:		420
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	=	
Soil Qualifier:	=	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	LEE HANLEY	
RP Address:	1464 MADERA ROAD, SUITE N., #265	
Program:	LUST	
Lat/Long:	34.2024 / -1	
Local Agency Staff:	DCS	
Beneficial Use:	Not reported	
Priority:	C2	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	
Assigned Name:	Not reported	
Summary:	Not reported	

C17 **EXXON (SANCHEZ)** **HIST CORTESE** **S101305759**
SSW **121 ROSE** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.290 mi.
1531 ft. **Site 5 of 5 in cluster C**

Relative:
Lower

Actual:
60 ft.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	56
Reg By:	LTNKA
Reg Id:	C-87095

D18 **OXNARD (CITY) TREATMENT PLANT** **LUST** **S103684213**
West **PERKINS RD** **HIST CORTESE** **N/A**
1/4-1/2 **OXNARD, CA 93033**
0.395 mi.
2087 ft. **Site 1 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-89075	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	89075	
Case Type:	Soil	
Abatement Method Used at the Site:		ETIT
Global ID:	T0611100484	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	7/5/1989	
Date Leak First Reported:		7/5/1989
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/5/1989	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		2/1/1992
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		742.11176583769876777767199175
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		7/5/1989
Preliminary Site Assessment Began:		Not reported
Pollution Characterization Began:		Not reported
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		7/5/1989
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported

OXNARD (CITY) TREATMENT PLANT (Continued) **S103684213**

Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	OX WW TREATMENT PLNT	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.148056 / -1	
Local Agency Staff:	EHD	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	
Assigned Name:	Not reported	
Summary:	Not reported	
Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87045	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	87045	
Case Type:	Groundwater	
Abatement Method Used at the Site:		ETIT
Global ID:	T0611100191	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	4/30/1987	
Date Leak First Reported:		4/30/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/1/1988	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		7/18/1996
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		2848.377086025758041026968079 7
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		7/27/1987
Preliminary Site Assessment Began:		10/15/1989
Pollution Characterization Began:		10/15/1989
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		4/30/1987

OXNARD (CITY) TREATMENT PLANT (Continued) **S103684213**

Historical Max MTBE Date:	Not reported
Hist Max MTBE Conc in Groundwater:	Not reported
Hist Max MTBE Conc in Soil:	Not reported
Significant Interim Remedial Action Taken:	Not reported
GW Qualifier:	Not reported
Soil Qualifier:	Not reported
Organization:	Not reported
Owner Contact:	Not reported
Responsible Party:	OXNARD WASTE WATER TREATMENT P
RP Address:	Not reported
Program:	LUST
Lat/Long:	34.1422103 / -1
Local Agency Staff:	EHD
Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	Not reported

HIST CORTESE:

Region:	CORTESE
Facility County Code:	56
Reg By:	LTNKA
Reg Id:	C-90007

D19 **OXNARD (CITY)** **LUST** **S106568384**
West **300 MARQUITA N** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.397 mi.
2095 ft. **Site 2 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST:

Region:	STATE
Global Id:	T0611100594
Latitude:	34.2056897
Longitude:	-119.1663208
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/01/1994
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-90007
LOC Case Number:	90007
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100594
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported

OXNARD (CITY) (Continued) **S106568384**

City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100594
Status: Completed - Case Closed
Status Date: 03/01/1994

Global Id: T0611100594
Status: Open - Case Begin Date
Status Date: 01/16/1990

Global Id: T0611100594
Status: Open - Remediation
Status Date: 12/16/1992

Global Id: T0611100594
Status: Open - Site Assessment
Status Date: 01/16/1990

Global Id: T0611100594
Status: Open - Site Assessment
Status Date: 09/01/1992

Regulatory Activities:
Global Id: T0611100594
Action Type: ENFORCEMENT
Date: 01/16/1990
Action: * Historical Enforcement

Global Id: T0611100594
Action Type: Other
Date: 01/16/1990
Action: Leak Reported

Global Id: T0611100594
Action Type: Other
Date: 01/16/1990
Action: Leak Discovery

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 90007
Status: Case Closed

D20 **OXNARD (CITY)** **LUST** **S106517299**
West **300 MARQUITA N** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.397 mi.
2095 ft. **Site 3 of 3 in cluster D**

Relative:
Lower

Actual:
62 ft.

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-90007	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	90007	
Case Type:	Soil	
Abatement Method Used at the Site:		Excavate and Dispose
Global ID:	T0611100594	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	1/16/1990	
Date Leak First Reported:		1/16/1990
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	1/16/1990	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		3/1/1994
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		1954.178225116558897196838059 4
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		1/16/1990
Preliminary Site Assessment Began:		9/1/1992
Pollution Characterization Began:		9/1/1992
Remediation Plan Submitted:		12/16/1992
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		1/16/1990
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	CITY OF OXNARD	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2053407 / -1	
Local Agency Staff:	EHD	

OXNARD (CITY) (Continued) **S106517299**

Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	Not reported

21
West
1/4-1/2
0.411 mi.
2168 ft.

STANDARD PACIFIC OF VENTURA **LUST** **U003187597**
1191 COLONIA ROAD **UST** **N/A**
OXNARD, CA **HIST CORTESE**

Relative:
Higher

Actual:
63 ft.

LUST:

Region:	STATE
Global Id:	T0611100061
Latitude:	34.2064444
Longitude:	-119.1664331
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	11/17/1993
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Worker:	YR
Local Agency:	Not reported
RB Case Number:	930300343
LOC Case Number:	Not reported
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100061
Contact Type:	Regional Board Caseworker
Contact Name:	YUE RONG
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	320 W. 4TH ST., SUITE 200
City:	Los Angeles
Email:	yrong@waterboards.ca.gov
Phone Number:	Not reported

Status History:

Global Id:	T0611100061
Status:	Completed - Case Closed
Status Date:	11/17/1993
Global Id:	T0611100061
Status:	Open - Case Begin Date
Status Date:	09/01/1992
Global Id:	T0611100061
Status:	Open - Site Assessment
Status Date:	11/05/1992

Regulatory Activities:

STANDARD PACIFIC OF VENTURA (Continued) **U003187597**

Global Id: T0611100061
Action Type: Other
Date: 11/05/1992
Action: Leak Reported

Global Id: T0611100061
Action Type: Other
Date: 09/01/1992
Action: Leak Discovery

Global Id: T0611100061
Action Type: Other
Date: 09/01/1992
Action: Leak Stopped

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: 930300343
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: Not reported
Case Type: Soil
Abatement Method Used at the Site: Excavate and Dispose
Global ID: T0611100061
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: ROSE AVE
Enforcement Type: Not reported
Date Leak Discovered: 9/1/1992
Date Leak First Reported: 11/5/1992
Date Leak Record Entered: 11/4/1992
Date Confirmation Began: Not reported
Date Leak Stopped: 9/1/1992
Date Case Last Changed on Database: 11/17/1993
Date the Case was Closed: 11/17/1993
How Leak Discovered: Tank Closure
How Leak Stopped: Not reported
Cause of Leak: UNK
Leak Source: UNK
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 2356.60203293682347202479791
Source of Cleanup Funding: UNK
Preliminary Site Assessment Workplan Submitted: Not reported
Preliminary Site Assessment Began: 11/5/1992
Pollution Characterization Began: Not reported
Remediation Plan Submitted: Not reported
Remedial Action Underway: Not reported
Post Remedial Action Monitoring Began: Not reported
Enforcement Action Date: Not reported
Historical Max MTBE Date: Not reported

STANDARD PACIFIC OF VENTURA (Continued) **U003187597**

Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: STANDARD PACIFIC OF VENTURA
RP Address: 32133 LINDERO CYN RD, #105, WESTLAKE VILLAGE, 92361
Program: LUST
Lat/Long: 34.2064587 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. UST:
Facility ID: D 1039
Facility Status: inactive

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: 930300343

22
NNE
1/4-1/2
0.432 mi.
2281 ft.

Relative:
Higher

Actual:
78 ft.

NISHIMORI FARMS / CAMBRIDGE DEVELOPMENT CO. **SLIC** **S109604724**
SOUTHEAST OF WILLIAMS DRIVE/SOCORRO WAY, AND WANKEL WAY **N/A**
OXNARD, CA 93003

SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 06/02/1999
Global Id: T10000001010
Lead Agency: VENTURA COUNTY
Lead Agency Case Number: SR3146622
Latitude: 34.216396
Longitude: -119.153809
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: Not reported
File Location: Not reported
Potential Media Affected: Not reported
Potential Contaminants of Concern: DDD / DDE / DDT, Other Insecticides / Pesticide / Fumigants / Herbicides
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

23
East
1/4-1/2
0.469 mi.
2476 ft.

JONES INTERCABLE
721 MAULHARDT AVE
OXNARD, CA 93030

LUST
HIST CORTESE

S104164823
N/A

Relative:
Higher

Actual:
67 ft.

LUST:

Region:	STATE
Global Id:	T0611100351
Latitude:	34.208523
Longitude:	-119.145016
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	05/18/1995
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-88111
LOC Case Number:	88111
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100351
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100351
Status:	Completed - Case Closed
Status Date:	05/18/1995
Global Id:	T0611100351
Status:	Open - Case Begin Date
Status Date:	08/22/1988
Global Id:	T0611100351
Status:	Open - Remediation
Status Date:	02/15/1991
Global Id:	T0611100351
Status:	Open - Remediation
Status Date:	12/15/1993
Global Id:	T0611100351
Status:	Open - Site Assessment
Status Date:	08/22/1988
Global Id:	T0611100351
Status:	Open - Site Assessment

JONES INTERCABLE (Continued) **S104164823**

Status Date: 01/15/1990

Global Id: T0611100351
Status: Open - Verification Monitoring
Status Date: 12/05/1994

Regulatory Activities:
Global Id: T0611100351
Action Type: ENFORCEMENT
Date: 08/22/1988
Action: * Historical Enforcement

Global Id: T0611100351
Action Type: Other
Date: 08/22/1988
Action: Leak Reported

Global Id: T0611100351
Action Type: Other
Date: 08/22/1988
Action: Leak Discovery

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-88111
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: 88111
Case Type: Groundwater
Abatement Method Used at the Site: EDVS
Global ID: T0611100351
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: Not reported
Enforcement Type: EF
Date Leak Discovered: 8/22/1988
Date Leak First Reported: 8/22/1988
Date Leak Record Entered: Not reported
Date Confirmation Began: 8/22/1988
Date Leak Stopped: Not reported
Date Case Last Changed on Database: Not reported
Date the Case was Closed: 5/18/1995
How Leak Discovered: Not reported
How Leak Stopped: Not reported
Cause of Leak: Not reported
Leak Source: Not reported
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 4352.062371287670504799488554 2
Source of Cleanup Funding: F

JONES INTERCABLE (Continued) **S104164823**

Preliminary Site Assessment Workplan Submitted: 8/22/1988
Preliminary Site Assessment Began: 1/15/1990
Pollution Characterization Began: 1/15/1990
Remediation Plan Submitted: 2/15/1991
Remedial Action Underway: 12/15/1993
Post Remedial Action Monitoring Began: 12/5/1994
Enforcement Action Date: 8/22/1988
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: JONES INTERCABLE INC
RP Address: Not reported
Program: LUST
Lat/Long: 34.2082347 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 88111
Status: Case Closed

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-88111

E24 **MAUL-GRAVES LEASING CO.** **LUST** **S102433106**
ENE **833 MAULHARDT** **HIST UST** **N/A**
1/4-1/2 **OXNARD, CA 93030** **HIST CORTESE**
0.487 mi.
2573 ft. **Site 1 of 3 in cluster E**

Relative:
Higher

Actual:
68 ft.

LUST:
Region: STATE
Global Id: T0611100174
Latitude: 34.2093981
Longitude: -119.1444516
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 02/01/1994
Lead Agency: VENTURA COUNTY
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: C-87010
LOC Case Number: 87010

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611100174
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Status History:
Global Id: T0611100174
Status: Completed - Case Closed
Status Date: 02/01/1994

Global Id: T0611100174
Status: Open - Case Begin Date
Status Date: 01/23/1987

Global Id: T0611100174
Status: Open - Remediation
Status Date: 06/15/1993

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 02/05/1987

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 07/01/1988

Global Id: T0611100174
Status: Open - Site Assessment
Status Date: 12/14/1992

Regulatory Activities:
Global Id: T0611100174
Action Type: Other
Date: 01/23/1987
Action: Leak Reported

Global Id: T0611100174
Action Type: Other
Date: 01/23/1987
Action: Leak Discovery

Global Id: T0611100174
Action Type: ENFORCEMENT
Date: 01/23/1987
Action: * Historical Enforcement

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Ventura	
Facility Id:	C-87010	
Status:	Case Closed	
Substance:	Diesel	
Substance Quantity:	Not reported	
Local Case No:	87010	
Case Type:	Groundwater	
Abatement Method Used at the Site:		VSET
Global ID:	T0611100174	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	56000L	
Cross Street:	Not reported	
Enforcement Type:	EF	
Date Leak Discovered:	1/23/1987	
Date Leak First Reported:		1/23/1987
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	7/1/1988	
Date Leak Stopped:	Not reported	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		2/1/1994
How Leak Discovered:	Not reported	
How Leak Stopped:	Not reported	
Cause of Leak:	Not reported	
Leak Source:	Not reported	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		4743.1482577817948404837919514
Source of Cleanup Funding:		F
Preliminary Site Assessment Workplan Submitted:		2/5/1987
Preliminary Site Assessment Began:		12/14/1992
Pollution Characterization Began:		12/14/1992
Remediation Plan Submitted:		6/15/1993
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		1/23/1987
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	DR. PEPPER	
RP Address:	Not reported	
Program:	LUST	
Lat/Long:	34.2093307 / -1	
Local Agency Staff:	EHD	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	

MAUL-GRAVES LEASING CO. (Continued) **S102433106**

Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87010
Status: Case Closed

HIST UST:
File Number: 0002CAAF
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CAAF.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-87010

E25 **CERTIFIED FREIGHT LINES** **LUST** **S106716448**
ENE **965 MAULHARDT AVE'** **N/A**
1/4-1/2 **OXNARD, CA 93030**
0.488 mi.
2575 ft. **Site 2 of 3 in cluster E**

Relative:
Higher

Actual:
68 ft.

LUST:
Region: STATE
Global Id: T0611108154
Latitude: 34.210398
Longitude: -119.144981
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 06/03/1987
Lead Agency: VENTURA COUNTY
Case Worker: EKO
Local Agency: VENTURA COUNTY

CERTIFIED FREIGHT LINES (Continued) **S106716448**

RB Case Number: C87011
LOC Case Number: 87011
File Location: Not reported
Potential Media Affect: Under Investigation
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0611108154
Contact Type: Regional Board Caseworker
Contact Name: DANIEL PIROTTON
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: dpirotton@waterboards.ca.gov
Phone Number: 2135766714

Global Id: T0611108154
Contact Type: Local Agency Caseworker
Contact Name: ERIN K. O'CONNELL
Organization Name: VENTURA COUNTY
Address: 800 S. VICTORIA AVE
City: VENTURA
Email: erin.oconnell@ventura.org
Phone Number: Not reported

Status History:
Global Id: T0611108154
Status: Completed - Case Closed
Status Date: 06/03/1987

Global Id: T0611108154
Status: Open - Case Begin Date
Status Date: 01/26/1987

Regulatory Activities:
Global Id: T0611108154
Action Type: ENFORCEMENT
Date: 06/03/1987
Action: Closure/No Further Action Letter

Global Id: T0611108154
Action Type: Other
Date: 01/27/1987
Action: Leak Reported

Global Id: T0611108154
Action Type: Other
Date: 01/26/1987
Action: Leak Discovery

E26
ENE
1/4-1/2
0.488 mi.
2575 ft.

SYSTEM 99
965 MAULHARDT AVE
OXNARD, CA 93030

Site 3 of 3 in cluster E

LUST **U001579872**
HIST UST **N/A**

Relative:
Higher

Actual:
68 ft.

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87011
Status: Case Closed

HIST UST:

File Number:	0002CAA9
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CAA9.pdf
Region:	STATE
Facility ID:	00000007121
Facility Type:	Other
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	8054853123
Owner Name:	MAUL GRAVE LEASING
Owner Address:	500 MAULHARDT AVE
Owner City,St,Zip:	OXNARD, CA 93030
Total Tanks:	0003
Tank Num:	001
Container Num:	1
Year Installed:	1974
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	002
Container Num:	2
Year Installed:	1974
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	003
Container Num:	3
Year Installed:	1974
Tank Capacity:	00001000
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	12
Leak Detection:	Visual

Click here for Geo Tracker PDF:

27
East
1/4-1/2
0.489 mi.
2580 ft.

MISSION LINEN
505 MAULHARDT AVE
OXNARD, CA 93030

LUST
DRYCLEANERS
HIST CORTESE

1001262532
N/A

Relative:
Higher

Actual:
67 ft.

LUST:

Region:	STATE
Global Id:	T0611100196
Latitude:	34.206783
Longitude:	-119.145039
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	08/07/1995
Lead Agency:	VENTURA COUNTY
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	C-87052
LOC Case Number:	87052
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0611100196
Contact Type:	Regional Board Caseworker
Contact Name:	DANIEL PIROTTON
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	Not reported
City:	R4 UNKNOWN
Email:	dpirotton@waterboards.ca.gov
Phone Number:	2135766714

Status History:

Global Id:	T0611100196
Status:	Completed - Case Closed
Status Date:	08/07/1995
Global Id:	T0611100196
Status:	Open - Case Begin Date
Status Date:	05/20/1987
Global Id:	T0611100196
Status:	Open - Remediation
Status Date:	01/06/1992
Global Id:	T0611100196
Status:	Open - Site Assessment
Status Date:	05/20/1987
Global Id:	T0611100196
Status:	Open - Site Assessment
Status Date:	07/01/1988
Global Id:	T0611100196
Status:	Open - Site Assessment

MISSION LINEN (Continued) **1001262532**

Status Date: 01/06/1992

Global Id: T0611100196
Status: Open - Verification Monitoring
Status Date: 01/06/1992

Regulatory Activities:
Global Id: T0611100196
Action Type: Other
Date: 05/20/1987
Action: Leak Reported

Global Id: T0611100196
Action Type: Other
Date: 05/20/1987
Action: Leak Discovery

Global Id: T0611100196
Action Type: ENFORCEMENT
Date: 05/20/1987
Action: * Historical Enforcement

LUST REG 4:
Region: 4
Regional Board: 04
County: Ventura
Facility Id: C-87052
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: 87052
Case Type: Soil
Abatement Method Used at the Site: Not reported
Global ID: T0611100196
W Global ID: Not reported
Staff: UNK
Local Agency: 56000L
Cross Street: Not reported
Enforcement Type: EF
Date Leak Discovered: 5/20/1987
Date Leak First Reported: 5/20/1987
Date Leak Record Entered: Not reported
Date Confirmation Began: 7/1/1988
Date Leak Stopped: Not reported
Date Case Last Changed on Database: Not reported
Date the Case was Closed: 8/7/1995
How Leak Discovered: Not reported
How Leak Stopped: Not reported
Cause of Leak: Not reported
Leak Source: Not reported
Operator: Not reported
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 3602.859251821587291219888336 9
Source of Cleanup Funding: F

MISSION LINEN (Continued) **1001262532**

Preliminary Site Assessment Workplan Submitted: 5/20/1987
Preliminary Site Assessment Began: 1/6/1992
Pollution Characterization Began: 1/6/1992
Remediation Plan Submitted: 1/6/1992
Remedial Action Underway: 1/6/1992
Post Remedial Action Monitoring Began: 1/6/1992
Enforcement Action Date: 5/20/1987
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: MISSION INDUSTRIES
RP Address: Not reported
Program: LUST
Lat/Long: 34.2061208 / -1
Local Agency Staff: EHD
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

VENTURA CO. LUST:
Region: VENTURA
Facility ID: 87052
Status: Case Closed

DRYCLEANERS:
EPA Id: CAL000070058
NAICS Code: 812331
NAICS Description: Linen Supply
SIC Code: 7213
SIC Description: Linen Supply
Create Date: 03/11/1992
Facility Active: No
Inactive Date: 06/30/2006
Facility Addr2: Not reported
Owner Name: MISSION LINEN SUPPLY
Owner Address: PO BOX 1299
Owner Address 2: Not reported
Owner Telephone: 8056828588
Contact Name: SAUL RACKAUSKAS
Contact Address: PO BOX 1299
Contact Address 2: Not reported
Contact Telephone: 8057303605
Mailing Name: Not reported
Mailing Address 1: 505 MAULHARDT AVE
Mailing Address 2: Not reported
Mailing City: OXNARD
Mailing State: CA
Mailing Zip: 93030

MISSION LINEN (Continued) **1001262532**

Owner Fax: Not reported
Region Code: 3

HIST CORTESE:
Region: CORTESE
Facility County Code: 56
Reg By: LTNKA
Reg Id: C-87052

28
East
1/2-1
0.627 mi.
3308 ft.

SA RECYCLING
521 N RICE AVE
OXNARD, CA 93030

ENVIROSTOR
SWRCY
NPDES
WDS

S101482916
N/A

Relative:
Higher

Actual:
65 ft.

ENVIROSTOR:
Facility ID: 56730054
Status: Refer: Other Agency
Status Date: 08/31/1995
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20735
Longitude: -119.1428
APN: 214001214
Past Use: NONE SPECIFIED
Potential COC: * Pesticides - Wastes From Production * EMPTY PESTICIDE CONTAINERS, 30 GALLONS OR MORE
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: PACIFIC PATIO
Alias Type: Alternate Name
Alias Name: 214001214
Alias Type: APN
Alias Name: CAD980636799
Alias Type: EPA Identification Number
Alias Name: 56730054
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 11/15/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

SA RECYCLING (Continued) **S101482916**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	10/12/1983
Comments:	Facility identified from ERRIS; Records Search: 1964 Pac Tel Directory - insecticides.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SWRCY:

Reg Id:	146992
Cert Id:	RC146992.001
Mailing Address:	2411 N Glassell
Mailing City:	Orange
Mailing State:	CA
Mailing Zip Code:	92865
Website:	Not reported
Email:	tjohnson@sarecycling.com
Phone Number:	(805) 483-0512
Grand Father:	N
Rural:	N
Operation Begin Date:	10/11/2011
Aluminium:	Y
Glass:	Y
Plastic:	Y
Bimetal:	Y
Agency:	N/A
Monday Hours Of Operation:	8:00 am - 5:00 pm
Tuesday Hours Of Operation:	8:00 am - 5:00 pm
Wednesday Hours Of Operation:	8:00 am - 5:00 pm
Thursday Hours Of Operation:	8:00 am - 5:00 pm
Friday Hours Of Operation:	8:00 am - 5:00 pm
Saturday Hours Of Operation:	8:00 am - 2:00 pm
Sunday Hours Of Operation:	CLOSED
Organization ID:	18968
Organization Name:	SA Recycling LLC

NPDES:

Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	421296
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 56I023382
Program Type:	Industrial

SA RECYCLING (Continued) **S101482916**

Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/21/2011
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	SA Recycling LLC
Discharge Address:	2411 N Glassell Street
Discharge City:	Orange
Discharge State:	California
Discharge Zip:	92865
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported

SA RECYCLING (Continued) **S101482916**

DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	421296
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	4 56I023382
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	10/21/2011
PROCESSED DATE:	10/21/2011
STATUS CODE NAME:	Active
STATUS DATE:	10/21/2011
PLACE SIZE:	0.98
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Todd Peterson
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	714-632-2000
FACILITY CONTACT PHONE EXT:	2041
FACILITY CONTACT EMAIL:	tpeterson@sarecycling.com
OPERATOR NAME:	SA Recycling LLC
OPERATOR ADDRESS:	2411 N Glassell Street
OPERATOR CITY:	Orange
OPERATOR STATE:	California
OPERATOR ZIP:	92865
OPERATOR CONTACT NAME:	Todd Peterson
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	714-632-2000
OPERATOR CONTACT PHONE EXT:	2041
OPERATOR CONTACT EMAIL:	tpeterson@sarecycling.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported

SA RECYCLING (Continued) **S101482916**

CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Pacific Ocean
CERTIFIER NAME:	Tesha Johnson
CERTIFIER TITLE:	Corporate Permits Manager
CERTIFICATION DATE:	30-APR-15
PRIMARY SIC:	5093-Scrap and Waste Materials
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

WDS:

Facility ID:	4 56I017180
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	4
Facility Telephone:	8059811133
Facility Contact:	Steve Helvik
Agency Name:	CALIFORNIA PUBLIC RECYCLING
Agency Address:	521 North Rice Ave
Agency City,St,Zip:	Oxnard 93030
Agency Contact:	Steve Helvik
Agency Telephone:	8059811133
Agency Type:	Private
SIC Code:	5093
SIC Code 2:	Not reported
Primary Waste Type:	Inert/Influent or Solid Wastes that do not contain soluble pollutants or organic wastes and have little adverse impact on water quality. Such wastes could cause turbidity and siltation. Uncontaminated soils, rubble and concrete are examples of this category.
Primary Waste:	STORMS
Waste Type2:	Not reported
Waste2:	Stormwater Runoff
Primary Waste Type:	Inert/Influent or Solid Wastes that do not contain soluble pollutants or organic wastes and have little adverse impact on water quality. Such wastes could cause turbidity and siltation. Uncontaminated soils,

SA RECYCLING (Continued) **S101482916**

rubble and concrete are examples of this category.
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: No reclamation requirements associated with this facility.
POTW: The facility is not a POTW.
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

29
WSW
1/2-1
0.647 mi.
3416 ft.

RAMONA SCHOOL SITE **ENVIROSTOR** **S118757030**
804 COOPER ROAD **SCH** **N/A**
OXNARD, CA 93030

Relative:
Lower

Actual:
60 ft.

ENVIROSTOR:
Facility ID: 56820003
Status: No Action Required
Status Date: 03/24/2000
Site Code: 304084
Site Type: School Investigation
Site Type Detailed: School
Acres: Not reported
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Mark Malinowski
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.20444
Longitude: -119.1702
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: OXNARD UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: OXNARD USD-RAMONA SCHOOL/CDE
Alias Type: Alternate Name
Alias Name: RAMONA SCHOOL SITE

RAMONA SCHOOL SITE (Continued) **S118757030**

Alias Type:	Alternate Name
Alias Name:	110021974915
Alias Type:	EPA (FRS #)
Alias Name:	304084
Alias Type:	Project Code (Site Code)
Alias Name:	56820003
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/24/2000
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	56820003
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	Not reported
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Mark Malinowski
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	304084
Assembly:	44
Senate:	19
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	03/24/2000
Restricted Use:	NO
Funding:	School District
Latitude:	34.20444
Longitude:	-119.1702
APN:	NONE SPECIFIED
Past Use:	NONE

RAMONA SCHOOL SITE (Continued) **S118757030**

Potential COC: NONE SPECIFIED, No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: OXNARD UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: OXNARD USD-RAMONA SCHOOL/CDE
Alias Type: Alternate Name
Alias Name: RAMONA SCHOOL SITE
Alias Type: Alternate Name
Alias Name: 110021974915
Alias Type: EPA (FRS #)
Alias Name: 304084
Alias Type: Project Code (Site Code)
Alias Name: 56820003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 04/18/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 03/24/2000
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

30
ENE
1/2-1
0.649 mi.
3429 ft.

Relative:
Higher

Actual:
69 ft.

THE PROCTER & GAMBLE PAPER PRODUCT CO
800 N RICE AVE
OXNARD, CA 93030

RCRA-LQG **1000181055**
ENVIROSTOR **93030PRCTR800NO**
TRIS
ICIS
US AIRS
FINDS
EMI
HAZNET
MED WASTE VENTURA
NPDES

RCRA-LQG:
Date form received by agency: 05/23/2016
Facility name: THE PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Facility address: 800 N RICE AVE
OXNARD, CA 93030
EPA ID: CAD072263494
Mailing address: N RICE AVE
OXNARD, CA 93030

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Contact: KYLE A FIELD
Contact address: N RICE AVE
OXNARD, CA 93030
Contact country: US
Contact telephone: (805) 485-8871
Telephone ext.: 2408
Contact email: FIELD.KA@PG.COM
EPA Region: 09
Land type: Private
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: THE PROCTER & GAMBLE COMPANY
Owner/operator address: PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45201
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 10/18/1973
Owner/Op end date: Not reported

Owner/operator name: PROCTOR & GAMBLE PAPER PRODUCTS COMPANY
Owner/operator address: PO BOX 866
CITY NOT REPORTED, CA 99999
Owner/operator country: Not reported
Owner/operator telephone: (805) 485-8871
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: THE PROCTER & GAMBLE PAPER PROD. CO
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 10/18/1973
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 141
. Waste name: 141

. Waste code: 181
. Waste name: 181

. Waste code: 212
. Waste name: 212

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 351
. Waste name: 351

. Waste code: 352
. Waste name: 352

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Historical Generators:
Date form received by agency: 09/28/2010
Site name: PROCTER AND GAMBLE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

Date form received by agency: 09/01/1996
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Large Quantity Generator

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Date form received by agency: 09/01/1996
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Small Quantity Generator

Date form received by agency: 03/22/1996
Site name: PROCTER AND GAMBLE PAPER PRODUCTS,OXNARD
Classification: Large Quantity Generator

Date form received by agency: 03/31/1994
Site name: PROCTER & GAMBLE PAPER PRODUCTS CO.
Classification: Large Quantity Generator

Date form received by agency: 04/04/1990
Site name: PROCTER & GAMBLE PAPER PRODUCTS CO
Classification: Large Quantity Generator

Date form received by agency: 08/15/1980
Site name: PROCTER & GAMBLE PAPER PRODUCTS COMPANY
Classification: Large Quantity Generator

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 05/11/2005
Date achieved compliance: 05/16/2005
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/11/2005
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 02/25/1986
Date achieved compliance: 04/17/1986
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 02/25/1986
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 02/25/1986
Date achieved compliance: 04/17/1986
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/31/1986
Enf. disposition status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 08/22/1984
Date achieved compliance: 05/20/1985
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 09/04/1984
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 08/06/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/11/2005
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 05/16/2005
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 07/05/1994
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 05/29/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 06/25/1986
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/25/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/17/1986
Evaluation lead agency: State

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Evaluation date: 08/22/1984
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 05/20/1985
Evaluation lead agency: State

ENVIROSTOR:
Facility ID: 56260002
Status: Refer: Other Agency
Status Date: 08/31/1995
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20961
Longitude: -119.1387
APN: 216015136
Past Use: NONE SPECIFIED
Potential COC: * HALOGENATED SOLVENTS * ORGANIC MONOMER WASTE, INCLUDING UNREACTED RESINS * OTHER STILL BOTTOM WASTE * DETERGENT & SOAP * UNSPECIFIED ACID SOLUTION * UNSPECIFIED ALKALINE SOLUTIONS * UNSPECIFIED SOLVENT MIXTURES * WASTE OIL & MIXED OIL * ADHESIVES * PAPER SLUDGE/PULP
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CHARMIN PAPER PRODUCTS (1973-PRESENT)
Alias Type: Alternate Name
Alias Name: PROCTOR & GAMBLE PAPER PRODUCTS
Alias Type: Alternate Name
Alias Name: STANDARD OIL CO OF CA(1956-69)
Alias Type: Alternate Name
Alias Name: 216015136
Alias Type: APN
Alias Name: CAD980636807
Alias Type: EPA Identification Number
Alias Name: 56260002
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 11/15/1994
Comments: CALSITES VALIDATION PROGRAM CONFIRMS NFA FOR DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Completed Document Type: * Discovery
Completed Date: 12/31/1910
Comments: FACILITY IDENTIFIED ID FROM ERRIS

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

TRIS:

Click this hyperlink while viewing on your computer to access
2 additional US_TRIS: record(s) in the EDR Site Report.

ICIS:

Enforcement Action ID: CAVCAA0000061110001500188
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500188
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500187
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500187
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500178
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500178
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500176
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500176
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA0000061110001500146
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500146
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500145
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500145
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500098
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500098
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611110001500093
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500093
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000073
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500073
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000072
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500072
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000051
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500051
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000050
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500050
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Notice of Violation
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000047
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500047
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE
OXNARD, CA 93030
Enforcement Action Type: Administrative Order
Facility County: VENTURA
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 2676
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.209139
Longitude in Decimal Degrees: -119.142083
Permit Type Desc: Not reported
Program System Acronym: CAVCA0000611100015
Facility NAICS Code: 322291
Tribal Land Code: Not reported

Enforcement Action ID: CAVCAA00000611100015000046
FRS ID: 110000481274
Action Name: PROCTER & GAMBLE PAPER PRODUCTS 061110001500046
Facility Name: PROCTER & GAMBLE PAPER PRODUCTS
Facility Address: 800 NORTH RICE AVENUE

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

	OXNARD, CA 93030
Enforcement Action Type:	Notice of Violation
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Informal
EA Type Code:	NOV
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

Enforcement Action ID:	CAVCAA0000061110001500043
FRS ID:	110000481274
Action Name:	PROCTER & GAMBLE PAPER PRODUCTS 061110001500043
Facility Name:	PROCTER & GAMBLE PAPER PRODUCTS
Facility Address:	800 NORTH RICE AVENUE
	OXNARD, CA 93030
Enforcement Action Type:	Administrative Order
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Formal
EA Type Code:	SCAAAO
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

Enforcement Action ID:	CAVCAA0000061110001500042
FRS ID:	110000481274
Action Name:	PROCTER & GAMBLE PAPER PRODUCTS 061110001500042
Facility Name:	PROCTER & GAMBLE PAPER PRODUCTS
Facility Address:	800 NORTH RICE AVENUE
	OXNARD, CA 93030
Enforcement Action Type:	Notice of Violation
Facility County:	VENTURA
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Informal
EA Type Code:	NOV
Facility SIC Code:	2676
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.209139
Longitude in Decimal Degrees:	-119.142083
Permit Type Desc:	Not reported
Program System Acronym:	CAVCA0000611100015
Facility NAICS Code:	322291
Tribal Land Code:	Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

US AIRS (AFS):
Envid: 1000181055
Region Code: 09
County Code: CA111
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
D and B Number: Not reported
Facility Site Name: PROCTER & GAMBLE PAPER PRODUCTS
Primary SIC Code: 2676
NAICS Code: 322291
Default Air Classification Code: MAJ
Facility Type of Ownership Code: POF
Air CMS Category Code: TVM
HPV Status: Not reported

US AIRS (AFS):
Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1982-03-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1985-09-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1985-09-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ

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Air Program: New Source Performance Standards
Activity Date: 1986-01-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-02-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-05-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1987-12-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1989-12-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015

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Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1991-12-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-03-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-11-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1992-12-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1993-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

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Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1994-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1995-10-31 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1996-10-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1997-10-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 1999-11-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

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Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2001-02-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards

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Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

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Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

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Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards

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Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: New Source Performance Standards
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-09-10 00:00:00
Activity Status Date: 2015-01-21 18:11:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-05-19 00:00:00
Activity Status Date: 2015-08-06 16:36:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-08-05 00:00:00
Activity Status Date: 2015-08-18 13:21:43
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-08-04 00:00:00
Activity Status Date: 2016-08-04 17:01:09
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-06-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2003-12-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-04-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-04-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-04-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-09-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-05-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2007-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-03-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-05-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-05-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2012-05-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-11-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-03-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-05-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-04-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-02-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-03-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-05-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-13 00:00:00
Activity Status Date: 2010-08-17 00:00:00
Activity Group: Case File

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: 2013-06-06 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: 2014-05-30 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 1992-09-02 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 1992-11-19 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: Not reported
Activity Status Date: 1993-06-21 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2004-08-09 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2005-11-11 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-09-10 00:00:00
Activity Status Date: 2015-01-21 18:11:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-05-19 00:00:00
Activity Status Date: 2015-08-06 16:36:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-08-05 00:00:00
Activity Status Date: 2015-08-18 13:21:43
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-02-12 00:00:00
Activity Status Date: 2016-07-14 19:25:41
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-08-04 00:00:00
Activity Status Date: 2016-08-04 17:01:09
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2000-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2001-02-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-04-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-06-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-07-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-06-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-06-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2003-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2003-12-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-11-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-04-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-06-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-06-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-08-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-11-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-04-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-04-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2006-09-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-11-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-03-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-04-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-05-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-06-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-12-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-03-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-03-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-04-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-05-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-09-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2008-12-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-03-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-05-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-06-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-06-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-10-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-01-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-06-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-12-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-03-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2011-03-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-05-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-09 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-08-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-12-05 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-03-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-05-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-07-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-09-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-11-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-03-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2013-05-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-06-17 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-09-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-04-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-12 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-07-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-02-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-03-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-03-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-05-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-09-02 00:00:00
Activity Status Date: 1992-09-02 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-11-19 00:00:00
Activity Status Date: 1992-11-19 00:00:00
Activity Group: Enforcement Action

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1993-06-21 00:00:00
Activity Status Date: 1993-06-21 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-07-19 00:00:00
Activity Status Date: 2004-07-19 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-10-04 00:00:00
Activity Status Date: 2005-10-04 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-21 00:00:00
Activity Status Date: 2010-07-21 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Activity Date: 2013-06-06 00:00:00
Activity Status Date: 2013-06-06 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-14 00:00:00
Activity Status Date: 2014-05-14 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-08-12 00:00:00
Activity Status Date: 1992-08-12 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1992-11-11 00:00:00
Activity Status Date: 1992-11-11 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1993-06-10 00:00:00
Activity Status Date: 1993-06-10 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-04-30 00:00:00
Activity Status Date: 2004-04-30 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-05-23 00:00:00
Activity Status Date: 2005-05-23 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-13 00:00:00
Activity Status Date: 2010-07-13 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-05-15 00:00:00
Activity Status Date: 2013-05-15 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CAVCA0000611100015
Facility Registry ID: 110000481274
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-05-06 00:00:00
Activity Status Date: 2014-05-06 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

FINDS:

Registry ID: 110055870062

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

EMI:

Year:	1987
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	37
Reactive Organic Gases Tons/Yr:	5
Carbon Monoxide Emissions Tons/Yr:	80
NOX - Oxides of Nitrogen Tons/Yr:	255
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	81
Part. Matter 10 Micrometers and Smllr Tons/Yr:	60

Year:	1987
County Code:	56
Air Basin:	SCC
Facility ID:	215
Air District Name:	VEN
SIC Code:	2033
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	56
Air Basin:	SCC
Facility ID:	215
Air District Name:	VEN
SIC Code:	2033
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	75
Reactive Organic Gases Tons/Yr:	43
Carbon Monoxide Emissions Tons/Yr:	80
NOX - Oxides of Nitrogen Tons/Yr:	212
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	105
Part. Matter 10 Micrometers and Smllr Tons/Yr:	76

Year:	1995
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	93
Reactive Organic Gases Tons/Yr:	59
Carbon Monoxide Emissions Tons/Yr:	178
NOX - Oxides of Nitrogen Tons/Yr:	319
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	151
Part. Matter 10 Micrometers and Smllr Tons/Yr:	111

Year:	1996
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	87
Reactive Organic Gases Tons/Yr:	52
Carbon Monoxide Emissions Tons/Yr:	277
NOX - Oxides of Nitrogen Tons/Yr:	178
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	60
Part. Matter 10 Micrometers and Smllr Tons/Yr:	47

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Year:	1997
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	224
Reactive Organic Gases Tons/Yr:	58
Carbon Monoxide Emissions Tons/Yr:	185
NOX - Oxides of Nitrogen Tons/Yr:	153
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	60
Part. Matter 10 Micrometers and Smllr Tons/Yr:	47

Year:	1998
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	250
Reactive Organic Gases Tons/Yr:	78
Carbon Monoxide Emissions Tons/Yr:	128
NOX - Oxides of Nitrogen Tons/Yr:	151
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	38
Part. Matter 10 Micrometers and Smllr Tons/Yr:	32

Year:	1999
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	252
Reactive Organic Gases Tons/Yr:	78
Carbon Monoxide Emissions Tons/Yr:	114
NOX - Oxides of Nitrogen Tons/Yr:	168
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	39
Part. Matter 10 Micrometers and Smllr Tons/Yr:	33

Year:	2000
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	235
Reactive Organic Gases Tons/Yr:	77
Carbon Monoxide Emissions Tons/Yr:	106
NOX - Oxides of Nitrogen Tons/Yr:	150
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	38
Part. Matter 10 Micrometers and Smllr Tons/Yr:	32

Year:	2001
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	B
Total Organic Hydrocarbon Gases Tons/Yr:	183
Reactive Organic Gases Tons/Yr:	55
Carbon Monoxide Emissions Tons/Yr:	122
NOX - Oxides of Nitrogen Tons/Yr:	152
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	36
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30

Year:	2002
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	185
Reactive Organic Gases Tons/Yr:	53
Carbon Monoxide Emissions Tons/Yr:	123
NOX - Oxides of Nitrogen Tons/Yr:	146
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	35
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30

Year:	2003
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	179
Reactive Organic Gases Tons/Yr:	58
Carbon Monoxide Emissions Tons/Yr:	158

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

NOX - Oxides of Nitrogen Tons/Yr:	133
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	34
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29

Year:	2004
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	137.383
Reactive Organic Gases Tons/Yr:	46.08
Carbon Monoxide Emissions Tons/Yr:	173.235
NOX - Oxides of Nitrogen Tons/Yr:	86.725
SOX - Oxides of Sulphur Tons/Yr:	1.514
Particulate Matter Tons/Yr:	33.17
Part. Matter 10 Micrometers and Smllr Tons/Yr:	28.15

Year:	2005
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	171.929
Reactive Organic Gases Tons/Yr:	59.7330397
Carbon Monoxide Emissions Tons/Yr:	102.105
NOX - Oxides of Nitrogen Tons/Yr:	89.23
SOX - Oxides of Sulphur Tons/Yr:	1.513
Particulate Matter Tons/Yr:	32.161
Part. Matter 10 Micrometers and Smllr Tons/Yr:	27.124608

Year:	2006
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	148.674943
Reactive Organic Gases Tons/Yr:	47.598834294
Carbon Monoxide Emissions Tons/Yr:	41.98888
NOX - Oxides of Nitrogen Tons/Yr:	72.17863
SOX - Oxides of Sulphur Tons/Yr:	1.46058
Particulate Matter Tons/Yr:	28.936085
Part. Matter 10 Micrometers and Smllr Tons/Yr:	25.76558434

Year:	2007

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	136.8816758
Reactive Organic Gases Tons/Yr:	49.05490852
Carbon Monoxide Emissions Tons/Yr:	55.82806
NOX - Oxides of Nitrogen Tons/Yr:	92.02524
SOX - Oxides of Sulphur Tons/Yr:	1.69014
Particulate Matter Tons/Yr:	34.233315
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29.258987324

Year:	2008
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	118.35693
Reactive Organic Gases Tons/Yr:	43.00705
Carbon Monoxide Emissions Tons/Yr:	41.25977
NOX - Oxides of Nitrogen Tons/Yr:	48.1715
SOX - Oxides of Sulphur Tons/Yr:	1.5775
Particulate Matter Tons/Yr:	32.03677
Part. Matter 10 Micrometers and Smllr Tons/Yr:	27.04915684

Year:	2009
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	130.7330345
Reactive Organic Gases Tons/Yr:	43.962728599999998
Carbon Monoxide Emissions Tons/Yr:	67.051689999999994
NOX - Oxides of Nitrogen Tons/Yr:	92.220619999999997
SOX - Oxides of Sulphur Tons/Yr:	1.7492319999999999
Particulate Matter Tons/Yr:	33.926262000000001
Part. Matter 10 Micrometers and Smllr Tons/Yr:	26.981721031999999

Year:	2010
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	139.08766199999999
Reactive Organic Gases Tons/Yr:	48.789369999999998
Carbon Monoxide Emissions Tons/Yr:	70.135310000000004
NOX - Oxides of Nitrogen Tons/Yr:	97.474199999999996
SOX - Oxides of Sulphur Tons/Yr:	1.79593
Particulate Matter Tons/Yr:	36.117787
Part. Matter 10 Micrometers and Smllr Tons/Yr:	28.085668911999999

Year:	2011
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	132.092659
Reactive Organic Gases Tons/Yr:	45.609359
Carbon Monoxide Emissions Tons/Yr:	65.82376
NOX - Oxides of Nitrogen Tons/Yr:	97.039575
SOX - Oxides of Sulphur Tons/Yr:	1.83171
Particulate Matter Tons/Yr:	35.41572
Part. Matter 10 Micrometers and Smllr Tons/Yr:	29.83878732

Year:	2012
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	136.11723425
Reactive Organic Gases Tons/Yr:	46.10633127
Carbon Monoxide Emissions Tons/Yr:	45.557135
NOX - Oxides of Nitrogen Tons/Yr:	98.877415
SOX - Oxides of Sulphur Tons/Yr:	1.81059675
Particulate Matter Tons/Yr:	35.18934925
Part. Matter 10 Micrometers and Smllr Tons/Yr:	30.143505092

Year:	2013
County Code:	56
Air Basin:	SCC
Facility ID:	15
Air District Name:	VEN
SIC Code:	2676
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	140.90758
Reactive Organic Gases Tons/Yr:	50.407229332
Carbon Monoxide Emissions Tons/Yr:	57.36006
NOX - Oxides of Nitrogen Tons/Yr:	99.7762

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

SOX - Oxides of Sulphur Tons/Yr: 1.767634
Particulate Matter Tons/Yr: 36.195665
Part. Matter 10 Micrometers and Smllr Tons/Yr: 30.651573792

Year: 2014
County Code: 56
Air Basin: SCC
Facility ID: 15
Air District Name: VEN
SIC Code: 2676
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 188.8761
Reactive Organic Gases Tons/Yr: 58.37146122
Carbon Monoxide Emissions Tons/Yr: 48.94074
NOX - Oxides of Nitrogen Tons/Yr: 92.8515
SOX - Oxides of Sulphur Tons/Yr: 1.7104
Particulate Matter Tons/Yr: 33.28398
Part. Matter 10 Micrometers and Smllr Tons/Yr: 28.26918584

Year: 2015
County Code: 56
Air Basin: SCC
Facility ID: 15
Air District Name: VEN
SIC Code: 2676
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 142.4271
Reactive Organic Gases Tons/Yr: 62.45876
Carbon Monoxide Emissions Tons/Yr: 38.85
NOX - Oxides of Nitrogen Tons/Yr: 93.0646
SOX - Oxides of Sulphur Tons/Yr: 1.65795
Particulate Matter Tons/Yr: 32.90746
Part. Matter 10 Micrometers and Smllr Tons/Yr: 27.7513168

HAZNET:
envid: 1000181055
Year: 2015
GEPAID: CAC002813492
Contact: JACK LEMAIRE
Telephone: 8054858871
Mailing Name: Not reported
Mailing Address: 800 N RICE AVE
Mailing City,St,Zip: OXNARD, CA 930308910
Gen County: Ventura
TSD EPA ID: AZC950823111
TSD County: 99
Waste Category: Asbestos containing waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.69
Cat Decode: Asbestos containing waste
Method Decode: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Facility County:	Ventura
envid:	1000181055
Year:	2015
GEPAID:	CAC002796242
Contact:	LINH K. NGUYEN
Telephone:	2132366444
Mailing Name:	Not reported
Mailing Address:	445 S FIGUEROA ST STE 1400
Mailing City,St,Zip:	LOS ANGELES, CA 900711602
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Other inorganic solid waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.5
Cat Decode:	Other inorganic solid waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura
envid:	1000181055
Year:	2013
GEPAID:	CAC002727615
Contact:	PAUL SHATKYVICH
Telephone:	8563824319
Mailing Name:	Not reported
Mailing Address:	600 CLIPPER DR
Mailing City,St,Zip:	BELMONT, CA 940024119
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	6.6
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported
envid:	1000181055
Year:	2013
GEPAID:	CAC002727615
Contact:	PAUL SHATKYVICH
Telephone:	8563824319
Mailing Name:	Not reported
Mailing Address:	600 CLIPPER DR
Mailing City,St,Zip:	BELMONT, CA 940024119
Gen County:	Ventura
TSD EPA ID:	AZ0000337360
TSD County:	99
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	105.95
Cat Decode:	Not reported

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

Method Decode: Not reported
Facility County: Not reported

MED WASTE VENTURA:
File Id: FA0019975
Permits: - MEDICAL WASTE SMALL QTY GENERATOR RECORDS

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	416664
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 56C361931
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	11/16/2012
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	9/2/2011
PROCESSED DATE:	9/12/2011
STATUS CODE NAME:	Terminated
STATUS DATE:	1/10/2013
PLACE SIZE:	2.55
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Marco Moretti
FACILITY CONTACT TITLE:	Project Manager
FACILITY CONTACT PHONE:	805-983-8995
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	moretti.m.1@pg.com
OPERATOR NAME:	The P&G Paper Products Co
OPERATOR ADDRESS:	800 North Rice Ave
OPERATOR CITY:	Oxnard
OPERATOR STATE:	California
OPERATOR ZIP:	93030
OPERATOR CONTACT NAME:	Marco Moretti
OPERATOR CONTACT TITLE:	Project Manager
OPERATOR CONTACT PHONE:	805-983-8995
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	moretti.m.1@pg.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	The P&G Paper Products Co
DEVELOPER ADDRESS:	800 North Rice Ave
DEVELOPER CITY:	Oxnard
DEVELOPER STATE:	California
DEVELOPER ZIP:	93030
DEVELOPER CONTACT NAME:	Marco Moretti
DEVELOPER CONTACT TITLE:	Project Manager

THE PROCTER & GAMBLE PAPER PRODUCT CO (Continued) **1000181055**

CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Y
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Mugu Lagoon
CERTIFIER NAME:	Marco Moretti
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	02-SEP-11
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

31
NNE
1/2-1
0.662 mi.
3497 ft.

TELEFLEX CONTROL SYSTEMS **ENVIROSTOR** **S118757241**
1950 WILLIAMS DRIVE **N/A**
OXNARD, CA 93030

Relative:
Higher

Actual:
83 ft.

ENVIROSTOR:

Facility ID:	60001505
Status:	No Action Required
Status Date:	06/27/2013
Site Code:	301514
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	12.5
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Manjul Bose
Supervisor:	Javier Hinojosa
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	EPA - PASI
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	EPA Grant
Latitude:	34.21998
Longitude:	-119.1522
APN:	213003120
Past Use:	ABOVE GROUND STORAGE TANKS

TELEFLEX CONTROL SYSTEMS (Continued) **S118757241**

Potential COC: Under Investigation
Confirmed COC: 31000-NO 31001-NO
Potential Description: AQUI, OTH, SOIL
Alias Name: 213003120
Alias Type: APN
Alias Name: 301514
Alias Type: Project Code (Site Code)
Alias Name: 60001505
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 10/07/2013
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

32
ESE
1/2-1
0.682 mi.
3603 ft.

MAULHARDT OIL LEASE **ENVIROSTOR** **S100204269**
N. OF STURGIS ROAD-W. OF RICE ROAD **N/A**
OXNARD, CA 93030

Relative:
Lower

Actual:
60 ft.

ENVIROSTOR:
Facility ID: 56130041
Status: No Further Action
Status Date: 06/28/1991
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: 0
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: * Mmonroy
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.20277
Longitude: -119.145
APN: NONE SPECIFIED
Past Use: OIL FIELD
Potential COC: TPH-diesel TPH-gas

MAULHARDT OIL LEASE (Continued) **S100204269**

Confirmed COC: 30024-NO 30025-NO
Potential Description: NMA
Alias Name: SEAGATE BUSINESS PARK
Alias Type: Alternate Name
Alias Name: 56130041
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 10/27/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/26/1991
Comments: Based on the information provided in the PEA report, the site shows no evidence of contamination that constitutes a threat to public health and/or the environment. No further action needed at this site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/08/1991
Comments: Crude oil was stored in above-ground tanks onsite until 1989. Soil contaminated with petroleum hydrocarbons. PEA recommended.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

33
NW
1/2-1
0.884 mi.
4668 ft.

PACIFICA HIGH SCHOOL
600 EAST GONZALES ROAD
OXNARD, CA 93030

ENVIROSTOR
SCH
EMI

S103883835
N/A

Relative:
Higher

Actual:
77 ft.

ENVIROSTOR:
Facility ID: 56010006
Status: No Further Action
Status Date: 07/02/1999
Site Code: 300752
Site Type: School Investigation
Site Type Detailed: School
Acres: 53
NPL: NO
Regulatory Agencies: DTSC
Lead Agency: DTSC
Program Manager: Shahir Haddad
Supervisor: Thomas Cota

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.20528
Longitude: -119.1914
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic DDD DDE DDT Polychlorinated biphenyls (PCBs
Confirmed COC: 30018-NO 30001-NO 30006-NO 30007-NO 30008-NO
Potential Description: SOIL
Alias Name: OXNARD UNION HIGH SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: 300752
Alias Type: Project Code (Site Code)
Alias Name: 56010006
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 07/25/1999
Comments: Apprved Phase One report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 04/23/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/23/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 06/11/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 07/02/1999
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 56010006
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 53
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Shahir Haddad
Supervisor: Thomas Cota
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 300752
Assembly: 44
Senate: 19
Special Program Status: Not reported
Status: No Further Action
Status Date: 07/02/1999
Restricted Use: NO
Funding: School District
Latitude: 34.20528
Longitude: -119.1914
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic, DDD, DDE, DDT, Polychlorinated biphenyls (PCBs
Confirmed COC: 30018-NO, 30001-NO, 30006-NO, 30007-NO, 30008-NO
Potential Description: SOIL
Alias Name: OXNARD UNION HIGH SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: PACIFICO HIGH SCHOOL
Alias Type: Alternate Name
Alias Name: 300752
Alias Type: Project Code (Site Code)
Alias Name: 56010006
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 07/25/1999
Comments: Apprved Phase One report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 04/23/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/23/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 06/11/1999
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 07/02/1999
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

EMI:
Year: 2003
County Code: 56
Air Basin: SCC
Facility ID: 7349
Air District Name: VEN
SIC Code: 8211
Air District Name: VENTURA COUNTY APCD
Community Health Air Pollution Info System: N
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 1
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2004
County Code: 56
Air Basin: SCC
Facility ID: 7349
Air District Name: VEN
SIC Code: 8211
Air District Name: VENTURA COUNTY APCD

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.07
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.1

Year:	2005
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2006
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2007
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469

PACIFICA HIGH SCHOOL (Continued) **S103883835**

SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2008
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1629
Reactive Organic Gases Tons/Yr:	.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	.469
SOX - Oxides of Sulphur Tons/Yr:	.00751
Particulate Matter Tons/Yr:	.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.095114

Year:	2009
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.16289999999999999
Reactive Organic Gases Tons/Yr:	6.8776379999999998E-2
Carbon Monoxide Emissions Tons/Yr:	1.0512600000000001
NOX - Oxides of Nitrogen Tons/Yr:	0.46899999999999997
SOX - Oxides of Sulphur Tons/Yr:	7.5100000000000002E-3
Particulate Matter Tons/Yr:	9.5114000000000004E-2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.5114000000000004E-2

Year:	2010
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.16289999999999999
Reactive Organic Gases Tons/Yr:	6.8776379999999998E-2
Carbon Monoxide Emissions Tons/Yr:	1.0512600000000001
NOX - Oxides of Nitrogen Tons/Yr:	0.46899999999999997
SOX - Oxides of Sulphur Tons/Yr:	7.5100000000000002E-3
Particulate Matter Tons/Yr:	9.5114000000000004E-2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.5114000000000004E-2

Year:	2011
County Code:	56

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2012
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2013
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2014
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N

PACIFICA HIGH SCHOOL (Continued) **S103883835**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

Year:	2015
County Code:	56
Air Basin:	SCC
Facility ID:	7349
Air District Name:	VEN
SIC Code:	8211
Air District Name:	VENTURA COUNTY APCD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.1629
Reactive Organic Gases Tons/Yr:	0.06877638
Carbon Monoxide Emissions Tons/Yr:	1.05126
NOX - Oxides of Nitrogen Tons/Yr:	0.469
SOX - Oxides of Sulphur Tons/Yr:	0.00751
Particulate Matter Tons/Yr:	0.095114
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.095114

34
SSW
1/2-1
0.921 mi.
4861 ft.

OXNARD METALS INC.
1441 MOUNTAIN VIEW
OXNARD, CA 93030

ENVIROSTOR **S111842214**
N/A

Relative:
Lower

Actual:
52 ft.

ENVIROSTOR:

Facility ID:	56500003
Status:	No Further Action
Status Date:	12/09/1987
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	0
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	* Mmonroy
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	* Site Char & Assess Grant (CERCLA 104)
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	34.19396
Longitude:	-119.1631
APN:	201026022
Past Use:	BATTERY RECLAMATION, METAL RECLAMATION
Potential COC:	* HOUSEHOLD WASTES * OTHER ORGANIC SOLIDS * Pesticides - Rinse Waters * CONTAMINATED SOIL * UNSPECIFIED SLUDGE WASTE * WASTE OIL &

OXNARD METALS INC. (Continued) **S111842214**

MIXED OIL
Confirmed COC: NONE SPECIFIED
Potential Description: SOIL, SV
Alias Name: WEST COAST AUTO RECYCLERS
Alias Type: Alternate Name
Alias Name: 201026022
Alias Type: APN
Alias Name: CAD053859393
Alias Type: EPA Identification Number
Alias Name: 56500003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 10/25/1994
Comments: CalSites Validation Program confirms NFA for DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 12/08/1987
Comments: Site Screening done to check EPA's actions since the DHS Preliminary Assessment.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 08/18/1987
Comments: Preliminary Assessment Done: EPA Federal Investigation Team reports no hazardous material use of hazardous waste generated; EPA recommendation is no further action.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 06/21/1982
Comments: Facility identified from DHS DMI file listing 1982.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

35
WSW
1/2-1
0.956 mi.
5049 ft.

SOUTH COAST AREA TRANSIT
301 E THIRD STREET
OXNARD, CA 93030

ENVIROSTOR
HIST UST
NPDES
WDS

1004443156
N/A

Relative:
Lower

Actual:
56 ft.

ENVIROSTOR:

Facility ID:	71002921
Status:	Refer: Other Agency
Status Date:	Not reported
Site Code:	Not reported
Site Type:	Tiered Permit
Site Type Detailed:	Tiered Permit
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Not reported
Division Branch:	Cleanup Chatsworth
Assembly:	44
Senate:	19
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	34.20062
Longitude:	-119.1737
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CAD981693153
Alias Type:	EPA Identification Number
Alias Name:	71002921
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

HIST UST:

File Number:	0002CE3D
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002CE3D.pdf
Region:	Not reported

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

Facility ID:	Not reported
Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported

Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	192572
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	4 56I002477
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	5/9/2008
PROCESSED DATE:	3/31/1992
STATUS CODE NAME:	Active
STATUS DATE:	3/31/1992
PLACE SIZE:	3
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Reed Caldwell
FACILITY CONTACT TITLE:	Director of Engineering & Construction
FACILITY CONTACT PHONE:	805-483-3959
FACILITY CONTACT PHONE EXT:	117
FACILITY CONTACT EMAIL:	rcaldwell@gctd.org
OPERATOR NAME:	Gold Coast Transit
OPERATOR ADDRESS:	301 E Third St
OPERATOR CITY:	Oxnard
OPERATOR STATE:	California
OPERATOR ZIP:	93030

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

OPERATOR CONTACT NAME:	Reed Caldwell
OPERATOR CONTACT TITLE:	Director of Engineering & Construction
OPERATOR CONTACT PHONE:	805-487-5336
OPERATOR CONTACT PHONE EXT:	117
OPERATOR CONTACT EMAIL:	rcaldwell@gctd.org
OPERATOR TYPE:	Other
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	805-483-3959
EMERGENCY PHONE EXT:	117
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Pacific Ocean
CERTIFIER NAME:	Reed Caldwell
CERTIFIER TITLE:	Director of Fleet and Facilities
CERTIFICATION DATE:	09-JAN-17
PRIMARY SIC:	4131-Intercity and Rural Bus Transportation
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	192572
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 56I002477
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/31/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Gold Coast Transit
Discharge Address:	301 E Third St

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

Discharge City:	Oxnard
Discharge State:	California
Discharge Zip:	93030
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported

SOUTH COAST AREA TRANSIT (Continued) **1004443156**

SECONDARY SIC: Not reported
TERTIARY SIC: Not reported

WDS:

Facility ID:	4 56I002477
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	4
Facility Telephone:	Not reported
Facility Contact:	Not reported
Agency Name:	SOUTH COAST AREA TRANSIT
Agency Address:	Not reported
Agency City,St,Zip:	0
Agency Contact:	Not reported
Agency Telephone:	Not reported
Agency Type:	Not reported
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	Not reported
POTW:	Not reported
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

36
NNE
1/2-1
0.971 mi.
5128 ft.

Relative:
Higher

Actual:
84 ft.

COSTCO WHOLESALE NO 420
2001 E VENTURA BLVD
OXNARD, CA 93036

RCRA-LQG **1004677950**
ENVIROSTOR **CAR000103333**
FINDS
ECHO
HAZNET
MED WASTE VENTURA

RCRA-LQG:
Date form received by agency: 03/03/2016
Facility name: COSTCO WHOLESALE # 420
Facility address: 2001 EAST VENTURA BOULEVARD

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

OXNARD, CA 93030
EPA ID: CAR000103333
Mailing address: GREY HAWK CT
STE 200
CARLSBAD, CA 92010
Contact: ERIC D ENSMINGER
Contact address: GREY HAWK CT STE 200
CARLSBAD, CA 92010
Contact country: US
Contact telephone: (760) 602-8616
Contact email: EENSMINGER@3ECOMPANY.COM
EPA Region: 09
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: COSTCO WHOLESALE CORPORATION
Owner/operator address: LAKE DR
ISSAQUAH, WA 98027
Owner/operator country: US
Owner/operator telephone: (425) 313-8100
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Owner/operator name: COSTCO WHOLESALE CORP
Owner/operator address: 999 LAKE DR
ISSAQUAH, WA 98027
Owner/operator country: US
Owner/operator telephone: 425-313-8100
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Owner/operator name: COSTCO WHOLESALE CORP
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Owner/operator name: COSTCO WHOLESALE CORPORATION
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 11/18/1985
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 122
. Waste name: 122

. Waste code: 214
. Waste name: 214

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 351
. Waste name: 351

. Waste code: 352
. Waste name: 352

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D010
. Waste name: SELENIUM

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Historical Generators:
Date form received by agency: 07/11/2014
Site name: COSTCO WHOLESALE NO 420
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: 122

. Waste code: 131
. Waste name: 131

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 135
. Waste name: 135

. Waste code: 141
. Waste name: 141

. Waste code: 151
. Waste name: 151

. Waste code: 172
. Waste name: 172

. Waste code: 181
. Waste name: 181

. Waste code: 211

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: 211

. Waste code: 212
. Waste name: 212

. Waste code: 213
. Waste name: 213

. Waste code: 214
. Waste name: 214

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 232
. Waste name: 232

. Waste code: 271
. Waste name: 271

. Waste code: 272
. Waste name: 272

. Waste code: 281
. Waste name: 281

. Waste code: 291
. Waste name: 291

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 541
. Waste name: 541

. Waste code: 561
. Waste name: 561

. Waste code: 611
. Waste name: 611

. Waste code: 791
. Waste name: 791

. Waste code: D001

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, &

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

SALTS

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

Date form received by agency: 03/01/2014
Site name: COSTCO WHOLESALE #420
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: 122

. Waste code: 131
. Waste name: 131

. Waste code: 133
. Waste name: 133

. Waste code: 134
. Waste name: 134

. Waste code: 135
. Waste name: 135

. Waste code: 141
. Waste name: 141

. Waste code: 151
. Waste name: 151

. Waste code: 172
. Waste name: 172

. Waste code: 181
. Waste name: 181

. Waste code: 211
. Waste name: 211

. Waste code: 212
. Waste name: 212

. Waste code: 213
. Waste name: 213

. Waste code: 214
. Waste name: 214

. Waste code: 221
. Waste name: 221

. Waste code: 223
. Waste name: 223

. Waste code: 232
. Waste name: 232

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: 271
. Waste name: 271

. Waste code: 272
. Waste name: 272

. Waste code: 281
. Waste name: 281

. Waste code: 291
. Waste name: 291

. Waste code: 311
. Waste name: 311

. Waste code: 331
. Waste name: 331

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 561
. Waste name: 561

. Waste code: 611
. Waste name: 611

. Waste code: 791
. Waste name: 791

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D029
. Waste name: 1,1-DICHLOROETHYLENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P001

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: U019
. Waste name: BENZENE (I,T)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U037
. Waste name: BENZENE, CHLORO- (OR) CHLOROBENZENE

. Waste code: U228
. Waste name: ETHENE, TRICHLORO- (OR) TRICHLOROETHYLENE

Date form received by agency: 07/09/2002
Site name: COSTCO WHOLESALE NO 420
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

ENVIROSTOR:
Facility ID: 71003264
Status: Refer: Other Agency
Status Date: Not reported
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Chatsworth
Assembly: 44
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.22526
Longitude: -119.1479
APN: NONE SPECIFIED

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAL000060250
Alias Type: EPA Identification Number
Alias Name: 71003264
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

FINDS:

Registry ID: 110012221513

Environmental Interest/Information System

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS AIR POLLUTANT MAJOR

HAZARDOUS WASTE BIENNIAL REPORTER

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1004677950
Registry ID: 110012221513
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110012221513

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

HAZNET:

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Pharmaceutical waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0015
Cat Decode:	Pharmaceutical waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Unspecified solvent mixture
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.1025
Cat Decode:	Unspecified solvent mixture
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Ventura

envid:	1004677950
Year:	2015
GEPAID:	CAR000103333
Contact:	LISA SIMPSON
Telephone:	4253136275
Mailing Name:	Not reported
Mailing Address:	3207 GREY HAWK CT STE 200
Mailing City,St,Zip:	CARLSBAD, CA 92010
Gen County:	Ventura
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Alkaline solution without metals pH >= 12.5
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0145
Cat Decode:	Alkaline solution without metals pH >= 12.5

COSTCO WHOLESALE NO 420 (Continued) **1004677950**

Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Ventura

envid: 1004677950
Year: 2015
GEPAID: CAR000103333
Contact: LISA SIMPSON
Telephone: 4253136275
Mailing Name: Not reported
Mailing Address: 3207 GREY HAWK CT STE 200
Mailing City,St,Zip: CARLSBAD, CA 92010
Gen County: Ventura
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons: 0.3612
Cat Decode: Aqueous solution with total organic residues less than 10 percent
Method Decode: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Ventura

envid: 1004677950
Year: 2015
GEPAID: CAR000103333
Contact: LISA SIMPSON
Telephone: 4253136275
Mailing Name: Not reported
Mailing Address: 3207 GREY HAWK CT STE 200
Mailing City,St,Zip: CARLSBAD, CA 92010
Gen County: Ventura
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.1995
Cat Decode: Off-specification, aged or surplus organics
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Ventura

Click this hyperlink while viewing on your computer to access
71 additional CA_HAZNET: record(s) in the EDR Site Report.

MED WASTE VENTURA:
File Id: FA0033643
Permits: - MEDICAL WASTE SMALL QTY GENERATOR RECORDS

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
OXNARD	S110655856	WILMA PACIFIC INC.	BERNOULLI CIR	93030	LUST
OXNARD	S109521349	CITY OF OXNARD	ROSE AVENUE HWY 101	93030	SLIC
OXNARD	S103878599	NAVARRO SITE	STURGIS	93030	SLIC
OXNARD	S100539068	SANTA CLARA/MAXWELL SWIFT/CONNOLLY	VENTURA RD.	93030	ENVIROSTOR

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/08/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 99

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69
Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 01/03/2017
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/20/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 05/31/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 76

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/29/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 54

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 65

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 105

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 65

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/25/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 121

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/23/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57
Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35
Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/25/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 08/11/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/23/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 9

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 29

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 64

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 42

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/23/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/03/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 104

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 67

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/16/2017
Date Data Arrived at EDR: 05/19/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 88

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 10/12/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 64

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/11/2017
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 04/26/2017
Number of Days to Update: 13
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/12/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/25/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 78
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/15/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 107
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/22/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 70
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/14/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 31

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/07/2017
Date Data Arrived at EDR: 07/11/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 43

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 49

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 104

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 77

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/26/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 58

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 05/04/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 92

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 50

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 30

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 03/20/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 57

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/09/2017
Date Data Arrived at EDR: 05/11/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 90

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/13/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 101

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 115
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/17/2017
Date Data Arrived at EDR: 04/18/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 14
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/18/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/17/2017
Date Data Arrived at EDR: 01/18/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 112
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/13/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/10/2017
Date Data Arrived at EDR: 01/13/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 110

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/07/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 63

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 76

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/22/2017
Date Data Arrived at EDR: 06/23/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 47

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 05/31/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/08/2017
Date Data Arrived at EDR: 05/09/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 92

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 05/11/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 99

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/04/2016
Date Data Arrived at EDR: 11/11/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 85
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/09/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 35
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/20/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 1
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/19/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 98
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 04/04/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 127

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 105

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 69

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 109
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/23/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 47
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 08/28/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 54
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 33
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 89
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/04/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 80

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 63

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/29/2017
Number of Days to Update: 69

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 06/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 43

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/05/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 85

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 93

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/21/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 104

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 09/05/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/27/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 105

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 103

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 10/27/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 89

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/24/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2017
Date Data Arrived at EDR: 03/15/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/29/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 51
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/10/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/17/2017
Next Scheduled EDR Contact: 10/30/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/11/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

OXNARD HIGH SCHOOL #8
1853 CAMINO DEL SOL
OXNARD, CA 93030

TARGET PROPERTY COORDINATES

Latitude (North):	34.206412 - 34° 12' 23.08''
Longitude (West):	119.158724 - 119° 9' 31.41''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	301108.0
UTM Y (Meters):	3786954.8
Elevation:	63 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619402 OXNARD, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

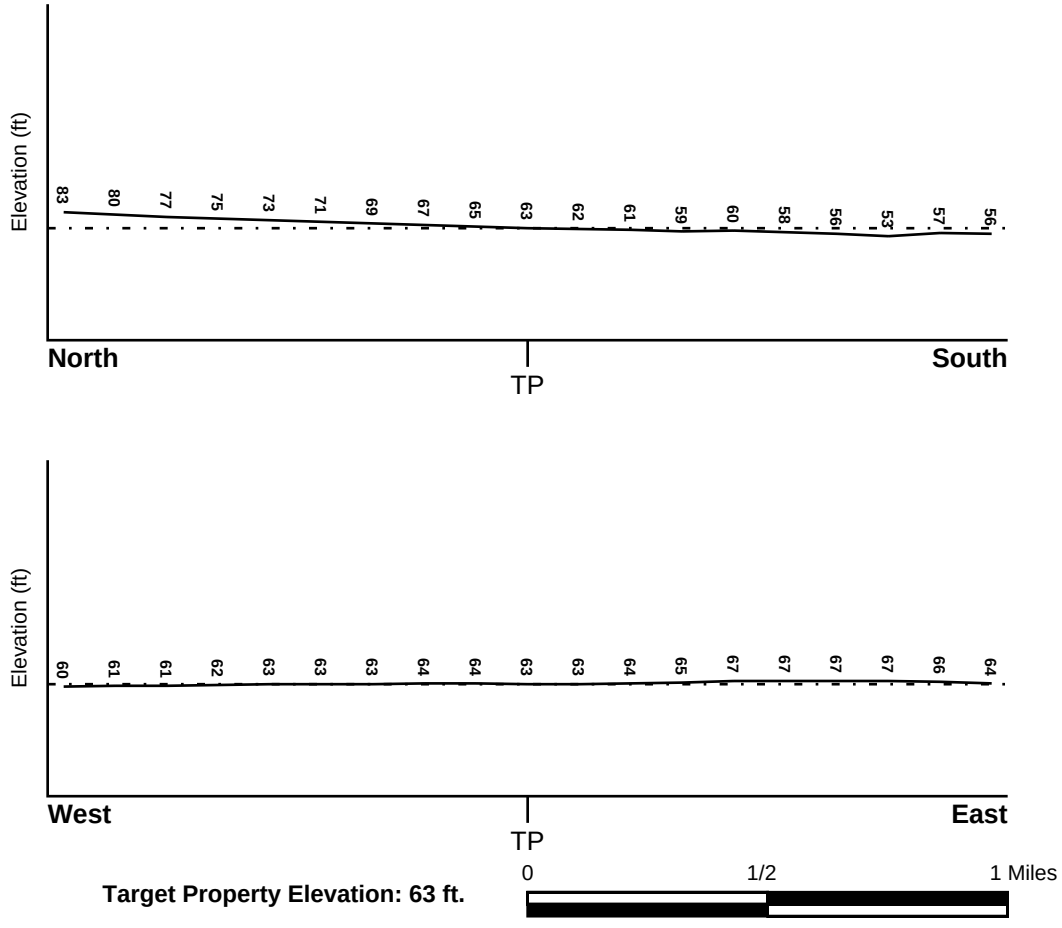
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06111C0910E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
OXNARD	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

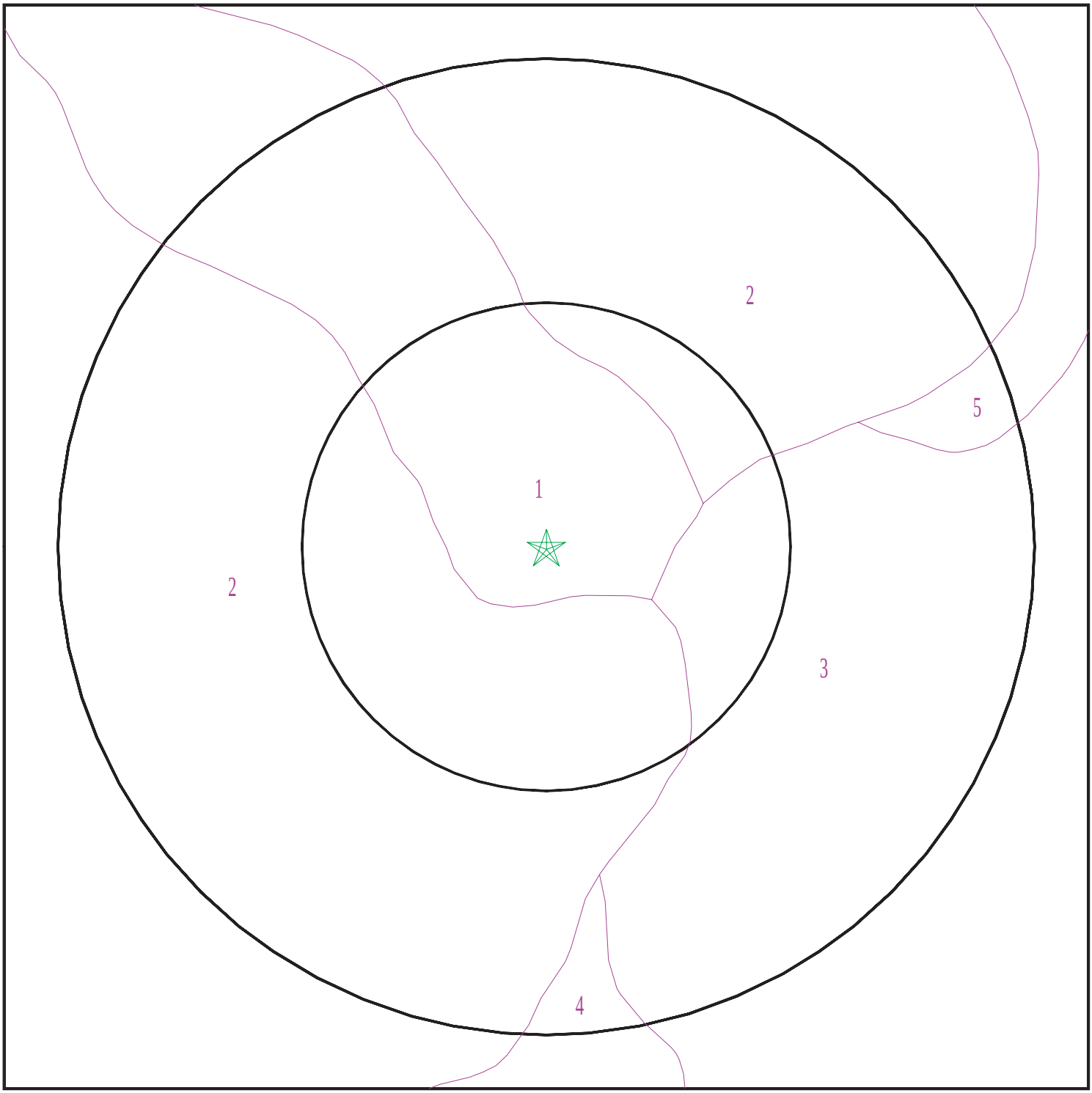
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5046760.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Oxnard High School #8	CLIENT:	Tetra Tech, Inc.
ADDRESS:	1853 Camino Del Sol Oxnard CA 93030	CONTACT:	Jason Dane
LAT/LONG:	34.206412 / 119.158724	INQUIRY #:	5046760.2s
		DATE:	September 21, 2017 2:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: PICO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	14 inches	29 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	29 inches	59 inches	stratified gravelly sand to stony sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: MOCHO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	16 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 3

Soil Component Name: HUENEME

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	16 inches	64 inches	stratified sand to silt loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

Soil Map ID: 4

Soil Component Name: METZ

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4
2	7 inches	59 inches	stratified sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4

Soil Map ID: 5

Soil Component Name: PICO

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	14 inches	53 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	53 inches	59 inches	stratified gravelly sand to gravelly loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A4	USGS40000142503	1/2 - 1 Mile East
5	USGS40000142520	1/2 - 1 Mile NW
C16	USGS40000142540	1/2 - 1 Mile North

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	686	1/4 - 1/2 Mile South
2	CADW60000018137	1/4 - 1/2 Mile SSW
A3	CADW60000015131	1/2 - 1 Mile East
B6	697	1/2 - 1 Mile SW
B7	698	1/2 - 1 Mile SW
B8	681	1/2 - 1 Mile SW
B9	680	1/2 - 1 Mile SW
B10	679	1/2 - 1 Mile SW
B11	682	1/2 - 1 Mile SW
B12	696	1/2 - 1 Mile SW
B13	688	1/2 - 1 Mile SW
B14	687	1/2 - 1 Mile SW
C15	CADW60000019759	1/2 - 1 Mile North
17	683	1/2 - 1 Mile West

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

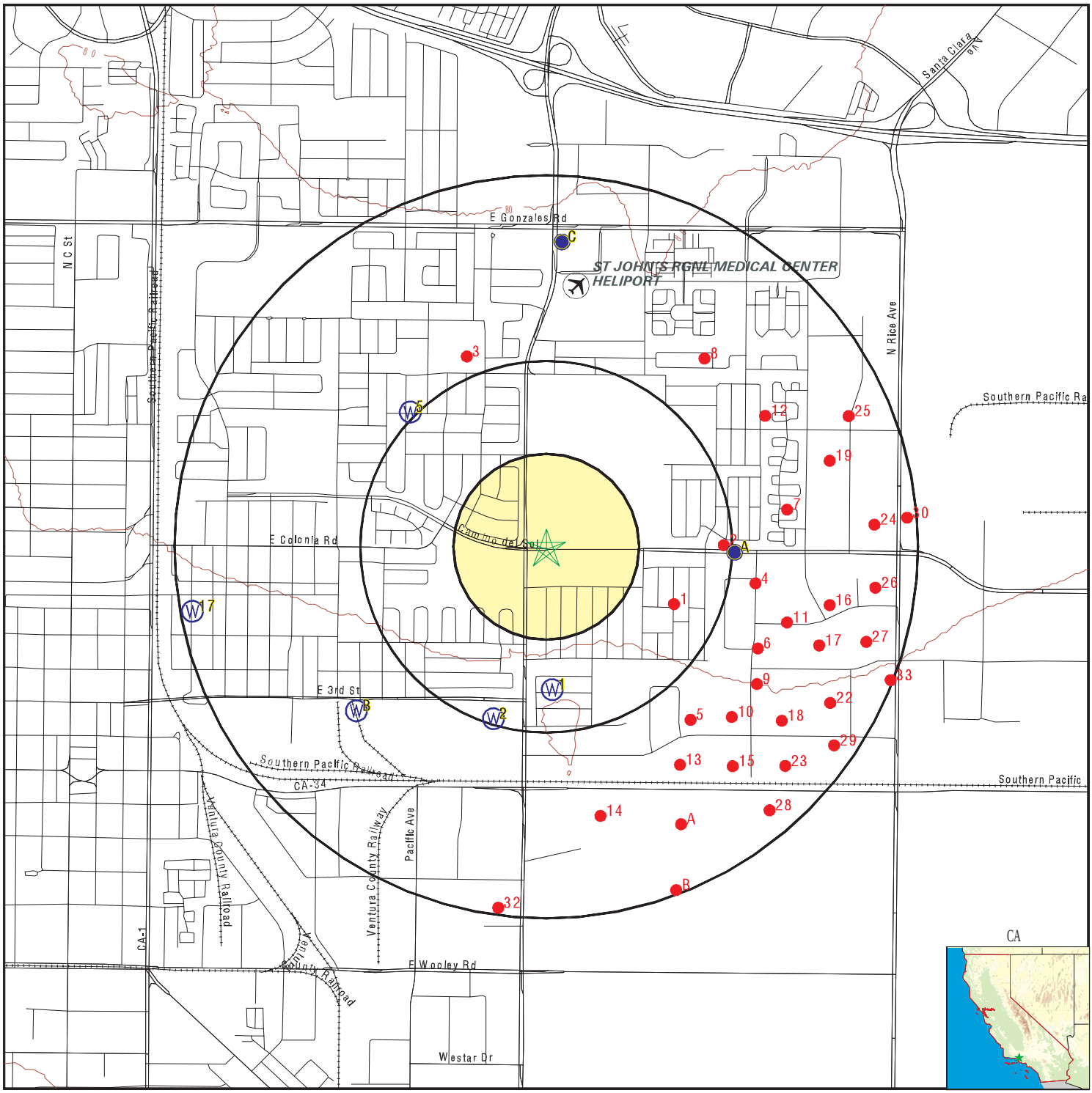
MAP ID	WELL ID	LOCATION FROM TP
1	CAOG11000285756	1/4 - 1/2 Mile ESE
2	CAOG11000285755	1/4 - 1/2 Mile East
3	CAOG11000285615	1/2 - 1 Mile NNW
4	CAOG11000285624	1/2 - 1 Mile East
5	CAOG11000285623	1/2 - 1 Mile SE
6	CAOG11000290446	1/2 - 1 Mile ESE
7	CAOG11000285754	1/2 - 1 Mile East
8	CAOG11000285600	1/2 - 1 Mile NE
9	CAOG11000285617	1/2 - 1 Mile ESE
10	CAOG11000285622	1/2 - 1 Mile SE
11	CAOG11000285753	1/2 - 1 Mile ESE
12	CAOG11000285752	1/2 - 1 Mile ENE
13	CAOG11000285775	1/2 - 1 Mile SSE
14	CAOG11000285804	1/2 - 1 Mile SSE
15	CAOG11000285774	1/2 - 1 Mile SE
16	CAOG11000285750	1/2 - 1 Mile ESE
17	CAOG11000285749	1/2 - 1 Mile ESE
18	CAOG11000285621	1/2 - 1 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
19	CAOG11000285751	1/2 - 1 Mile ENE
A20	CAOG11000285637	1/2 - 1 Mile SSE
A21	CAOG11000285642	1/2 - 1 Mile SSE
22	CAOG11000285776	1/2 - 1 Mile ESE
23	CAOG11000285773	1/2 - 1 Mile SE
24	CAOG11000285748	1/2 - 1 Mile East
25	CAOG11000285616	1/2 - 1 Mile ENE
26	CAOG11000285747	1/2 - 1 Mile East
27	CAOG11000285757	1/2 - 1 Mile ESE
28	CAOG11000285731	1/2 - 1 Mile SE
29	CAOG11000285777	1/2 - 1 Mile SE
30	CAOG11000285630	1/2 - 1 Mile East
B31	CAOG11000284724	1/2 - 1 Mile SSE
32	CAOG11000285626	1/2 - 1 Mile South
33	CAOG11000285597	1/2 - 1 Mile ESE
B34	CAOG11000285639	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 5046760.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Oxnard High School #8	CLIENT:	Tetra Tech, Inc.
ADDRESS:	1853 Camino Del Sol Oxnard CA 93030	CONTACT:	Jason Dane
LAT/LONG:	34.206412 / 119.158724	INQUIRY #:	5046760.2s
		DATE:	September 21, 2017 2:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
South
1/4 - 1/2 Mile
Lower | **CA WELLS** | **686**

Water System Information:

Prime Station Code:	01N/22W-03F08 S	User ID:	TAP
FRDS Number:	5610007021	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	341203.8 1190927.5	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 23 (1990)		
System Number:	5610007		
System Name:	OXNARD WATER DEPT		
Organization That Operates System:			
	251 SOUTH HAYES AVE. OXNARD, CA 93030		
Pop Served:	151500	Connections:	30588
Area Served:	OXNARD CITY		
Sample Collected:	05-JAN-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-JAN-11	Findings:	660. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JAN-11	Findings:	58. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JAN-11	Findings:	560. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JAN-11	Findings:	0.51 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JAN-11	Findings:	95. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JAN-11	Findings:	1200. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-FEB-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-FEB-11	Findings:	630. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	03-FEB-11	Findings:	160. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-11	Findings:	54. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-11	Findings:	540. MG/L
Chemical:	SULFATE		
Sample Collected:	03-FEB-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-11	Findings:	54. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-FEB-11	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAR-11	Findings:	260. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	260. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAR-11	Findings:	660. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAR-11	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-MAR-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-11	Findings:	20. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-APR-11	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-APR-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-APR-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	06-APR-11	Findings:	600. MG/L
Chemical:	SULFATE		
Sample Collected:	06-APR-11	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-APR-11	Findings:	54. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-APR-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-APR-11	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-MAY-11	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-MAY-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-11	Findings:	670. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-11	Findings:	55. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-MAY-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-11	Findings:	26. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-JUN-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-JUN-11	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-11	Findings:	61. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-11	Findings:	650. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-11	Findings:	0.49 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	01-JUN-11	Findings:	68. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-JUN-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-11	Findings:	24. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-JUL-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-JUL-11	Findings:	670. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	170. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-JUL-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-JUL-11	Findings:	530. MG/L
Chemical:	SULFATE		
Sample Collected:	06-JUL-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-JUL-11	Findings:	67. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-JUL-11	Findings:	1200. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-JUL-11	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-AUG-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-AUG-11	Findings:	690. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-11	Findings:	59. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-AUG-11	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-11	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-11	Findings:	63. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-AUG-11	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	03-AUG-11	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-SEP-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-SEP-11	Findings:	730. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-11	Findings:	62. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-11	Findings:	620. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-SEP-11	Findings:	81. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-SEP-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-SEP-11	Findings:	26. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-OCT-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-OCT-11	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-OCT-11	Findings:	71. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-OCT-11	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	12-OCT-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-OCT-11	Findings:	83. UG/L
Chemical:	MANGANESE		
Sample Collected:	12-OCT-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-OCT-11	Findings:	32. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-NOV-11	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	03-NOV-11	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-NOV-11	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-NOV-11	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-NOV-11	Findings:	610. MG/L
Chemical:	SULFATE		
Sample Collected:	03-NOV-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-NOV-11	Findings:	78. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-NOV-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-NOV-11	Findings:	45. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	14-DEC-11	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	14-DEC-11	Findings:	700. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	14-DEC-11	Findings:	60. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	14-DEC-11	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	14-DEC-11	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	14-DEC-11	Findings:	77. UG/L
Chemical:	MANGANESE		
Sample Collected:	14-DEC-11	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	14-DEC-11	Findings:	34. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-JAN-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-JAN-12	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-JAN-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-JAN-12	Findings:	590. MG/L
Chemical:	SULFATE		
Sample Collected:	04-JAN-12	Findings:	0.61 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-JAN-12	Findings:	71. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-JAN-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-JAN-12	Findings:	46. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-FEB-12	Findings:	770. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-FEB-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-FEB-12	Findings:	600. MG/L
Chemical:	SULFATE		
Sample Collected:	01-FEB-12	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-FEB-12	Findings:	68. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-FEB-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-FEB-12	Findings:	28. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-MAR-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-MAR-12	Findings:	810. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-MAR-12	Findings:	70. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	07-MAR-12	Findings:	680. MG/L
Chemical:	SULFATE		
Sample Collected:	07-MAR-12	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-MAR-12	Findings:	70. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-MAR-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-MAR-12	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-APR-12	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-APR-12	Findings:	690. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-APR-12	Findings:	60. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-APR-12	Findings:	1000. MG/L
Chemical:	SULFATE		
Sample Collected:	04-APR-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-APR-12	Findings:	62. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-APR-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-APR-12	Findings:	38. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAY-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAY-12	Findings:	850. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAY-12	Findings:	73. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAY-12	Findings:	640. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAY-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	02-MAY-12	Findings:	79. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-MAY-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAY-12	Findings:	41. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	13-JUN-12	Findings:	180. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	13-JUN-12	Findings:	760. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	13-JUN-12	Findings:	66. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	13-JUN-12	Findings:	760. MG/L
Chemical:	SULFATE		
Sample Collected:	13-JUN-12	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	13-JUN-12	Findings:	53. UG/L
Chemical:	MANGANESE		
Sample Collected:	13-JUN-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	13-JUN-12	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUL-12	Findings:	300. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	370. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-JUL-12	Findings:	790. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUL-12	Findings:	70. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUL-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUL-12	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-JUL-12	Findings:	61. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUL-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	03-JUL-12	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-AUG-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-AUG-12	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-AUG-12	Findings:	67. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-AUG-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	01-AUG-12	Findings:	0.61 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-AUG-12	Findings:	66. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-AUG-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-AUG-12	Findings:	39. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-SEP-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-SEP-12	Findings:	730. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-SEP-12	Findings:	64. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-SEP-12	Findings:	670. MG/L
Chemical:	SULFATE		
Sample Collected:	05-SEP-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-SEP-12	Findings:	55. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-SEP-12	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-SEP-12	Findings:	31. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-OCT-12	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	03-OCT-12	Findings:	300. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-OCT-12	Findings:	740. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	190. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-OCT-12	Findings:	64. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-OCT-12	Findings:	680. MG/L
Chemical:	SULFATE		
Sample Collected:	03-OCT-12	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-OCT-12	Findings:	67. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-OCT-12	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-OCT-12	Findings:	35. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-NOV-12	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-NOV-12	Findings:	830. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-NOV-12	Findings:	76. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-NOV-12	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	07-NOV-12	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-NOV-12	Findings:	92. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-NOV-12	Findings:	1400. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-NOV-12	Findings:	33. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-DEC-12	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-DEC-12	Findings:	800. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	05-DEC-12	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-DEC-12	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-DEC-12	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	05-DEC-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-DEC-12	Findings:	60. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-DEC-12	Findings:	1300. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-DEC-12	Findings:	37. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-JAN-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-JAN-13	Findings:	720. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	180. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-JAN-13	Findings:	65. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-JAN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	02-JAN-13	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-JAN-13	Findings:	60. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-JAN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-JAN-13	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-FEB-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-FEB-13	Findings:	780. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	200. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-FEB-13	Findings:	67. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	06-FEB-13	Findings:	700. MG/L
Chemical:	SULFATE		
Sample Collected:	06-FEB-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-FEB-13	Findings:	76. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-FEB-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-FEB-13	Findings:	50. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAR-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	280. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-MAR-13	Findings:	880. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAR-13	Findings:	77. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAR-13	Findings:	750. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAR-13	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-MAR-13	Findings:	88. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-MAR-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAR-13	Findings:	34. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-APR-13	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	290. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-APR-13	Findings:	850. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	220. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-APR-13	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-APR-13	Findings:	710. MG/L
Chemical:	SULFATE		
Sample Collected:	03-APR-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	03-APR-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-APR-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-APR-13	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-MAY-13	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	300. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-MAY-13	Findings:	840. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	210. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-MAY-13	Findings:	74. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-MAY-13	Findings:	760. MG/L
Chemical:	SULFATE		
Sample Collected:	01-MAY-13	Findings:	0.69 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-MAY-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-MAY-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-MAY-13	Findings:	36. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-JUN-13	Findings:	270. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	895. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	226. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JUN-13	Findings:	80.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JUN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JUN-13	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JUN-13	Findings:	100. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JUN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JUN-13	Findings:	8.7 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	12-JUN-13	Findings:	2100. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12-JUN-13	Findings:	7.65
Chemical:	PH, LABORATORY		
Sample Collected:	12-JUN-13	Findings:	270. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	330. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-JUN-13	Findings:	880. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	224. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-JUN-13	Findings:	78.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-JUN-13	Findings:	120. MG/L
Chemical:	SODIUM		
Sample Collected:	12-JUN-13	Findings:	6.2 MG/L
Chemical:	POTASSIUM		
Sample Collected:	12-JUN-13	Findings:	67. MG/L
Chemical:	CHLORIDE		
Sample Collected:	12-JUN-13	Findings:	690. MG/L
Chemical:	SULFATE		
Sample Collected:	12-JUN-13	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-JUN-13	Findings:	3.6 UG/L
Chemical:	ARSENIC		
Sample Collected:	12-JUN-13	Findings:	76. UG/L
Chemical:	MANGANESE		
Sample Collected:	12-JUN-13	Findings:	19. UG/L
Chemical:	SELENIUM		
Sample Collected:	12-JUN-13	Findings:	4.14 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12-JUN-13	Findings:	0.329 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12-JUN-13	Findings:	1500. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-JUN-13	Findings:	1.33
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	12-JUN-13	Findings:	40. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	9000. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	12-JUN-13	Findings:	1.6e-002 PCI/L
Chemical:	GROSS ALPHA MDA95		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

2
SSW
1/4 - 1/2 Mile
Lower

CA WELLS **CADW60000018137**

Objectid:	18137
Latitude:	34.1997
Longitude:	-119.1612
Site code:	341997N1191612W001
State well numbe:	01N22W02E001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000018137

A3
East
1/2 - 1 Mile
Higher

CA WELLS **CADW60000015131**

Objectid:	15131
Latitude:	34.206009
Longitude:	-119.149916
Site code:	342058N1191490W001
State well numbe:	01N22W02A002S
Local well name:	'01N22W02A02S'
Well use id:	3
Well use descrip:	Irrigation
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000015131

A4
East
1/2 - 1 Mile
Higher

FED USGS **USGS40000142503**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341223119085601		
Monloc name:	001N022W02A002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2063936
Longitude:	-119.1498285	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	394
Welldepth units:	ft	Wellholedepth:	394
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

5
NW **FED USGS** **USGS40000142520**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341242119095101		
Monloc name:	002N022W34H001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2116713
Longitude:	-119.1651068	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	254
Welldepth units:	ft	Wellholedepth:	254
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B6
SW **CA WELLS** **697**
1/2 - 1 Mile
Lower

Water System Information:

Prime Station Code:	01N/22W-10B02 S	User ID:	TAP
FRDS Number:	5610007017	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Inactive Raw
Source Lat/Long:	341200.0 1191000.0	Precision:	Undefined
Source Name:	WELL 17 - INACTIVE		

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B7
SW **CA WELLS** **698**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-10B03 S User ID: TAP
FRDS Number: 5610007016 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Inactive Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 16 - INACTIVE
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B8
SW **CA WELLS** **681**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F03 S User ID: TAP
FRDS Number: 5610007002 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 02
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B9
SW **CA WELLS** **680**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F02 S User ID: TAP
FRDS Number: 5610007003 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 03

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B10
SW **CA WELLS** **679**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F01 S User ID: TAP
FRDS Number: 5610007004 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 04
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B11
SW **CA WELLS** **682**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03F04 S User ID: TAP
FRDS Number: 5610007001 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Active Raw
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 01
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B12
SW **CA WELLS** **696**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-10B01 S User ID: TAP
FRDS Number: 5610007010 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 10 - ABANDONED

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B13
SW **CA WELLS** **688**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03K14 S User ID: TAP
FRDS Number: 5610007012 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 12 - ABANDONED
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

B14
SW **CA WELLS** **687**
1/2 - 1 Mile
Lower

Water System Information:
Prime Station Code: 01N/22W-03K11 S User ID: TAP
FRDS Number: 5610007011 County: Ventura
District Number: 06 Station Type: WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type: Well/Groundwater Well Status: Abandoned
Source Lat/Long: 341200.0 1191000.0 Precision: Undefined
Source Name: WELL 11 - ABANDONED
System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

C15
North **CA WELLS** **CADW60000019759**
1/2 - 1 Mile
Higher

Objectid:	19759
Latitude:	34.2183
Longitude:	-119.1578
Site code:	342183N1191578W001
State well numbe:	02N22W35C001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	56
County name:	Ventura
Basin code:	'4-4.02'
Basin desc:	Oxnard
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000019759

C16
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000142540**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-341306119092601		
Monloc name:	002N022W35C001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070103	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.2183379
Longitude:	-119.1581622	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	198
Welldepth units:	ft	Wellholedepth:	198
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

17
West
1/2 - 1 Mile
Lower

CA WELLS **683**

Water System Information:

Prime Station Code:	01N/22W-03F05 S	User ID:	TAP
FRDS Number:	5610007018	County:	Ventura
District Number:	06	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	341214.0 1191028.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 20		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

System Number: 5610007
System Name: OXNARD WATER DEPT
Organization That Operates System:
251 SOUTH HAYES AVE.
OXNARD, CA 93030
Pop Served: 151500 Connections: 30588
Area Served: OXNARD CITY

Sample Collected:	01-FEB-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-FEB-12	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-FEB-12	Findings:	410. MG/L
Chemical:	SULFATE		
Sample Collected:	01-FEB-12	Findings:	0.51 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-FEB-12	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-FEB-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-FEB-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-MAR-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-MAR-12	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-MAR-12	Findings:	150. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-MAR-12	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-MAR-12	Findings:	520. MG/L
Chemical:	SULFATE		
Sample Collected:	07-MAR-12	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-MAR-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-MAR-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-MAR-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-APR-12	Findings:	190. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	230. MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	04-APR-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-APR-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-APR-12	Findings:	42. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-APR-12	Findings:	660. MG/L
Chemical:	SULFATE		
Sample Collected:	04-APR-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-APR-12	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-APR-12	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAY-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAY-12	Findings:	600. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAY-12	Findings:	160. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAY-12	Findings:	49. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAY-12	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAY-12	Findings:	0.66 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAY-12	Findings:	970. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAY-12	Findings:	11. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	13-JUN-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	13-JUN-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	13-JUN-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	13-JUN-12	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	13-JUN-12	Findings:	500. MG/L
Chemical:	SULFATE		

Sample Collected:	13-JUN-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	13-JUN-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	13-JUN-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUL-12	Findings:	250. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	310. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-JUL-12	Findings:	510. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUL-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUL-12	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUL-12	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUL-12	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-JUL-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUL-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-JUL-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-AUG-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-AUG-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-AUG-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-AUG-12	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-AUG-12	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	01-AUG-12	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-AUG-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-AUG-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	01-AUG-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-SEP-12	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-SEP-12	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-SEP-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-SEP-12	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-SEP-12	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	05-SEP-12	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-SEP-12	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-SEP-12	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-OCT-12	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-OCT-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-OCT-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-OCT-12	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-OCT-12	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	03-OCT-12	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-OCT-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-OCT-12	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-NOV-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-NOV-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-NOV-12	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	07-NOV-12	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-NOV-12	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-NOV-12	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-NOV-12	Findings:	0.68 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-NOV-12	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-NOV-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-NOV-12	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-DEC-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-DEC-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-DEC-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-DEC-12	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-DEC-12	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	05-DEC-12	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-DEC-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-DEC-12	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-DEC-12	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-JAN-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-JAN-13	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-JAN-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-JAN-13	Findings:	43. MG/L
Chemical:	MAGNESIUM		

Sample Collected:	02-JAN-13	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	02-JAN-13	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-JAN-13	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	02-JAN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-JAN-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-FEB-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-FEB-13	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-FEB-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-FEB-13	Findings:	43. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-FEB-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	06-FEB-13	Findings:	0.55 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-FEB-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-FEB-13	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-FEB-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAR-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-MAR-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAR-13	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAR-13	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAR-13	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAR-13	Findings:	0.66 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	06-MAR-13	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-MAR-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAR-13	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-APR-13	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	250. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-APR-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-APR-13	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-APR-13	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-APR-13	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	03-APR-13	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-APR-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-APR-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-APR-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-MAY-13	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	240. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-MAY-13	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-MAY-13	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-MAY-13	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-MAY-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	01-MAY-13	Findings:	0.75 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-MAY-13	Findings:	23. UG/L
Chemical:	MANGANESE		
Sample Collected:	01-MAY-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	01-MAY-13	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-JUN-13	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	554. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JUN-13	Findings:	142. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JUN-13	Findings:	48.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JUN-13	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JUN-13	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JUN-13	Findings:	25. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JUN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JUN-13	Findings:	3.6 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	1400. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12-JUN-13	Findings:	7.69
Chemical:	PH, LABORATORY		
Sample Collected:	12-JUN-13	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-JUN-13	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-JUN-13	Findings:	142. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-JUN-13	Findings:	48.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-JUN-13	Findings:	100. MG/L
Chemical:	SODIUM		
Sample Collected:	12-JUN-13	Findings:	5. MG/L
Chemical:	POTASSIUM		
Sample Collected:	12-JUN-13	Findings:	45. MG/L
Chemical:	CHLORIDE		
Sample Collected:	12-JUN-13	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	12-JUN-13	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	12-JUN-13	Findings:	12. UG/L
Chemical:	SELENIUM		
Sample Collected:	12-JUN-13	Findings:	6.02 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12-JUN-13	Findings:	0.397 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12-JUN-13	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-JUN-13	Findings:	1.14
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	12-JUN-13	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-JUN-13	Findings:	3700. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	12-JUN-13	Findings:	1.6e-002 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	19-NOV-14	Findings:	8.02
Chemical:	PH, LABORATORY		
Sample Collected:	19-NOV-14	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	19-NOV-14	Findings:	146. MG/L
Chemical:	CALCIUM		
Sample Collected:	19-NOV-14	Findings:	5. PCI/L
Chemical:	URANIUM (PCI/L)		
Sample Collected:	19-NOV-14	Findings:	12.9
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	07-JAN-15	Findings:	230. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-JAN-15	Findings:	538. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-JAN-15	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-JAN-15	Findings:	45.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-JAN-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	07-JAN-15	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-JAN-15	Findings:	22. UG/L
Chemical:	MANGANESE		
Sample Collected:	07-JAN-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-JAN-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	01-APR-15	Findings:	240. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-APR-15	Findings:	548. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-APR-15	Findings:	144. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-APR-15	Findings:	45.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-APR-15	Findings:	510. MG/L
Chemical:	SULFATE		
Sample Collected:	01-APR-15	Findings:	0.74 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-APR-15	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-APR-15	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-MAY-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-MAY-15	Findings:	547. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-MAY-15	Findings:	144. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-MAY-15	Findings:	45.4 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-MAY-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	06-MAY-15	Findings:	0.54 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-MAY-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-MAY-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-JUN-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-JUN-15	Findings:	535. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-JUN-15	Findings:	139. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-JUN-15	Findings:	45.3 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-JUN-15	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	03-JUN-15	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	03-JUN-15	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	03-JUN-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-JUN-15	Findings:	18. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08-JUL-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08-JUL-15	Findings:	541. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	08-JUL-15	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	08-JUL-15	Findings:	45.6 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08-JUL-15	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	08-JUL-15	Findings:	0.59 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	08-JUL-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	08-JUL-15	Findings:	19. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05-AUG-15	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-AUG-15	Findings:	555. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-AUG-15	Findings:	143. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-AUG-15	Findings:	47.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-AUG-15	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	05-AUG-15	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-AUG-15	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-AUG-15	Findings:	20. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-SEP-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-SEP-15	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	02-SEP-15	Findings:	526. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	02-SEP-15	Findings:	135. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-SEP-15	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-SEP-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	02-SEP-15	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-SEP-15	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-NOV-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-NOV-15	Findings:	4.1 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	04-NOV-15	Findings:	514. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-NOV-15	Findings:	134. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-NOV-15	Findings:	43.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-NOV-15	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	04-NOV-15	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-NOV-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09-DEC-15	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09-DEC-15	Findings:	4.1 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	09-DEC-15	Findings:	572. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09-DEC-15	Findings:	149. MG/L
Chemical:	CALCIUM		
Sample Collected:	09-DEC-15	Findings:	48.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09-DEC-15	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	09-DEC-15	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	09-DEC-15	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-JAN-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		

Sample Collected:	07-JAN-16	Findings:	4.3 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	07-JAN-16	Findings:	534. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-JAN-16	Findings:	136. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-JAN-16	Findings:	46.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-JAN-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	07-JAN-16	Findings:	0.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-JAN-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-16	Findings:	8.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	03-FEB-16	Findings:	556. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-FEB-16	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-16	Findings:	49.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-16	Findings:	480. MG/L
Chemical:	SULFATE		
Sample Collected:	03-FEB-16	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-16	Findings:	4.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	02-MAR-16	Findings:	529. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-16	Findings:	137. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-16	Findings:	45.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-16	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	02-MAR-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-16	Findings:	3.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	04-MAY-16	Findings:	502. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-16	Findings:	128. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-16	Findings:	44.5 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-16	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-16	Findings:	0.53 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-16	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	01-JUN-16	Findings:	568. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-16	Findings:	143. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-16	Findings:	51.4 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-16	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-16	Findings:	0.46 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-JUN-16	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-AUG-16	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-16	Findings:	4.2 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	03-AUG-16	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-16	Findings:	141. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-16	Findings:	50.7 MG/L
Chemical:	MAGNESIUM		

Sample Collected:	03-AUG-16	Findings:	390. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-16	Findings:	0.47 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-16	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	31-AUG-16	Findings:	1400. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	31-AUG-16	Findings:	7.7
Chemical:	PH, LABORATORY		
Sample Collected:	31-AUG-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	31-AUG-16	Findings:	270. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	31-AUG-16	Findings:	3.7 MG/L
Chemical:	NITRATE (AS N)		
Sample Collected:	31-AUG-16	Findings:	530. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	31-AUG-16	Findings:	132. MG/L
Chemical:	CALCIUM		
Sample Collected:	31-AUG-16	Findings:	48.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	31-AUG-16	Findings:	95. MG/L
Chemical:	SODIUM		
Sample Collected:	31-AUG-16	Findings:	5. MG/L
Chemical:	POTASSIUM		
Sample Collected:	31-AUG-16	Findings:	50. MG/L
Chemical:	CHLORIDE		
Sample Collected:	31-AUG-16	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	31-AUG-16	Findings:	0.48 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	31-AUG-16	Findings:	11. UG/L
Chemical:	SELENIUM		
Sample Collected:	31-AUG-16	Findings:	1100. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	31-AUG-16	Findings:	1.11
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	31-AUG-16	Findings:	3.7 MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	07-SEP-16	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-16	Findings:	3.6 MG/L
Chemical:	NITRATE (AS N)		

Sample Collected:	07-SEP-16	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-16	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-16	Findings:	47.1 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-16	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-16	Findings:	0.46 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07-SEP-16	Findings:	990. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05-JAN-11	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05-JAN-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	05-JAN-11	Findings:	47. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05-JAN-11	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	05-JAN-11	Findings:	0.53 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05-JAN-11	Findings:	22. UG/L
Chemical:	MANGANESE		
Sample Collected:	05-JAN-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05-JAN-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-FEB-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-FEB-11	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-FEB-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-FEB-11	Findings:	41. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-FEB-11	Findings:	490. MG/L
Chemical:	SULFATE		

Sample Collected:	03-FEB-11	Findings:	0.63 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-FEB-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-FEB-11	Findings:	16. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02-MAR-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	02-MAR-11	Findings:	500. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	02-MAR-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	02-MAR-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	02-MAR-11	Findings:	400. MG/L
Chemical:	SULFATE		
Sample Collected:	02-MAR-11	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	02-MAR-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	02-MAR-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-APR-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-APR-11	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-APR-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	06-APR-11	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-APR-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	06-APR-11	Findings:	0.58 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-APR-11	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-APR-11	Findings:	910. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-APR-11	Findings:	17. MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	04-MAY-11	Findings:	220. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	220. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-MAY-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-MAY-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-MAY-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-MAY-11	Findings:	490. MG/L
Chemical:	SULFATE		
Sample Collected:	04-MAY-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-MAY-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-MAY-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-JUN-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-JUN-11	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01-JUN-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	01-JUN-11	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01-JUN-11	Findings:	460. MG/L
Chemical:	SULFATE		
Sample Collected:	01-JUN-11	Findings:	0.69 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01-JUN-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01-JUN-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06-JUL-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06-JUL-11	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	06-JUL-11	Findings:	140. MG/L
Chemical:	CALCIUM		

Sample Collected:	06-JUL-11	Findings:	46. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06-JUL-11	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	06-JUL-11	Findings:	0.67 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	06-JUL-11	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	06-JUL-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06-JUL-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-AUG-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-AUG-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-AUG-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-AUG-11	Findings:	44. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-AUG-11	Findings:	440. MG/L
Chemical:	SULFATE		
Sample Collected:	03-AUG-11	Findings:	0.64 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-AUG-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-AUG-11	Findings:	14. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07-SEP-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07-SEP-11	Findings:	510. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07-SEP-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	07-SEP-11	Findings:	42. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07-SEP-11	Findings:	450. MG/L
Chemical:	SULFATE		
Sample Collected:	07-SEP-11	Findings:	0.65 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		

Sample Collected:	07-SEP-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07-SEP-11	Findings:	12. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12-OCT-11	Findings:	520. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	12-OCT-11	Findings:	130. MG/L
Chemical:	CALCIUM		
Sample Collected:	12-OCT-11	Findings:	45. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12-OCT-11	Findings:	420. MG/L
Chemical:	SULFATE		
Sample Collected:	12-OCT-11	Findings:	0.64 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	12-OCT-11	Findings:	980. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12-OCT-11	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03-NOV-11	Findings:	560. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	03-NOV-11	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	03-NOV-11	Findings:	49. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03-NOV-11	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	03-NOV-11	Findings:	0.57 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	03-NOV-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03-NOV-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	14-DEC-11	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	210. MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	14-DEC-11	Findings:	480. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	14-DEC-11	Findings:	120. MG/L
Chemical:	CALCIUM		
Sample Collected:	14-DEC-11	Findings:	40. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	14-DEC-11	Findings:	470. MG/L
Chemical:	SULFATE		
Sample Collected:	14-DEC-11	Findings:	0.62 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	14-DEC-11	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	14-DEC-11	Findings:	15. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	200. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04-JAN-12	Findings:	550. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04-JAN-12	Findings:	140. MG/L
Chemical:	CALCIUM		
Sample Collected:	04-JAN-12	Findings:	48. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04-JAN-12	Findings:	430. MG/L
Chemical:	SULFATE		
Sample Collected:	04-JAN-12	Findings:	0.56 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04-JAN-12	Findings:	21. UG/L
Chemical:	MANGANESE		
Sample Collected:	04-JAN-12	Findings:	1000. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04-JAN-12	Findings:	14. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01-FEB-12	Findings:	180. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01-FEB-12	Findings:	180. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01-FEB-12	Findings:	540. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
ESE **OIL_GAS** **CAOG11000285756**
1/4 - 1/2 Mile

District nun:	2	Api number:	11101287
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	11A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285756		

2
East **OIL_GAS** **CAOG11000285755**
1/4 - 1/2 Mile

District nun:	2	Api number:	11101286
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	10
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285755		

3
NNW **OIL_GAS** **CAOG11000285615**
1/2 - 1 Mile

District nun:	2	Api number:	11101144
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Petan Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	A. Pfeiler Est.	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285615		

4
East **OIL_GAS** **CAOG11000285624**
1/2 - 1 Mile

District nun:	2	Api number:	11101153
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285624		

5
SE **OIL_GAS** **CAOG11000285623**
1/2 - 1 Mile

District nun:	2	Api number:	11101152
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285623		

6
ESE **OIL_GAS** **CAOG11000290446**
1/2 - 1 Mile

District nun:	2	Api number:	11105527
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Applegate & Owens		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000290446		

7
East **OIL_GAS** **CAOG11000285754**
1/2 - 1 Mile

District nun:	2	Api number:	11101285
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	9
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285754		

Map ID
Direction
Distance

Database EDR ID Number

8
NE **OIL_GAS** **CAOG11000285600**
1/2 - 1 Mile

District nun:	2	Api number:	11101136
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Mobil Oil Corporation		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	35
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	FR NORTH LINE OF COLONIA AND WEST LINE OF RICE 2796N AND 2846W		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Standard Scholle	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285600		

9
ESE **OIL_GAS** **CAOG11000285617**
1/2 - 1 Mile

District nun:	2	Api number:	11101146
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Plains Oil Co. No. 4		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285617		

10
SE **OIL_GAS** **CAOG11000285622**
1/2 - 1 Mile

District nun:	2	Api number:	11101151
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Reserve Oil & Gas Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285622		

11
ESE **OIL_GAS** **CAOG11000285753**
1/2 - 1 Mile

District nun:	2	Api number:	11101284
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	8
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285753		

12
ENE **OIL_GAS** **CAOG11000285752**
1/2 - 1 Mile

District nun:	2	Api number:	11101283
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	7
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285752		

13
SSE **OIL_GAS** **CAOG11000285775**
1/2 - 1 Mile

District nun:	2	Api number:	11101306
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	7
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285775		

14
SSE **OIL_GAS** **CAOG11000285804**
1/2 - 1 Mile

District nun:	2	Api number:	11101332
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Engine Oil & Gas Corp.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Diedrich	Wellnumber:	4
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285804		

Map ID
Direction
Distance

Database EDR ID Number

15
SE **OIL_GAS** **CAOG11000285774**
1/2 - 1 Mile

District nun:	2	Api number:	11101305
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	6
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285774		

16
ESE **OIL_GAS** **CAOG11000285750**
1/2 - 1 Mile

District nun:	2	Api number:	11101281
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	5
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285750		

17
ESE **OIL_GAS** **CAOG11000285749**
1/2 - 1 Mile

District nun:	2	Api number:	11101280
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	4
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285749		

18
SE **OIL_GAS** **CAOG11000285621**
1/2 - 1 Mile

District nun:	2	Api number:	11101150
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Chevron U.S.A. Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Duntley	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285621		

19
ENE **OIL_GAS** **CAOG11000285751**
1/2 - 1 Mile

District nun:	2	Api number:	11101282
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	6
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285751		

A20
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000285637**

District nun:	2	Api number:	11101166
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285637		

A21
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000285642**

District nun:	2	Api number:	11101171
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Diedrich-Gordon	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285642		

Map ID
Direction
Distance

Database EDR ID Number

22
ESE
1/2 - 1 Mile

OIL_GAS **CAOG11000285776**

District nun:	2	Api number:	11101307
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	8
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285776		

23
SE
1/2 - 1 Mile

OIL_GAS **CAOG11000285773**

District nun:	2	Api number:	11101304
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	5A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285773		

24
East
1/2 - 1 Mile

OIL_GAS **CAOG11000285748**

District nun:	2	Api number:	11101279
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285748		

25
ENE **OIL_GAS** **CAOG11000285616**
1/2 - 1 Mile

District nun:	2	Api number:	11101145
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Plains Oil Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285616		

26
East **OIL_GAS** **CAOG11000285747**
1/2 - 1 Mile

District nun:	2	Api number:	11101278
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285747		

27
ESE **OIL_GAS** **CAOG11000285757**
1/2 - 1 Mile

District nun:	2	Api number:	11101288
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Maulhardt Community	Wellnumber:	101A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285757		

28
SE **OIL_GAS** **CAOG11000285731**
1/2 - 1 Mile

District nun:	2	Api number:	11101262
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Chevron U.S.A. Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Gordon-Pfeiler Line Well	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285731		

Map ID
Direction
Distance

Database EDR ID Number

29
SE
1/2 - 1 Mile

OIL_GAS **CAOG11000285777**

District nun:	2	Api number:	11101308
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	9
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285777		

30
East
1/2 - 1 Mile

OIL_GAS **CAOG11000285630**

District nun:	2	Api number:	11101160
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	36
Township:	02N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Thatcher	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285630		

B31
SSE
1/2 - 1 Mile

OIL_GAS **CAOG11000284724**

District nun:	2	Api number:	11100299
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	08-DEC-56
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000284724		

32
South **OIL_GAS** **CAOG11000285626**
1/2 - 1 Mile

District nun:	2	Api number:	11101155
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Roscoe Oil Co.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Ecoff	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	03-AUG-57
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285626		

33
ESE **OIL_GAS** **CAOG11000285597**
1/2 - 1 Mile

District nun:	2	Api number:	11101133
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	John W Lucas Jr		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	1
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Pfeiler	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000285597		

B34
SSE **OIL_GAS** **CAOG11000285639**
1/2 - 1 Mile

District nun:	2	Api number:	11101168
Blm well:	N	Redrill can:	No
Dryhole:	N	Well status:	P
Operator name:	Shell Western Exploration & Production Inc.		
County name:	Ventura	Fieldname:	Oxnard
Area name:	Any Area	Section:	2
Township:	01N	Range:	22W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	E. J. Diedrich Community	Wellnumber:	5
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	POG
Site id:	CAOG11000285639		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93030	38	1

Federal EPA Radon Zone for VENTURA County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93030

Number of sites tested: 9

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.478 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Oxnard High School #8

1853 Camino Del Sol

Oxnard, CA 93030

Inquiry Number: 5046760.3

September 11, 2017

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

09/11/17

Site Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.3

Client Name:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Tetra Tech, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 435C-48F7-8633

PO # NA

Project Oxnard High School #8

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 435C-48F7-8633

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.5
September 11, 2017

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Executive Summary

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City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

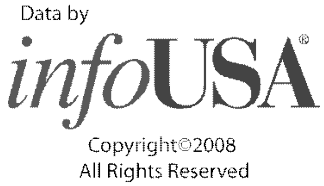
Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1926 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2010	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2005	EDR Digital Archive	-	X	X	-
	EDR Digital Archive	X	X	X	-
2002	Haines & Company, Inc.	-	X	X	-
2000	Pacific Bell Telephone Co	-	-	-	-
1996	Pacific Bell	-	X	X	-
1993	GTE	-	X	X	-
1986	Pacific Bell	-	X	X	-
1985	Pacific Telephone Co	-	X	X	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1980	Polk	-	X	X	-
1976	R. L. Polk & Co.	-	X	X	-
1975	General Telephone Company of California	-	X	X	-
	Pacific Telephone Co	-	X	X	-
1971	B&G Publications	-	-	-	-
1970	General Telephone Company of California	-	X	X	-
1968	B&G Publications	-	-	-	-
1965	R. L. Polk & Co.	-	X	X	-
1964	Pacific Telephone Co	-	X	X	-
1961	R. L. Polk & Co.	-	-	-	-
1957	R. L. Polk & Co.	-	-	-	-
1953	R. L. Polk & Co. of California	-	-	-	-
1949	Los Angeles Directory Co.	-	-	-	-
1940	Southern California	-	-	-	-
1930	Los Angeles Directory Co.	-	-	-	-
1926	Los Angeles Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	*Type*	*Findings*
440 Rose Avenue	Client Entered	
480 Rose Avenue	Client Entered	
1900 Camino Del Sol	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

1853 Camino Del Sol
Oxnard, CA 93030

FINDINGS DETAIL

Target Property research detail.

Camino del Sol

1853 Camino del Sol

Year	*Uses*	*Source*
2014	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2010	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2005	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

ALPINE ST

366 ALPINE ST

Year	*Uses*	*Source*
1975	Timmons Michael D	General Telephone Company of California

367 ALPINE ST

Year	*Uses*	*Source*
1975	Horton Edw H	General Telephone Company of California
1970	Horton Edw H	General Telephone Company of California

374 ALPINE ST

Year	*Uses*	*Source*
1975	Fryer Dick	General Telephone Company of California
1970	Fryer S	General Telephone Company of California
	Fryer Dick	General Telephone Company of California

375 ALPINE ST

Year	*Uses*	*Source*
1975	Baril Normand A	General Telephone Company of California
1970	Phinney Lynn	General Telephone Company of California

382 ALPINE ST

Year	*Uses*	*Source*
1975	Frantom Jas G	General Telephone Company of California
1970	Frantom Jas G	General Telephone Company of California

383 ALPINE ST

Year	*Uses*	*Source*
1975	Bower John K	General Telephone Company of California
1970	Bower John K	General Telephone Company of California

390 ALPINE ST

Year	*Uses*	*Source*
1970	Hubbard Robt A	General Telephone Company of California

FINDINGS

BALSAM ST

399 BALSAM ST

Year	Uses	Source
2002	FERNANDEZJohn	Haines & Company, Inc.

Camino del Sol

1500 Camino del Sol

Year	Uses	Source
2014	OXNARD CITY OF	EDR Digital Archive
	OXNARD FRNDS OF LIB FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD FRNDS OF LIB FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
2010	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
2005	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	CHILD DEVELOPMENT INC	EDR Digital Archive
	NATIONAL ASSOC FOR HISPANIC EL	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive
	LA ESCUELITA CHILDRENS CENTER	EDR Digital Archive
	CHILD DEVELOPMENT INC	EDR Digital Archive
	NATIONAL ASSOC FOR HISPANIC EL	EDR Digital Archive
	OXNARD CITY OF	EDR Digital Archive

FINDINGS

Year	Uses	Source
2005	PROMOTRAS Y PRMTRES FOUNDATION	EDR Digital Archive

1825 Camino del Sol

Year	Uses	Source
2010	DEL SOL WIRELESS LLC	EDR Digital Archive
	DEL SOL WIRELESS LLC	EDR Digital Archive

1853 Camino del Sol

Year	Uses	Source
2014	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2010	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive
2005	AGRICULTURAL INFO SYSTEMS	EDR Digital Archive

1910 Camino del Sol

Year	Uses	Source
2014	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
2010	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
	CAMINO DEL SOL APARTMENTS	EDR Digital Archive
2005	CAMINO DEL SOL APARTMENT	EDR Digital Archive
	CAMINO DEL SOL APARTMENT	EDR Digital Archive

CAMINO DEL SOL

1928 CAMINO DEL SOL

Year	Uses	Source
2002	CONTRERASFEDEBRICO	Haines & Company, Inc.
	FERNANDZ	Haines & Company, Inc.
	JUAREZSaul	Haines & Company, Inc.
	MENDOZLas ROCHA	Haines & Company, Inc.
	R 0 CHA Mania S SAUCEDOM	Haines & Company, Inc.
1996	A artment	Pacific Bell

1932 CAMINO DEL SOL

Year	Uses	Source
2002	APARTMENTS	Haines & Company, Inc.
	BACELISMickey	Haines & Company, Inc.
	REYESRosnlva	Haines & Company, Inc.
	Neves	Haines & Company, Inc.
	RAMi REZHernandez	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	ORNELASSeima ORTEGAEvan	Haines & Company, Inc.
	HERNANDEZ Pedro U B M 0 EJ 8 A 2 Ee	Haines & Company, Inc.
	HERNANDEZHiiduvena	Haines & Company, Inc.
	GUTIEREZJoaqaun	Haines & Company, Inc.
	ENRIOUEZFernando	Haines & Company, Inc.
	LUDARDOErck	Haines & Company, Inc.
	MARTINEZEsther	Haines & Company, Inc.
	PINAJaime A	Haines & Company, Inc.
	ROSALES Jovta	Haines & Company, Inc.
	GALES Mary J	Haines & Company, Inc.
	LOPEZ Rube	Haines & Company, Inc.
	SERRANORomelra	Haines & Company, Inc.
	DURAN Mana Ce	Haines & Company, Inc.
	GUTIERREZBemtha Alcia HERNANDEZCl	Haines & Company, Inc.
	LAREAAleiandro	Haines & Company, Inc.
1996	Apartment	Pacific Bell

1936 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1940 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1944 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1948 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1952 CAMINO DEL SOL

Year	Uses	Source
1996	Apartment	Pacific Bell

1956 CAMINO DEL SOL

Year	Uses	Source
2002	ALUSWIZA	Haines & Company, Inc.

Year	Uses	Source
2002	CAMNO DEOL S 3 BSOC 01 T	Haines & Company, Inc.
	APARTMENTS	Haines & Company, Inc.
1996	Apartment	Pacific Bell

CORDOVA ST

399 CORDOVA ST

Year	Uses	Source
2002	GONZALESEsltea	Haines & Company, Inc.
	8 LES oaud Oe	Haines & Company, Inc.

FLORENTINA DR

1731 FLORENTINA DR

Year	Uses	Source
2002	OKONICOLBemari	Haines & Company, Inc.

1741 FLORENTINA DR

Year	Uses	Source
2002	CSNEROS Victor	Haines & Company, Inc.

1751 FLORENTINA DR

Year	Uses	Source
2002	ORAMZIRArt BO	Haines & Company, Inc.

Florentina Dr

1761 Florentina Dr

Year	Uses	Source
2014	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
2010	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
2005	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive
	CHANNEL ISLANDS AMUSEMENTS	EDR Digital Archive

FLORENTINA DR

1761 FLORENTINA DR

Year	Uses	Source
2002	OWI TE 49a 8hew	Haines & Company, Inc.

FINDINGS

Florentina Dr

1771 Florentina Dr

Year	Uses	Source
2014	RTM CARPET SERVICE	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
2010	CHAVEZ ERICK J	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
	RTM CARPET SERVICE	EDR Digital Archive
	CHAVEZ ERICK J	EDR Digital Archive

FLORENTINA DR

1773 FLORENTINA DR

Year	Uses	Source
2002	ALf BAJeoe	Haines & Company, Inc.

GABRIELLA DR

1732 GABRIELLA DR

Year	Uses	Source
2002	MOORE Da Vud	Haines & Company, Inc.

1733 GABRIELLA DR

Year	Uses	Source
2002	PADILLALu ZA B 05 M	Haines & Company, Inc.
	RUBIOFred	Haines & Company, Inc.

N RICE AVE

526 N RICE AVE

Year	Uses	Source
2002	XXXX	Haines & Company, Inc.
1980	Workman Loren A	Polk
1975	Workman Loren A	Pacific Telephone Co

N ROSE AVE

420 N ROSE AVE

Year	Uses	Source
2002	YENCOHMTLGY	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	ONCLGYSPCLSTS	Haines & Company, Inc.
	VEN CO PULMONARY	Haines & Company, Inc.
	MEDICAL GROUP	Haines & Company, Inc.
	VENCORDTh ONCLGY	Haines & Company, Inc.
	MED GORP	Haines & Company, Inc.
	VEN COUNTY	Haines & Company, Inc.
	FERTUITY CENTER	Haines & Company, Inc.
	CERNIL 1 AJAMESJMD	Haines & Company, Inc.
	e CHANGSTEVENDM	Haines & Company, Inc.
	CHIANG JULIAN MD COASTAL EYE	Haines & Company, Inc.
	SPECIALISTS	Haines & Company, Inc.
	ROSEAV 5 N	Haines & Company, Inc.
	CONWISAR PHIl P H B	Haines & Company, Inc.
	COSGIETC&LASER M	Haines & Company, Inc.
	HEALTH CENTER	Haines & Company, Inc.
	DEFOREST IMELDA MO DECLUSIN RICHD J MD	Haines & Company, Inc.
	APROCORP	Haines & Company, Inc.
	DTMARS MICHAEL L MD ENOBOUEZTTH	Haines & Company, Inc.
	MOCL CLNC INC	Haines & Company, Inc.
	EVVAZZAOEH BENICA	Haines & Company, Inc.
	FLYNN ARTHUR MD FORD JOHN MD	Haines & Company, Inc.
	GENLSURGERYMEG	Haines & Company, Inc.
	GRPVEN CO	Haines & Company, Inc.
	HANAAANT 01 ETMD HERNANDEZMANUEL 805 988 1443 S IHUANG THOMAS MO	Haines & Company, Inc.
	JACOBSON GRETCHEN	Haines & Company, Inc.
	KELLEYANNSMD	Haines & Company, Inc.
	KONG LYNN R MO t LEEJAES	Haines & Company, Inc.
	UAOYUCHE	Haines & Company, Inc.
	NTEDSN 1D	Haines & Company, Inc.
	LOH KELVIN MD	Haines & Company, Inc.
	LOIGNONLUCILLE MD LOWE 1 SAAC	Haines & Company, Inc.
	LUM ROBERT P MD	Haines & Company, Inc.
	LUNDEENUE OALID	Haines & Company, Inc.
	MCCALL LAURIE C MO	Haines & Company, Inc.
	MCi NTYRE ROSEMARY	Haines & Company, Inc.
	MEDICAL PLAZA	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2002	PHARMACY	Haines & Company, Inc.
	MESCIER DAVID MD MIUIGANCA	Haines & Company, Inc.
	MUMMANENIPRASAO	Haines & Company, Inc.
	NEIRASERGIOOMO 805 983 2355 t	Haines & Company, Inc.
	NGUYENTIMOPM	Haines & Company, Inc.
	NESLUCHOWSKI WITOLDS MD NISHIKAWAWA	Haines & Company, Inc.
	Y MG t NSHIKAWA&LOWE	Haines & Company, Inc.
	SRGCL SERVICES OCONNORi Ti IM	Haines & Company, Inc.
	MO OX 0 ARDHLEN 4 EME	Haines & Company, Inc.
	OBEGYN GRP	Haines & Company, Inc.
	XNROERNSET 4 RT	Haines & Company, Inc.
	HDO&HCXSRGCL	Haines & Company, Inc.
	PACCARDIOTHORACC	Haines & Company, Inc.
	SURGERY GRP	Haines & Company, Inc.
	PANAGOTIDES	Haines & Company, Inc.
	GEORGE PMD	Haines & Company, Inc.
	PARSAKOOBOSMD	Haines & Company, Inc.
	PAYNE DALENNDIPHD	Haines & Company, Inc.
	RADIATION ONCLOY	Haines & Company, Inc.
	CTRS VNTRA CO	Haines & Company, Inc.
	ROSEAVENUE FAMILY	Haines & Company, Inc.
	MEDICAL GRP	Haines & Company, Inc.
	SANTANGELOSALC	Haines & Company, Inc.
	MDFACS	Haines & Company, Inc.
	SHIAH ROSHAN MD	Haines & Company, Inc.
	SODERBEB 6 HARRIS BETh FNP SOUZJOSEPM	Haines & Company, Inc.
	SPAUISH 86 LLS MEDICALGROUP ST JOHN REG	Haines & Company, Inc.
	IMAGING CENTER	Haines & Company, Inc.
	STEINBERG JEFFREY	Haines & Company, Inc.
	SUPPLE BRIAN LUD	Haines & Company, Inc.
	TULATHIUUTTE	Haines & Company, Inc.
	SUCKCHAI MD	Haines & Company, Inc.
	UNIVRSL FAMILY	Haines & Company, Inc.
	HEALTH CARE CTR	Haines & Company, Inc.

FINDINGS

625 N ROSE AVE

Year	Uses	Source
1980	VENTURA COUNTY FARM LABOR ASSN	Polk
	BUENA VISTA LABOR CAMP labor contrs	Polk

ROSE AVE

491 ROSE AVE

Year	Uses	Source
1976	Og Daniels & Moore	R. L. Polk & Co.

SAN GORGNIO AVE

1845 SAN GORGNIO AVE

Year	Uses	Source
1970	Romero Yolanda	General Telephone Company of California

SAN GORGONIO AVE

1840 SAN GORGONIO AVE

Year	Uses	Source
1965	VACANT	R. L. Polk & Co.

1860 SAN GORGONIO AVE

Year	Uses	Source
1965	GARCIA JOSE C	R. L. Polk & Co.

SAN GORGONIO ST

1805 SAN GORGONIO ST

Year	Uses	Source
1996	Apartment	Pacific Bell
1993	Rodriguez Manuel Mendoza	GTE
	Barrera Nora	GTE
	Juarez Roberto Tenorio	GTE
	Redondo Francisco P	GTE
	Barrera Nora	GTE
	Juarez Roberto Tenorio	GTE
	Redondo Francisco P	GTE
	Redondo Judith	GTE

FINDINGS

Year	Uses	Source
1993	Rodriguez Manuel Mendoza	GTE
1986	Gonzales Concepcion	Pacific Bell
	Gonzalez Ruben P	Pacific Bell
	Magana Silvia	Pacific Bell
	Martinez Antonio	Pacific Bell
	Rodriguez Manuel Mendoza	Pacific Bell
1985	Gonzales Concepcion	Pacific Telephone Co
	Magana Silvia	Pacific Telephone Co
	Martinez Antonio	Pacific Telephone Co
	Mendoza Dan I Ayala	Pacific Telephone Co
	Rodriguez Manuel Mendoza	Pacific Telephone Co
1980	Ceja Hermila Maciel	Polk
	Diaz Manuel	Polk
	Maldonado Juan Ramon	Polk
	Martinez Antonio	Polk
	Quezada Paul	Polk
1976	Hunandez Ildefonso	R. L. Polk & Co.
	Maldonado Juan R	R. L. Polk & Co.
	Deloera Jose	R. L. Polk & Co.
	Quezada Jose	R. L. Polk & Co.
	Quintiro Simon	R. L. Polk & Co.
	Diaz D	R. L. Polk & Co.
	Rose Garden Apartments lMonte James	R. L. Polk & Co.
	Gonzales Marcelino	R. L. Polk & Co.
1975	Brighton Park Apartments	Pacific Telephone Co
	Lopez Francisco	Pacific Telephone Co
	Rose Garden Apartments	Pacific Telephone Co
	Brighton Park Apartments	General Telephone Company of California
	Lopez Francisco	General Telephone Company of California
	Rose Garden Apartments	General Telephone Company of California
1970	Braden Lawrence	General Telephone Company of California
	Gonzales Michael F	General Telephone Company of California
	Jackson Lee Arthur	General Telephone Company of California

1815 SAN GORGONIO ST

Year	Uses	Source
2002	APARTMENTS	Haines & Company, Inc.
	CERVANTES Emnesto	Haines & Company, Inc.
1996	Apartment	Pacific Bell

FINDINGS

Year	Uses	Source
1993	Hernandez Idefonso	GTE
	Hernandez Idefonso	GTE
1986	Galvan M	Pacific Bell
	Gonzales Maximino M	Pacific Bell
	Hernandez Idefonso	Pacific Bell
	Sanchez Jesus	Pacific Bell
1985	Galvan M	Pacific Telephone Co
	Gonzales Maximino M	Pacific Telephone Co
	Hernandez lldefonso	Pacific Telephone Co
	Sanchez Jesus	Pacific Telephone Co
1980	Galvan M	Polk
	Gongora Gaspar	Polk
	Hernandez lldefonso	Polk
	Morales Rosa	Polk
	Sanchez Jesus	Polk
1976	Morales Enrique	R. L. Polk & Co.
	Soto Christina	R. L. Polk & Co.
	Martinez C	R. L. Polk & Co.
	Castillo J	R. L. Polk & Co.
	Ortega C	R. L. Polk & Co.
	Espinosa Frank	R. L. Polk & Co.
	Monte James	R. L. Polk & Co.
	Apartments	R. L. Polk & Co.
	Hernandez Congona	R. L. Polk & Co.
1975	Espinoza Frank	Pacific Telephone Co
	Martinez Gracia	Pacific Telephone Co
	Reyes Efren L	Pacific Telephone Co
	Espinoza Frank	General Telephone Company of California
	Martinez Gracia	General Telephone Company of California
	i Reyes Efren L	General Telephone Company of California
1970	Hacker Donald F I	General Telephone Company of California
	Olechnicki John	General Telephone Company of California
	Rose Garden Apts	General Telephone Company of California

1825 SAN GORGONIO ST

Year	Uses	Source
2002	AKEJose	Haines & Company, Inc.
	LOPEZGuadalupe	Haines & Company, Inc.
1996	Apartment	Pacific Bell

FINDINGS

Year	Uses	Source
1993	Galaviz Javier	GTE
	Galavlz R L @Camarillo	GTE
	Lopez Guadalupe	GTE
	Pantoja Miguel	GTE
	Galaviz Javier	GTE
	Lopez Guadalupe	GTE
	Pantoja Miguel	GTE
1986	Esqueda Fausto	Pacific Bell
	Esparza Barajas Rosa M	Pacific Bell
	Bravo Gloria	Pacific Bell
	Esqueda Gildardo	Pacific Bell
	Galaviz Javier	Pacific Bell
	Panto a Miguel	Pacific Bell
1985	Bravo Gloria	Pacific Telephone Co
	Esqueda Fausto	Pacific Telephone Co
	Esqueda Gildardo	Pacific Telephone Co
	Galaviz Javier	Pacific Telephone Co
	Panto a Miguel	Pacific Telephone Co
1980	Bravo Gloria	Polk
	Esparza Barajas Rosa M	Polk
	Esqueda Fausto	Polk
	Esqueda Gildardo	Polk
	Pantoja Miguel	Polk
1976	Apartments	R. L. Polk & Co.
	Rornan Rodrigo	R. L. Polk & Co.
	Esqueda Fauisto	R. L. Polk & Co.
	No Return	R. L. Polk & Co.
	Heredia Bravo	R. L. Polk & Co.
	Hernandez Jose	R. L. Polk & Co.
	Robeldo Mary D	R. L. Polk & Co.
1975	Bravo Gloria	General Telephone Company of California
	Moncayo Francisco	General Telephone Company of California
	Brav Q Gloria	Pacific Telephone Co
	Moncayo Francisco	Pacific Telephone Co
1970	Delgado Edgar	General Telephone Company of California
	Espinoza Frank	General Telephone Company of California
	Moncayo Francisco	General Telephone Company of California
	Nickson Robt	General Telephone Company of California

FINDINGS

1835 SAN GORGONIO ST

Year	*Uses*	*Source*
2002	ORTIZHenibe	Haines & Company, Inc.
	RODR 0 GUEZLuz Mana	Haines & Company, Inc.
1996	Apartment	Pacific Bell
1993	Rodriguez Artemio F	GTE
	Rodriguez Erato	GTE
	Rodriguez Erato	GTE
	Rodriguez Artemio F	GTE
	Rodriguez Augustine	GTE
1986	Martinez Ramon	Pacific Bell
	Orosco Jose	Pacific Bell
	Parra Landy	Pacific Bell
	Saldana Rosendo	Pacific Bell
	Saldia Brando @Newbury Park	Pacific Bell
	Saldin B & D @Newbury Park	Pacific Bell
	Sadino Betty	Pacific Bell
	Saldino Margaret	Pacific Bell
1985	Martinez Ramon	Pacific Telephone Co
	Orosco Jose	Pacific Telephone Co
	Parra Landy	Pacific Telephone Co
	Saldana Rosendo	Pacific Telephone Co
1980	Parra Landy	Polk
	Quintono Carlos	Polk
	Rivas Jorge	Polk
	Sandoval Felipe	Polk
1976	Apartments	R. L. Polk & Co.
	Robles Olague	R. L. Polk & Co.
	Valenzuela Josefta	R. L. Polk & Co.
	Me Laughlin Mable	R. L. Polk & Co.
	Pantoja Jimerez	R. L. Polk & Co.
	Ruiz Pabba	R. L. Polk & Co.
	Mora Miguel	R. L. Polk & Co.
1975	Pantoja Alicia	General Telephone Company of California
	Valenzuela Fellciano R	General Telephone Company of California
1970	Aguilera Milton	General Telephone Company of California
	Garcia Juan V	General Telephone Company of California
	Hernandez John	General Telephone Company of California

FINDINGS

1840 SAN GORGONIO ST

Year	Uses	Source
2002	6 MATAC 6lso M	Haines & Company, Inc.
	MATAMargarya	Haines & Company, Inc.
1996	Mata Celao M	Pacific Bell
	Mats Margarita	Pacific Bell
1993	Mata Celso M	GTE
	Mata Margarita	GTE
	Mata Celso M	GTE
	Mata D @Oxnard	GTE
	Mata E Z @Camarillo	GTE
	Mata Estela @Oxnard	GTE
	Mata Margarita	GTE
	Mata Peter @Santa Paula	GTE
1986	Mata Celso M	Pacific Bell
1985	ata Celso M	Pacific Telephone Co
1980	Mata Celso M	Polk
1976	Mata Celso M	R. L. Polk & Co.
1970	Mata Celso M	General Telephone Company of California

1845 SAN GORGONIO ST

Year	Uses	Source
2002	CERVANTES 5ar 4n	Haines & Company, Inc.
	C 5 AVEZJuan	Haines & Company, Inc.
	MAOANAAarora	Haines & Company, Inc.
	NUNEZBeniamin	Haines & Company, Inc.
	SANT 1 AGOPEDRO	Haines & Company, Inc.
	MARCEUNO	Haines & Company, Inc.
1996	Apartment	Pacific Bell
1993	Anaya Maria E	GTE
	Castellon Maria	GTE
	Magana Eleazar	GTE
	Navarro Jose	GTE
	Anaya Maria E	GTE
	Castellon Maria	GTE
	Magana Eleazar	GTE
	Navarro Jose	GTE
1986	Ambriz Rogelio	Pacific Bell
	Anaya Maria E	Pacific Bell

FINDINGS

Year	Uses	Source
1986	Anaya Michael 11873 Nightingale @Moorpark	Pacific Bell
	Anaya Rodolfo F	Pacific Bell
	Anaya Uvence Cortes @Oxnard	Pacific Bell
	Ayala Francisco	Pacific Bell
	Gonzales Jose	Pacific Bell
	Palencia Roberto	Pacific Bell
1985	Ambriz Rogelio	Pacific Telephone Co
	Ayala Francisco	Pacific Telephone Co
	Gonzales Jose	Pacific Telephone Co
	Palencia Roberto	Pacific Telephone Co
1980	Ambriz Rogelio	Polk
	Ayala Francisco	Polk
	Gonzales Jose	Polk
	Palencia Roberto	Polk
1976	Apartments	R. L. Polk & Co.
	Ibarra Juan	R. L. Polk & Co.
	Rocha Jaime	R. L. Polk & Co.
	Adams Castorii	R. L. Polk & Co.
	Gonzalez Vicente	R. L. Polk & Co.
	Palencia Roberto	R. L. Polk & Co.
	Ybarra Miguel	R. L. Polk & Co.
	Medrmno Geo	R. L. Polk & Co.
	Pierrdia Gilbert	R. L. Polk & Co.
1975	Aalls Josephine	Pacific Telephone Co
	A i	Pacific Telephone Co
	Gonzales Vincent	Pacific Telephone Co
	Ibarra Miguel	Pacific Telephone Co
	Avalos Josephine	General Telephone Company of California
	Gonzales Lupe	General Telephone Company of California
	Gonzales Vincent	General Telephone Company of California
	Gonzales Virginia J ill OColonia Rd @Oxnard	General Telephone Company of California
	Ibarra Miguel	General Telephone Company of California
	Rocha Jaime	General Telephone Company of California
	Gonzales Lupe	Pacific Telephone Co
	Rocha Jaime	Pacific Telephone Co
1970	Land Carlton	General Telephone Company of California
	Luis Armando	General Telephone Company of California

FINDINGS

1860 SAN GORGONIO ST

Year	Uses	Source
2002	OGARCIAJose	Haines & Company, Inc.
1985	Sanchez Irene G	Pacific Telephone Co
1976	Lemon Ocar	R. L. Polk & Co.
1975	Maerid Gilbert	Pacific Telephone Co
	Maerid Gilbert	General Telephone Company of California

SAN GORGONLA AVE

1860 SAN GORGONLA AVE

Year	Uses	Source
1964	Garcia Jose C	Pacific Telephone Co

VALENTINA DR

525 VALENTINA DR

Year	Uses	Source
2002	CAVAZOSA	Haines & Company, Inc.
	CAVAAZOSAngel	Haines & Company, Inc.

535 VALENTINA DR

Year	Uses	Source
2002	SANCHEZ Rabert	Haines & Company, Inc.

545 VALENTINA DR

Year	Uses	Source
2002	ESCUi EBOJoae	Haines & Company, Inc.
	GALAV 12 Richard	Haines & Company, Inc.

555 VALENTINA DR

Year	Uses	Source
2002	0p Ry 0 R Willam	Haines & Company, Inc.

Valentina Dr

565 Valentina Dr

Year	Uses	Source
2010	SHAILENDRA BHAWNAN	EDR Digital Archive
	SHAILENDRA BHAWNAN	EDR Digital Archive
2005	SHAILENDRA BHAWNAN	EDR Digital Archive
	SHAILENDRA BHAWNAN	EDR Digital Archive

FINDINGS

VALENTINA DR

565 VALENTINA DR

Year	*Uses*	*Source*
2002	TORRESGerman	Haines & Company, Inc.

575 VALENTINA DR

Year	*Uses*	*Source*
2002	GONZALEZA 4fredo	Haines & Company, Inc.

585 VALENTINA DR

Year	*Uses*	*Source*
2002	0 PAS 2 UA 4 Monn Btte 805 4865 404 O	Haines & Company, Inc.

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
1853 Camino Del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
1500 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1500 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1731 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1732 GABRIELLA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1733 GABRIELLA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1741 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1751 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 Florentina Dr	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1761 Florentina Dr	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1771 Florentina Dr	2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1771 Florentina Dr	2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1773 FLORENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1805 SAN GORGONIO ST	2014, 2010, 2005, 2002, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1815 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1825 Camino del Sol	2014, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

FINDINGS

Address Researched	Address Not Identified in Research Source
1825 Camino del Sol	2014, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1825 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1835 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1840 SAN GORGONIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1840 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1845 SAN GORGNIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1845 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1853 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONIO AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONIO ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1980, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1860 SAN GORGONLA AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1900 Camino Del Sol	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1910 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1910 Camino del Sol	2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1928 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1932 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1936 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1940 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1944 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1948 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1952 CAMINO DEL SOL	2014, 2010, 2005, 2002, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
1956 CAMINO DEL SOL	2014, 2010, 2005, 2000, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
366 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
367 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

FINDINGS

Address Researched	Address Not Identified in Research Source
374 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
375 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
382 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
383 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
390 ALPINE ST	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
399 BALSAM ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
399 CORDOVA ST	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
420 N ROSE AVE	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
440 Rose Avenue	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
480 Rose Avenue	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
491 ROSE AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
525 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
526 N RICE AVE	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1976, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
535 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
545 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
555 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 Valentina Dr	2014, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
565 Valentina Dr	2014, 2002, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
575 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
585 VALENTINA DR	2014, 2010, 2005, 2000, 1996, 1993, 1986, 1985, 1980, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926
625 N ROSE AVE	2014, 2010, 2005, 2002, 2000, 1996, 1993, 1986, 1985, 1976, 1975, 1971, 1970, 1968, 1965, 1964, 1961, 1957, 1953, 1949, 1940, 1930, 1926

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D HISTORICAL AERIAL PHOTOGRAPHS

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.9
September 12, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

09/12/17

Client Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.9

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

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Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1994	1"=500'	Acquisition Date: September 03, 1994	USGS/DOQQ
1985	1"=500'	Flight Date: August 06, 1985	USDA
1978	1"=500'	Flight Date: September 21, 1978	USDA
1967	1"=500'	Flight Date: August 13, 1967	USGS
1959	1"=500'	Flight Date: October 04, 1959	USDA
1947	1"=500'	Flight Date: August 15, 1947	USGS
1938	1"=500'	Flight Date: May 09, 1938	USDA
1927	1"=500'	Flight Date: January 01, 1927	USGS

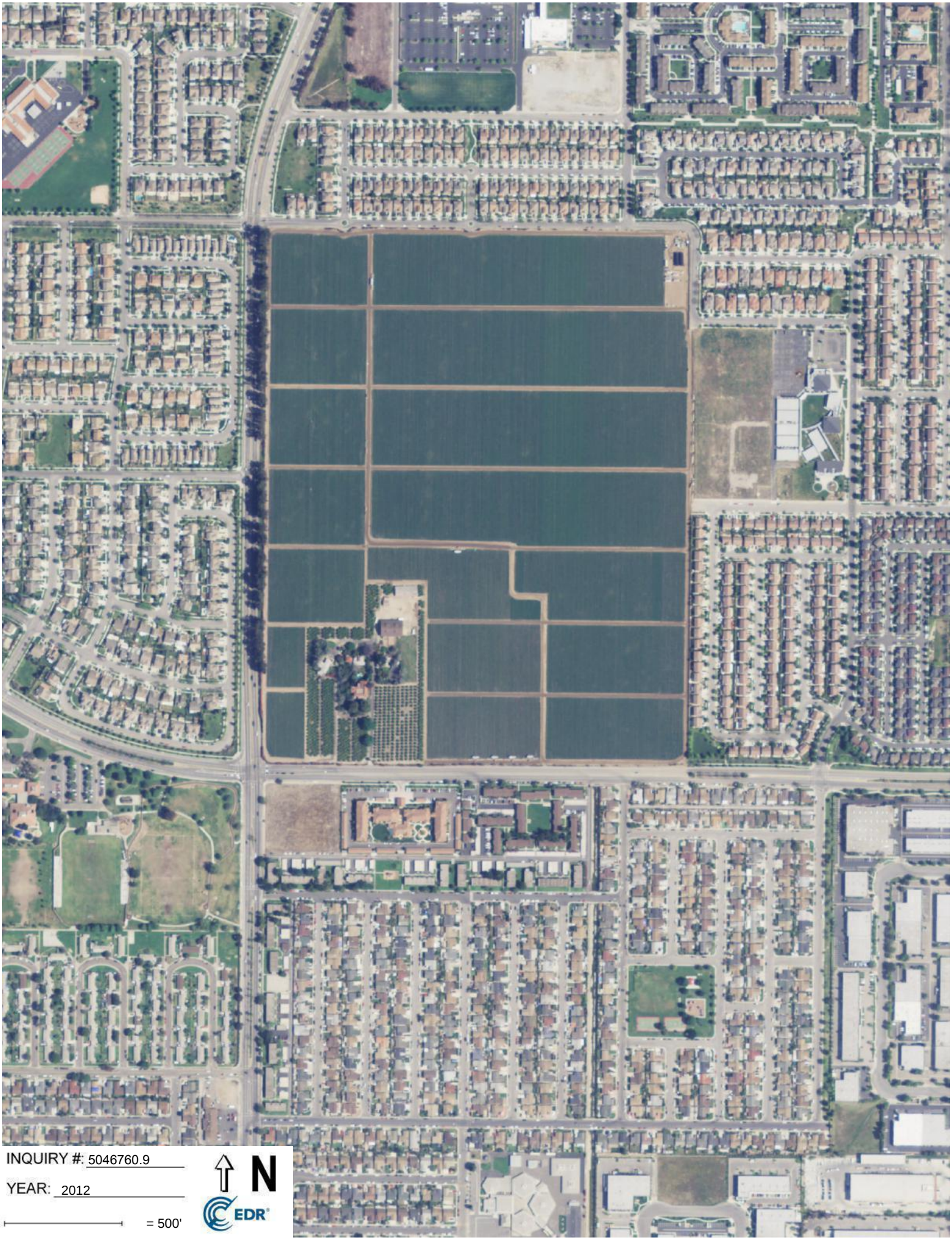
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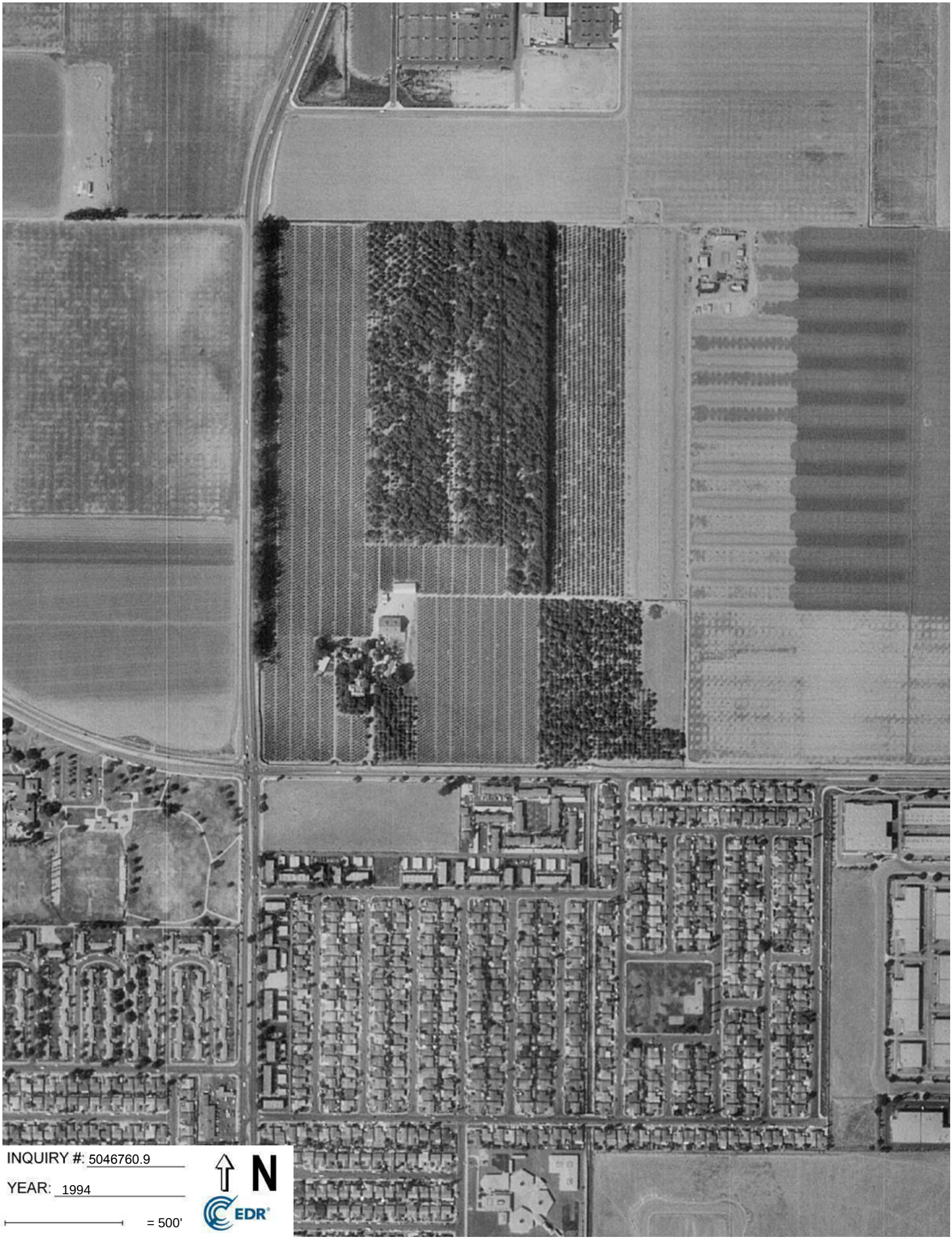
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INQUIRY #: 5046760.9
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2010
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 5046760.9
YEAR: 1994
= 500'
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EDR


INQUIRY #: 5046760.9
YEAR: 1985
= 500'
N
EDR



INQUIRY #: 5046760.9

YEAR: 1978

= 500'

N

EDR


INQUIRY #: 5046760.9
YEAR: 1967
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EDR


INQUIRY #: 5046760.9
YEAR: 1959
= 500'
N
EDR



INQUIRY #: 5046760.9

YEAR: 1947

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1938

= 500'

N

EDR



INQUIRY #: 5046760.9

YEAR: 1927

= 500'

N

EDR

E HISTORICAL TOPOGRAPHIC MAPS

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Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030

Inquiry Number: 5046760.4
September 11, 2017

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

09/11/17

Site Name:

Oxnard High School #8
1853 Camino Del Sol
Oxnard, CA 93030
EDR Inquiry # 5046760.4

Client Name:

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111
Contact: Jason Dane

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Tetra Tech, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: Oxnard High School #8

Coordinates:

Latitude:	34.206412 34° 12' 23" North
Longitude:	-119.158724 -119° 9' 31" West
UTM Zone:	Zone 11 North
UTM X Meters:	301112.55
UTM Y Meters:	3787149.83
Elevation:	63.00' above sea level

Maps Provided:

2012
1967
1951
1949
1947
1943
1904

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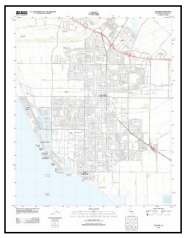
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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Oxnard
2012
7.5-minute, 24000

1967 Source Sheets



Oxnard
1967
7.5-minute, 24000
Aerial Photo Revised 1967

1951 Source Sheets



Oxnard
1951
7.5-minute, 24000
Aerial Photo Revised 1947

1949 Source Sheets



Oxnard
1949
7.5-minute, 24000
Aerial Photo Revised 1947

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1947 Source Sheets



HUENEME
1947
15-minute, 50000

1943 Source Sheets



Hueneme
1943
15-minute, 62500
Aerial Photo Revised 1938

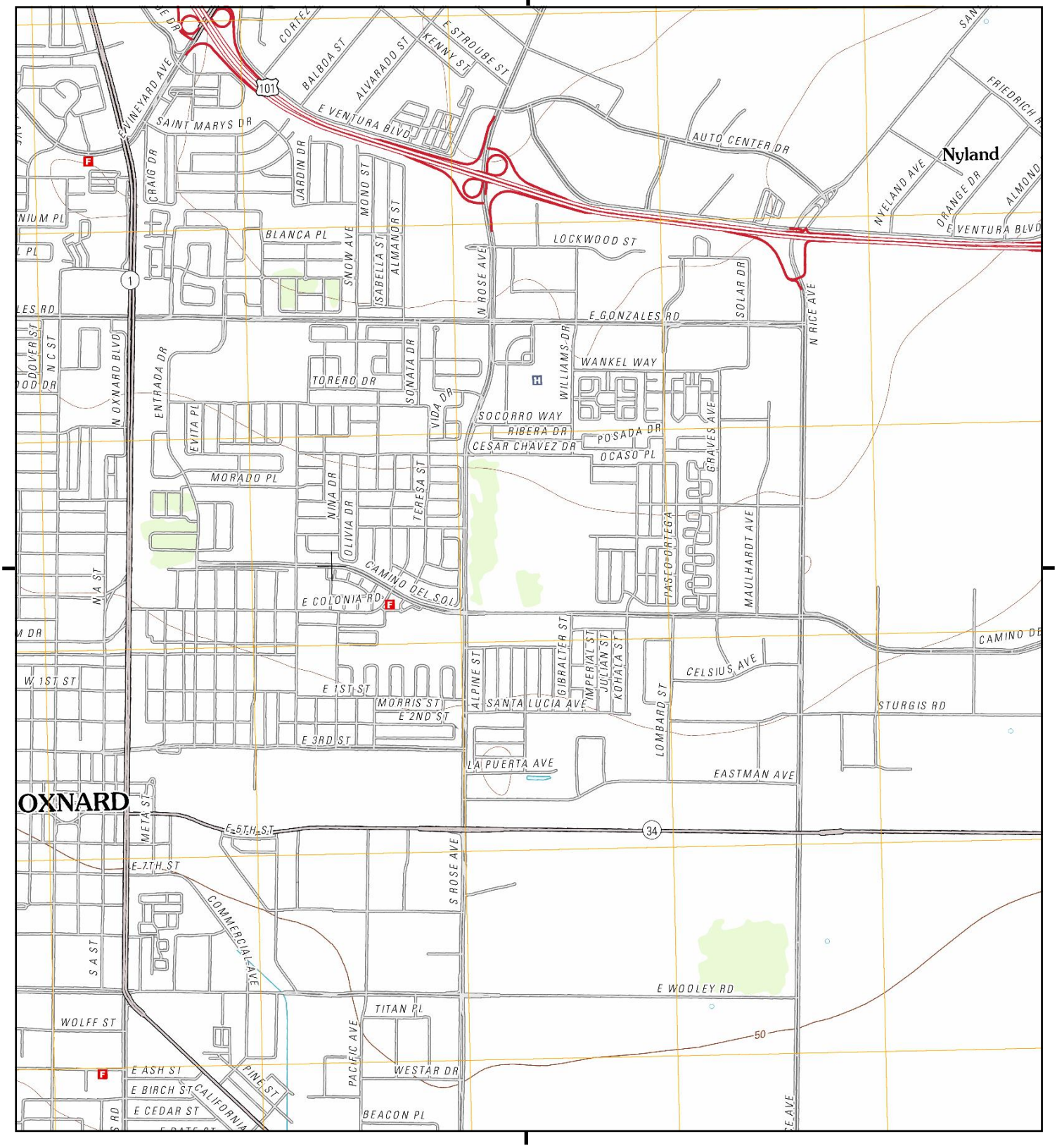
1904 Source Sheets



Hueneme
1904
15-minute, 62500

Historical Topo Map

2012



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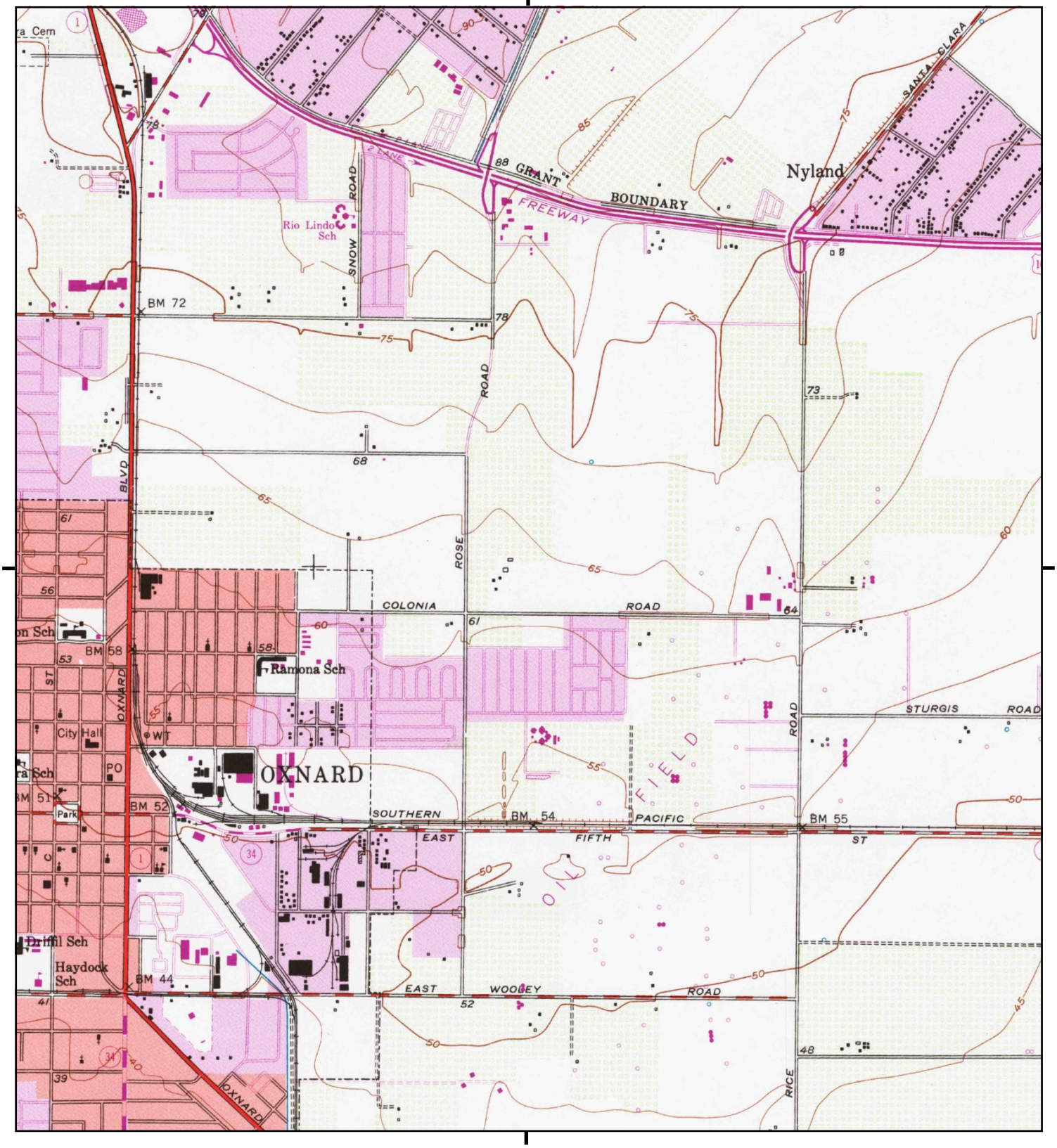
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Oxnard, 2012, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N



This report includes information from the following map sheet(s).

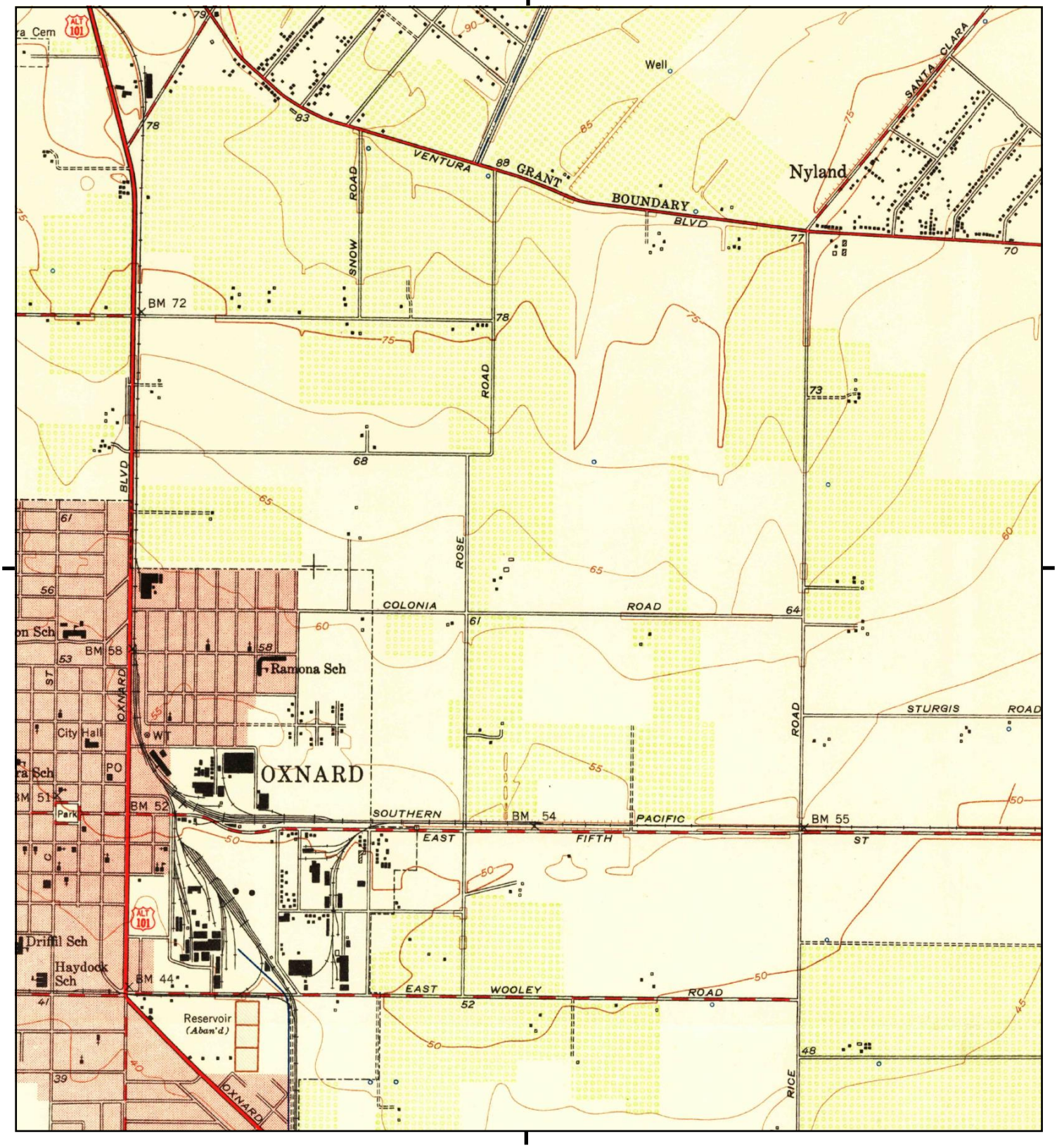
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Oxnard, 1967, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N



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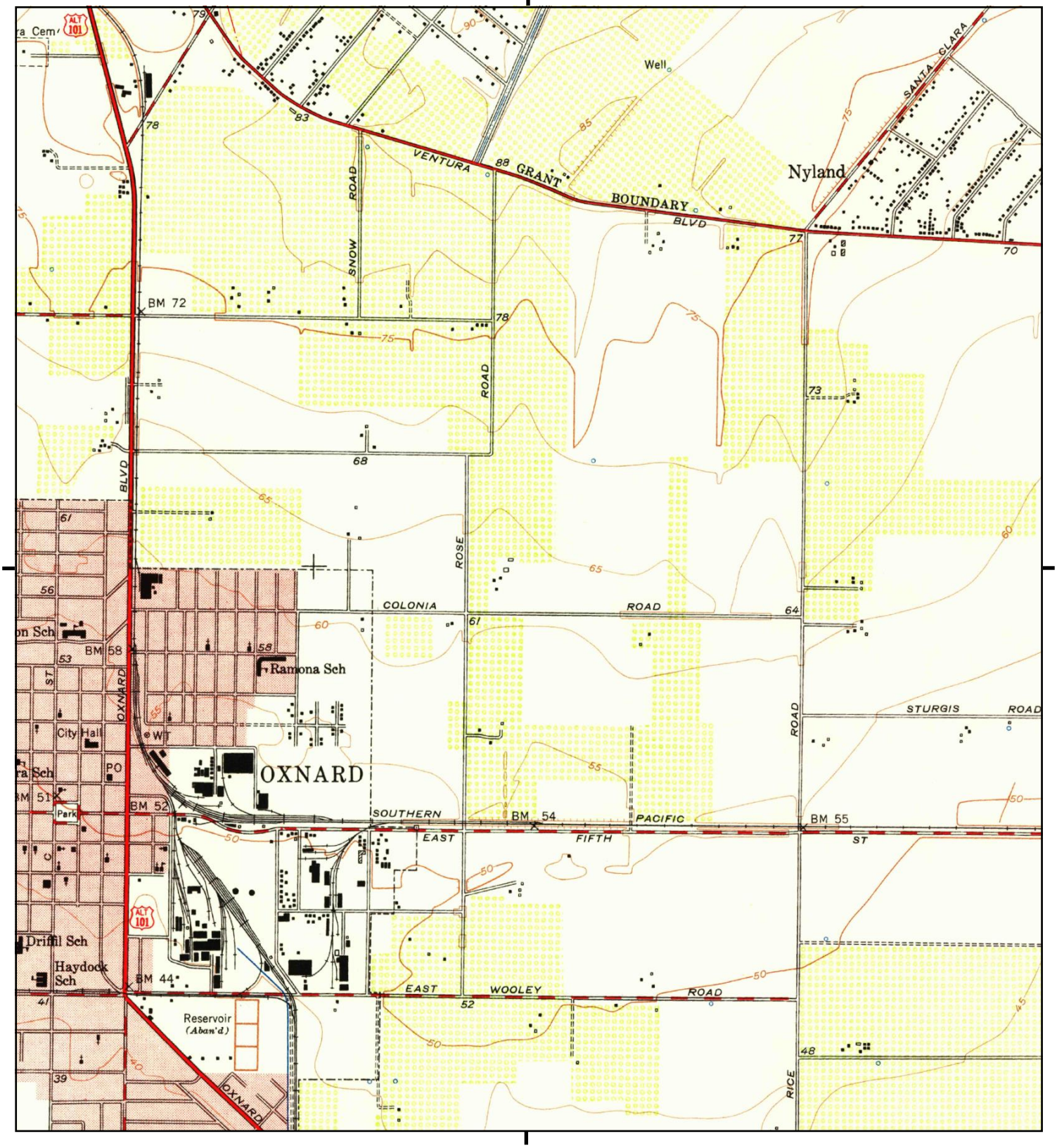
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NW N NE
W E
SW S SE

TP, Oxnard, 1951, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

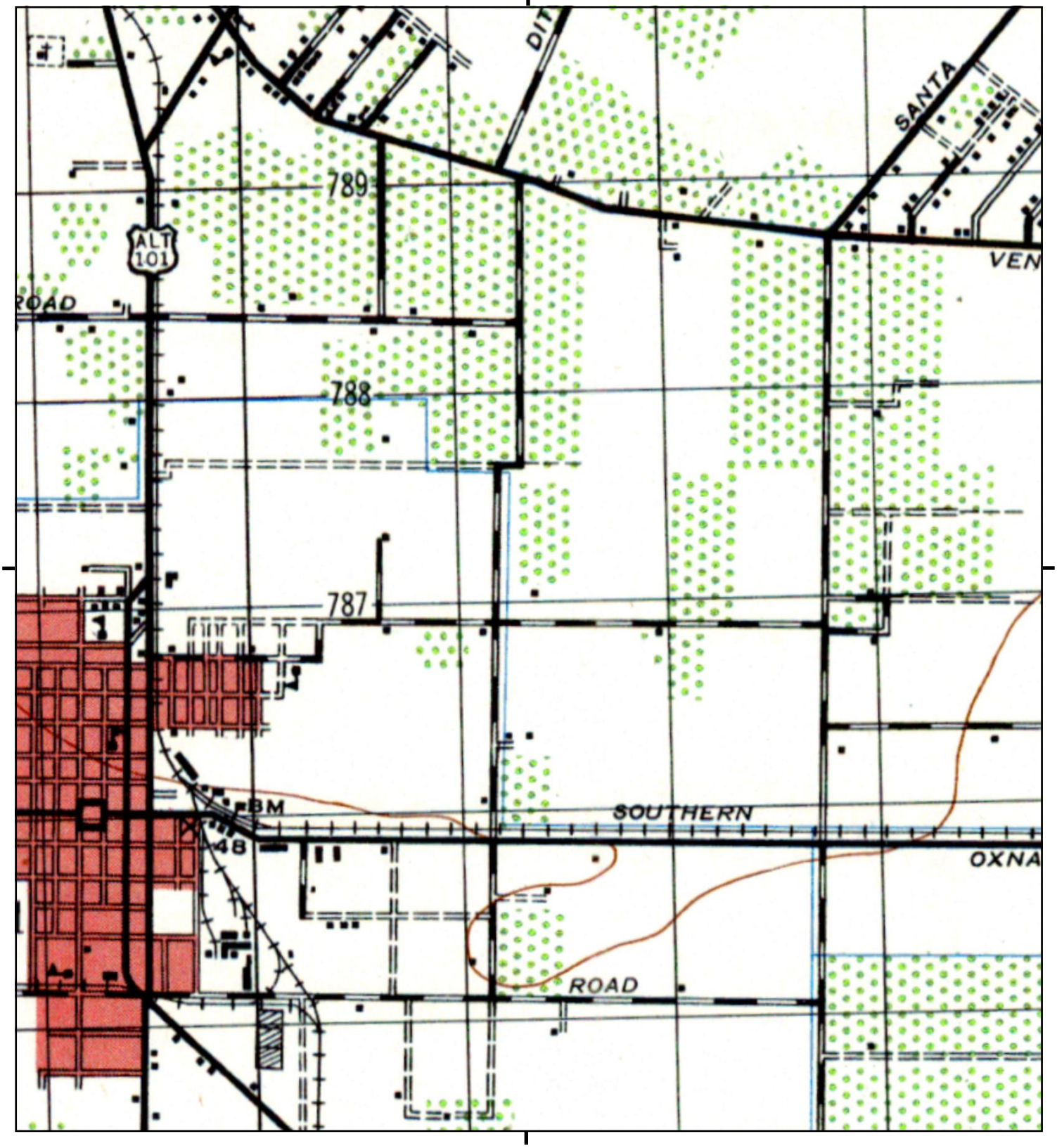
TP, Oxnard, 1949, 7.5-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

Historical Topo Map

1947



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

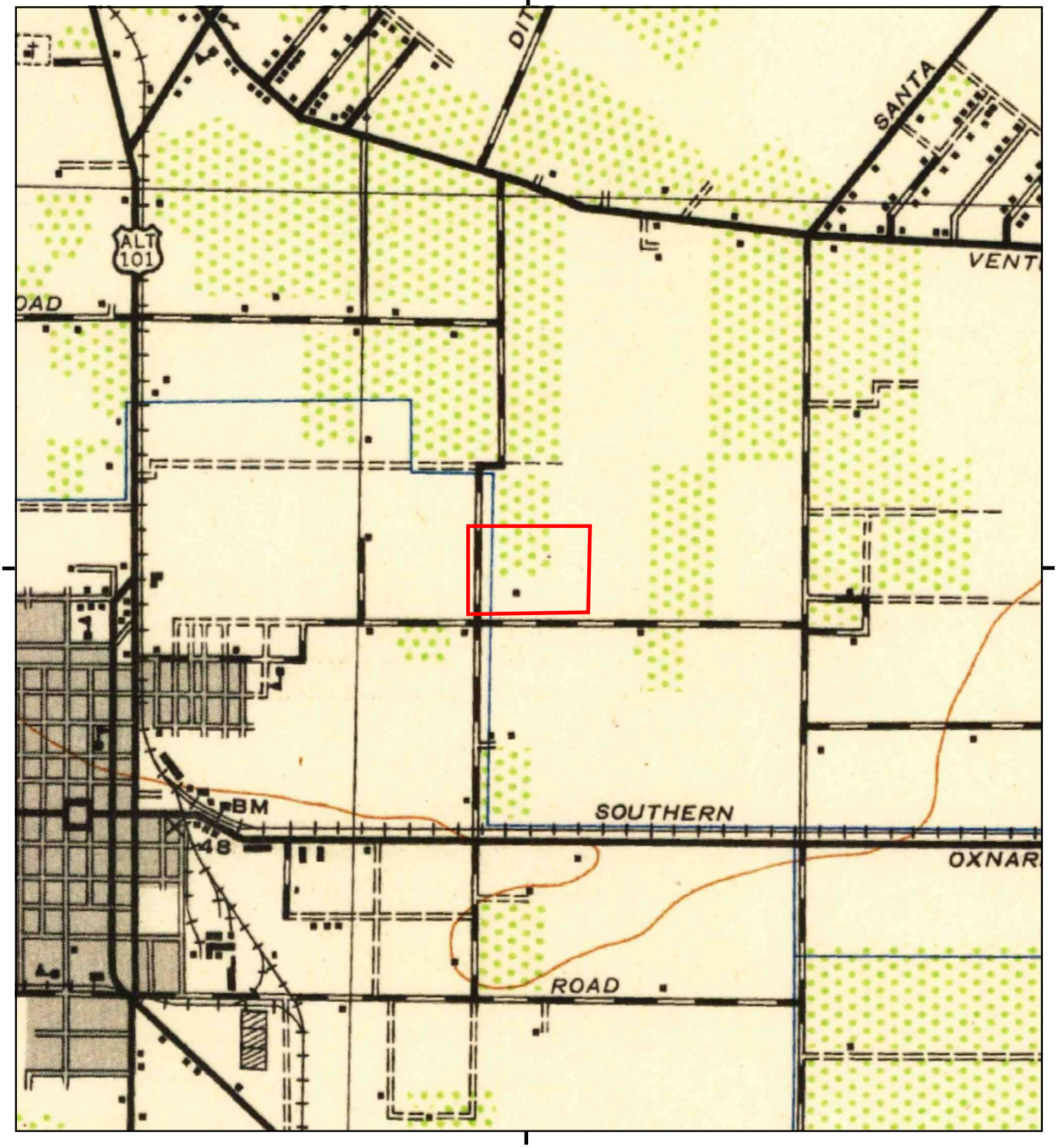
TP, HUENEME, 1947, 15-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

Historical Topo Map

1943



This report includes information from the following map sheet(s).

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W E
SW S SE

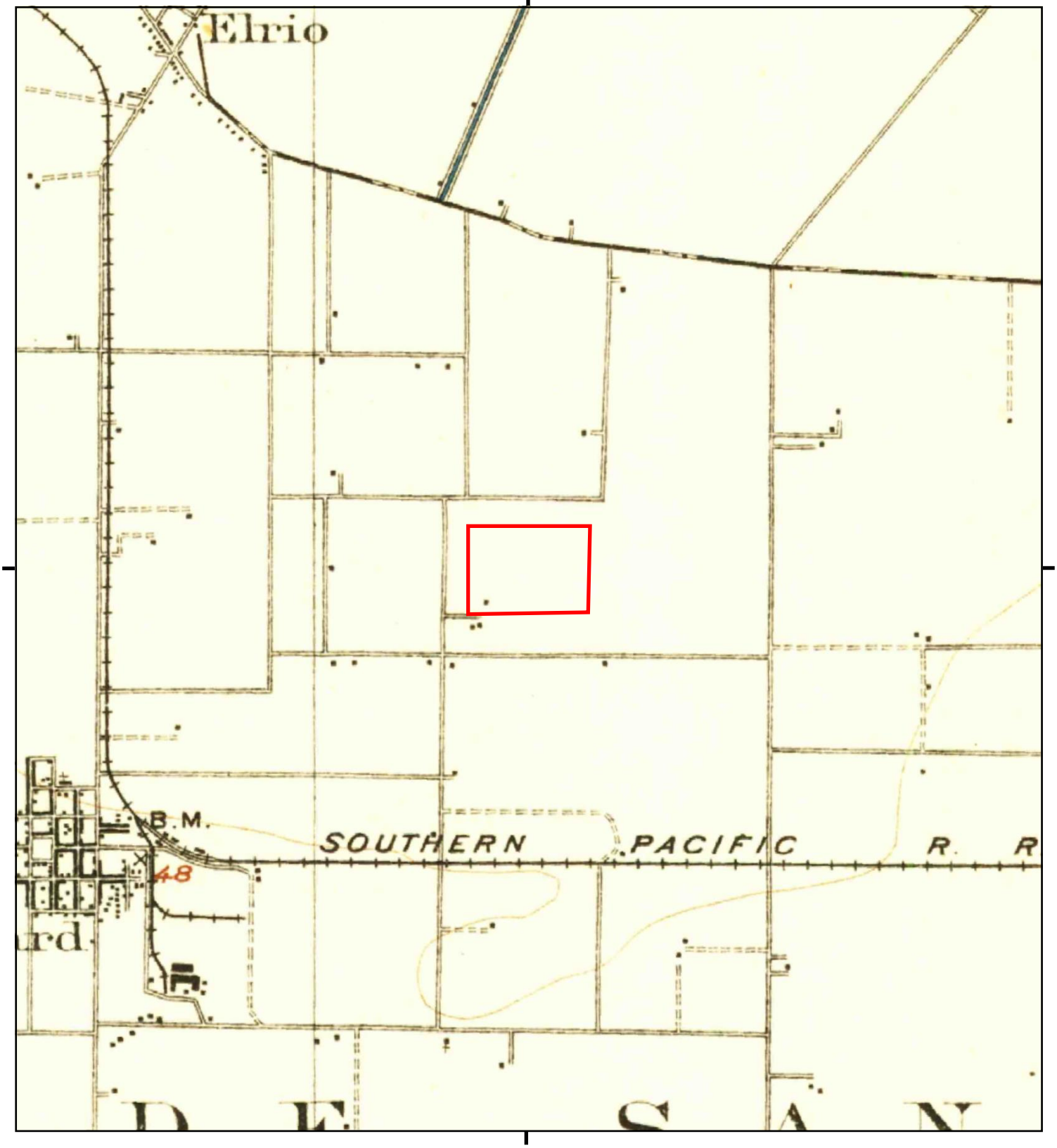
TP, Hueneme, 1943, 15-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

Historical Topo Map

1904



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hueneme, 1904, 15-minute

SITE NAME: Oxnard High School #8
ADDRESS: 1853 Camino Del Sol
Oxnard, CA 93030
CLIENT: Tetra Tech, Inc.

N

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F SITE RECONNAISSANCE PHOTOGRAPHS

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Photograph 1. Former gasoline AST location at the southwest corner of the Maulhardt Ranch Garage facing north.



Photograph 2. Inactive fuel lines inside of the Maulhardt Ranch Garage.



Photograph 3. Oil change sump location inside the Maulhardt Ranch Garage beneath covered automobile on right.



Photograph 4. Empty waste oil drum and container inside of the Maulhardt Ranch Garage.



Photograph 5. View of the Maulhardt Ranch Storage Shed where pesticide storage was performed.



Photograph 6. Interior of the Maulhardt Ranch Storage Shed building.



Photograph 7. View of the strawberry fields north of Maulhardt Ranch Farm Yard, facing north.



Photograph 8. View of the interior of the Maulhardt Ranch Tin Shed showing pesticide and fertilizer distribution tanks and other farm equipment.



Photograph 9. View of interior of the Maulhardt Ranch Tin Shed showing a tractor pesticide or fertilizer distribution tank, and other equipment. .



Photograph 10. View of empty trailer mounted fertilizer/pesticide tank in the Maulhardt Ranch Tin Shed.



Photograph 11. View of a tractor on other farm equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 12. View of waste oil tank serviced by Black Gold inside of the Maulhardt Ranch Tin Shed.



Photograph 13. View of an air compressor and other old farm equipment inside of T Maulhardt Ranch in Shed.



Photograph 14. View of pesticide-fertilized distribution tank inside of the Maulhardt Ranch Tin Shed.



Photograph 15. View of pesticide/fertilizer spray equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 16. Stained soils inside of Maulhardt Ranch Tin Shed.



Photograph 17. Miscellaneous portable gasoline storage tanks and other equipment inside of the Maulhardt Ranch Tin Shed.



Photograph 18. Old smudge pot inside of the Maulhardt Ranch Tin Shed.



Photograph 19. Portable gasoline tank and drum inside of the Maulhardt Ranch Tin Shed.



Photograph 20. Storage area inside of the Maulhardt Ranch Tin Shed.



Photograph 21. **"**Weed oil" mixing area south of the Maulhardt Ranch Tin Shed, with visible soil staining.



Photograph 22. View of former gasoline dispenser pump location on the south side of the Apartment.



Photograph 23. Former gasoline UST location on the south side of the Apartment.



Photograph 24 View of strawberry fields and recreational vehicle on east side of the Horse Barn from the second story of the Horse Barn.



Photograph 25. View of storage area inside of first floor of the Horse Barn showing vintage automobile.



Photograph 26. View of the entrance to the second floor of the Horse Barn



Photograph 27. View of storage area inside of second floor of the Horse Barn.



Photograph 28. View of abandoned septic tank on south side of Horse Barn.



Photograph 29. View of the covered livestock pen on the south side of the Horse Barn from the second story of the Horse Barn.

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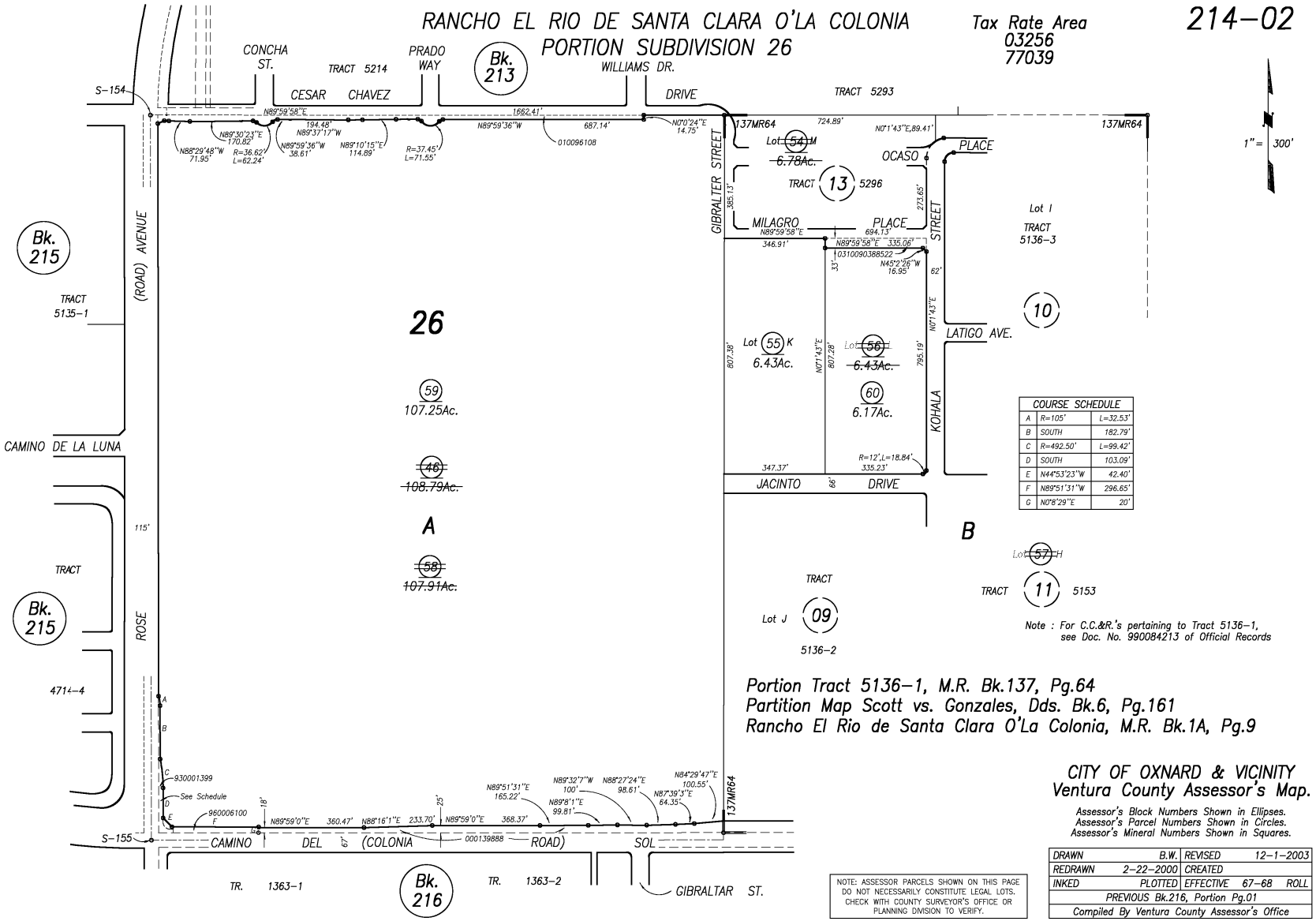
G AGENCY/UTILITY CONTACT DOCUMENTATION

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RANCHO EL RIO DE SANTA CLARA O'LA COLONIA
PORTION SUBDIVISION 26

Tax Rate Area
03256
77039

214–02



COURSE SCHEDULE		
A	R=105'	L=32.53'
B	SOUTH	182.79'
C	R=492.50'	L=99.42'
D	SOUTH	103.09'
E	N44°53'23"W	42.40'
F	N89°51'31"W	296.65'
G	N0°8'29"E	20'

Note : For C.C.&R.'s pertaining to Tract 5136–1, see Doc. No. 990084213 of Official Records

Portion Tract 5136–1, M.R. Bk.137, Pg.64
Partition Map Scott vs. Gonzales, Dds. Bk.6, Pg.161
Rancho El Rio de Santa Clara O'La Colonia, M.R. Bk.1A, Pg.9

CITY OF OXNARD & VICINITY
Ventura County Assessor's Map.

Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.
Assessor's Mineral Numbers Shown in Squares.

DRAWN	B.W.	REVISED	12–1–2003
REDRAWN	2–22–2000	CREATED	
INKED	PLOTTED	EFFECTIVE	67–68 ROLL
PREVIOUS Bk.216, Portion Pg.01			
Compiled By Ventura County Assessor's Office			

NOTE: ASSESSOR PARCELS SHOWN ON THIS PAGE DO NOT NECESSARILY CONSTITUTE LEGAL LOTS. CHECK WITH COUNTY SURVEYOR'S OFFICE OR PLANNING DIVISION TO VERIFY.

1" = 300'

Roll–Year 04–05 BK. 214 , PG. 02 REVISION LOG

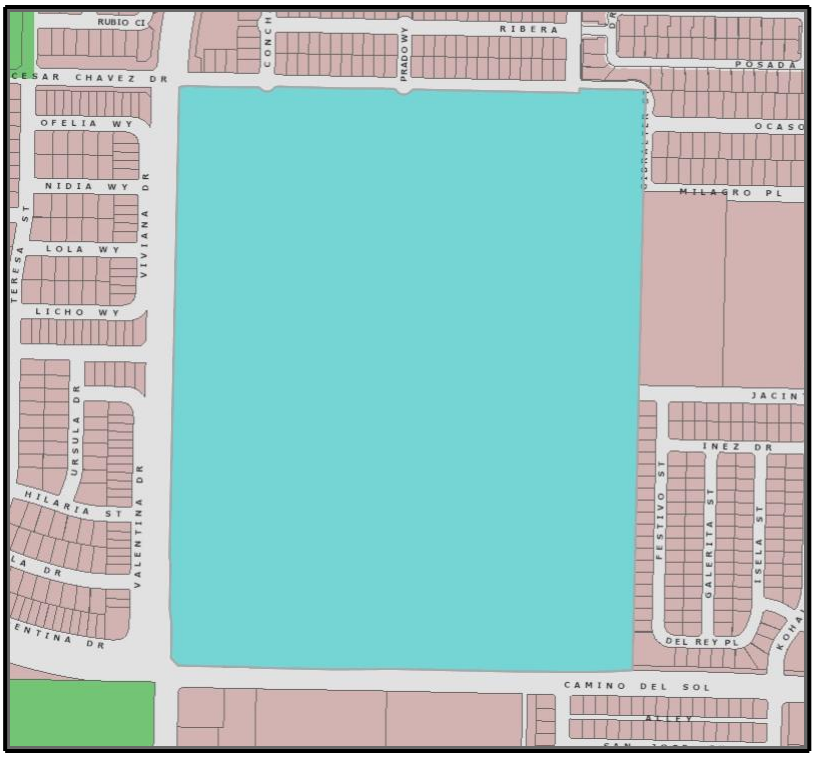
DATE	REFERENCE DOC.	EXPLANATION Code	Description	VOID A.P.N.(s)	RESIDUAL A.P.N.(s)	NEW A.P.N.(s)
6/18/03	147 MR 51	SUBDIVISION	NEW TRACT 5296–00	214–0–020–545		NEW PAGE 13
12/01/03	03100903885 22	SPLIT TO ROAD	PER GRANT DEED	214–0–020–565	214–0–020–605	11526 SQ. FT TO ROAD

County View Parcel Report

Parcel Information

Printed 5/16/2017 4:52:49 PM

APN	214002059
APN Suffix	5
Document Date	20141201
Document Number	140150971
Tract Number	
Map Number	
Situs Number	
Situs Street	
Situs Suffix	
Acreage	107.25



Additional Information

Cities

City Boundary

City Name	Oxnard

Election Precincts

Election Precincts

Precinct Name	OXNARD NO. 557

Political Districts

Assembly Districts

Name	Jacqui Irwin
Ordinal	44TH

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

County View Parcel Report

Senatorial Districts

Name	Jackson
Ordinal	19TH

Congressional Districts

Name	Julia Brownley
Ordinal	26TH

Supervisorial Districts

Name	John C. Zaragoza
Ordinal	5th

School Districts

Elementary School Districts

District Name	RIO

Secondary School Districts

District Name	Oxnard Union

Land Use

Is County SOAR Present?	No

General Plan

GENPLANDES	Urban

Zoning

Zone	Oxnard

Hazards

Earthquake Fault Hazard Zones	No
Liquefaction	Yes

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

County View Parcel Report

Tsunami Inundation	**No**

WARNING: The information contained herein was created by the Ventura County Geographic Information System (GIS), which is designed and operated solely for the convenience of the County and related contract entities. The County does not warrant the accuracy of this information, and no decision involving a risk of economic loss or physical injury should be made in reliance thereon.

CA.GOV

Department of Conservation

Accessibility

Lat: 34.22556, l

Division of Oil, Gas & Geothermal Resources Well Finder

Legend:

Well Types:

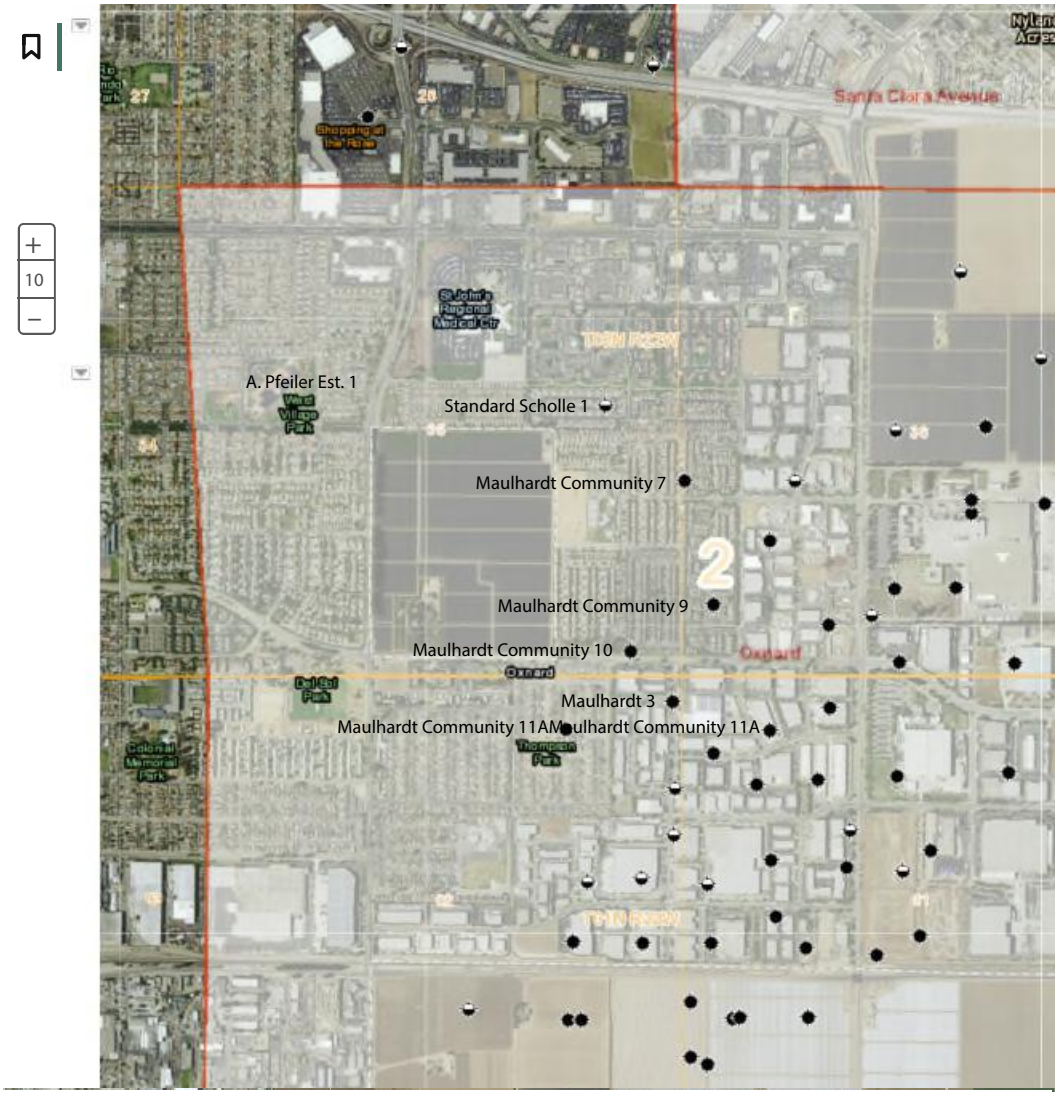
- New
- Active Producer
- Active Injector
- Dry Hole
- Plugged
- Geothermal
- Notice & Permit
- Enhanced Oil Recovery
- Disposal

Geologic Map:

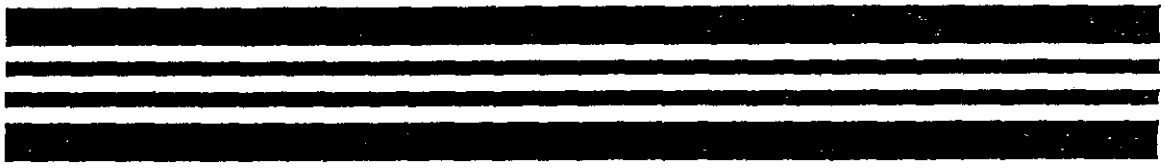
Bookmarks:

Sacramento

Add Bookmark



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Anacapa Imaging Scan Control Sheet

ISDS Site Files

Client: Ventura County Environmental Health Division

Street Address: 1853 Camino Del Sol

Area:

Owner/Builder: Maulharot

Assessor Parcel No.: 214-0-020-450

Initials

Box No 40678

PROJECT DESCRIPTION QUESTIONNAIRE
(Residential/Agricultural)

A. EXISTING PROJECT SITE

1. Assessors Parcel No(s): 214-020-450

2. Location (nearest public road, cross street, community, etc.):
1853 CAMINO DEL SOL
CROSS STREET — ROSE AVE.

3. Existing Land Use(s): AGRICULTURAL ~ AVOCADO TREES AND LEMON TREES

4. LCA Contract No. 49-1,1 Contract-specified agricultural use(s) (illegible)

Assessor Parcel Numbers Within Contract

5. Distinctive Physical Features on the Property (rock outcroppings, barrancas, etc.): LEVEL FARM LAND PLANTED TO ORCHARDS

6. Has the property been surveyed by an archaeologist? Yes___ No✓ Unknown___ If yes, what was the result?

7. Existing Drainage Direction(s): SOUTH

8. Existing Drainage/Flood Control Facilities (culverts, retention basins, etc.): NO DRAINAGE FACILITIES

9. Existing Water Supply (if any): WELL

10. Existing Sanitation (Sewage Disposal) Facilities (if any):
SEPIC TANK WITH LEACH LINE

11. Describe the type and size of all existing signs (if any):
N/A

12. Is your property on the State's list of identified hazardous waste and/or hazardous substance sites? (Copy of list is kept at Planning Division public counter.) NO

B. SURROUNDING PROPERTY

1. Land Uses

North: FARM LAND East: FARM LAND
South: OPEN FIELD/LOW INCOME HOUSING West: ROSE AVE. / FARM LAND

2. Distinctive Physical Features

North: OPEN FIELDS, FARMING
South: OPEN LOT, APARTMENTS
East: STRAWBERRY FIELDS
West: ROSE AVE, STRAWBERRIES

3. Vegetation

North: CELERY East: STRAWBERRIES
South: OPEN LOT West: STRAWBERRIES

C. PROJECT DESCRIPTION

1. Describe in detail the proposed use(s):
EXTENSION OF EXISTING PERMIT

2. Describe access to site from a public road:
PRIVATE GATE ON CAMINO DEL SOL

3. Will project be developed in phases? _____ If so, describe each phase in detail:
N/A

4. Describe type and size of all proposed signs: NONE

5. If applicable, will existing signs be removed? N/A If so, describe:

6. Describe any potential noise sources associated with the project. If applicable, also describe what methods would be used to reduce the noise such that it would not be objectionable to surrounding uses (attach sheets if necessary):
N/A

7. Describe any uses or operations producing significant light or glare. If applicable, describe what methods would be used to shield, enclose or otherwise control light or glare such that it would not be objectionable to surrounding uses (attach sheets if necessary):
N/A

8. Grading

Area to be graded: N/A sq.ft./acres

Total volume to be moved: N/A cu. yds.

Slope ratio of steepest finished slope (horiz. feet/ea. vert. foot):
N/A

Height of highest finished slope (from toe to top): N/A feet

Disposition of excavated material:

9. Number of trees to be removed (count trees with 5" dia. or more at 3' above root crown) by species: N/A

10. Drainage

Describe how increased runoff will be handled both onsite and offsite:
N/A

Will the project require the installation or replacement of storm drains or channels? NO If yes, indicate length _____, size _____ and capacity _____.

D. PROPOSED SERVICES

1. Water Supply

Water Source (check): _____ Well ✓ Water Purveyor

Will the project necessitate the installation or replacement of new water service mains? N/A If yes, indicate length _____, size _____, and capacity _____.

2. Sanitation

Sanitation will be provided by (check):

Private onsite septic system ✓ Public sewers _____

3. Fire Protection

Indicate number and capacity of existing and/or proposed fire hydrants and distance from proposed buildings:
PRIVATE WELL / SWIMMING POOL WITHIN 200 FT.

I certify that the foregoing information is complete and correct to the best of my knowledge.

Richard Wardbrook
Applicant/Representative

1/25/12
Date

GD:mb/H15

COUNTY OF VENTURA

ENVIRONMENTAL HEALTH DIVISION

M E M O R A N D U M

TO: Paul Merrett **DATE:** Aug 29, 1994

FROM: Darrell Siegrist

SUBJECT: CUP 3462 MOD 2 (MAULHARDT)

The Environmental Health Division considers the subject application incomplete:

* Please submit a scaled plot plan which includes the existing septic tanks and leach lines (or seepage pits), water well, and the footprint of the existing structures.

* Please submit a septic tank pumping report for the primary residence.

If you have any questions, please contact me at ex. 2811.

COPY

COUNTY OF VENTURA

ENVIRONMENTAL HEALTH DIVISION

M E M O R A N D U M

TO: Paul Merrett **DATE:** Nov 14, 1994

FROM: Darrell Siegrist

SUBJECT: CUP 3462 MOD 2 (MAULHARDT)

The Environmental Health Division now considers the subject application complete.

PROJECT CONDITION:

* Only domestic waste as defined in the County Building Code Ordinance shall be discharged into the on-site individual sewage disposal systems (septic systems).

If you have any questions, please contact me at ex. 2811.

COUNTY OF VENTURA

SEPTIC TANK PUMPING INSPECTION REPORT

Name of Property Owner: Richard Maulhardt Ranch

Location of Pumping: 1853 Camino Del Sol, Ox.

Assessor's Parcel Number: 214-0-020-4500

Date of Pumping: 8-31-94 Gallons Pumped: ~~1200~~

Type of on-site disposal system (please check one of the following):

- [x] septic tank/absorption field or seepage pit
- [ ] cesspool
- [ ] other (explain): _____

Estimated capacity of septic tank or cesspool: 1250 gallons

Internal dimensions of septic tank (length, width and depth) 8'X4'X5'

Construction of septic tank or cesspool (please check one of the following):

- [x] concrete
- [ ] fiberglass
- [ ] steel
- [ ] wood
- [ ] other (explain): _____

Condition of tank (please answer yes or no for each question):

	Yes	No
Inlet tee present?	[x]	[ ]
Outlet tee present?	[x]	[ ]
Two compartments?	[x]	[ ]
Tank structure deteriorated?*	[ ]	[x]

*If yes, briefly explain: _____

While pumping the tank, did effluent flow back into tank from the absorption system? [ ] Yes [x] No

Prior to pumping, was the liquid level in the tank above the outlet tee? [ ] Yes [x] No

Using the grid on the back of this page, please sketch the location of the septic tank, the house, and if possible, the soil absorption system.

Additional Comments: This septic tank is proper for this house also leach line is in good working order.

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND ACCURATE:

WELCH'S & GENE'S SANITATION
43 AMADOR AVENUE
VENTURA, CA 93004

#2517 Modesto Mata 8-31-94
SIGNATURE OF PUMPER DATE

RESOURCE MANAGEMENT AGENCY
ENVIRONMENTAL HEALTH DIVISION

EH-77-3 (3/82)

COUNTY OF VENTURA

SEPTIC TANK PUMPING INSPECTION REPORT

Name of Property Owner: Richard Mawhardt Ranch.

Location of Pumping: 1853 Camino Del Sol Oxnard Ca. 93030

Assessor's Parcel Number: Same.

Date of Pumping: 7-19-94 Gallons Pumped: 1,000

Type of on-site disposal system (please check one of the following):

- [x] septic tank/absorption field or seepage pit
- [ ] cesspool
- [ ] other (explain): _____

Estimated capacity of septic tank or cesspool: 1000 gallons

Internal dimensions of septic tank (length, width and depth) 8'X4'X4'9"

Construction of septic tank or cesspool (please check one of the following):

- [x] concrete
- [ ] fiberglass
- [ ] steel
- [ ] wood
- [ ] other (explain): _____

Condition of tank (please answer yes or no for each question):

	Yes	No
Inlet tee present?	[x]	[ ]
Outlet tee present?	[x]	[ ]
Two compartments?	[x]	[ ]
Tank structure deteriorated?*	[ ]	[x]

*If yes, briefly explain: _____

While pumping the tank, did effluent flow back into tank from the absorption system? [ ] Yes [x] No

Prior to pumping, was the liquid level in the tank above the outlet tee? [ ] Yes [x] No

Using the grid on the back of this page, please sketch the location of the septic tank, the house, and if possible, the soil absorption system.

Additional Comments: System in good working Condition.

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND ACCURATE:

WELCH'S & GENE'S SANITATION
343 AMADOR AVENUE
VENTURA, CA 93004

Gerardo Mata
SIGNATURE OF PUMPER

#2517

7-19-94
DATE

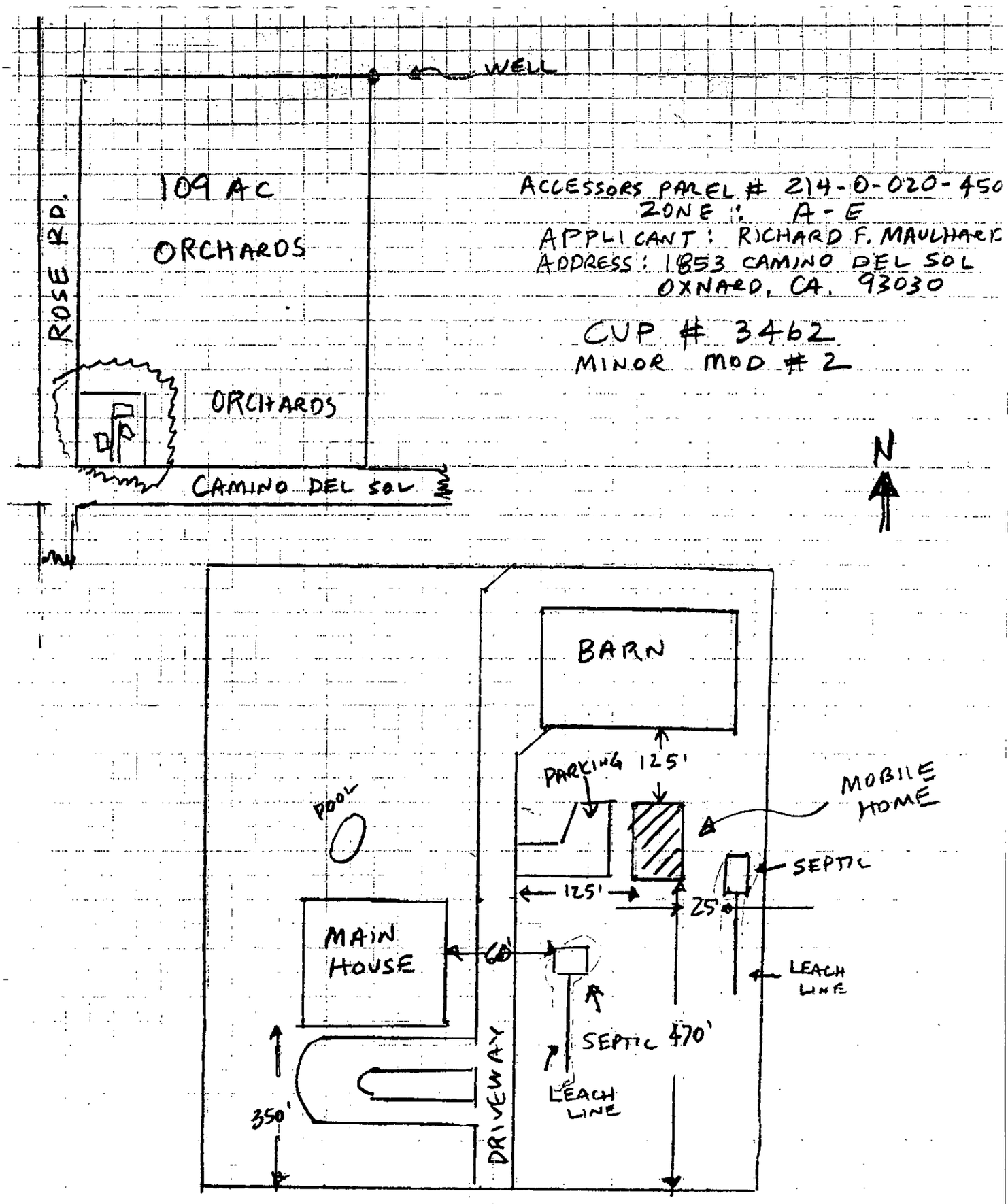
RESOURCE MANAGEMENT AGENCY
ENVIRONMENTAL HEALTH DIVISION

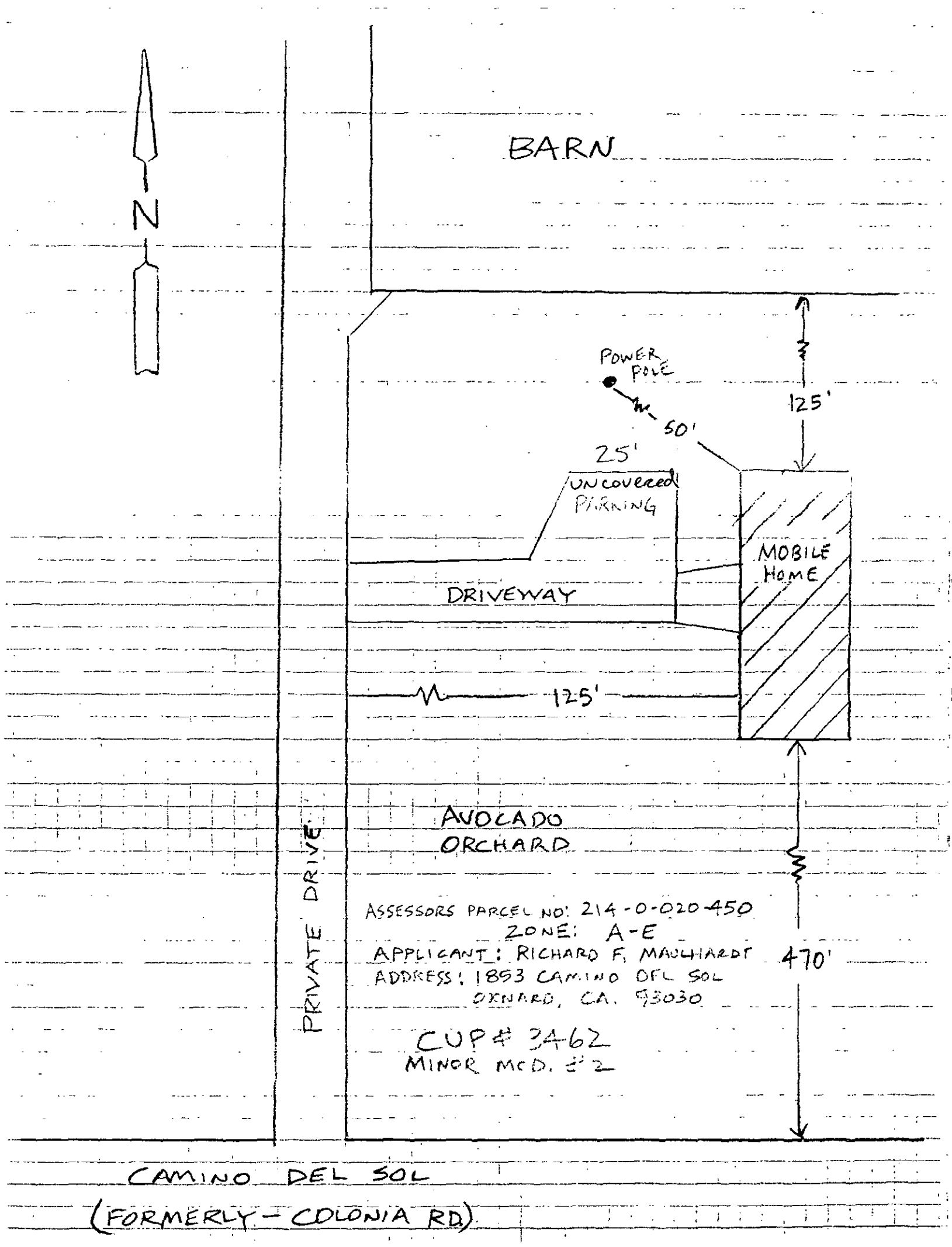
EH-77-3 (3/82)

ATTEN: PAUL MERRIT

FAX # 654-2509

LEACH LINES LOCATED AS REQUESTED BY DARYL SIGREST




N
BARN
POWER POLE
50'
125'
25'
UNCOVERED PARKING
MOBILE HOME
DRIVEWAY
125'
AVOCADO ORCHARD
PRIVATE DRIVE
ASSESSORS PARCEL NO: 214-0-020-450
ZONE: A-E
APPLICANT: RICHARD F. MAULHARDT
ADDRESS: 1853 CAMINO DEL SOL
OXNARD, CA. 93030
470'
CUP # 3462
MINOR MOD. #2
CAMINO DEL SOL
(FORMERLY - COLONIA RD)

July 29, 1994

LAB No: SP 404386-01

Maulhardt Farms
1853 E. Colonia Rd.
Young Avocados
Oxnard, CA 93030

Site : Oxnard
Sampled by : G. Stiles
Sampled : July 26, 1994
Received : July 26, 1994

Started : July 26, 1994
Finished : July 28, 1994

BACTERIOLOGICAL ANALYSIS

Coliform

Sample ID	Sample Reason	Sample Type	Cl_2 Residual Free	Cl_2 Residual Total	Time Sampled	Time Start	Coliform MPN/100 ml	Fecal MPN/100 ml
Oxnard	Routine	Source	----	-----	08:00A	01:58P	< 1.1 ABSENT	

The State Board of Public Health requires that bacteriological results must be "ABSENT" to meet drinking water requirements. This analysis was completed in 24 hours using Access, Colilert Test.

FGL ENVIRONMENTAL

Raquel R. Harvey

RRH:rrh
cc: Nick Medina

RESOURCE MANAGEMENT AGENCY
county of ventura

Environmental Health Division
William C. Stratton
Director

September 20, 2017

Jason Dane
Tetra Tech
5383 Hollister Ave. Ste 130
Santa Barbara, CA 93111

RECORDS SEARCH REQUEST #15695

SITE NAME: **MAULHARDT RANCH**
ADDRESS: **1825 CAMINO DEL SOL/1853 CAMINO DEL SOL/1825 COLONIA RD.**
CITY: **OXNARD**

The Environmental Health Division (Division) staff identified records that match your Records Search Request for copies of documents. Your copies are enclosed. Additionally, older records that are "Document Imaged" are online on the Division website. To access those records, please go to:

www.vcenvhealth.org

Click on "Hazardous Materials Program & Underground Tanks (CUPA) Active 1984 - July 2011". In the Address box, type in "1853" or "1825" and click on the Search box to see a listing of records that match your search.

Since the Division does not maintain the information you are requesting, for that area, please contact the responsible agency as shown below:

Oxnard City Fire Department
805/385-8364

Gladys Dobson
Records Search Coordinator
Environmental Health Division

G:\Clerical\Records Search\Dane RSR #15695 Copies, Online Records & Contact Oxnard CUPA 09 20 17.doc

Ventura County Environmental Health Division
800 S. Victoria Ave., Ventura, CA 93009-1730

Community Right to Know
HAZARDOUS MATERIALS INVENTORY REPORT

September 19, 2017

SALVADOR HERNANDEZ
ECLIPSE BERRY RANCH #9
3860 ETTING RD
OXNARD, CA 93033

FACILITY ID: FA0034801 SITE LOCATION: ECLIPSE BERRY RANCH #9
1853 CAMINO DEL SOL
OXNARD, CA

EMERGENCY CONTACTS:

PRIMARY:
SALVADOR HERNANDEZ

SECONDARY:
PEDRO NEVAREZ

UNIT PLAN #: 1 **GENERAL**

ID	COMMON NAME	MAXIMUM DAILY AMOUNT
HZ0028472	CALCIUM NITRATE	500 GALLONS
HZ0028473	DIESEL FUEL	250 GALLONS
HZ0028474	SULFURIC ACID	500 GALLONS

FIRE/CUPA • 360 West Second Street., Oxnard, CA 93030
TELEPHONE: (805) 385-7722 FAX: (805) 385-8009

CUPA FILE REVIEW REQUEST

CUPA is an acronym for Certified Unified Program Agency. CUPA files contain information for: hazardous materials, hazardous wastes, underground storage tanks, aboveground storage tanks and the California Accidental Release Prevention (Cal-ARP) Program. ***There is no fee assessed for reviewing the program files. Allow for 48 hour advanced notice for appointments to review files.***

Site Information
Business name/Property Owner: Maulhardt Ranch
Site Address: 1825 Camino Del Sol Oxnard CA, 93030

Party Requesting File Review
Requestor's Name: Jason Dane
Requestor's Business or Organization Name: Tetra Tech
Requestor's Business, Organization, or Home Address: 5383 Hollister Avenue, Suite 130, Santa Barbara, CA 93111
Requestor's Business, Organization, or Home Phone Number: 805-681-1527
Requestor's Fax Number: 805-681-3108

CUPA Program Files Requested:

- ☑ ***Business Plan***
- ☑ ***Hazardous Waste***
- ☑ ***Underground Storage Tanks***
- ☑ ***Cal-ARP***

Contact Ventura County Environmental Health for Information regarding UST Closures and site cleanups. Electronic files may be found at http://www.vcenvhealth.org or by phone: 805/654-2813.

Instruction for file review:

1. Information or documents must not be removed from the files (except for photocopy purposes).
2. If you would like us to make photocopies of any documents in the files, please request this service from the City of Oxnard Fire Department administrative staff. Please note there is a fee for photocopies.
3. Fax copy of completed file review request to (805) 385-8009, Attention CUPA.

I certify that I will comply with the aforementioned file review procedures and that no documents will be removed from the file(s) reviewed (except for photocopy purposes).

Applicant Signature: Jason Dane Date: 09/13/2017

CUPA Representative Findings: ☑ No CUPA records found. ☐ Records available for review.

CUPA Representative Signature Julie Maulhardt Date: 9/18/17

Steele, James

From: Enriquez-Pratt, Blanca <Blanca.Enriquez-Pratt@ventura.org>
Sent: Wednesday, September 27, 2017 11:55 AM
To: Dane, Jason
Subject: Ventura County Request to Inspect Public Records
Attachments: Maulhardt Ranch.xlsx

Good morning Jason,

Please find the attached information which you requested on September 18, 2017. This is the information that is currently in our Calagpermits system.

If recent paper pesticide use reports have been submitted, those reports may not have been reflected at the time of your request. Also, our county may be possibly a couple of months behind in entering this submitted paper pesticide use reports since that information must be enter manually.

Should you have any questions please do not hesitate to contact me.

Best Regards,
Blanca Enriquez-Pratt
Supervising Agricultural Inspector Biologist Ventura County Agricultural Commissioner's Office
555 Airport Way Suite I
Camarillo, Ca. 93010
Office (805) 388-4222
Fax (805) 388-4209

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/4/2011	7:30 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	1051042-50001-AA	WESTERN LIME - HIGH CALCIUM HYDRATED LIME	12.0000	Pounds	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	11160-50001-AA	S-K-H AGRICULTURAL ADHESIVE	12.0000	Pounds	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	1/12/2011	1:50 AM	2004-0	LEMON	No	5.0000	ACRES	352-662-ZA	DUPONT KOCIDE 3000 FUNGICIDE/BACTERICIDE	12.0000	Pounds	4.0000	ACRES	Ground			01360
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	62719-442-AA	INTREPID 2F	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	66222-58-AA-51036	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	1/22/2011	12:15 PM	40008-0	SOIL FUM/PREPI	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	135.0000	Pounds	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	11.2500	Gallon	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.1100	Gallon	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/12/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-503-AA	ACRAMITE 50WS	90.0000	Pounds	90.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	8.9100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	73049-40-AA	XENTARI BIOLOGICAL INSECTICIDE DRY FLOWABLE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-51036	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	2/24/2011	11:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	8.9100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.2300	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/12/2011	1:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-503-AA	ACRAMITE 50WS	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.8800	Gallon	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50022-AA	MILLER NU FILM P	4.1300	Gallon	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-199-AA	PRISTINE FUNGICIDE	126.5000	Pounds	88.0000	ACRES	Ground			12195
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/18/2011	12:20 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	176.0000	Pounds	88.0000	ACRES	Ground			12195
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	3/22/2011	9:00 AM	2004-0	LEMON	No	5.0000	ACRES	64864-2-AA	DEADLINE BULLETS	50.0000	Pounds	2.5000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	3/26/2011	1:30 AM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-35-ZA-400	RIMON 0.83EC	8.9100	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	4/16/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-545-AA	RADIANT SC	5.9400	Gallon	95.0000	ACRES	Other			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	279-3108-AA	BRIGADE WSB INSECTICIDE/MITICIDE	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC	2.9700	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	5/15/2011	12:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC	23.7500	Quart	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	279-3108-AA	BRIGADE WSB INSECTICIDE/MITICIDE	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66330-35-AA	ELEVATE 50 WDG FUNGICIDE	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	72-50003-AA	MILLER NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/4/2011	6:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-545-AA	RADIANT SC	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	65.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.0800	Gallon	65.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	65.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	195.0000	Pounds	65.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	6/15/2011	5:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-187-AA	CABRIO EG FUNGICIDE	48.7500	Pounds	65.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	7/11/2011	11:30 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	28.0000	Gallon	4.0000	ACRES	Ground			01360
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	7/11/2011	11:30 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	30.0000	Ounce	4.0000	ACRES	Ground			01360
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	7/16/2011	9:00 AM	1016-0	STRAWBERRY	No	65.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	3.7500	Gallon	15.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS		RANCH #9 - MAULHARDT	S	02N	22W	35	7/16/2011	9:00 AM	1016-0	STRAWBERRY	No	65.0000	ACRES	62719-447-ZA	GOALTENDER	1.8800	Gallon	15.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	8/19/2011	2:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	58266-5-AA-11220	TRI-CLOR EC FUMIGANT	16,700.0000	Pounds	83.5000	ACRES	Fumigation	1209		
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	10/20/2011	10:30 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	28.0000	Gallon	4.0000	ACRES	Ground		MAULHARDT FARMS	
56C0042	LAGUNA GROVE SERVICE, LLC		MAULHARDT RANCH	S	02N	22W	35	10/20/2011	10:30 AM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	40.0000	Ounce	4.0000	ACRES	Ground		MAULHARDT FARMS	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH	S	02N	22W	35	10/21/2011	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	5481-103-AA	DURHAM METALDEHYDE GRANULES 7.5	100.0000	Pounds	5.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	352-729-AA	DUPONT CORAGEN INSECT CONTROL	3.7100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	264-719-AA	OBERON 2SC INSECTICIDE/MITICIDE	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	34704-50035-AA	LI 700	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/5/2011	3:00 PM	1016-0	STRAWBERRY	No	105.0000	ACRES	62719-410-ZC	RALLY 40 WSP	23.7500	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/29/2011	11:30 AM	1016-0	STRAWBERRY	No	105.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC PROTECTANT	10.3900	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	11/29/2011	11:30 AM	1016-0	STRAWBERRY	No	105.0000	ACRES	5905-50087-AA	KINETIC	2.2300	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	400-518-AA	PROCURE 480SC (013/0	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	62719-442-AA	INTREPID 2F	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/10/2011	5:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	142.5000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	136.5600	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/28/2011	1:30 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	5905-50087-AA	KINETIC (CA)	2.2800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL, OXNA	RANCH #9 - MAULHARDT	S	02N	22W	35	12/31/2011	4:00 PM	1016-0	STRAWBERRY	No	100.0000	ACRES	10163-250-AA	SAVEY 50 DF	35.6300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	11.8800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	35.7200	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC (CA)	2.2800	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/13/2012	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-AA	ACRAMITE 50WS (023/0	95.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-AA	PROCURE 480SC (013/0	5.9400	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/19/2012	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	83.1300	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.4100	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	4.4500	Gallon	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/11/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	190.0000	Pounds	95.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	8/28/2012	12:45 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	33.6000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	8/28/2012	12:45 PM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-719-AA	OBERON 2 SC INSECTIC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-35-AA	DANITOL(R) 2.4 EC SP	7.0900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2012	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2012	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-719-AA	OBERON 2 SC INSECTIC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2012	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/9/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	1051042-50001-AA	WESTERN LIME - HIGH CALCIUM HYDRATED LIME	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	11160-50001-AA	S-K-H AGRICULTURAL ADHESIVE	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH	S	02N	22W	35	12/19/2012	10:00 AM	2004-0	LEMON	No	5.0000	ACRES	352-662-ZA	DUPONT KOCIDE 3000 FUNGICIDE/BACTERICIDE	12.0000	Pounds	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/23/2012	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/9/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL	10.6300	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	31.9600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.0400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	10163-250-AA	SAVEY 50 DF	31.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/20/2013	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.0800	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSECT CONTROL	0.9400	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	1.6200	Gallon	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE FUNGICIDE	49.5900	Pounds	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/23/2013	11:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80 WDG	69.0000	Pounds	34.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	12195
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.2700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/27/2013	12:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/6/2013	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.0400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72662-3-ZA	PREV-AM ULTRA (CA)	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/16/2013	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7001-50312-AA	NU-FILM-P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.7200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/2/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-834-AA	DUPONT FONTELIS FUNG	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (014/09	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	255.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.7100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.7200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/23/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	2.5000	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	1.2500	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTER	5.0000	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/9/2013	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	38167-50012-AA	KINETIC	1.2500	Gallon	20.0000	ACRES	Ground		TRI-TECH AG PRODUCTS	02473
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	5.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	15.0000	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	3.7500	Gallon	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/22/2013	9:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-211-AA	VENDEX 50WP	240.0000	Pounds	80.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50035-AA	LI 700	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2013	5:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-211-AA	VENDEX 50WP	255.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	4.5000	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	4.5000	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (014/09	6.7500	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/11/2013	2:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-58-AA-66330	CAPTAN 80WDG	144.0000	Pounds	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/25/2013	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	9.0700	Gallon	72.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAM

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

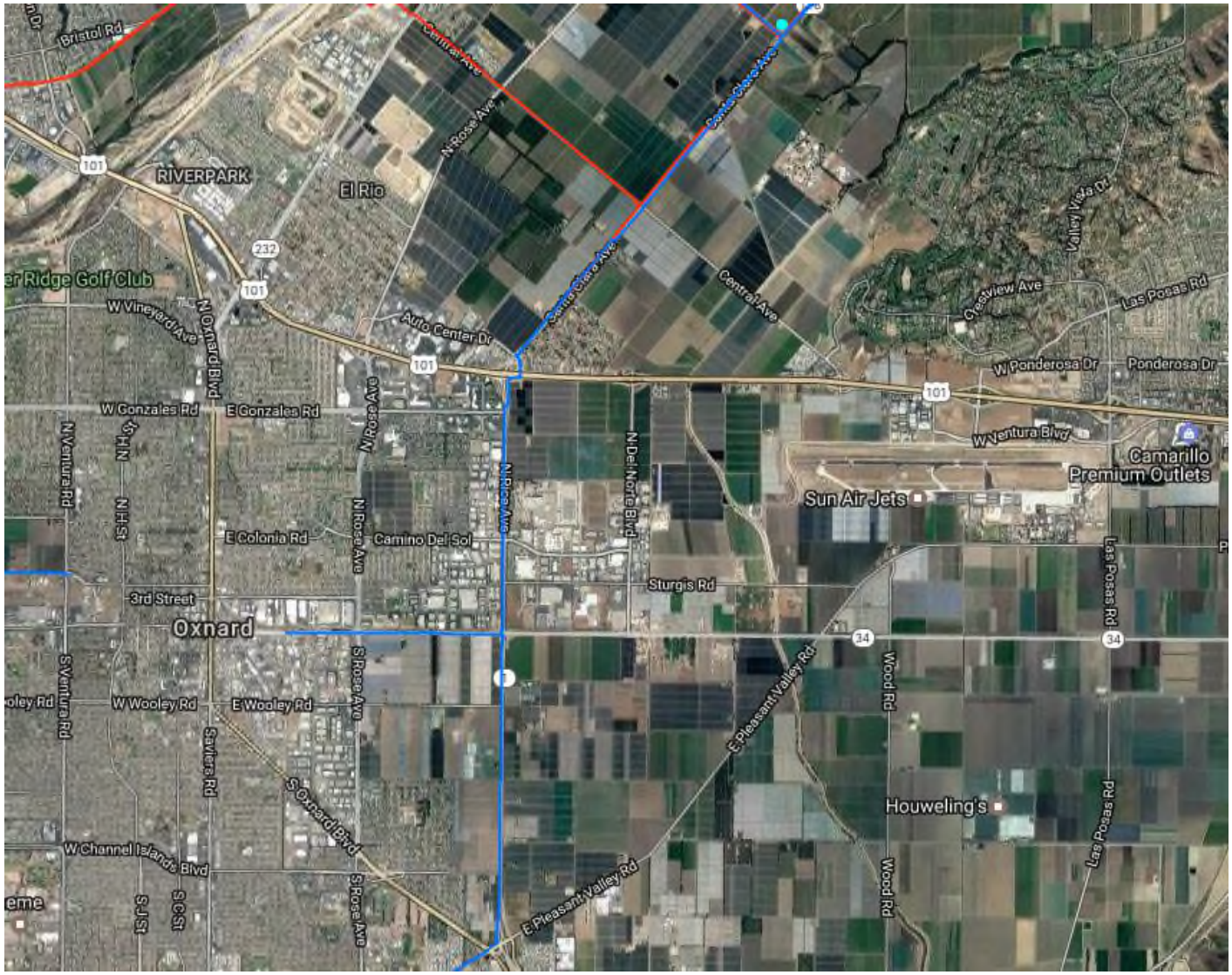
Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/13/2014	8:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	20.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/13/2014	8:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70051-2-ZB	TRILOGY	15.9400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/22/2014	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA &	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/10/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL (CA	2.1300	Gallon	17.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	0.5000	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.3800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.2800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	0.5000	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.3800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	8:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.2800	Gallon	4.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.6600	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	0.6600	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	2.6300	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2014	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	1.7000	Gallon	7.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/16/2014	1:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	3/28/2014	9:00 AM	2004-0	LEMON	No	1.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	28.0000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	3/28/2014	9:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	01360
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/30/2014	1:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (0150	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/13/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA &	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2014	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50073-AA	SILWET L-77 SURFACTA	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/17/2014	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (0150	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (017/11	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-227-AA	BIFENTURE 10DF	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/1/2014	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/14/2014	11:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG (CA & N	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	7/27/2014	6:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-2-AA-11220	TRI-CLOR	5,417.0000	Pounds	5.0000	ACRES	Fumigation	1143		
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	1.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	33.6000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	40.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	8/8/2014	11:00 AM	2004-0	LEMON	No	5.0000	ACRES	264-1050-AA	MOVENTO	36.0000	Ounce	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/15/2014	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	36.5600	Gallon	97.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/15/2014	8:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-99-AA	CHATEAU HERBICIDE SW	18.2800	Pounds	97.5000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/24/2014	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	36.0000	Gallon	96.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/24/2014	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-424-AA	GOAL 2XL	12.0000	Gallon	96.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL SOL	MAULHARDT RANCH/	S	02N	22W	35	8/29/2014	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.5000	Gallon	5.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/13/2014	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-5-AA-11220	TRI-CLOR EC FUMIGANT	14,596.0000	Pounds	72.9800	ACRES	Fumigation	1259	TRI-CAL INC	30596
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-ZA	RIDOMIL GOLD SL	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2014	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-1025-AA	BELT SC INSECTICIDE	1.5900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/8/2014	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	3.5600	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	9.5000	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	1.1900	Gallon	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/8/2015	10:30 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-503-ZA	ACRAMITE 50WS (023/0	38.0000	Pounds	38.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/14/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-38-ZA	KANEMITE 15 SC	4.6000	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	2.1600	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	69.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/15/2015	12:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-788-AA	SCALA BRAND SC FUNGI	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50031-AA	FREEWAY	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-545-AA	RADIANT SC	5.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (017/11	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/20/2015	6:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/2/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC	2.3800	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/3/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.7800	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/3/2015	10:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.5900	Gallon	19.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/4/2015	2:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	66222-35-ZB-400	RIMON 0.83EC (017/11	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/18/2015	4:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	1.5600	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.6300	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-375-AA	QUINTEC	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/25/2015	8:45 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	400-518-ZB	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	59639-35-AA	DANITOL(R) 2.4 EC SP	7.0900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/8/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-953-AA	SWITCH 62.5WG	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.6300	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/19/2015	9:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	279-3108-AA	BRIGADE WSB	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	71512-10-AA-279	BELEAF 50 SG	14.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/23/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	6/2/2015	2:00 PM	2004-0	LEMON	No	5.0000	ACRES	100-1154-AA	EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	80.0000	Ounce	4.0000	ACRES	Ground			
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	6/2/2015	2:00 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6-E	28.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/3/2015	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/3/2015	7:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	264-788-AA	SCALA BRAND SC FUNGI	11.9500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	279-3108-AA	BRIGADE WSB	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	4.3100	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	11.5000	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.1600	Gallon	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	11.5000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	92.0000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/15/2015	7:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-938-ZA	ACTARA	11.5000	Pounds	46.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/19/2015	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50061-AA	WIDESPREAD MAX	0.9400	Gallon	20.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/19/2015	3:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	80.0000	Pounds	20.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	7/3/2015	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	7/28/2015	11:00 AM	1016-0	STRAWBERRY	No	98.0000	ACRES	58266-2-AA-11220	TRI-CLOR	27,869.0000	Pounds	92.8000	ACRES	Fumigation	1143	TRI-CAL INC	30596
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/6/2015	1:00 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	44.8000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/6/2015	1:00 PM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.0000	Gallon	4.0000	ACRES	Ground		OXNARD PEST CONTROL ASSOC.	30223
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/10/2015	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	44.8000	Gallon	4.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	8/10/2015	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.0000	Gallon	4.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	8/18/2015	1:00 AM	1016-0	STRAWBERRY	Yes	98.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	31.5000	Gallon	84.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/18/2015	1:00 AM	1016-0	STRAWBERRY	Yes	98.0000	ACRES	62719-424-AA	GOAL 2XL	10.5000	Gallon	84.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/30/2015	4:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1313-ZA	QUADRIS TOP (CA)	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1351-ZA	AGRI-MEK SC	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	10/31/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/12/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	100-1202-ZA	RIDOMIL GOLD SL (CA)	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/12/2015	5:00 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	228-527-AA	NUPRID 4.6F PRO	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	10.6300	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/24/2015	3:30 PM	1016-0	STRAWBERRY	No	98.0000	ACRES	5905-50087-AA	KINETIC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO

Ventura County Agricultural Commissioner's Pesticide Use Records for the Maulhardt Ranch January 2011 - August 2017

Permit #	Permitee	Site Location	Site Name	Meridian	Township	Range	Section	Application Date	Application Time	Commodity Code	Commodity	Pre-plant	Planted Amount	Planted Units	EPA Reg No	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Applicator Name	Applicator License #
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	4/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	4/26/2016	12:00 PM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.5000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50030-AA	LIBERATE	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA)	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	80289-8-AA	METTLE 125 ME	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-953-AA	SWITCH 62.5WG (CA)	74.3800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/4/2016	7:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	5/16/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-AA	OMNI SUPREME SPRAY	30.0000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	5/16/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	100-1351-ZA	AGRI-MEK SC	20.4000	Ounce	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	5/21/2016	2:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-23-AA-70506	ASSAIL 70 WP	15.9400	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-474-ZA	MALATHION 8 AQUAMUL	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50030-AA	LIBERATE	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50031-AA	FREEWAY	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN (CA)	3.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-35-ZD-400	RIMON 0.83EC (022/08	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	6/16/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	7/23/2016	10:00 AM	1016-0	STRAWBERRY	Yes	95.0000	ACRES	58266-2-AA-11220	TRI-CLOR FUMIGANT	27,887.0000	Pounds	92.6000	ACRES	Fumigation	1143	ITO, DARYL M	30597
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/20/2016	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	241-418-AA	PROWL H2O HERBICIDE	31.8800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	9/20/2016	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-424-AA	GOAL 2XL	10.6300	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/22/2016	12:30 PM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6E	49.5000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/22/2016	12:30 PM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.6900	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/24/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	5905-368-ZA	OMNI OIL 6E	49.5000	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	10/24/2016	1:00 AM	2004-0	LEMON	No	5.0000	ACRES	62719-591-AA	LORSBAN ADVANCED	4.6900	Gallon	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2016	5:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-1202-AA	RIDOMIL GOLD SL (HI	6.9100	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/3/2016	5:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	264-827-ZA	ADMIRE PRO SYSTEMIC	9.3000	Gallon	85.0000	ACRES	Other		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-1351-ZA	AGRI-MEK SC (CA, HI,	2.3200	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50035-AA	LI 700	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/4/2016	4:30 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	1.9900	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	352-729-AA	DUPONT CORAGEN INSEC	2.6600	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-442-AA	INTREPID 2F	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	72-50014-AA	EXIT ACTIVATOR ADJUV	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/5/2016	1:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-410-ZC	RALLY 40 WSP	21.2500	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	6.6400	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	11/19/2016	2:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) FUNGICID	122.1900	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	7.9700	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50038-AA	CHOICE WEATHER MASTE	21.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	34704-50066-AA	HI-WETT SUPER SPREAD	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	400-503-ZB	ACRAMITE 50WS (023/0	85.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/3/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	10163-250-AA	SAVEY 50 DF	31.8800	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	4.0300	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	72-50022-AA	MILLER NU FILM P	4.0300	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50023-AA	MILLER SPRAY AIDE	5.3800	Gallon	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	172.0000	Pounds	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/14/2016	4:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	100-953-AA	SWITCH 62.5WG	75.2500	Pounds	86.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	1051042-50001-AA	HIGH CALCIUM HYDRATE	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	48813-50010-AA	BRANDT ORGANICS SKH	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/20/2016	12:00 PM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	91411-2-AA-70051	KOCIDE 3000	17.5000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	1051042-50001-AA	HIGH CALCIUM HYDRATE	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	48813-50010-AA	BRANDT ORGANICS SKH	15.0000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	12/22/2016	1:00 AM	28509-94	ORCHARD FLOC	No	5.0000	ACRES	91411-2-AA-70051	KOCIDE 3000	17.5000	Pounds	5.0000	ACRES	Ground		NELSON III, TERENCE P	99103
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	17545-50027-AA	MONTEREY SUPER 7	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	400-518-ZC	PROCURE 480SC (015/0	5.3100	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	42750-231-AA	CAPTAN 80 WDG	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	12/29/2016	3:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-35-AA	ELEVATE 50WDG	127.5000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56C0042	LAGUNA GROVE SERVICE, LLC	E/O ROSE & N/O CAMINO DEL	MAULHARDT RANCH/	S	02N	22W	35	1/3/2017	9:30 AM	2004-0	LEMON	No	5.0000	ACRES	34704-890-ZC	MAD DOG PLUS	2.0000	Gallon	4.0000	ACRES	Ground			
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	62719-375-AA	QUINTEC	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	1/24/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-56-ZA	PH-D WATER DISPERSABLE GRANULES	527.0000	Ounce	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	8033-103-AA-10163	TORINO	2.2600	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/9/2017	3:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66330-3-AA	ELEVATE 50 WDG FUNGICIDE	127.5000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	84876-1-AA-279	FRACTURE FUNGICIDE	16.2000	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	66222-58-ZA	CAPTAN GOLD 80WDG	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/19/2017	1:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	70506-187-AA	MICROTHIOL DISPERSS	170.0000	Pounds	85.0000	ACRES	Ground		COASTAL GROWERS SUPPLY, INC	32334
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	2/23/2017	8:00 AM	1016-0	STRAWBERRY	No	95.0000	ACRES	84059-3-AA	REGALIA (CA)	18.0000	Gallon	24.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	45728-26-ZA	THIRAM SC	55.2500	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	48813-50005-AA	BRANDT SUPER 7	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	90930-50022-AA	MILLER NU FILM P	3.9800	Gallon	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	73049-40-AA	XENTARI(R) BIOLOGICA	170.0000	Pounds	85.0000	ACRES	Ground		Grower Applied	
56X0047	ECLIPSE BERRY FARMS	1853 CAMINO DEL SOL	MAULHARDT RANCH (#9)/	S	02N	22W	35	3/4/2017	7:00 PM	1016-0	STRAWBERRY	No	95.0000	ACRES	7969-199-AA	PRISTINE(R) F



Legend

- Accidents (Liquid)
- Incidents (Gas)
- Gas Transmission Pipelines
- Hazardous Liquid Pipelines
- State Boundaries

1000 m
2000 ft

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: May 16, 2017

811 Know what's below. Call before you dig.

Steele, James

From: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Sent: Wednesday, September 20, 2017 4:19 PM
To: Dane, Jason
Subject: FW: 17-P-750 FW: Public Records Request for Phase 1 ESA

Good Afternoon Mr. Dane:

The Department of Forestry and Fire Protection, CAL FIRE, has searched its records and has found no documents in response to your request.

Sincerely,

Anne Henigan
CAL FIRE Legal Office

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:01 AM
To: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Subject: Public Records Request for Phase 1 ESA

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request information on any pipelines that are located near the property listed below within 1,500 feet:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059

Any additional information including distance, direction from the property, direction the pipeline is running, whether the pipeline is active, and pipeline size/ depth would be greatly appreciated. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
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Please consider the environment before printing. Read more



SEE MAP Q-18

SEE MAP P-19

SEE MAP R-19

LORENA DR

CAMINO DE LA LUNA

LICHO WAY

SARA DR

ROSALINDA DR

TERESA ST

URSULA DR

VALENTINA DR

GABRIELLA DR

HILARIA ST

FLORENTINA DR

PANAL CT

N ROSE AVE

CITY OF OXNARD

99-28A SHT # 44

99-28A SHT # 45

99-28A SHT # 41

99-28A SHT # 40

99-28A SHT # 36

99-28 A SHT # 46

95-06A SHT # 35

97-36A SHT # 12

97-36A SHT # 10

97-36A SHT # 11

95-06A SHT # 28

95-06A SHT # 29

95-06A SHT # 33

95-06A SHT # 31

95-06A SHT # 32

95-06A SHT # 34

91-171 A SHT # 10

91-171A SHT # 10

91-171A SHT # 9

90-57 A SHT # 50

90-57 A SHT # 49

90-57A

H-1 H-2 H-3 H-4 H-5 H-6 H-7 H-8 H-9 H-10 H-11 H-12 H-13 H-14 H-15 H-18 H-19

8" PVC

12" PVC

6" STUB

2" 4" 6"

A/R BO

22 ' 43 ' 34 ' 12 '

0 160 320 FEET

Q-19	City of Oxnard		WATER ATLAS		February 2010		FH: 16 W V: 75	Q-19

SEE MAP Q-20

City of Oxnard DataSheet Grid No Q-19

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	6"	20	19'	OFF +	75"
2	12"	38	20' 3"	OFF +	75"
3	6"	20	11' 9"	OFF +	75"
4	12"	38	12' 6"	OFF +	77"
5	6"	20	11' 6"	OFF +	75"
6	12"	38	21' 6"	OFF +	75"
7	8"	26	35' 3"	29' 9"	75"
8	12"	38	59' 9"	48' 3"	75"
9	8"	26	60'	48' 9"	75"
10	8"	26	25' 7"	24' 6"	75"
11	8"	26	26'	26' 5"	75"
12	8"	26	25'	25' 4"	75"
13	6"	20	5' 9"	OFF F/H	75"
14	8"	26	23' 5"	23' 8"	75"
15	8"	26	9' 6"	13' 6"	75"
16	8"	26	10' 9"	13'	75"
17	8"	26	11' 6"	11' 3"	75"
18	6"	20	5'	OFF F/H	75"
19	8"	26	25' 3"	26' 5"	75"
20	6"	20	6'	OFF F/H	75"
21	8"	26	26' 2"	25' 8"	75"
22	8"	26	25' 6"	25' 8"	80"
23	8"	26	24' 2"	24' 4"	80"
24	8"	26	25' 2"	23' 3"	80"
25	6"	20	5' 6"	OFF F/H	75"
26	6"	20	6'	OFF F/H	80"
27	8"	26	29' 5"	26'	80"
28	8"	26	28'	24' 6"	80"
29	8"	26	30' 5"	25' 3"	80"
30	8"	26	26' 8"	25' 7"	75"
31	8"	26	24' 3"	25' 2"	75"
32					
33	6"	20	5' 9"	OFF F/H	75"
34	8"	26	28' 6"	30' 3"	75"
35	8"	26	30'	31' 7"	75"
36	8"	26	30' 9"	30' 9"	75"
37	8"	26	23' 8"	25'	75"
38	6"	20	6'	OFF F/H	75"
39	8"	26	24' 10"	23' 6"	75"
40	8"	26	23' 9"	24' 6"	75"
41	8"	26	22'	22' 3"	75"
42	8"	26	23' 3"	24' 6"	75"
43	8"	26	20' 8"	11' 2"	75"
44	6"	20	6"	OFF F/H	75"
45	6"	20	5' 6"	OFF F/H	75"
46					
47	8"	26	29' 5"	29' 10"	75"
48	8"	26	27' 4"	29' 6"	75"
49	6"	20	6' 6"	OFF F/H	75"
50	8"	26	26' 3"	26' 10"	75"
51	8"	26	24' 8"	25' 8"	75"
52	6"	20	11'	11'	75"
53	8"	26	12' 6"	12' 6"	75"
54	8"	26	10' 9"	10' 9"	75"
55	6"	20	6'	OFF +	75"

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
56	6"	20	6'	OFF F/H	75"
57	8"	26	23' 4"	11' 5"	75"
58	8"	26	24' 6"	23' 6"	75"
59	8"	26	23' 8"	24' 5"	75"
60	8"	26	24' 10"	23' 6"	75"
61	6"	20	5' 3"	OFF F/H	75"
62	6"	20	6'	OFF F/H	80"
63	8"	26	30' 5"	29' 3"	75"
64	8"	26	28' 10"	28'	75"
65	6"	20	7' 6"	OFF F/H	75"
66	8"	26	26' 9"	OFF +	75"
67	DOES NOT ESIXT				
68	8"	26	26' 6"	24' 10"	80"
69	4"	14	6' 6"	OFF +	80"
70	4"	14	9' 6"	OFF C/F +	75"
71					
72	4"	14	18' 4"	24' 5"	75"
73	1"	0.25	5' 6"	OFF A/V	35"
74	1"	0.25	21'	OFF A/V	35"
75	4"	14	27'	21' 2"	80"
76	6"	20	6'	OFF F/H	80"

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

SEE MAP R-19

SEE MAP Q-20

SEE MAP S-20

CAMINO DEL SOL

CITY OF OXNARD

SAN GORGONIO AVE

SAN JOSE ST

DEL REY PL

SAN LUIS ST

SAN JACINTO ST

BALSAM ST

CORDOVA ST

N DRISKILL ST

EVEREST ST

FEATHERSTONE ST

GIBRALTAR ST

HALCON ST

IMPERIAL ST

JULIAN ST

KOHALA ST

BERNOULLI CIR

4"FIRE LINE

BACKFLOW DEVICE

IRRIG

BURIED OR MISSING

A/R

SEE MAP R-21

R-20	City of Oxnard	0 180 360 FEET	WATER ATLAS	June 2011	FH: 35 W V: 93	R-20

City of Oxnard DataSheet Grid No R-20

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	12"	40	5' 0"	C/F +	19"
2	8"	27	4' 0"	(+) GUTTER	28"
3	6"	21	18' 8"	OFF F.H -1	28"
4	4"	15	3' 4"	(+) GUTTER	40"
5	6"	21	5' 4"	OFF F.H -2	22"
6	4"	15	3' 0"	(+) GUTTER	16"
7	6"	21	20' 2" C/F +	11' 0" C/F +	36"
8	6"	21	5' 9"	OFF F.H -3	16"
9	8"	27	21' 7" + BLOCKWALL	14' 6" + BLOCKWALL	13"
10	12"	39	12' 7" C/F +	33' 2" C/F +	6"
11	8"	27	31' 2" C/F +	18' 0" C/F +	17"
12	6"	21	5' 6"	OFF F.H -4	26"
13	6"	21	12' 8" C/F +	26' 4" C/F +	22"
14	6"	21	29' 0" C/F +	10' 2" C/F +	21"
15	6"	21	5' 8"	OFF F.H -6	20"
16	6"	21	11' 4" C/F +	27' 3" C/F +	21"
17	6"	21	5' 0"	OFF F.H -7	
18	6"	21	27' 0"	11' 9" C/F +	23"
19	6"	21	5' 4"	OFF F.H -8	20"
20	6"		12' 7" C/F +	26' 2" C/F +	17"
21	6"	21	27' 3" C/F +	12' 7" C/F +	18"
22	6"	21	5' 5"	OFF F/H - 9	19"
23	6"	21	13' 0" C/F +	26' 3" C/F +	18"
24	6"	21	4' 8"	OFF F/H - 10	37"
25	12"	39	13' 7" C/F +	32' 2" C/F +	26"
26	12"	39	31' 3" C/F +	16' 0" C/F +	25"
27	12"	39	32' 6" C/F +	56' 6" C/F +	50"
28	6"	21	12' 0" C/F +	26' 4" C/F +	23"
29	12"	39	26' 4" C/F +	11' 2" C/F +	20"
30	6"	21	4' 10"	OFF F/H - 11	31"
31	8"	27	5' 0"	C/F +	17"
32	6"	21	26' 5" C/F +	11' 0" C/F +	18"
33	6"	21	4' 10	OFF F/H - 12	16"
34	6"	21	5' 6"	OFF F/H - 13	13"
35	8"	27	4' 8"	C/F +	20"
36	6"	21	26' 4" C/F +	13' 3" C/F +	22"
37	6"	21	5' 6"	OFF F/H - 14	23"
38	6"	21	5' 6"	OFF F/H - 15	20"
39	8"	27	5' 6"	C/F +	17"
40	6"	21	26' 7" C/F +	12' 8" C/F +	18"
41	6"	21	5' 5"	OFF F/H - 16	19"
42	6"	21	5' 6"	OFF F/H - 17	19"
43	8"	27	4' 6"	C/F +	22"
44	6"	21	26' 9" C/F +	10' 5" C/F +	12"
45	6"	21	5' 5"	OFF F/H - 18	16"
46	6"	21	5' 4"	OFF F/H - 19	17"
47	6"	21	20' 4" C/F +	12' 3" C/F +	24"
48	8"	27	27' 4" C/F +	11' 0" C/F +	25"
49	8"	27	5' 5"	C/F +	22"
50	6"	21	5' 7"	OFF F/H - 5	21"
51	6"	21	5' 3"	OFF F/H - 20	13"
52	8"	27	11' 4" C/F +	26' 10" C/F +	12"
53	6"	21	9' 10" C/F +	26' 10" C/F +	17"
54	6"	21	6' 7"	OFF F/H - 21	21"
55	8"	27	11' 0" C/F +	27' 10" C/F +	17"

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
56	6"	21	9' 3" C/F +	26' 8" C/F +	21"
57	6	21	10' 4" C/F +	27' 0" C/F +	16"
58	6"	21	26' 7"	11' 5" C/F +	24"
59	6"	21	5' 3"	OFF F/H - 22	19"
60	6"	21	11' 3" C/F +	26' 10" C/F +	20"
61	6"	21	5' 0"	C/F +	17"
62	6"	21	5' 7"	OFF F/H - 24	18"
63	6"	21	7' 6" C/F	10' 2" C/F +	16"
64	6"	21	5' 8"	C/F +	16"
65	6"	21	7' 0" C/F +	29' 7" C/F +	17"
66	6"	21	27' 6" C/F +	10' 2" C/F +	19"
67	6"	21	10' 10" C/F +	27' 4" C/F +	19"
68	6"	21	5' 6"	OFF F/H - 23	18"
69	6"	21	8' 7" C/F +	8' 9" C/F +	21"
70	6"	21	5' 6"	OFF F/H - 25	26"
71	6"	21	10' 10" C/F +	27' 4" C/F +	26"
72	6"	21	12' 6" C/F +	25' 10" C/F +	24"
73	6"	21	6' 0" C/F +	12' 3" C/F +	20"
74	6"	21	5' 4"	C/F +	24"
75	6"	21	6' 0"	OFF F/H - 26	22"
76	6"	21	5' 0"	OFF F/H - 27	32"
77	12"	39	10' 2" C/F +	27' 0" C/F +	21"
78	12"	39	27' 0" C/F +	10' 7" C/F +	27"
79	6"	21	5' 3"	OFF F/H -28	33"
80	6"	21	5' 4"	OFF F/H - 29	30"
81	6"	21	6' 0"	OFF F/H - 36	36"
82	8"	27	23' 0" C/F +	9' 10" C/F +	23"
83	8"	27	14' 0" C/F +	18' 4" C/F +	23"
84	6"	21	7' 0"	OFF F/H - 30	30"
85	10"	33	43' 0" C/F +	55' 5" C/F +	50"
86	4"	15	16' 6"	OFF 4" DEVICE	21"
87	6"	21	3' 4"	C/F +	24"
88	6"	21	4' 0"	OFF F/H - 33	31"
89	6"	21	10' 10"	OFF F/H - 37	25"
90	4"	15	15' 4"	C/F +	19"
91	4"	15	24' 4" C/F +	18' 2" C/F +	24"
92	3_4	CURB STOP	2' 6"	C/F +	29"
93	6"	21	3' 2"	(+) GUTTER	28"
94	4"	15	10' 6"	OFF 4" DEVICE	30"
95	6"	21	13' 7"	OFF F/H - 30	30"

System Valves

Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

SEE MAP Q-19

FLORENTINA DR
GLORIA CT
N ROSE AVE
CAMINO DEL SOL
SAN GORGONIO AVE
CARMELITA CT
DOLORES CT
ELIZA CT
ALPINE ST
BALSAM ST
E FIRST ST
CITY OF OXNARD
ABANDONED
4" BLOWOFF VALVE
4"FIRE LINE
4" DEVICE
10" ACP
12" ACP
8" ACP
6" ACP
8" PVC
12" PVC
4" PVC
6" CIP
4" RP
42" UWCD
12"X10" RED.
61-222 B SHT # 2
61-221 B SHT # 1
91-171A SHT # 9
95-06A SHT # 30
95-06A SHT # 36
90-57A SHT # 49
SHT # 34
H-1
H-2
H-3
H-4
H-5
H-6
H-7
H-8
H-9
H-10
H-11
H-12
H-13
H-14
H-15
H-16
H-17
H-18
H-19
H-20
H-21
H-22
SEE MAP P-20
SEE MAP R-20
SEE MAP Q-21

Q-20	City of Oxnard	0 160 320 FEET	WATER ATLAS		February 2010		FH: 21 W V: 44	Q-20

City of Oxnard DataSheet Grid No Q-20

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut
1	6"	20	12"	OFF F/H	19"
2	10"	31	1"	"+" ON C/F	20"
3	DOES NOT EXIST				
4	6"	20	28"	OFF F/H	31"
5	10"	28	37' 3"	61' 9"	19"
6	12"	38	33' 9"	19'	19"
7	12"	40	12' 3"	33'	14"
8	6"	21	6'	OFF F/H	24"
9	6"	21	5' 3"	OFF F/H	27"
10	8"	26	3' 7"	CONC. GUTTER	33"
11	6"	20	27'	OFF F/H	36"
12	6"	20	18' 4"	OFF F/H	26"
13	12"	39	18' 6"	37' 4"	22"
14	8"	27	31' 10"	16' 5"	21"
15	6"	21	10' 6"	OFF F/H	32"
16	8"	26	5'	"+" ON C/F	20"
17	6"	20	27' 7"	12' 9"	21"
18	6"	21	5' 10"	OFF F/H	19"
19	8"	26	5' 5"	"+" ON C/F	20"
20	6"	20	27' 7"	11' 7"	14"
21	6"	21	5' 9"	OFF F/H	13"
22	6"	20	7'	OFF F/H	24"
23	6"	21	10' 8"	OFF F/H	32"
24	6"	21	5' 5"	OFF F/H	14"
25	6"	21	5' 7"	OFF F/H	11"
26	12"	36	36' 5"	24' 7"	40"
27	ABANDONED				
28	12"	36	2' 6"	"+" ON C/F	16"
29	12"	36	3'	"+" ON C/F	24"
30	4"	13	2' 3"	"+" ON C/F	31"
31	4"	13	3' 6"	FROM R.P.D	35"
32	6"	20	5' 8"	OFF F/H	34"
33	4"	14	18' 9"	"+" ON C/F	40"
34	6"	20	4' 2"	"+" ON C/F	40"
35	6"	20	4' 4"	OFF F/H	12"
36	6"	20	21'	OFF F/L	40"
37	4"	14	2' 6"	CONC. GUTTER	26"
38	DOES NOT EXIST				
39	4"	14	11' 3"	OFF F/L	12"
40	6"	20	10' 6"	OFF F/H	24"
41	4"	14	2' 2"	OFF F/L	32"
42	1"		2'	OFF A/V	18"
43	6"	20	2' 6"	CONC. GUTTER	

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

System Valves					
Valve #	Diameter	# of Turns	A Distance	B Distance	Depth To Nut

Ventura County
Air Pollution
Control District

Public Records Request Form

Please fill out this form as completely as possible. Please fill out a separate form for each address of interest. The form may be emailed to maree@vcapcd.org or faxed to the District at 805/645-1444. For more information, please contact Maree Penhart at 805/645-1403.

Person Requesting Information

Name:		Date:
Company:		
Mailing Address:		
City:	State:	Zip Code:
Telephone Number:	Fax Number:	
Email address:		

Standard Facility Information Request

Facility Name:		
Facility Address:		
City:	State:	Zip Code:
Facility Number(s):		

Information Requested (Check All That Are Applicable):

- ☐ Copy of Current Facility Permit to Operate with Facility Permitted Emissions
- ☐ Inspection Summary (1996 to Present)
- ☐ Notice of Violation Summary (1996 to Present)
- ☐ Notice to Comply Summary (1996 to Present)
- ☐ Complaint Summary (1996 to Present)
- ☐ Other (Describe Below)

Requests for records must be for clearly identifiable records in the District's possession, and for facilities within the District's jurisdiction. The District is not required by law to create a new record or list from an already existing record.

Copying costs are $0.17 per page for requests that are 10 pages or more in length. If the "Other" box is checked, an additional charge for labor may be added to the invoice for the information requested.

NOW AVAILABLE ONLINE !
Facility Info System
Find information on facilities with APCD Permits at:
http://www.vcapcd.org/FIS.htm

AirNav.com

Airports | Navaids | Airspace Fixes | Aviation Fuel | AIRBOSS | iPhone App | My AirNav

Airport Search Results

7 airports found

ID	CITY	AIRPORT NAME	WHERE
2CL6	*OXNARD, CA*	*ST JOHN'S REGIONAL MEDICAL CENTER HELIPORT*	0.6 nm N
OXR	OXNARD, CA	OXNARD AIRPORT	2.4 nm W
CMA	CAMARILLO, CA	CAMARILLO AIRPORT	3.2 nm E
3CL9	*SAN BUENAVENTURA, CA*	*SCE NORTHERN DIVISION HELIPORT*	4.8 nm N
NTD	*OXNARD, CA*	*POINT MUGU NAS (NAVAL BASE VENTURA CO) AIRPORT*	5.6 nm SSE
CA72	*VENTURA, CA*	*COMMUNITY MEMORIAL HOSPITAL HELIPORT*	6.5 nm NW
SZP	SANTA PAULA, CA	SANTA PAULA AIRPORT	9.7 nm NNE

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Steele, James

From: Maree Penhart <maree@vcapcd.org>
Sent: Wednesday, September 20, 2017 4:43 PM
To: Dane, Jason
Subject: RE: Request for Public information under the Public Records Act
Attachments: Public Records Request Form.pdf

Hello Jason,

Nothing was found for the address:

1853 Camino Del Sol, Oxnard CA 93030.

I have attached our Public Records Request Form which is required for each request for your future use.
Please let me know if you have any questions.
Thank you.

Maree Penhart
Engineering Division
Ventura County Air Pollution Control District
(805) 645-1403
(805) 645-1444 fax
maree@vcapcd.org

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Tuesday, September 19, 2017 4:07 PM
To: Maree Penhart
Subject: RE: Request for Public information under the Public Records Act

Hello Marie,

Thank you for the information. Could you also run a check for the following address?:

1853 Camino Del Sol, Oxnard CA 93030

Thanks.

From: Maree Penhart [mailto:maree@vcapcd.org]
Sent: Tuesday, September 19, 2017 12:37 PM
To: Dane, Jason <Jason.Dane@tetratech.com>
Subject: RE: Request for Public information under the Public Records Act

Hello Jason,

Nothing was found for the address:

1825 Camino Del Sol, Oxnard CA 93030.

Please let me know if you have any questions.
Thank you.

Maree Penhart
Engineering Division
Ventura County Air Pollution Control District
(805) 645-1403
(805) 645-1444 fax
maree@vcapcd.org

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:46 AM
To: Maree Penhart
Subject: Request for Public information under the Public Records Act

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request any records pertaining to the property listed below:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059
Historical and current use of the property is agricultural.

Any and all records on this property would be greatly appreciated. In addition we are only concerned with this property and not surrounding properties. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
tetratech.com

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Steele, James

From: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Sent: Wednesday, September 20, 2017 4:19 PM
To: Dane, Jason
Subject: FW: 17-P-750 FW: Public Records Request for Phase 1 ESA

Good Afternoon Mr. Dane:

The Department of Forestry and Fire Protection, CAL FIRE, has searched its records and has found no documents in response to your request.

Sincerely,

Anne Henigan
CAL FIRE Legal Office

From: Dane, Jason [mailto:Jason.Dane@tetratech.com]
Sent: Monday, September 18, 2017 10:01 AM
To: Request, PRA@CALFIRE <pra.request@fire.ca.gov>
Subject: Public Records Request for Phase 1 ESA

Good morning,

I am currently conducting a Phase 1 Environmental Site Assessment for a property located in Oxnard, CA . I am writing to request information on any pipelines that are located near the property listed below within 1,500 feet:

1825 Camino Del Sol Oxnard, CA, 93030
APN: 214-002-059

Any additional information including distance, direction from the property, direction the pipeline is running, whether the pipeline is active, and pipeline size/ depth would be greatly appreciated. Feel free to contact me with any questions.

Sincerely,

Jason Dane | Environmental Engineer II
Direct **+1 (805) 681-1527** | Business **+1 (805) 681-3100** | Mobile **+1 (805) 342-7941** | Fax **+1 (805) 681-3108** |
Jason.Dane@tetratech.com

Tetra Tech | Complex World, Clear Solutions™ | Santa Barbara | 5383 Hollister Ave., Suite 130 | Santa Barbara, CA 93111 |
tetratech.com

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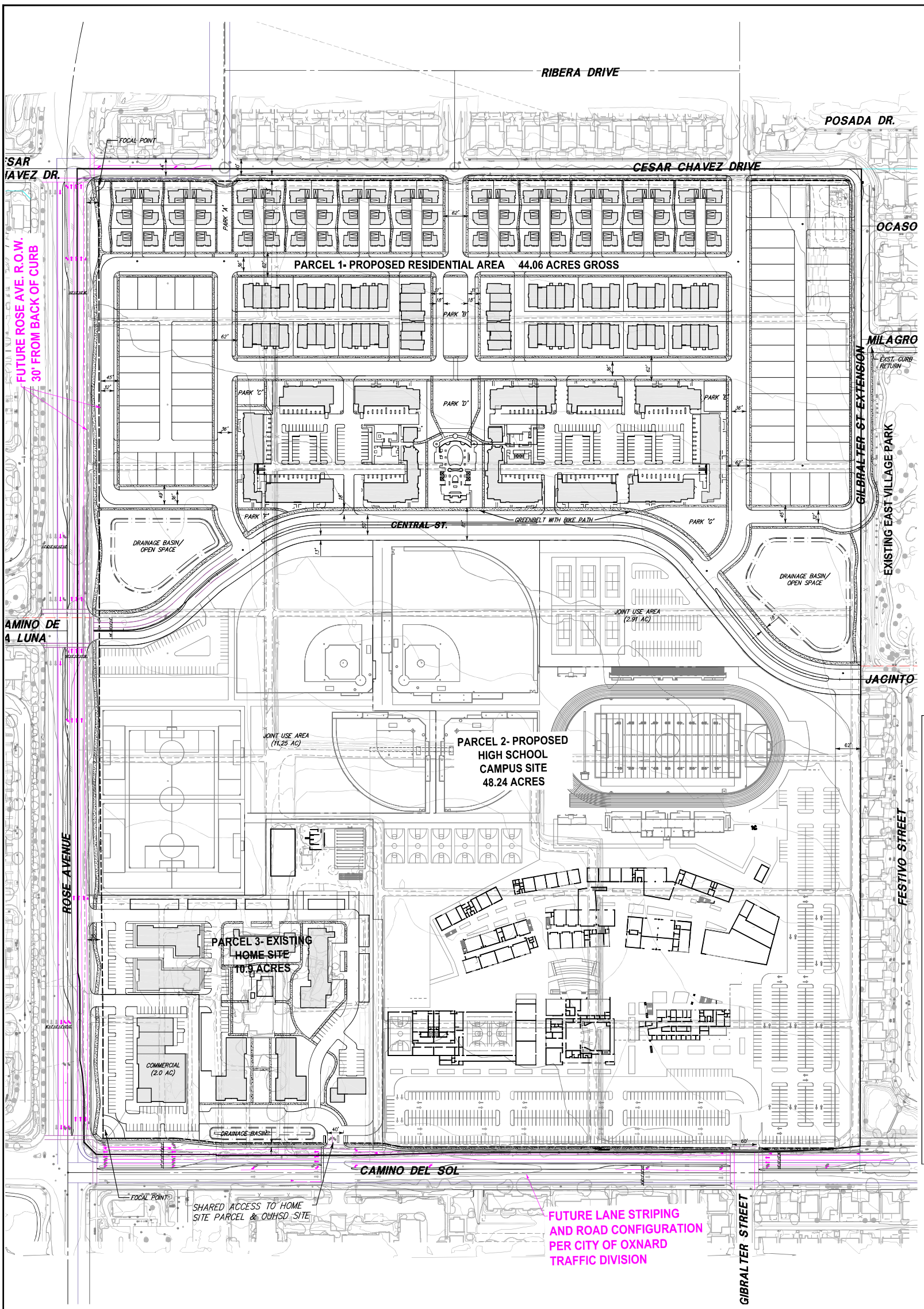

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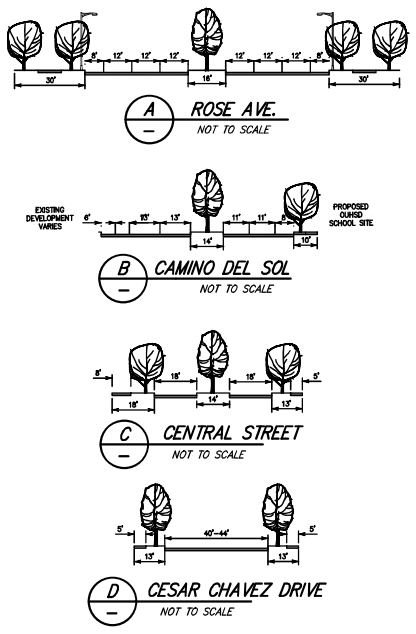
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H NORTHEAST COMMUNITY SPECIFIC PLAN, MAULHARDT PROPERTY URBAN VILLAGE SITE PLAN

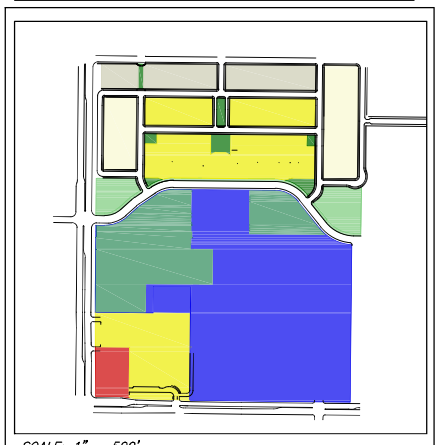
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STREET SECTIONS



NORTHEAST COMMUNITY SPECIFIC PLAN PROPOSED URBAN VILLAGE LAND USE



SCALE: 1" = 500'

PUBLIC EDUCATION	34.1 AC
JOINT USE PUBLIC EDUCATION/RECREATION	14.2 AC
NEIGHBORHOOD COMMERCIAL	2.0 AC
LOW DENSITY RESIDENTIAL (UP TO 8 DU/AC)	7.2 AC
LOW-MEDIUM DENSITY RESIDENTIAL (12 DU/AC)	5.7 AC
MEDIUM DENSITY RESIDENTIAL (15-30 DU/AC)	20.5 AC
NEIGHBORHOOD PARKS	1.5 AC
OPEN SPACE/DRAINAGE AREAS	4.1 AC

LAND USE DATA

OVERVIEW

GROSS PROPERTY AREA: 107.2 AC

EXISTING N.E.C.S.P. LAND USE DESIGNATIONS

LOW DENSITY RESIDENTIAL	101.2 AC
NEIGHBORHOOD COMMERCIAL	6 AC

PROPOSED LAND USE DESIGNATIONS

PUBLIC EDUCATION	34.1 AC
JOINT USE PUBLIC EDUCATION/RECREATION	14.2 AC
NEIGHBORHOOD COMMERCIAL	2.0 AC
RESIDENTIAL URBAN VILLAGE	
LOW DENSITY RESIDENTIAL	7.2 AC
LOW-MEDIUM DENSITY RESIDENTIAL	5.7 AC
MEDIUM DENSITY RESIDENTIAL	20.5 AC
NEIGHBORHOOD PARKS	1.5 AC
OPEN SPACE/DRAINAGE	4.1 AC
CIRCULATION/PUBLIC RIGHT OF WAYS	17.9 AC

LAND USE DETAILS

RESIDENTIAL URBAN VILLAGE (PARCEL 1)

A. LOW DENSITY RESIDENTIAL (8.5 DU/AC)

46' x 80' DETACHED SFD	10 D.U.
48' x 80' DETACHED SFD	10 D.U.
40.5' x 100' DETACHED SFD	14 D.U.
40' x 105' DETACHED SFD	28 D.U.
LOW DENSITY SUBTOTAL:	62 D.U.

B. LOW-MEDIUM DENSITY RESIDENTIAL (11.5 DU/AC)

128' x 176' 6-PACK CLUSTER SFD	66 D.U.
LOW-MEDIUM DENSITY SUBTOTAL	66 D.U.

C. MEDIUM DENSITY RESIDENTIAL (14-30 DU/AC)

ATTACHED TOWNHOME (3 UNIT BLDG.)	6 D.U.
ATTACHED TOWNHOME (4 UNIT BLDG.)	32 DU.
ATTACHED TOWNHOME (5 UNIT BLDG.)	40 D.U.
APARTMENTS/CONDOMINIUMS	244 D.U.
MEDIUM DENSITY SUBTOTAL	322 D.U.

TOTAL URBAN VILLAGE DWELLING UNITS: 450 D.U.

PUBLIC EDUCATION (PARCEL 2)

A. PUBLIC HIGH SCHOOL (OUHSD)	34.1 AC
B. JOINT USE PUBLIC HIGH SCHOOL FIELDS	14.2 AC
TOTAL PUBLIC EDUCATION ACREAGE:	48.3 AC

NEIGHBORHOOD COMMERCIAL/RESIDENTIAL (PARCEL 3)

A. NEIGHBORHOOD COMMERCIAL/RETAIL	21,300 S.F.
B. MEDIUM DENSITY RESIDENTIAL (14-30 DU/AC) APARTMENTS	140 D.U.
TOTAL COMMERCIAL/RETAIL SPACE:	21,300 S.F.
TOTAL DWELLING UNITS	140 D.U.

NEIGHBORHOOD PARKS (PARCEL 1)

A. NEIGHBORHOOD PARKS	
PARK A	.16 AC
PARK B	.26 AC
PARK C	.15 AC
PARK D	.43 AC
PARK E	.10 AC
PARK F	.10 AC
PARK G	.30 AC
TOTAL PARK ACREAGE:	1.50 AC

OPEN SPACE/DRAINAGE (PARCEL 1)

A. OPEN SPACE/DRAINAGE BASINS	4.10 AC

CIRCULATION/PUBLIC RIGHT OF WAYS

A. ROSE AVENUE	2.95 AC
B. CAMINO DEL SOL	.86 AC
C. CESAR CHAVEZ DRIVE	1.27 AC
D. GIBRALTAR STREET EXTENSION	.54 AC
E. CENTRAL STREET	3.10 AC
F. INTERIOR URBAN VILLAGE STREETS	9.18 AC
TOTAL CIRCULATION/PUBLIC R.O.W.	17.90 AC

100' 50' 0' 100' 200'

GRAPHIC SCALE: 1"=100'

NOTE:

STREET AREAS SHOWN TO EXISTING BOUNDARY; SUBJECT TO FUTURE STREET DEDICATIONS REQUIRED BY THE CITY OF OXNARD. PRELIM CAMINO DEL SOL AND ROSE AVE. STRIPING & SECTIONS BASED ON CITY TRAFFIC MARKUPS

VICINITY MAP



NOT TO SCALE

REVISION	DATE
PRE-APP	06/2018

SUBDIVIDER/OWNER:
MAULHARDT FAMILY
C/O
MIKE PENROD
PARKSTONE COMPANIES
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 931361

OXNARD UNION HIGH SCHOOL DISTRICT
309 SOUTH "K" STREET
OXNARD, CA 93030

ENGINEER & LAND PLANNER:
JENSEN DESIGN & SURVEY, INC
www.jdsciv.com
1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

NORTHEAST COMMUNITY SPECIFIC PLAN

MAULHARDT PROPERTY

URBAN VILLAGE SITE PLAN

CITY OF OXNARD | COUNTY OF VENTURA | STATE OF CALIFORNIA

LEGAL DESCRITION HERE

SCALE: 1"=100' | J.N.: PAR 15808

DATE: Jun 20, 2018 | DWG. NAME: PAR15808 SITE PLAN.dwg

SHEET 1 OF 2

J:\PAR15808\Planning\Site Plan\PAR15808 SITE PLAN.dwg Jun 20, 2018, 12:12pm tshelton

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I CHECKLIST FOR PHASE I SITE VISIT

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PHASE I ENVIRONMENTAL SITE ASSESSMENT CHECKLIST

Project Name: Oxnard High School No. 8

Address: 1853 Camino Del Sol, Oxnard, CA 93030

General Site Description: Residential Property surrounded by private orchards, farm building and compound surrounded by strawberry fields

I. Pre-arrival Background Information

1. **Current Owner(s):** Maulhardt Family
   Owner Since: 1869

2. **Current Occupants:** Ruth Maulhardt, Sean Maulhardt
   Occupant Since: 1952

3. **Year Buildings Constructed :** Main Residence (1917), Barn (~~1908~~ 1908), Pesticide Storage shed (1890), Mobile homes (1970's)

4. **Site Zoning:** Residential Planned Development/General Commercial Planned Development /Community Resource

5. **Land Use(s):** Residential / Agricultural

II. Site Observations:

A. Lot/Property Observations:

1. **Current Groundcover (%):** Estimated from aerial photograph review.

Orchards	9 %	Buildings	2 %		
Strawberry Fields	83 %	Dirt	6 %		

Any concrete staining, soil staining or stressed vegetation? yes shown in Figure

2. **Is there any evidence of pesticide/herbicide use, storage or disposal on the property?** Yes
   If yes, describe: Agricultural Areas, Pesticide use and Storage shed
   Have any pesticides/herbicides been used on the property at any time?* Yes, Pesticide and herbicides used historically for agricultural activities

3. **Are there any electrical transformers or capacitors on the property?** Yes
   If yes, location: 2 identified at property, 3 have been removed
   Evidence of leaks? No
   Have they been tested for PCBs*? No
   Transformers owned by utility company, owner, or tenant?* Utility, So Cal Edison

* Indicates question that requires follow-up during site owner/occupant interview.

4a. Are there any visible aboveground or underground storage tanks on the property? Yes

If yes, location: 2 propane storage tanks, Abandoned heating oil tank

Currently in use? Propane tanks in use, heating oil tank no longer used

Contents: Propane, heating oil

Size (gallons): ~500 gallons

Evidence of leaks? No

When was the tank installed?* NA

Is there a permit for the tank? If so, who is the listed owner?* NA, AAA

Have any leak tests been performed?* N/A

If not in use, has the tank been "abandoned"? Documentation?* No

4b. Is there any evidence that an AST or UST has been removed from the site? Yes

If yes, describe: Property owners disclosed several former ASTs and UST that have been removed

When was the tank removed?* 25-30+ years ago

Documentation?* None

5. Are there any visible storage drums on the property? If yes, how many? Yes

If yes, location: One drum in pesticide use area, Drum in shed

Describe size and contents (if known): 25 gallons unknown contents, 25 gallons unknown contents

Evidence of spills/leaks? Stained areas in shed

Are they stored in a bermed area (any secondary containment)? No

6. Any evidence of solid waste disposal on the property? Yes

If yes, location: Miscellaneous solid waste present across site, shed and barn

Describe: old cars stored, miscellaneous trash

Evidence of any hazardous materials? Yes

7. Are there any ponds, pits, sumps, or ditches on the property? Yes

If yes, location: Sump inside garage / gas house

Describe: used historically for auto repair and oil changes

Evidence of any hazardous materials? Yes strong petroleum odors, abandoned gas tank piping

8. Describe the general air quality at the site: Good Air Quality

Are there activities on the site which produce air emissions (painting, printing, venting, exhaust): No

If yes, describe:

Are the emissions monitored or permitted?*

Documentation?*

9. Are there any curb cuts, footings, or other signs of former buildings on the property? Yes

If yes, location: Former bunkhouse west of the Farm yard

When was the former building built/demolished?* 1970's

* Indicates question that requires follow-up during site owner/occupant interview.

B. Buildings

1. **Is a building(s) present on site?** Yes
   If yes, when was it built?* 1880's - 1970's

2. **Are there any cracks or openings (drains or sumps) on the first floor?** N/A
   If yes, location: NA
   Are they connected to storm drains, sewer lines or discharged into the ground? NA

   Is there any evidence of spills or stains on the ground? NA

   Is there a possibility of hazardous waste spills or leaks?* NA

3. **Are there painted surfaces on the exterior or interior of the building?** Yes
   Evidence of lead based paint? Yes
   If yes, location: exteriors of building have chipped paint
   When were the walls painted?* Unknown painted multiple times, multiple layers
   Have they been tested for lead?* No

4. **Are there any electrical transformers or capacitors inside the building?** NA
   If yes, location:
   Evidence of leaks?
   Have they been tested for PCBs?*
   Transformers owned by utility company, owner, or tenant?*

5. **Is there any evidence of the presence of asbestos?** Unknown
   If yes, location:
   Friable?
   If no evidence of asbestos, but the building was built before 1979, has an asbestos survey been completed?*

6. **Are there any chemicals or drums stored or used in the building?** Yes
   If yes, location: sheds
   Evidence of leaks/spills? Yes, stained areas in shed
   If drums, secondary containment? No
   Have there been any documented leaks or spills of hazardous materials*? No
   If yes, describe and list documentation:

* Indicates question that requires follow-up during site owner/occupant interview.

III. Surrounding Properties

1. Describe generally the current use(s) of the adjacent properties (%):

Residential: 75 %, Agricultural: 25 %, Industrial: ____

Office: ____ Commercial: ____ Manufacturing: ____

Other (specify) ____

Describe any adjacent propertied used for industrial, manufacturing, or refining purposes: NA

Do they pose a possible threat to groundwater or air quality at the site? NO

If yes, explain: ____

Checklist completed by: Jason Dane

Date: 10/23/2017

Checked by: ____

Date: ____

* Indicates question that requires follow-up during site owner/occupant interview.

J USER QUESTIONNAIRE

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URGENT and CONFIDENTIAL

USER QUESTIONNAIRE for PHASE I ESA

AS REQUIRED by ASTM Standard E1527-05

Site Name: Portion of Maulhardt Ranch (approximately ~~45~~ 55 acres) proposed to be developed as Oxnard High School No. 8. MTH

Address: 1853 Camino Del Sol, Oxnard, CA 93030

Completed By: MR. SID ALBAUGH, ASST SUPT

The person who will use the Phase One should provide the following information. Please fill in this form to the best of your ability, explaining any Yes answers on a separate sheet of paper. Without these answers, our report would have to note that the Phase One is incomplete, and your Landowner Liability Protections could be at risk. We need these answers before we conduct the site visit.

* 1. **Environmental Cleanup Liens.** ASTM requires the User to check for environmental liens that may be filed or recorded against the subject property under federal, tribal, state or local law. Such liens might be listed in the "exceptions to coverage" in the property's title insurance commitment or policy. Failure to check for these liens could put your Landowner Liability Protections at risk.

Have you checked for these environmental cleanup liens? ☐ Yes ☑ No

Are you aware of any such liens against the subject property? ☐ Yes ☑ No

* 2. **Activity and Use Limitations (AULs).** These include engineering controls (e.g., slurry walls, caps) and land use restrictions or institutional controls (e.g., deed restrictions, covenants) that may be in place at the site or filed under federal, tribal, state or local law. The title commitment or policy might also list AULs.

Are you aware of any possible AULs involving the subject site? ☐ Yes ☑ No

3. **Specialized Knowledge.** This involves personal knowledge or experience related to the subject property or nearby properties. For example, if you are involved in the same line of business as the current or former occupants of the property or an adjoining property, you would probably know of any chemicals, oil, degreasers, gasoline, or other hazardous substances commonly used in that type of business.

Do you have any specialized knowledge that might indicate the past or present use or release of such substances on the subject or nearby properties? ☐ Yes ☑ No

4. **Fair Market Value (FMV).** A purchase price significantly below FMV may indicate an environmental problem. Please note that this question does not require an appraisal of the property. If the price is significantly below FMV, the User should consider whether it might be because contamination may be present at the property.

Is the purchase price significantly below fair market value? ☐ Yes ☑ No

5. **Obvious Indicators.** This involves past or present spills, stains, releases, cleanups, etc. on or near the site.

Do you know of any obvious indicators of possible contamination on or near the site? ☐ Yes ☑ No

6. **Common Knowledge.** Please use a separate sheet if necessary.

Describe the past uses of the property: RESIDENT, AGRICULTURE, BARN

Describe any specific chemicals that may have been present at the property: TBD.

Describe any other information that may help us identify possible contamination:

# of separate sheets attached: ____

Your Signature _____ **Date** 10-19-17

Explain Yes answers on a separate sheet.

*: TO BE REVIEWED UPON OPENING OF ESCROW AND REVIEW OF PRELIMINARY TITLE REPORTS MTH

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K BORING LOGS

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TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-1
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/2018	Completed: 09/18/2018	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: JDane	Checked By: J. R. Steele CAPG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ft above MSL	

Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sandy Brown (10YR 4/3), loose, slightly moist	SM					100	0.0	
	Moist								
	Poorly graded Sand, light Brown (7.5yr 6/4) loose, moist, fine grained	SP							
5									SV-1-5 set at 1030
	Well graded sand, light brown - yellowish brown (10yr 5/4), moist, medium - fine grained	SW							
10									
	Well graded sand with gravel, light brown-yellowish brown (10yr 5/4), Angular fine gravel - gravel is light grey								
	trace gravel								
15	Thin lense of Sandy lean clay, moist, soft, Brown (7.5yr 4/2) TD = 15.5'	CL							SV-1-15 set at 1037
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-2
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/2018 Completed: 09/18/2018	__" Sch.___ ____ Blank Casing: from ft bgs to ft bgs
Logged By: J. Dow Checked By: JR Steele CAPG 5963	__" Sch.___ ____ Screen Casing: from ft bgs to ft bgs
Drilled By: Interphase	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment: Dual Core	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD: 15.5'	TOC Elevation: Soil Gasprobe ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, Poorly graded, dave brown (7.5Y 3/2) moist (Alluvium	SM					25%	0.0	
	Poorly graded sand, moist, light brown (7.5y 4/3) Fine grained	SP							
5	light yellowish brown (10YR 5/4), trace silt,						100%		SV-2-5 set at 12:12
	well graded sand, light brown, moist medium-fine grains, dense.	SW					30%		
10									
	Poorly graded sand with gravel, brown (10 YR 4/3),	SP							
15									SV-2-15 set at 1208
	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-3
Location: 1853 Camino Del Sol
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J.Dane	Checked By: J.R. Steele	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase	CDPH 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeves)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil Gas Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sands, Brown (10YR 4/3), loose, slightly moist	SM					100%	0.0	
	Moist								
	Poorly Graded Sand, Light Brown (7.5YR 6/4) loose, moist, fine grained	SP							
5	Well graded Sand, light brown - yellowish brown (10YR, 5/4), moist, medium - fine grained	SW							SV-3-5 set @ 1304
10	With light gray fine gravel								
	trace fine gravel								
15	Thin 2" lense of Sandy Lean clay, very moist, soft, Brown (7.5YR 4/2)	CL							SV-3-15 set at 1258
	TD= 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-4
Location: 1853 Camino Del Sol
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs	
Logged By: J. Dane	Checked By: J. R. Steele	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs	
Drilled By: Interphase CAPC 5963		Bentonite/Cement Grout: from ft bgs to ft bgs	
Drilling Equipment: Direct Push (Geoprobe 6600		Bentonite Transitional Seal: from ft bgs to ft bgs	
Sampling Equipment: Dual Core (Acetate Sleeves)		Sand Filter Pack: from ft bgs to ft bgs	
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil 655 ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown (7.5YR 5/3) slightly moist	SM					100	0.0	
	Moist, decreasing silt, trace clay								
	Poorly graded sand, light brown (7.5YR 6/3), loose, moist	SP							
5									SV-4-5 set @ 1337
	well Graded sand, light brown (7.5YR 6/3), medium dense, moist trace fine gravel	SW							
10									
	Increasing fine gravel content								
15									SV-4-15 set @ 1332
	TD=15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-5
Location: 1853 Camino Del Sol Oxnard CA
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J.D	Checked By: J.R Steele CA PG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil Gas Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand light brown, moist, (10YR, 4/3)	SM					75%	0.0	
	Poorly graded Sand, light brown, loose, fine grained, moist	SP							SV-5-5 set @ 1404
5	Sandy Silt, brown (10YR 4/3), very moist trace Clay	ML							
	Well Graded Sand, light brown, moist	SW							
10	slightly moist								
	trace fine gravel								
15	TD=15.5'								SV-5-15 set @ 1400
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T33186
Log of Boring No. SV-6
Location: 1853 Cummo Dirt Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/2018	Completed: 09/20/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: JD	Checked By: J.R. Steele	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase	CA PG 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5	TOC Elevation: Soil/Gas probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, slightly moist, brown (10yr 4/3)	SM					100%	0.0	
	moist								
	Poorly graded sand, light brown-yellowish brown (10yr 5/4)	SP							
5									SV-6-5 Spl at 1500
	well graded sand, light brown, moist, trace fine gravel	SW							
10									
15									SV-6-15 1258
	TD=15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T3P16
Log of Boring No. SV-7
Location:
Northing: Easting:

Date Started: 09/20/18	Completed: 09/20/18	__" Sch.___ ____ Blank Casing: from	ft bgs to ft bgs
Logged By: JP	Checked By: J.R. Steele CAPE 5963	__" Sch.___ ____ Screen Casing: from	ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout: from	ft bgs to ft bgs
Drilling Equipment: Direct Push Geoprobe 6600		Bentonite Transitional Seal: from	ft bgs to ft bgs
Sampling Equipment: Dual Core		Sand Filter Pack: from	ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ft above MSL	Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand slightly moist, brown no odor (10YR 4/3)	SM					100%	0.0	
	moist								
	poorly grade sand moist light brown (10YR 6/4) moist	SP							SV-7-5 set at 12:02
5									
	Light brown - reddish brown fine grained								
10									
	trace gravel								
	poorly graded sand with gravel								SV-7-15 Set at 11:58
15	trace silt								
	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SDA-T38186
Log of Boring No. SV-8
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/18	Completed: 09/20/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: JD	Checked By: J.R. Steele CA PG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ft above MSL	

Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
0	Silty Sand, brown, slightly moist, loose	SM							
	Moist								
5	Poorly graded sand, light brown - yellowish brown, moist, fine grained	SP							SV-8-5 Set @ 1136
10	trace fine gravel, trace silt								SV-8-15 Set @ 1133
15	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-9
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dow	Checked By: J.R. Steele	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase	CAPE 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil Gas Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	silty sand, brown, slightly moist	SM					50%	0.0	
	Moist								
	Increasing silt content								
	2" lense of sandy silt, wet, brown	ML							
	Poorly graded sand, light brow, loose, moist	SP							
5	well graded sand, light brown (7.5YR 6/3), moist	SW					75%		SV-9-5 Set @ 1609
	trace fine gravel								
10									
15	TD=15.5'								SV-9-15 Set @ 1605
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100 - SBA - T38186
Log of Boring No. SV-10
Location: 1353 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/2018	Completed: 09/18/2018	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J.P. Steele CAPG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil/Gas probe	ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, Slightly Moist, brown	SM					100%	0.0	
	Moist								
5	Poorly graded Sand, Light brown, moist fine grained.	SP							SV-10-5 Set @ 1340
10	Poorly Graded Gravel with Sand, loose, fine	GP							
	well Graded sand with trace fine gravel, Light brown, moist	SW							
	Poorly Graded sand, light brown, moist	SP							
15	TD = 15.5'								SV-10-15 Set @ 1537
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-11
Location: ~~SV-11~~ 1853 camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ ____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dowd	Checked By: J.P. Steele	__" Sch.___ ____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase	CA PG 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5	TOC Elevation: 30.16 ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown, slightly moist	SM					100%	0.0	
	moist								
	Increasing silt content								
5	poorly graded Sand, light brown moist	SP							SV-11-5 set at 1508
	thin layer of well graded gravel with ~~Sand~~ sand	GW							
10	poorly graded sand.	SP							
	well graded sand, trace fine gravel, light brown, moist	SW							
15	TD = 15.5'								SV-11-15 set at 1508
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-12
Location: 1853 Carnino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/18/18	Completed: 09/18/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dent	Checked By: J.P. Steele CAPE 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil Gas Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand, slightly moist, brown (7.5 YR, 4/2)	SM					75%	0.0	
	well graded sand, light brown, loose moist (7.5 YR, 6/3)	SW							
5									SV-12-5 set@1436
	trace fine gravel								
10									
	increasing grain size, fine-coarse grained sand								
15									SV-12-15 set@1434
	TD=15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-+38186
Log of Boring No. SV-13
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/18	Completed: 09/20/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J.R. Steele CA PG. 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual core (Acetate Sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ft above MSL	Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown, slightly moist, loose	SM					60%	0.0	
	moist								
	well graded sand, light brown, moist fine grained	~~SP~~ SW							
5	trace fine gravel						100%		SV-13-5 set @ 1333
	Dark brown - yellow brown (10YR 4/6)								
10	1" layer of silty sand with gravel, brown, moist,	SM					75%		
	well graded sand, light brown, slightly moist w/ trace fine gravel	SW							
15	TD = 15.5'								SV-13-15 set @ 1330
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-14
Location: 1853 Cuyama Rd SO
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/18	__" Sch.___ ____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dano	Checked By: J.R. Steele CA PG 5963	__" Sch.___ ____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interheavy		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual core (~~Geoprobe~~ Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil / Grs Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, loose, slightly moist, brown (7.5 YR, 4/3)	SM					100%	0.0	
	Moist								
	Poorly Graded sand, brown (7.5YR 5/3) Moist, ~~fine~~ grained.	SP							
5									SV-14-5 set @ 1522
10									
	trace fine gravel								
15									SV-14-15 set @ 1519
	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T3886
Log of Boring No. SV-15
Location: 1853 Camino Del Sol
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J.R. Steele CA PG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeves)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ' ft above MSL	Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown slightly moist moist	SM					75%	0.0	
	well graded sand, dense brown moist	SW							
5	Poorly graded sand, light brown, moist	SP					100%		SV-15-5 1459
	trace gravel								
10	poorly graded sand with some gravel						30%		
	Sandy silt olive grey 2", moist	SM							SV-15-15 SPT 1454
	well graded sand with some gravel olive (5Y 5/4)	SW							
15	TD=15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA - T38186
Log of Boring No. SV-16
Location: 1853 Camino Del Sol
Northing: Easting:

Date Started: 09/19/18 Completed: 09/19/18
Logged By: S Dann Checked By: J.R. Steele
Drilled By: InterPhase CA PC 5463
Drilling Equipment: Direct Push (Geoprobe 6600)
Sampling Equipment: Dual Core (Acetate Sleeves)
GS Elev.: ft above MSL TD:

__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Bentonite/Cement Grout: from ft bgs to ft bgs
Bentonite Transitional Seal: from ft bgs to ft bgs
Sand Filter Pack: from ft bgs to ft bgs
TOC Elevation: Soil Gas Probe ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	silty Sand, brown, slightly moist 7.5YR 4/4	SM					100%	0.2	
	moist								
	Poorly graded Sand, Yellowish-brown - light brown (10YR 5/8), moist fine grain, trace silt	SP							SV-16-5 Spl @ ~~1443~~ 1451
5									
	increasing grain size ~~Sandy gravel~~ Some fine gravel								
	well graded Sand with trace gravel fine to coarse, light brown, moist ~~light brown~~	SW							
10									
									SV-16-15 Spl @ 1446
15	TD=15.5								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-17
Location: 1853 Camino Del Sol, Oakland CA
Northing: Easting:

Date Started: 09/19/2018	Completed: 09/19/2018	__" Sch.___ ____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J-R. Steele CA PG 5963	__" Sch.___ ____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Lour		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: ft above MSL	Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand slightly moist brown (7.5 YR 5/4)	SM					25%	0.0	
	moist								
5	poorly graded sand, brown 7.5 YR (5/4)	SP					75%		SV-17-5 set @ 1342
	~~Yellowish~~ brown sandy silt with trace clay (10YR 4/3) 2-3"	ML							
	Poorly graded Sand, moist, Yellowish-brown 1.5' (10YR 5/6)	SP							
	Poorly graded sand, brown (10YR 5/3)								
10	moist								
15	some gravel								SV-17-15 set @ 1340
	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

B-47

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Project: 100-SBA-T38186
Log of Boring No. SV-18
Location: 1853 Camino Del Sol, Oakland CA
Northing: Easting:

Date Started: 09/19/18 Completed: 09/19/18	
Logged By: J. Dana Checked By: J.R. Steele CA PG 5963	
Drilled By: Interphase	
Drilling Equipment: Direct Push (Geoprobe 6600)	
Sampling Equipment: Dual core (Acetate Sleeve)	
GS Elev.: ft above MSL TD: 15.5'	TOC Elevation: ft above MSL Soil Gas Probe

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand (Slightly moist) brown (7.5 YR 4/2) moist increasing silt content	SM					100%	0.0	
	Sandy Silt, brown (7.5 YR 4/3), Most trace clay	ML							
5	Poorly graded Sand light brown - brown (10 YR 4/3) fine grained, moist	SP							SV-18-05 Spl at 10:18
10	trace coarse gravel								
15	TD = 15.5'								SV-18-15 Spl at 10:15
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T3186
Log of Boring No. SV-19
Location: ~~SV-19~~ 1853 Camino Del Sol, Oxnard
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/18
Logged By: J. Dane	Checked By: J.P. Steele
Drilled By: Interphase	CAPE 5963
Drilling Equipment: Direct Push (Geoprobe 6600)	
Sampling Equipment: Dual core (Acetate sleeve)	
GS Elev.: ft above MSL	TD: 15.5

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: ~~Soil Gas Probe~~ ft above MSL			

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, dark brown (7.5 YR 3/3) slightly moist (Alluvium)	SM					100%	0.0	
	Moist								
	Poorly graded sand, Yellowish brown (10YR 5/6), Moist, fine grain	SP							SV-19-5 set at 0947
5	well graded sand, moist, light brown (7.5YR 5/4), trace gravel	SW							
	thin base of gravel, 1', fine-coarse	GP							
	poorly graded								
10	Poorly graded Sand light brown (7.5YR 5/3) fine grained, moist	SP							
	trace fine gravel								
	well graded Sand, brown-light brown (7.5YR 6/3) fine-coarse grains, slightly moist	SW							SV-19-15 set at 0945
15	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-20
Location: 1853 Cantano Del Sol, Oakland CA
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/18
Logged By: J. Davis	Checked By: J.R Steele CA PG 5963
Drilled By: Interphase	
Drilling Equipment: Direct Push (Geoprobe 6600)	
Sampling Equipment: Dual Core Acetate Sleeve	
GS Elev.: ft above MSL	TD: 15.5'

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: ft above MSL			

Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, Dark Brown (7.5Yr 3/2) Moist	SM					30%	0.0	
	Increasing silt content								
	Poorly graded sand, brown (7.5Yr 5/3) moist fine grained	SP							
5	light brown - orange brown						75%		SV-20-5 set @ 0919
	trace fine gravel								
10	Well graded sand, brown (10Yr 4/3) with trace gravel, moist, fine to medium grain	SW							
15	TD = 15.5'								SV-20-15 set at 0916
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SDA - T38186
Log of Boring No. SV-21
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/19/2018	Completed: 09/19/2018	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J. R. Steele CA PG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5'	TOC Elevation: Soil Gas Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Sandy Silt, dark brown, (7.5YR 3/4) moist	ML					30%	0.0	
5	Poorly graded sand, brown (10YR 5/4), moist, fine grained	SP							SV-21-5 set @ 0829
	~1-2" lense of silty sand, dark-yellowish brown (10YR 4/4.5)								
	Well Graded Sand, light brown, moist fine-medium grained	SW					100%		
	Increasing grain s'z and moisture								
10	Poorly graded sand, light brown, moist	SP							
	well graded sand with gravel, light brown (7.5YR 6/4)	SW							
15	TD = 15.5'								SV-21-15 set @ 0826
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100 - SBA - T38186
Log of Boring No. SV-22
Location: 1853 Camino Del Sol Oxnard CA
Northing: Easting:

Date Started: 09/18/2018	Completed: 09/19/2018
Logged By: J. Dance	Checked By: J.R. Steele
Drilled By: Interphase	CAPE 5963
Drilling Equipment: Direct Push (Geoprobe 6600)	
Sampling Equipment: Dual core (Acetate sleeve	
GS Elev.: ft above MSL	TD: 15.5'

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: 30.11 ft above MSL/Tube			

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand, dark brown (10YR 3/3) slightly moist	SM					100%	0.0	
	moist, increasing silt content								
	sandy silt, soft, moist, brown (10YR 3/3)	ML							SV-22-5 set at 10ft
5	Poorly graded sand, light brown (7.5 YR 5/2), fine grained moist	SP							
	increasing grain size								
10	well graded sand with trace fine gravel, moist, Yellowish brown (10YR 5/6)	SW							
	silt with sand, grey-dark brown (5Y 5/1), wet	ML							SV-22-15 set at 16ft
15	well graded sand brown moist	SW							
	TD = 15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-23
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/19/2018	Completed: 09/19/2018
Logged By: J.Dane	Checked By: J.R. Steele CA PG 5963
Drilled By: Interphase	
Drilling Equipment: Direct Push (Geoprobe 6600)	
Sampling Equipment: Dual Core (Acetate Sleeve	
GS Elev.: ft above MSL	TD: 15.5'

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: Soil Gas Probe ft above MSL			

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand slightly moist, brown (7.5YR 3/3) - - -

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Project: 100-SBA-T38180
Log of Boring No. SV-24
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/18	__" Sch.___ ____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dawe	Checked By: J.R. Steele	__" Sch.___ ____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase	CAPE 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core Acetate Sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 15.5	TOC Elevation: Soil Probe ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	silty sand, slightly moist, brown (10YR 4/4), Loose	SM					100%	0.0	
	moist								
	trace fine gravel, increasing silt								
	trace clay								
	poorly graded sand, yellowish brown (10 YR 5/4), moist, loose, fine grains	SP							SV-24-5 Set @ 1247
5									
	trace gravel, trace clay								
	well graded sand, brown, fine-medium grain, moist (10YR 5/4)	SW							
10									
	trace gravel								
									SV-24-15 Set @ 1245
15	TD=15.5'								
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project: 100-SBA-T38186
Log of Boring No. SV-25
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/19/18	Completed: 09/19/
Logged By: JDann	Checked By: J.R. Steele CA PG 5963
Drilled By: Interphase	
Drilling Equipment: Direct push (Geoprobe 6600)	
Sampling Equipment: Dual core (Acetate sleeve)	
GS Elev.: ft above MSL	TD: 15.5'

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: ft above MSL			

Soil 645 Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand brown slightly moist						75%	0.0	
	moist.								
5	Poorly graded sand, yellowish brown (10 YR 5/4) moist, fine grained						100%		SV-25-5 Set at 1314
	well graded sand with trace gravel slightly moist, brown (10 YR 4/3)								
10									
	some fine - coarse gravel ~~3/4~~ JD								
15	TD = 15.5.								SV-25-15 Set at 1314
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-26
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/2018	Completed: 09/20/2018	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Dane	Checked By: J.R. Steele CAPG 5963	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 25'	TOC Elevation: ft above MSL	

Soil Gas Probe

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	~~Well~~ Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown, slightly moist	SM					100%	0.0	
	Moist.								
5	Poorly graded sand, light brown, moist.	SP							
	trace fine gravel								
10	with fine-course light brown gravel								
15	trace fine gravel								SV-26-15 collected @ 1400
	well graded sand, light brown, moist.	SW							
20									

21 ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. SV-26
Location:
Northing: Easting:

Date Started: Completed:	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: Checked By:	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By:	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment:	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment:	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD:	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	well graded sand with gravel, light brown, moist	SW					100%	0.0	SV-26-20 collected @ 1405
	GW @ 21' bgs wet								
	Sandy silt, light brown - light greyish brown wet	SM							
	well graded sand, brown, wet	SW							
25	TD = 25								SVGW-26-10 collected @ 1424
~~10~~									
~~15~~									
20									

21 ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
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Project: 100-SBA-138186
Log of Boring No. SV-27
Location:
Northing: Easting:

Date Started: 09/20/18	Completed: 09/20/18	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: J. Daw	Checked By: J.R. Steele	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: Enterphase	CA Pb 5963	Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 25'	TOC Elevation: 5.1 ft above MSL	Datum

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand brown, slightly moist	SM					25%	0.0	
	100SV								
5	Poorly graded Sand light brown moist, fine grained	SP					100%		
10	trace fine gravel								
	thin 4" layer of sandy silt, brown moist	ML							
15	poorly graded sand with gravel, light brown, moist	SP							SV-27-15 collected @ 1452
20									

21.5 ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. SV-27
Location:
Northing: Easting:

Date Started: Completed:	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: JD Checked By:	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By:	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment:	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment:	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD:	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
20ft	well graded sand moist light brown	SW			X		100%	0.0	SV-27-20 collected @ 1458
	GW at 21.5'								
	wet								
	trace fine - coarse gravel								
25	TD=25'								SVGW-27-10 collected @ 1510
10									
15									
20									

21.5 ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-28
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/18	Completed: 09/20/18		
Logged By: JDane	Checked By: J.R. Steele CA PG 5963		
Drilled By: Interphase			
Drilling Equipment: Direct Push (Geoprobe 6600)			
Sampling Equipment: Dual core (Acetate Sleeve)			
GS Elev.: ft above MSL	TD: 25'	TOC Elevation: Silicas Probe ft above MSL	

__" Sch.___ ____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ ____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty sand, loose, slightly moist	SM					30%	0.0	
	moist								
5	Poorly graded sand light brown moist	SP					100%		
	trace gravel								
10	well graded sand, light brown moist	SW							
	thin 1.5 inch layer of Silty sand	SM							
	well graded sand, moist light brown	SW							SV-28-15 collected @ 1605
15									
20	well graded sand with gravel								

21 ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Project:
Log of Boring No. SV-28
Location: ~
Northing: Easting:

Date Started: Completed:	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: Checked By:	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By:	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment:	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment:	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD: 25'	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
20	GW @ 21'				X		75%	0.0	SV-28-20 collected @ 1610
	well graded sand wet, light brown, fine - medium grained								
25	TD = 25'								SVGW28-10 collected @ 1620
10									
15									
20									

21 ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SDA-T38186
Log of Boring No. SV-29
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/2018	Completed: 09/20/2018
Logged By: J. Dane	Checked By: J.R. Steele
Drilled By: Interphase	CAPG5963
Drilling Equipment: Direct Push (GeoProbe 6600)	
Sampling Equipment: Dual Core (Acetate Sleeve	
GS Elev.: ft above MSL	TD: ~~15.5~~ 25

__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sand Filter Pack:	from	ft bgs to	ft bgs
TOC Elevation: ~~5.163~~ Probe	ft above MSL		

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand Moist, brown	SM					100%	0.0	
	well graded Sand light brown Moist, fine grained	SW							
5									
	trace gravel well graded sand with trace fine gravel								
10	~~Sand~~ with Gravel								
	4" lense silty sand, moist	SM							
	well graded Sand, light brown	SW							SV-29-15 collected @ 1654
15									
20									

21 ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Project:
Log of Boring No. SV-29
Location: ~~SV-29~~ 50
Northing: Easting:

Date Started: 09/20/2018 Completed: 09/20/2018	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: J. Davis Checked By:	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By: Eastchase	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment:	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment:	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD:	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
20	▼ GW at 21' ▲ well graded sand wet	SW			X		100%	0.0	SV-29-20 collected @ 1658
25									SVGW-~~29~~-10 ~~SV-29~~ collected @ 1716
10									
15									
20									

21 ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Project: 100-SBA-T38186
Log of Boring No. SV-30
Location: 1853 Camino Del Sol, Oxnard CA
Northing: Easting:

Date Started: 09/20/2018	Completed:	__" Sch.___ _____ Blank Casing:	from	ft bgs to	ft bgs
Logged By: J. Dane	Checked By: J.R. Steele CA PG 5963	__" Sch.___ _____ Screen Casing:	from	ft bgs to	ft bgs
Drilled By: Interphase		Bentonite/Cement Grout:	from	ft bgs to	ft bgs
Drilling Equipment: Direct Push (Geoprobe 6600)		Bentonite Transitional Seal:	from	ft bgs to	ft bgs
Sampling Equipment: Dual Core (Acetate Sleeve)		Sand Filter Pack:	from	ft bgs to	ft bgs
GS Elev.: 2 ft above MSL	TD: 25'	TOC Elevation: Soil Gas Probe ft above MSL			

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Silty Sand, brown, slightly moist, loose	SM					100%	0.0	
	moist								
5	Poorly Graded Sand, light brown-reddish brown, fine grained	SP							
10	trace fine gravel								
15	thin 2" lense of well graded gravel with sand	GW							SV-30-15 collected @ 0835
	thin 3" lense of lean clay with sand	CL							
	well graded sand, light brown moist fine grained.	SW							
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. SV-30
Location:
Northing: Easting:

Date Started: 09/20/18 Completed: 09/20/18	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: SO Checked By:	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By:	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment:	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment:	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD:	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
20	GW @ 21'	SW			X		100	0.0	SV-30-20 collected @ 0840
	well graded sand with fine gravel light brown, wet								
25	TD = 25'								SVGW-30-10 collected at 0900
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling.
ft bgs ▽ Groundwater depth after well development on:

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L SOIL GAS LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

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A & R Laboratories, Inc.

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LA City#	10261
ELAP#'s	2789
	2790
	2122

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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 09/27/2018 10:06:25
Laboratory Job No. (Certificate of Analysis No.)	1809-00132
Project Name / No.	1853 Camino Del Sol, Oxnard, CA
Dates Sampled (from/to)	09/19/18 To 09/19/18
Dates Received (from/to)	09/19/18 To 09/19/18
Dates Reported (from/to)	09/27/18 To 9/27/2018
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Inorganic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon condition that it is not to be reproduced, wholly or in part, for advertising or other purposes without approval from the laboratory.

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LA City#	10261
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	2790
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Laboratory Job# 1809-00132

Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL	Sample	Analyte	Result	Qual	Units	RL
SV-1-5	Nitrogen	**77.6**		%	0.50	SV-1-5	Oxygen	**18.7**		%	0.50
SV-1-15	Nitrogen	**79.5**		%	0.50	SV-1-15	Oxygen	**17.0**		%	0.50
SV-2-5	Nitrogen	**78.1**		%	0.50	SV-2-5	Oxygen	**18.3**		%	0.50
SV-2-15	Nitrogen	**78.9**		%	0.50	SV-2-15	Oxygen	**15.3**		%	0.50
SV-3-5	Nitrogen	**77.3**		%	0.50	SV-3-5	Oxygen	**18.0**		%	0.50
SV-3-15	Nitrogen	**78.2**		%	0.50	SV-3-15	Oxygen	**16.7**		%	0.50
SV-4-5	Nitrogen	**80.2**		%	0.50	SV-4-5	Oxygen	**18.9**		%	0.50
SV-4-15	Nitrogen	**79.2**		%	0.50	SV-4-15	Oxygen	**16.6**		%	0.50
SV-5-5	Nitrogen	**66.6**		%	0.50	SV-5-5	Oxygen	**16.7**		%	0.50
SV-5-15	Nitrogen	**77.9**		%	0.50	SV-5-15	Oxygen	**15.6**		%	0.50
SV-9-5	Nitrogen	**81.3**		%	0.50	SV-9-5	Oxygen	**19.2**		%	0.50
SV-9-15	Nitrogen	**79.9**		%	0.50	SV-9-15	Oxygen	**20.1**		%	0.50
SV-10-5	Nitrogen	**79.4**		%	0.50	SV-10-5	Oxygen	**17.3**		%	0.50
SV-10-15	Nitrogen	**74.3**		%	0.50	SV-10-15	Oxygen	**15.1**		%	0.50
SV-10-15 DUP	Nitrogen	**73.5**		%	0.50	SV-10-15 DUP	Oxygen	**16.9**		%	0.50
SV-11-5	Nitrogen	**80.2**		%	0.50	SV-11-5	Oxygen	**19.1**		%	0.50
SV-11-15	Nitrogen	**81.9**		%	0.50	SV-11-15	Oxygen	**18.7**		%	0.50
SV-12-5	Nitrogen	**82.9**		%	0.50	SV-12-5	Oxygen	**17.1**		%	0.50
SV-12-15	Nitrogen	**84.9**		%	0.50	SV-12-15	Oxygen	**16.4**		%	0.50
SV-18-5	Nitrogen	**82.9**		%	0.50	SV-18-5	Oxygen	**17.8**		%	0.50
SV-18-15	Nitrogen	**87.1**		%	0.50	SV-18-15	Oxygen	**11.9**		%	0.50
SV-19-5	Nitrogen	**81.1**		%	0.50	SV-19-5	Oxygen	**19.1**		%	0.50
SV-19-5 DUP	Nitrogen	**80.6**		%	0.50	SV-19-5 DUP	Oxygen	**20.1**		%	0.50
SV-19-15	Nitrogen	**72.7**		%	0.50	SV-19-15	Oxygen	**14.4**		%	0.50

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CERTIFICATE OF ANALYSIS

1809-00132

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 001 **SV-1-5**						Date & Time Sampled:		09/19/18	@	9:50
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	11:30	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:10	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	8:00	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	8:00	JEN
Nitrogen	**77.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	8:00	JEN
Oxygen	**18.7**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	8:00	JEN
Sample: 002 **SV-1-15**						Date & Time Sampled:		09/19/18	@	10:15
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	11:45	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:14	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	8:20	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	8:20	KZ
Nitrogen	**79.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	8:20	JEN
Oxygen	**17.0**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	8:20	JEN
Sample: 003 **SV-2-5**						Date & Time Sampled:		09/19/18	@	10:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	11:55	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:18	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	8:41	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	8:41	JEN
Nitrogen	**78.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	8:41	JEN
Oxygen	**18.3**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	8:41	JEN
Sample: 004 **SV-2-15**						Date & Time Sampled:		09/19/18	@	10:45
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

1809-00132

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 004 **SV-2-15**						Date & Time Sampled:		09/19/18	@	10:45
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	12:10	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:23	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	9:01	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	9:01	JEN
Nitrogen	**78.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	9:01	JEN
Oxygen	**15.3**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	9:01	JEN
Sample: 005 **SV-3-5**						Date & Time Sampled:		09/19/18	@	10:55
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	12:23	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:27	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	9:20	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	9:20	JEN
Nitrogen	**77.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	9:20	JEN
Oxygen	**18.0**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	9:20	JEN
Sample: 006 **SV-3-15**						Date & Time Sampled:		09/19/18	@	11:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	12:32	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:31	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	9:39	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	9:39	JEN
Nitrogen	**78.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	9:39	JEN
Oxygen	**16.7**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	9:39	JEN
Sample: 007 **SV-4-5**						Date & Time Sampled:		09/19/18	@	11:40
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

1809-00132

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 007 **SV-4-5**								Date & Time Sampled:	09/19/18 @	11:40
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	12:40	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:35	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	9:58	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	9:58	JEN
Nitrogen	**80.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	9:58	JEN
Oxygen	**18.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	9:58	JEN
Sample: 008 **SV-4-15**								Date & Time Sampled:	09/19/18 @	12:05
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	12:50	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:39	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	10:15	JEN
Carbon Monoxide	<0.2720	S	%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	10:15	JEN
Nitrogen	**79.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	10:15	JEN
Oxygen	**16.6**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	10:15	JEN
Sample: 009 **SV-5-5**								Date & Time Sampled:	09/19/18 @	12:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	1:02	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:42	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	10:34	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	10:34	JEN
Nitrogen	**66.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	10:34	JEN
Oxygen	**16.7**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	10:34	JEN
Sample: 010 **SV-5-15**								Date & Time Sampled:	09/19/18 @	12:45
Sample Matrix: **Soil Vapor**										

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Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 010 **SV-5-15**						Date & Time Sampled:		09/19/18	@	12:45
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	1:13	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:46	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	10:52	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	10:52	JEN
Nitrogen	**77.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	10:52	JEN
Oxygen	**15.6**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	10:52	JEN
Sample: 011 **SV-9-5**						Date & Time Sampled:		09/19/18	@	12:55
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	1:23	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:50	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	11:12	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	11:12	JEN
Nitrogen	**81.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	11:12	JEN
Oxygen	**19.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	11:12	JEN
Sample: 012 **SV-9-15**						Date & Time Sampled:		09/19/18	@	13:10
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	1:40	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	2:55	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	11:30	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	11:30	JEN
Nitrogen	**79.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	11:30	JEN
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	11:30	JEN
Sample: 013 **SV-10-5**						Date & Time Sampled:		09/19/18	@	13:20
Sample Matrix: **Soil Vapor**										

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Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 013 **SV-10-5**						Date & Time Sampled:		09/19/18	@	13:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	1:52	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:01	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	11:48	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	11:48	JEN
Nitrogen	**79.4**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	11:48	JEN
Oxygen	**17.3**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	11:48	JEN
Sample: 014 **SV-10-15**						Date & Time Sampled:		09/19/18	@	13:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	2:00	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:04	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	12:08	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	12:08	JEN
Nitrogen	**74.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	12:08	JEN
Oxygen	**15.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	12:08	JEN
Sample: 015 **SV-10-15 DUP**						Date & Time Sampled:		09/19/18	@	13:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	2:20	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:09	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	12:25	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	12:25	JEN
Nitrogen	**73.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	12:25	JEN
Oxygen	**16.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	12:25	JEN
Sample: 016 **SV-11-5**						Date & Time Sampled:		09/19/18	@	14:10
Sample Matrix: **Soil Vapor**										

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Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 016 **SV-11-5**						Date & Time Sampled:		09/19/18	@	14:10
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	2:40	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:14	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	12:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	12:43	JEN
Nitrogen	**80.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	12:43	JEN
Oxygen	**19.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	12:43	JEN
Sample: 017 **SV-11-15**						Date & Time Sampled:		09/19/18	@	14:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	3:00	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:18	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	1:01	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	1:01	JEN
Nitrogen	**81.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	1:01	JEN
Oxygen	**18.7**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	1:01	JEN
Sample: 018 **SV-12-5**						Date & Time Sampled:		09/19/18	@	14:50
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	3:19	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:22	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	1:20	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	1:20	JEN
Nitrogen	**82.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	1:20	JEN
Oxygen	**17.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	1:20	JEN
Sample: 019 **SV-12-15**						Date & Time Sampled:		09/19/18	@	15:10
Sample Matrix: **Soil Vapor**										

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Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 019 **SV-12-15**						Date & Time Sampled:		09/19/18	@	15:10
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	3:45	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	3:26	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	1:38	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	1:38	JEN
Nitrogen	**84.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	1:38	JEN
Oxygen	**16.4**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	1:38	JEN
Sample: 020 **SV-18-5**						Date & Time Sampled:		09/19/18	@	15:35
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:06	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:32	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	1:57	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	1:57	JEN
Nitrogen	**82.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	1:57	JEN
Oxygen	**17.8**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	1:57	JEN
Sample: 021 **SV-18-15**						Date & Time Sampled:		09/19/18	@	15:55
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:20	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:36	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	2:18	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	2:18	JEN
Nitrogen	**87.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	2:18	JEN
Oxygen	**11.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	2:18	JEN
Sample: 022 **SV-19-5**						Date & Time Sampled:		09/19/18	@	16:16
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

1809-00132

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83512
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 022 **SV-19-5**						Date & Time Sampled:		09/19/18	@	16:16
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:30	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:40	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	2:27	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	2:27	JEN
Nitrogen	**81.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	2:27	JEN
Oxygen	**19.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	2:27	JEN
Sample: 023 **SV-19-5 DUP**						Date & Time Sampled:		09/19/18	@	16:16
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:40	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:45	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	2:48	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	2:48	JEN
Nitrogen	**80.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	2:48	JEN
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	2:48	JEN
Sample: 024 **SV-19-15**						Date & Time Sampled:		09/19/18	@	16:24
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:48	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:49	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	3:06	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	3:06	JEN
Nitrogen	**72.7**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	3:06	JEN
Oxygen	**14.4**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	3:06	JEN

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Respectfully Submitted: Ken Zheng

Ken Zheng - President

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

1809-00132

INTERPHASE
LOS ANGELES, CA 90040

Date Reported	**09/27/2018**
Date Received	**09/19/2018**
Date Sampled	**09/19/2018**
Invoice No.	**83512**
Customer #	**1567**
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Method # EPA 8015M

QC Reference # 76422 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	Control Ranges LCS %RPD
Methane	93	95	2	70 - 130	0 - 25

QC Reference # 76423 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 020 021 022 023 024

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	Control Ranges LCS %RPD
Methane	89	91	2	70 - 130	0 - 25

Method # HACH Model HS-C

QC Reference # 76480 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	Control Ranges LCS %RPD
Hydrogen Sulfide	95	92	3	70 - 130	0 - 25

QC Reference # 76483 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 021 022 023 024

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	Control Ranges LCS %RPD
Hydrogen Sulfide	88	90	2	70 - 130	0 - 25

Method blank results

Ref	Test Name	Result	Qualif	Units	MDL	Ref	Test Name	Result	Qualif	Units	MDL
76422	Methane	<10		ppmv	10						
76423	Methane	<10		ppmv	10						

Respectfully Submitted: Ken Zheng

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

1809-00132

INTERPHASE

Date Reported	**09/27/2018**
Date Received	**09/19/2018**
Date Sampled	**09/19/2018**

Project: 1853 Camino Del Sol, Oxnard, CA

ARL

A & R Laboratories
1650 S. Grove Ave., Ste C, Ontario, CA 91761
Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-132

Client Name: Interphase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 10200 Beachtree. Los Angeles, CA 90040
Report Attention: Rose W. | Phone #: 323-278-7700 | Fax: #
Sampled By: KZ
Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

☐ Chilled ☑ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☑ Normal Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	H_2S	CH_4	Fixed Gas				Remarks
-1	SV-1-5	9/19/18	9:50	Air		Tedlar Bag										X	X	X				3 PV
-2	SV-1-15		10:15															X				
-3	SV-2-5		10:30																			
-4	SV-2-15		10:45																			
-5	SV-3-5		10:55																			
-6	SV-3-15		11:20																			
-7	SV-4-5		11:40																			
-8	SV-4-15		12:05																			
-9	SV-5-5		12:20																			
-10	SV-5-15		12:45																			
-11	SV-9-5		12:55																			
-12	SV-9-15		13:10																			
-13	SV-10-5		13:20																			
-14	SV-10-15		13:30																			
-15	SV-10-15 DUP		13:30																			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Aaron Rose	Tetra Tech	9/19/18	17:00				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
					A&R	9/19/18	17:00

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

ARL

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E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-132

Client Name: Inter Phase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 0200 Peachtree. Los Angeles, CA 90040
Report Attention: Rose W. | Phone # 323 278 7700 | Fax: # | Sampled By: KZ
Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

☐ Chilled ☑ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☑ Normal

Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	1/2S	CO/4	Fixed Gas				Remarks
-16	SV-11-5	9/19/18	14:10	Air		Tedlar Bag										X	X	X				3PV
-17	SV-11-15		14:30																			
-18	SV-12-5		14:50																			
-19	SV-12-15		15:10																			
-20	SV-18-5		15:35																			
-21	SV-18-15		15:55																			
-22	SV-19-5		16:16																			
-23	SV-19-5 DUP		16:16																			
-24	SV-19-15		16:24																			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Tetra Tech	9/19/18	17:00				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	ARL	9/19/18	17:00

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 09/27/2018 10:06:32
Laboratory Job No. (Certificate of Analysis No.)	1809-00133
Project Name / No.	1853 Camino Del Sol, Oxnard, CA
Dates Sampled (from/to)	09/19/18 To 09/20/18
Dates Received (from/to)	09/19/18 To 09/19/18
Dates Reported (from/to)	09/27/18 To 9/27/2018
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Inorganic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

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Laboratory Job# 1809-00133

Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL	Sample	Analyte	Result	Qual	Units	RL
SV-20-5	Nitrogen	**81.2**		%	0.50	SV-20-5	Oxygen	**20.9**		%	0.50
SV-20-15	Nitrogen	**81.0**		%	0.50	SV-20-15	Oxygen	**19.0**		%	0.50
SV-21-5	Nitrogen	**81.5**		%	0.50	SV-21-5	Oxygen	**18.5**		%	0.50
SV-21-15	Nitrogen	**83.2**		%	0.50	SV-21-15	Oxygen	**16.1**		%	0.50
SV-22-5	Nitrogen	**81.2**		%	0.50	SV-22-5	Oxygen	**15.8**		%	0.50
SV-22-15	Nitrogen	**68.6**		%	0.50	SV-22-15	Oxygen	**14.6**		%	0.50
SV-23-5	Nitrogen	**75.5**		%	0.50	SV-23-5	Oxygen	**15.8**		%	0.50
SV-23-15	Nitrogen	**83.1**		%	0.50	SV-23-15	Oxygen	**15.6**		%	0.50
SV-24-5	Nitrogen	**81.6**		%	0.50	SV-24-5	Oxygen	**18.9**		%	0.50
SV-24-15	Nitrogen	**82.6**		%	0.50	SV-24-15	Oxygen	**18.0**		%	0.50
SV-25-5	Nitrogen	**82.7**		%	0.50	SV-25-5	Oxygen	**17.8**		%	0.50
SV-25-15	Nitrogen	**83.1**		%	0.50	SV-25-15	Oxygen	**16.4**		%	0.50
SV-25-15 DUP	Nitrogen	**83.9**		%	0.50	SV-25-15 DUP	Oxygen	**17.0**		%	0.50
SV-14-5	Nitrogen	**78.9**		%	0.50	SV-14-5	Oxygen	**21.2**		%	0.50
SV-14-15	Nitrogen	**90.6**		%	0.50	SV-14-15	Oxygen	**10.3**		%	0.50
SV-15-5	Nitrogen	**80.8**		%	0.50	SV-15-5	Oxygen	**19.5**		%	0.50
SV-15-15	Nitrogen	**80.3**		%	0.50	SV-15-15	Oxygen	**21.2**		%	0.50
SV-16-5	Nitrogen	**80.3**		%	0.50	SV-16-5	Oxygen	**20.8**		%	0.50
SV-16-15	Nitrogen	**80.2**		%	0.50	SV-16-15	Oxygen	**20.1**		%	0.50
SV-17-5	Nitrogen	**80.6**		%	0.50	SV-17-5	Oxygen	**22.4**		%	0.50
SV-17-15	Nitrogen	**81.5**		%	0.50	SV-17-15	Oxygen	**18.5**		%	0.50
SV-17-15 DUP	Nitrogen	**80.5**		%	0.50	SV-17-15 DUP	Oxygen	**19.3**		%	0.50

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CERTIFICATE OF ANALYSIS

1809-00133

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 001 **SV-20-5**						Date & Time Sampled:		09/19/18	@	16:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	4:57	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	6:55	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	3:25	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	3:25	JEN
Nitrogen	**81.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	3:25	JEN
Oxygen	**20.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	3:25	JEN
Sample: 002 **SV-20-15**						Date & Time Sampled:		09/19/18	@	16:50
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	5:10	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:01	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	3:44	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	3:44	JEN
Nitrogen	**81.0**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	3:44	JEN
Oxygen	**19.0**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	3:44	JEN
Sample: 003 **SV-21-5**						Date & Time Sampled:		09/19/18	@	17:05
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	5:30	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:06	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	4:05	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	4:05	JEN
Nitrogen	**81.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	4:05	JEN
Oxygen	**18.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	4:05	JEN
Sample: 004 **SV-21-15**						Date & Time Sampled:		09/19/18	@	17:20
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

1809-00133

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 004 **SV-21-15**						Date & Time Sampled:		09/19/18	@	17:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	5:41	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:11	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	4:24	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	4:24	JEN
Nitrogen	**83.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	4:24	JEN
Oxygen	**16.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	4:24	JEN
Sample: 005 **SV-22-5**						Date & Time Sampled:		09/19/18	@	17:47
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	6:08	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:16	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	4:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	4:43	JEN
Nitrogen	**81.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	4:43	JEN
Oxygen	**15.8**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	4:43	JEN
Sample: 006 **SV-22-15**						Date & Time Sampled:		09/19/18	@	17:55
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	6:20	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:22	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	5:04	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	5:04	JEN
Nitrogen	**68.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	5:04	JEN
Oxygen	**14.6**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	5:04	JEN
Sample: 007 **SV-23-5**						Date & Time Sampled:		09/19/18	@	18:10
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

1809-00133

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 007 **SV-23-5**						Date & Time Sampled:		09/19/18	@	18:10
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	6:32	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:25	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	5:23	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	5:23	JEN
Nitrogen	**75.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	5:23	JEN
Oxygen	**15.8**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	5:23	JEN
Sample: 008 **SV-23-15**						Date & Time Sampled:		09/19/18	@	18:18
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	6:50	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:32	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	5:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	5:43	JEN
Nitrogen	**83.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	5:43	JEN
Oxygen	**15.6**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	5:43	JEN
Sample: 009 **SV-24-5**						Date & Time Sampled:		09/19/18	@	18:29
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	7:10	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:40	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	5:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	5:43	JEN
Nitrogen	**81.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	5:43	JEN
Oxygen	**18.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	5:43	JEN
Sample: 010 **SV-24-15**						Date & Time Sampled:		09/19/18	@	18:38
Sample Matrix: **Soil Vapor**										

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CERTIFICATE OF ANALYSIS

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INTERPHASE
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Date Reported	09/27/18
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Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 010 **SV-24-15**						Date & Time Sampled:		09/19/18	@	18:38
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	7:21	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:44	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	6:05	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	6:05	JEN
Nitrogen	**82.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	6:05	JEN
Oxygen	**18.0**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	6:05	JEN
Sample: 011 **SV-25-5**						Date & Time Sampled:		09/19/18	@	18:46
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	7:30	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:51	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	6:24	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	6:24	JEN
Nitrogen	**82.7**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	6:24	JEN
Oxygen	**17.8**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	6:24	JEN
Sample: 012 **SV-25-15**						Date & Time Sampled:		09/19/18	@	18:59
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	7:41	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	7:55	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	6:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	6:43	JEN
Nitrogen	**83.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	6:43	JEN
Oxygen	**16.4**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	6:43	JEN
Sample: 013 **SV-25-15 DUP**						Date & Time Sampled:		09/19/18	@	18:59
Sample Matrix: **Soil Vapor**										

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LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 013 **SV-25-15 DUP**						Date & Time Sampled:		09/19/18	@	18:59
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/19/18	7:52	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/19/18	8:01	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/20/18	6:43	JEN
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/20/18	6:43	JEN
Nitrogen	**83.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/20/18	6:43	JEN
Oxygen	**17.0**		%	ASTM D-1946	1.0	0.3700	0.50	09/20/18	6:43	JEN
Sample: 014 **SV-14-5**						Date & Time Sampled:		09/20/18	@	7:40
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	9:15	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:16	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	8:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	8:05	KZ
Nitrogen	**78.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	8:05	KZ
Oxygen	**21.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	8:05	KZ
Sample: 015 **SV-14-15**						Date & Time Sampled:		09/20/18	@	7:50
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	9:24	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:21	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	8:24	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	8:24	KZ
Nitrogen	**90.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	8:24	KZ
Oxygen	**10.3**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	8:24	KZ
Sample: 016 **SV-15-5**						Date & Time Sampled:		09/20/18	@	8:05
Sample Matrix: **Soil Vapor**										

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INTERPHASE
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Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 016 **SV-15-5**						Date & Time Sampled:		09/20/18	@	8:05
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	9:33	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:25	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	8:44	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	8:44	KZ
Nitrogen	**80.8**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	8:44	KZ
Oxygen	**19.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	8:44	KZ
Sample: 017 **SV-15-15**						Date & Time Sampled:		09/20/18	@	8:15
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	9:42	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:30	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	9:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	9:05	KZ
Nitrogen	**80.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	9:05	KZ
Oxygen	**21.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	9:05	KZ
Sample: 018 **SV-16-5**						Date & Time Sampled:		09/20/18	@	8:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	9:53	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:35	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	9:24	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	9:24	KZ
Nitrogen	**80.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	9:24	KZ
Oxygen	**20.8**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	9:24	KZ
Sample: 019 **SV-16-15**						Date & Time Sampled:		09/20/18	@	8:40
Sample Matrix: **Soil Vapor**										

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Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 019 **SV-16-15**						Date & Time Sampled:		09/20/18	@	8:40
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	10:01	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:40	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	9:45	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	9:45	KZ
Nitrogen	**80.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	9:45	KZ
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	9:45	KZ
Sample: 020 **SV-17-5**						Date & Time Sampled:		09/20/18	@	8:55
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	10:09	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:45	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	10:06	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	10:06	KZ
Nitrogen	**80.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	10:06	KZ
Oxygen	**22.4**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	10:06	KZ
Sample: 021 **SV-17-15**						Date & Time Sampled:		09/19/18	@	9:07
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	10:19	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:51	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	10:25	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	10:25	KZ
Nitrogen	**81.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	10:25	KZ
Oxygen	**18.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	10:25	KZ
Sample: 022 **SV-17-15 DUP**						Date & Time Sampled:		09/19/18	@	9:07
Sample Matrix: **Soil Vapor**										

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FDA#	2030513
LA City#	10261
ELAP#'s	2789
	2790
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CERTIFICATE OF ANALYSIS

1809-00133

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/19/18
Invoice No.	83513
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 022 **SV-17-15 DUP** Date & Time Sampled: 09/19/18 @ 9:07
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	10:28	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	10:02	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	10:46	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	10:46	KZ
Nitrogen	**80.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	10:46	KZ
Oxygen	**19.3**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	10:46	KZ

Respectfully Submitted: Ken Zheng

Ken Zheng - President

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

1809-00133

INTERPHASE
LOS ANGELES, CA 90040

Date Reported	**09/27/2018**
Date Received	**09/19/2018**
Date Sampled	**09/19/2018**
Invoice No.	**83513**
Customer #	**1567**
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Method # EPA 8015M

QC Reference # 76423 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 001 002 003 004 005 006 007 008 009 010 011 012

Results

	LCS %REC	LCS %DUP	LCS %RPD
Methane	89	91	2

Control Ranges

LCS %REC	LCS %RPD
70 - 130	0 - 25

QC Reference # 76425 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 013

Results

	LCS %REC	LCS %DUP	LCS %RPD
Methane	89	91	2

Control Ranges

LCS %REC	LCS %RPD
70 - 130	0 - 25

QC Reference # 76426 **Date Analyzed:** 9/20/2018 **Technician:** KZ

Samples 014 015 016 017 018 019 020 021 022

Results

	LCS %REC	LCS %DUP	LCS %RPD
Methane	92	96	4

Control Ranges

LCS %REC	LCS %RPD
70 - 130	0 - 25

Method # HACH Model HS-C

QC Reference # 76483 **Date Analyzed:** 9/19/2018 **Technician:** KZ

Samples 001 002 003 004 005 006 007 008 009 010 011 012 013

Results

	LCS %REC	LCS %DUP	LCS %RPD
Hydrogen Sulfide	88	90	2

Control Ranges

LCS %REC	LCS %RPD
70 - 130	0 - 25

QC Reference # 76484 **Date Analyzed:** 9/20/2018 **Technician:** KZ

Samples 014 015 016 017 018 019 020 021 022

Results

	LCS %REC	LCS %DUP	LCS %RPD
Hydrogen Sulfide	89	85	5

Control Ranges

LCS %REC	LCS %RPD
70 - 130	0 - 25

Method blank results

Ref	Test Name	Result	Qualif	Units	MDL
76423	Methane	<10		ppmv	10
76425	Methane	<10		ppmv	10
76426	Methane	<10		ppmv	10

Ref	Test Name	Result	Qualif	Units	MDL

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QUALITY CONTROL DATA REPORT

1809-00133

INTERPHASE

Date Reported	**09/27/2018**
Date Received	**09/19/2018**
Date Sampled	**09/19/2018**

Project: 1853 Camino Del Sol, Oxnard, CA

Respectfully Submitted: Ken Zheng

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

ARL

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Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-133

Client Name: Interphase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 10200 Peachtree. Los Angeles CA 90040
Report Attention: Rose W. | Phone # 323-278-7700 | Fax: #
Sampled By: KZ
Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

☐ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☐ Normal — Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	H2S	CH4	Fixed Gas				Remarks
-1	SV-20-5	9/19/18	16:30	Air		Tedlar Bag										X	X	X				3PV
-2	SV-20-15		16:50																			
-3	SV-21-5		17:05																			
-4	SV-21-15		17:20																			
-5	SV-22-5		17:47																			
-6	SV-22-15		17:55																			
-7	SV-23-5		18:10																			
-8	SV-23-15		18:18																			
-9	SV-24-5		18:29																			
-10	SV-24-15		18:38																			
-11	SV-25-5		18:46																			
-12	SV-25-15		18:59																			
-13	SV-25-15 Dup		18:59																			
-14	SV-14-5	9/20/18	7:40																			
-15	SV-14-15		7:50																			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Tetratech	9/20/18	10:00				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	[signature] ARL	9/20/18	10:00

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

ARL

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1650 S. Grove Ave., Ste C, Ontario, CA 91761
Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-133

Client Name: Interphase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 6200 Peachtree. Los Angeles, CA 90040
Report Attention: Rose W. | Phone # 323-278-7700 | Fax: #
Sampled By: KZ

☐ Chilled ☒ Intact ☐ Seal

Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☐ Normal Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	H2S	CH4	Fixed Gas				Remarks
-16	SV-15-5	9/20/18	8:05	Air		Tedlar Bag										X	X	X				3PV
-17	SV-15-15		8:15																			
-18	SV-16-5		8:30																			
-19	SV-16-15		8:40																			
-20	SV-17-5		8:55																			
-21	SV-17-15		9:07																			
-22	SV-17-15 DUP		9:07																			
~~-23~~																						

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	TetraTech	9/20/18	10:00	[signature]			
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	A&R	9/20/18	10:00

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng, President 09/27/2018 11:30:27
Laboratory Job No. (Certificate of Analysis No.)	1809-00134
Project Name / No.	1853 Camino Del Sol, Oxnard, CA
Dates Sampled (from/to)	09/20/18 To 09/20/18
Dates Received (from/to)	09/20/18 To 09/20/18
Dates Reported (from/to)	09/27/18 To 9/27/2018
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Inorganic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

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Laboratory Job# 1809-00134

Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL	Sample	Analyte	Result	Qual	Units	RL
SV-30-5	Naphthalene	***0.020***	J	µg/L	0.025	SV-30-5	Nitrogen	**78.1**		%	0.50
SV-30-5	Oxygen	**17.2**		%	0.50	SV-30-5	Toluene	***0.030***	J	µg/L	0.050
SV-30-15	Nitrogen	**77.2**		%	0.50	SV-30-15	Oxygen	**18.9**		%	0.50
SV-30-15	Toluene	***0.030***	J	µg/L	0.050	SV-29-5	Nitrogen	**76.8**		%	0.50
SV-29-5	Oxygen	**20.1**		%	0.50	SV-29-5	Toluene	***0.030***	J	µg/L	0.050
SV-29-15	Nitrogen	**78.1**		%	0.50	SV-29-15	Oxygen	**19.2**		%	0.50
SV-29-15	Toluene	***0.030***	J	µg/L	0.050	SV-28-5	Nitrogen	**79.2**		%	0.50
SV-28-5	Oxygen	**20.2**		%	0.50	SV-28-5	Toluene	***0.030***	J	µg/L	0.050
SV-28-15	Naphthalene	***0.020***	J	µg/L	0.025	SV-28-15	Nitrogen	**76.5**		%	0.50
SV-28-15	Oxygen	**19.5**		%	0.50	SV-28-15	Toluene	***0.040***	J	µg/L	0.050
SV-27-5	Nitrogen	**79.2**		%	0.50	SV-27-5	Oxygen	**19.9**		%	0.50
SV-27-5	Toluene	**0.050**		µg/L	0.050	SV-27-15	Naphthalene	***0.020***	J	µg/L	0.025
SV-27-15	Nitrogen	**78.5**		%	0.50	SV-27-15	Oxygen	**20.1**		%	0.50
SV-27-15	Toluene	***0.030***	J	µg/L	0.050	SV-26-5	Nitrogen	**76.3**		%	0.50
SV-26-5	Oxygen	**17.5**		%	0.50	SV-26-5	Toluene	**0.070**		µg/L	0.050
SV-26-15	Nitrogen	**79.1**		%	0.50	SV-26-15	Oxygen	**20.2**		%	0.50
SV-26-15	Toluene	***0.030***	J	µg/L	0.050	SV-26-15 DUP	Nitrogen	**79.8**		%	0.50
SV-26-15 DUP	Oxygen	**19.5**		%	0.50	SV-26-15 DUP	Toluene	***0.030***	J	µg/L	0.050
SV-6-5	Nitrogen	**77.6**		%	0.50	SV-6-5	Oxygen	**19.7**		%	0.50
SV-6-15	Nitrogen	**78.2**		%	0.50	SV-6-15	Oxygen	**19.2**		%	0.50
SV-7-5	Nitrogen	**76.2**		%	0.50	SV-7-5	Oxygen	**19.5**		%	0.50
SV-7-15	Nitrogen	**78.6**		%	0.50	SV-7-15	Oxygen	**18.1**		%	0.50
SV-8-5	Nitrogen	**79.5**		%	0.50	SV-8-5	Oxygen	**19.6**		%	0.50
SV-8-15	Nitrogen	**79.1**		%	0.50	SV-8-15	Oxygen	**20.1**		%	0.50
SV-13-5	Nitrogen	**76.4**		%	0.50	SV-13-5	Oxygen	**19.9**		%	0.50
SV-13-15	Nitrogen	**78.9**		%	0.50	SV-13-15	Oxygen	**18.1**		%	0.50
SV-13-15 DUP	Nitrogen	**76.8**		%	0.50	SV-13-15 DUP	Oxygen	**20.1**		%	0.50

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 001 **SV-30-5** Date & Time Sampled: 09/20/18 @ 11:20
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	11:35	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	11:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	11:05	KZ
Nitrogen	**78.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	11:05	KZ
Oxygen	**17.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	11:05	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	11:35	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	11:35	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	11:35	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 001 **SV-30-5** Date & Time Sampled: 09/20/18 @ 11:20
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	11:35	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	11:35	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Naphthalene	***0.020***	J	µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	11:35	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 001 **SV-30-5** Date & Time Sampled: 09/20/18 @ 11:20
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	11:35	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	11:35	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	11:35	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	11:35	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	11:35	KZ
[VOC Surrogates]										
Dibromofluoromethane	103		%REC	EPA 8260B			70-130	09/20/18	11:35	KZ
Toluene-D8	97		%REC	EPA 8260B			70-130	09/20/18	11:35	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	11:35	KZ

Sample: 002 **SV-30-15** Date & Time Sampled: 09/20/18 @ 11:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	12:06	KZ
[Fixed Gases]										

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 002 **SV-30-15** Date & Time Sampled: 09/20/18 @ 11:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	11:24	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	11:24	KZ
Nitrogen	**77.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	11:24	KZ
Oxygen	**18.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	11:24	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	12:06	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:06	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:06	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:06	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 002 **SV-30-15** Date & Time Sampled: 09/20/18 @ 11:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	12:06	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	12:06	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 002 **SV-30-15** Date & Time Sampled: 09/20/18 @ 11:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:06	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:06	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	12:06	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:06	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:06	KZ
[VOC Surrogates]										
Dibromofluoromethane	100		%REC	EPA 8260B			70-130	09/20/18	12:06	KZ
Toluene-D8	99		%REC	EPA 8260B			70-130	09/20/18	12:06	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	12:06	KZ

Sample: 003 **SV-29-5** Date & Time Sampled: 09/20/18 @ 12:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	12:29	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	11:45	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	11:45	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 003 **SV-29-5** Date & Time Sampled: 09/20/18 @ 12:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Nitrogen	**76.8**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	11:45	KZ
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	11:45	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	12:29	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:29	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:29	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:29	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 003 **SV-29-5** Date & Time Sampled: 09/20/18 @ 12:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	12:29	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	12:29	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ

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ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 003 **SV-29-5** Date & Time Sampled: 09/20/18 @ 12:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:29	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:29	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	12:29	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:29	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:29	KZ
[VOC Surrogates]										
Dibromofluoromethane	103		%REC	EPA 8260B			70-130	09/20/18	12:29	KZ
Toluene-D8	99		%REC	EPA 8260B			70-130	09/20/18	12:29	KZ
Bromofluorobenzene	99		%REC	EPA 8260B			70-130	09/20/18	12:29	KZ

Sample: 004 **SV-29-15** Date & Time Sampled: 09/20/18 @ 12:40
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	12:51	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	12:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	12:05	KZ
Nitrogen	**78.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	12:05	KZ
Oxygen	**19.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	12:05	KZ

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Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 004 **SV-29-15** Date & Time Sampled: 09/20/18 @ 12:40
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	12:51	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:51	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:51	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:51	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 004 **SV-29-15** Date & Time Sampled: 09/20/18 @ 12:40
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	12:51	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	12:51	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 004 **SV-29-15** Date & Time Sampled: 09/20/18 @ 12:40
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	12:51	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	12:51	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	12:51	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	12:51	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	12:51	KZ
[VOC Surrogates]										
Dibromofluoromethane	99		%REC	EPA 8260B			70-130	09/20/18	12:51	KZ
Toluene-D8	97		%REC	EPA 8260B			70-130	09/20/18	12:51	KZ
Bromofluorobenzene	97		%REC	EPA 8260B			70-130	09/20/18	12:51	KZ

Sample: 005 **SV-28-5** Date & Time Sampled: 09/20/18 @ 13:01
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	1:16	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	12:26	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	12:26	KZ
Nitrogen	**79.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	12:26	KZ
Oxygen	**20.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	12:26	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 005 **SV-28-5** Date & Time Sampled: 09/20/18 @ 13:01
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	1:16	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	1:16	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:16	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:16	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ

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Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 005 **SV-28-5** Date & Time Sampled: 09/20/18 @ 13:01
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	1:16	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	1:16	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 005 **SV-28-5**							Date & Time Sampled:	09/20/18	@	13:01
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:16	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	1:16	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	1:16	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:16	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:16	KZ
[VOC Surrogates]										
Dibromofluoromethane	104		%REC	EPA 8260B			70-130	09/20/18	1:16	KZ
Toluene-D8	105		%REC	EPA 8260B			70-130	09/20/18	1:16	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	1:16	KZ
Sample: 006 **SV-28-15**							Date & Time Sampled:	09/20/18	@	13:25
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	1:39	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	12:45	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	12:45	KZ
Nitrogen	**76.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	12:45	KZ
Oxygen	**19.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	12:45	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	1:39	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 006 **SV-28-15** Date & Time Sampled: 09/20/18 @ 13:25
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	1:39	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:39	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:39	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ

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INTERPHASE
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LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 006 **SV-28-15** Date & Time Sampled: 09/20/18 @ 13:25
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	1:39	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Naphthalene	***0.020***	J	µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	1:39	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Toluene	***0.040***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	1:39	KZ

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CERTIFICATE OF ANALYSIS

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INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported 09/27/18
Date Received 09/20/18
Invoice No. 83514
Cust # 1567
Permit Number
Customer P.O.

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 006 **SV-28-15** Sample Matrix: **Soil Vapor** Purge Volume Sampled: **3**							Date & Time Sampled:	09/20/18	@	13:25
.....continued										
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	1:39	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	1:39	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	1:39	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	1:39	KZ
[VOC Surrogates]										
Dibromofluoromethane	100		%REC	EPA 8260B			70-130	09/20/18	1:39	KZ
Toluene-D8	99		%REC	EPA 8260B			70-130	09/20/18	1:39	KZ
Bromofluorobenzene	97		%REC	EPA 8260B			70-130	09/20/18	1:39	KZ
Sample: 007 **SV-27-5** Sample Matrix: **Soil Vapor** Purge Volume Sampled: **3**							Date & Time Sampled:	09/20/18	@	13:50
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	2:02	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	1:06	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	1:06	KZ
Nitrogen	**79.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	1:06	KZ
Oxygen	**19.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	1:06	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	2:02	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ

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Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 007 **SV-27-5** Date & Time Sampled: 09/20/18 @ 13:50
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:02	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:02	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:02	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 007 **SV-27-5** Date & Time Sampled: 09/20/18 @ 13:50
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	2:02	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	2:02	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Toluene	**0.050**		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:02	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 007 **SV-27-5**							Date & Time Sampled:	09/20/18	@	13:50
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:02	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	2:02	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:02	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:02	KZ
[VOC Surrogates]										
Dibromofluoromethane	103		%REC	EPA 8260B			70-130	09/20/18	2:02	KZ
Toluene-D8	100		%REC	EPA 8260B			70-130	09/20/18	2:02	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	2:02	KZ
Sample: 008 **SV-27-15**							Date & Time Sampled:	09/20/18	@	14:12
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	2:24	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	1:24	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	1:24	KZ
Nitrogen	**78.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	1:24	KZ
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	1:24	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	2:24	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ

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LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 008 **SV-27-15** Date & Time Sampled: 09/20/18 @ 14:12
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:24	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:24	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:24	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ

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CERTIFICATE OF ANALYSIS

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INTERPHASE
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LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 008 **SV-27-15** Date & Time Sampled: 09/20/18 @ 14:12
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	2:24	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Naphthalene	***0.020***	J	µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	2:24	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:24	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 008 **SV-27-15**							Date & Time Sampled:	09/20/18	@	14:12
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:24	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	2:24	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:24	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:24	KZ
[VOC Surrogates]										
Dibromofluoromethane	104		%REC	EPA 8260B			70-130	09/20/18	2:24	KZ
Toluene-D8	101		%REC	EPA 8260B			70-130	09/20/18	2:24	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	2:24	KZ
Sample: 009 **SV-26-5**							Date & Time Sampled:	09/20/18	@	14:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	2:47	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	1:46	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	1:46	KZ
Nitrogen	**76.3**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	1:46	KZ
Oxygen	**17.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	1:46	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	2:47	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 009 **SV-26-5** Date & Time Sampled: 09/20/18 @ 14:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:47	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:47	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:47	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 009 **SV-26-5** Date & Time Sampled: 09/20/18 @ 14:30
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	2:47	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	2:47	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Toluene	**0.070**		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	2:47	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	2:47	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	2:47	KZ

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Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 009 **SV-26-5**							Date & Time Sampled:	09/20/18	@	14:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	2:47	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	2:47	KZ
[VOC Surrogates]										
Dibromofluoromethane	105		%REC	EPA 8260B			70-130	09/20/18	2:47	KZ
Toluene-D8	99		%REC	EPA 8260B			70-130	09/20/18	2:47	KZ
Bromofluorobenzene	96		%REC	EPA 8260B			70-130	09/20/18	2:47	KZ
Sample: 010 **SV-26-15**							Date & Time Sampled:	09/20/18	@	15:00
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	3:09	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	2:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	2:05	KZ
Nitrogen	**79.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	2:05	KZ
Oxygen	**20.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	2:05	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	3:09	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ

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LA City#	10261
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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 010 **SV-26-15** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	3:09	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:09	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:09	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ

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Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 010 **SV-26-15** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	3:09	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	3:09	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:09	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	3:09	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	3:09	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:09	KZ
[VOC Vapor Sampling Tracer]										

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Invoice No.	83514
Cust #	1567
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Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 010 **SV-26-15** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:09	KZ
[VOC Surrogates]										
Dibromofluoromethane	100		%REC	EPA 8260B			70-130	09/20/18	3:09	KZ
Toluene-D8	99		%REC	EPA 8260B			70-130	09/20/18	3:09	KZ
Bromofluorobenzene	97		%REC	EPA 8260B			70-130	09/20/18	3:09	KZ

Sample: 011 **SV-26-15 DUP** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

[TPH Gasoline by GCMS]										
C4-C12	<5		µg/L	LUFT GCMS	1.0	5.0000	10	09/20/18	3:31	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	2:24	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	2:24	KZ
Nitrogen	**79.8**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	2:24	KZ
Oxygen	**19.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	2:24	KZ
[VOCs by GCMS]										
Acetone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Benzene	<0.0180		µg/L	EPA 8260B	0.5	0.0180	0.025	09/20/18	3:31	KZ
Bromobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Bromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Bromodichloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Bromoform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Bromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
t-Butanol (TBA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
2-Butanone (MEK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
n-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
sec-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
tert-Butylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ

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Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 011 **SV-26-15 DUP** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Carbon Disulfide	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
Carbon Tetrachloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	3:31	KZ
Chlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Chloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Chloroform	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Chloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
2-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
4-Chlorotoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Dibromochloromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2-Dibromoethane (EDB)	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:31	KZ
1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:31	KZ
Dibromomethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,3-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,4-Dichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Dichlorodifluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2-Dichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
cis-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
trans-1,2-Dichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,3-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
2,2-Dichloropropane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
cis-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
trans-1,3-Dichloropropene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Diisopropyl Ether (DiPE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Ethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ

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Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 011 **SV-26-15 DUP** Date & Time Sampled: 09/20/18 @ 15:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**
.....continued

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Hexachlorobutadiene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
2-Hexanone	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
Isopropylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
4-Isopropyltoluene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Methylene Chloride	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.05	09/20/18	3:31	KZ
4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Naphthalene	<0.0160		µg/L	EPA 8260B	0.5	0.0160	0.025	09/20/18	3:31	KZ
n-Propylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Styrene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1,1,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1,2,2-Tetrachloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Tetrachloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Toluene	***0.030***	J	µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2,3-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2,4-Trichlorobenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1,1-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,1,2-Trichloroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Trichloroethene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2,3-Trichloropropane	<0.0100		µg/L	EPA 8260B	0.5	0.0100	0.050	09/20/18	3:31	KZ
Trichlorofluoromethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Trichlorotrifluoroethane	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,2,4-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
1,3,5-Trimethylbenzene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
Vinyl Chloride	<0.0125		µg/L	EPA 8260B	0.5	0.0125	0.025	09/20/18	3:31	KZ
m,p-Xylenes	<0.0500		µg/L	EPA 8260B	0.5	0.0500	0.10	09/20/18	3:31	KZ
o-Xylene	<0.0250		µg/L	EPA 8260B	0.5	0.0250	0.050	09/20/18	3:31	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.2500		µg/L	EPA 8260B	0.5	0.2500	0.50	09/20/18	3:31	KZ
[VOC Surrogates]										

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 011 **SV-26-15 DUP**						Date & Time Sampled:		09/20/18	@	15:00
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
Dibromofluoromethane	108		%REC	EPA 8260B			70-130	09/20/18	3:31	KZ
Toluene-D8	101		%REC	EPA 8260B			70-130	09/20/18	3:31	KZ
Bromofluorobenzene	97		%REC	EPA 8260B			70-130	09/20/18	3:31	KZ
Sample: 012 **SV-6-5**						Date & Time Sampled:		09/20/18	@	15:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:05	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	5:58	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	2:45	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	2:45	KZ
Nitrogen	**77.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	2:45	KZ
Oxygen	**19.7**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	2:45	KZ
Sample: 013 **SV-6-15**						Date & Time Sampled:		09/20/18	@	15:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:14	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:02	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	3:04	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	3:04	KZ
Nitrogen	**78.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	3:04	KZ
Oxygen	**19.2**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	3:04	KZ
Sample: 014 **SV-7-5**						Date & Time Sampled:		09/20/18	@	15:45
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:25	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:06	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 014 **SV-7-5**								Date & Time Sampled:	09/20/18 @	15:45
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	11:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	3:04	KZ
Nitrogen	**76.2**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	11:05	KZ
Oxygen	**19.5**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	3:04	KZ
Sample: 015 **SV-7-15**								Date & Time Sampled:	09/20/18 @	16:05
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:34	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:12	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	3:25	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	3:25	KZ
Nitrogen	**78.6**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	3:25	KZ
Oxygen	**18.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	3:25	KZ
Sample: 016 **SV-8-5**								Date & Time Sampled:	09/20/18 @	16:20
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:45	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:15	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	3:44	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	3:44	KZ
Nitrogen	**79.5**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	3:44	KZ
Oxygen	**19.6**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	3:44	KZ
Sample: 017 **SV-8-15**								Date & Time Sampled:	09/20/18 @	16:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 017 **SV-8-15**						Date & Time Sampled:		09/20/18	@	16:30
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
.....continued										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	5:54	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:20	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	4:05	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	4:05	KZ
Nitrogen	**79.1**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	4:05	KZ
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	4:05	KZ
Sample: 018 **SV-13-5**						Date & Time Sampled:		09/20/18	@	16:45
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	6:05	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:24	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	4:25	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	4:25	KZ
Nitrogen	**76.4**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	4:25	KZ
Oxygen	**19.9**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	4:25	KZ
Sample: 019 **SV-13-15**						Date & Time Sampled:		09/20/18	@	17:00
Sample Matrix: **Soil Vapor**										
Purge Volume Sampled: **3**										
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	6:16	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:29	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	4:46	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	4:46	KZ
Nitrogen	**78.9**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	4:46	KZ
Oxygen	**18.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	4:46	KZ

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CERTIFICATE OF ANALYSIS

1809-00134

INTERPHASE
ROSE WILLIAMS
6200 PEACHTREE STREET
LOS ANGELES, CA 90040

Date Reported	09/27/18
Date Received	09/20/18
Invoice No.	83514
Cust #	1567
Permit Number	
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Sample: 020 **SV-13-15 DUP** Date & Time Sampled: 09/20/18 @ 17:00
Sample Matrix: **Soil Vapor**
Purge Volume Sampled: **3**

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Hydrogen Sulfide	<0.010		ppmv	HACH Model HS-C	1.0	0.0100	0.010	09/20/18	6:25	KZ
Methane	<10		ppmv	EPA 8015M	1.0	10.0000	15	09/20/18	6:36	KZ
[Fixed Gases]										
Carbon Dioxide	<0.3440		%	ASTM D-1946	1.0	0.3440	0.5	09/21/18	5:06	KZ
Carbon Monoxide	<0.2720		%	ASTM D-1946	1.0	0.2720	0.50	09/21/18	5:06	KZ
Nitrogen	**76.8**		%	ASTM D-1946	1.0	0.1740	0.50	09/21/18	5:06	KZ
Oxygen	**20.1**		%	ASTM D-1946	1.0	0.3700	0.50	09/21/18	5:06	KZ

Respectfully Submitted: Ken Zheng

Ken Zheng - President

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

1809-00134

INTERPHASE
LOS ANGELES, CA 90040

Date Reported	**09/27/2018**
Date Received	**09/20/2018**
Date Sampled	**09/20/2018**
Invoice No.	**83514**
Customer #	**1567**
Customer P.O.	

Project: 1853 Camino Del Sol, Oxnard, CA

Method # EPA 8015M
QC Reference # 76427 **Date Analyzed:** 9/20/2018 **Technician:** KZ
Samples 012 013 014 015 016 017 018 019 020

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	LCS %RPD
Methane	82	98	6	70 - 130	0 - 25

Method # EPA 8260B
QC Reference # 76485 **Date Analyzed:** 9/20/2018 **Technician:** KZ
Samples 001 002 003 004 005 006 007 008 009 010 011

Results	LCS %REC	BLKSRR% REC	Control Ranges LCS %REC	BLKSRR%REC
1,1-Dichloroethene	110		70 - 130	
Benzene	100		70 - 130	
Bromofluorobenzene		99		50 - 150
Chlorobenzene	100		70 - 130	
Dibromofluoromethan		108		50 - 150
Toluene	100		70 - 130	
Toluene-D8		94		50 - 150
Trichloroethene	100		70 - 130	

Method # HACH Model HS-C
QC Reference # 76484 **Date Analyzed:** 9/20/2018 **Technician:** KZ
Samples 012 013 014 015 016 017 018 019 020

Results	LCS %REC	LCS %DUP	LCS %RPD	Control Ranges LCS %REC	LCS %RPD
Hydrogen Sulfide	89	85	5	70 - 130	0 - 25

Method # LUFT GCMS
QC Reference # 76487 **Date Analyzed:** 9/20/2018 **Technician:** KZ
Samples 001 002 003 004 005 006 007 008 009 010 011

Results	LCS %REC	Control Ranges LCS %REC
C4-C12	82	70 - 130

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QUALITY CONTROL DATA REPORT

INTERPHASE

1809-00134

Date Reported 09/27/2018
Date Received 09/20/2018
Date Sampled 09/20/2018

Project: 1853 Camino Del Sol, Oxnard, CA

Method blank results

Ref	Test Name	Result	Qualif	Units	MDL
76427	Methane	<10		ppmv	10
76485	Acetone	<0.2500		µg/L	0.2500
	t-Amyl Methyl Ether (TAME)	<0.0250		µg/L	0.0250
	Benzene	<0.0180		µg/L	0.0180
	Bromobenzene	<0.0250		µg/L	0.0250
	Bromochloromethane	<0.0250		µg/L	0.0250
	Bromodichloromethane	<0.0250		µg/L	0.0250
	Bromoform	<0.0250		µg/L	0.0250
	Bromomethane	<0.0250		µg/L	0.0250
	t-Butanol (TBA)	<0.2500		µg/L	0.2500
	2-Butanone (MEK)	<0.2500		µg/L	0.2500
	n-Butylbenzene	<0.0250		µg/L	0.0250
	sec-Butylbenzene	<0.0250		µg/L	0.0250
	tert-Butylbenzene	<0.0250		µg/L	0.0250
	Carbon Disulfide	<0.2500		µg/L	0.2500
	Carbon Tetrachloride	<0.0125		µg/L	0.0125
	Chlorobenzene	<0.0250		µg/L	0.0250
	Chloroethane	<0.0250		µg/L	0.0250
	Chloroform	<0.0250		µg/L	0.0250
	Chloromethane	<0.0250		µg/L	0.0250
	2-Chlorotoluene	<0.0250		µg/L	0.0250
	4-Chlorotoluene	<0.0250		µg/L	0.0250
	Dibromochloromethane	<0.0250		µg/L	0.0250
	1,2-Dibromoethane (EDB)	<0.0100		µg/L	0.0100
	1,2-Dibromo-3-Chloropropane	<0.0100		µg/L	0.0100
	Dibromomethane	<0.0250		µg/L	0.0250
	1,2-Dichlorobenzene	<0.0250		µg/L	0.0250
	1,3-Dichlorobenzene	<0.0250		µg/L	0.0250
	1,4-Dichlorobenzene	<0.0250		µg/L	0.0250
	Dichlorodifluoromethane	<0.0250		µg/L	0.0250
	1,1-Dichloroethane	<0.0250		µg/L	0.0250
	1,2-Dichloroethane	<0.0250		µg/L	0.0250
	1,1-Dichloroethene	<0.0250		µg/L	0.0250
	cis-1,2-Dichloroethene	<0.0250		µg/L	0.0250
	trans-1,2-Dichloroethene	<0.0250		µg/L	0.0250
	1,2-Dichloropropane	<0.0250		µg/L	0.0250
	1,3-Dichloropropane	<0.0250		µg/L	0.0250
	2,2-Dichloropropane	<0.0250		µg/L	0.0250
	1,1-Dichloropropene	<0.0250		µg/L	0.0250
	cis-1,3-Dichloropropene	<0.0250		µg/L	0.0250
	trans-1,3-Dichloropropene	<0.0250		µg/L	0.0250
	Diisopropyl Ether (DiPE)	<0.0250		µg/L	0.0250
	Ethylbenzene	<0.0250		µg/L	0.0250
	Ethyl-t-Butyl Ether (EtBE)	<0.0250		µg/L	0.0250
	Hexachlorobutadiene	<0.0250		µg/L	0.0250
	2-Hexanone	<0.2500		µg/L	0.2500
	Isopropylbenzene	<0.0250		µg/L	0.0250
	4-Isopropyltoluene	<0.0250		µg/L	0.0250
	Methylene Chloride	<0.0250		µg/L	0.0250
	4-Methyl-2-Pentanone (MIBK)	<0.2500		µg/L	0.2500
	Methyl-t-butyl Ether (MtBE)	<0.0250		µg/L	0.0250
	Naphthalene	<0.0160		µg/L	0.0160
	n-Propylbenzene	<0.0250		µg/L	0.0250
	Styrene	<0.0250		µg/L	0.0250
	1,1,1,2-Tetrachloroethane	<0.0250		µg/L	0.0250
	1,1,2,2-Tetrachloroethane	<0.0250		µg/L	0.0250
	Tetrachloroethene	<0.0250		µg/L	0.0250
	Toluene	<0.0250		µg/L	0.0250
	1,2,3-Trichlorobenzene	<0.0250		µg/L	0.0250
	1,2,4-Trichlorobenzene	<0.0250		µg/L	0.0250
	1,1,1-Trichloroethane	<0.0250		µg/L	0.0250
	1,1,2-Trichloroethane	<0.0250		µg/L	0.0250
	Trichloroethene	<0.0250		µg/L	0.0250
	1,2,3-Trichloropropane	<0.0100		µg/L	0.0100
	Trichlorofluoromethane	<0.0250		µg/L	0.0250
	Trichlorotrifluoroethane	<0.0250		µg/L	0.0250
	1,2,4-Trimethylbenzene	<0.0250		µg/L	0.0250
	1,3,5-Trimethylbenzene	<0.0250		µg/L	0.0250
	Vinyl Chloride	<0.0125		µg/L	0.0125
	m,p-Xylenes	<0.0500		µg/L	0.0500
	o-Xylene	<0.0250		µg/L	0.0250
	Isopropanol (IPA)	<0.2500		µg/L	0.2500
76487	C4-C12	<2.5000		µg/L	2.5000

A & R Laboratories, Inc.

1650 S. GROVE AVE., SUITE C
ONTAIRO, CA 91761
951-779-0310 FAX 951-779-0344
www.arlaboratories.com office@arlaboratories.com

FDA#	2030513
LA City#	10261
ELAP#'s	2789
	2790
	2122

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QUALITY CONTROL DATA REPORT

1809-00134

INTERPHASE

Date Reported	**09/27/2018**
Date Received	**09/20/2018**
Date Sampled	**09/20/2018**

Project: 1853 Camino Del Sol, Oxnard, CA

Respectfully Submitted: Ken Zheng

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

ARL

A & R Laboratories
1650 S. Grove Ave., Ste C, Ontario, CA 91761
Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-134

Client Name: Inter phase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 6200 Peachtree. Los Angeles CA 90040
Report Attention: ROSE W. | Phone # / Fax #: 323-278-7700 | Sampled By: KZ
Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

☐ Chilled ☑ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☑ Normal Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	H2S	CH4	Fixed Gas				Remarks
-1	SV-30-5	9/20/18	11:20	Air		Tedlar Bag	X		X									X				3PV
-2	SV-30-15		11:30																			
-3	SV-29-5		12:00																			
-4	SV-29-15		12:40																			
-5	SV-28-5		13:01																			
-6	SV-28-15		13:25																			
-7	SV-27-5		13:50																			
-8	SV-27-15		14:12																			
-9	SV-26-5		14:30																			
-10	SV-26-15		15:00																			
-11	SV-26-15 DUP		15:00																			
-12	SV-6-5		15:20													X	X	X				
-13	SV-6-15		15:30													X	X	X				
-14	SV-7-5		15:45																			
-15	SV-7-15		16:05																			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Jason Ma	TetraTech	9/20/18	17:30				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	LR	9/20/18	17:30

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

ARL
A & R Laboratories
1650 S. Grove Ave., Ste C, Ontario, CA 91761
Tel: 951-779-0310 / 909-781-6335 Fax: 951-779-0344
E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1809-134

Client Name: Inter phase
E-mail: OFFICE@INTERPHASEENVIRONMENTAL.COM
Address: 6200 Peachtree Los angeles, CA 90040
Report Attention: Rose W. | Phone # 323-278-7700 | Fax: # | Sampled By: KZ
Project No./ Name:
Project Site: 1853 Camino Del Sol, Oxnard, CA

☐ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal Mobile

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	H2S	CH4	Fixed Gas				Remarks
-16	SV-8-5	9/20/18	16:20	Air		Tedlar Bag										X	X	X				3PV
-17	SV-8-15		16:30																			
-18	SV-13-5		16:45																			
-19	SV-13-15		17:00																			
-20	SV-13-15 DUP		17:00																			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	Tetra Tech	9/20/18	17:30				
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
				[signature]	A & K	9/20/18	17:30

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

M SOIL LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

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Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Number of Pages 49
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94142	09/20/2018	T/TSB

Project ID: 38186
Project Name: OUHSD HS#8 PEA
Site: 1853 Camino Del Sol
Oxnard, CA 93030

Enclosed please find results of analyses of 44 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

107778

AETL JOB No. 94142

Page 1 of 5

COMPANY	Tetra Tech
PROJECT MANAGER	James Steele
COMPANY ADDRESS	5383 Hollister Ave Suite 130, Santa Barbara, CA 93111
PHONE	805-681-6302
FAX	
PROJECT NAME	OUSD HS #8 PEA
PROJECT #	38186
SITE NAME AND ADDRESS	1853 Camino Del Sol, Oxnard CA
PO #	100-SBA-T38186

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	SS-1-0	94142.01	09/17/18	0940	Soil	1	None
2	SS-2-0	94142.02		0955			
3	SS-3-0	94142.03		1000			
4	SS-4-0	94142.04		1008			
5	SS-5-0	94142.05		1014			
6	SS-6-0	94142.06		1020			
7	SS-7-0	94142.07		1045			
8	SS-8-0	94142.08		1054			
9	SS-24-0	94142.09		1129			
10	SS-14-0	94142.10		1138			
11	SS-23-0	94142.11		1145			
12	SS-13-0	94142.12		1150			
13	SS-22-0	94142.13		1155			
14	SS-12-0	94142.14		1204			
15	Soil Dup 2	94142.15		1204			

ANALYSIS REQUESTED

	EPA 8081A, OCPs	Cobalt B, Arsenic	8270C, SVOCs	8310 PAHs	Diesel, heavy oil Range TPH 8015B						
1	X	X	X	X	X						
2	X										
3	X										
4	X	X	X	X	X	X					
5	X										
6	X	X	X	X							
7	X										
8	X										
9	X										
10	X										
11	X	X	X	X	X						
12	X										
13	X										
14	X										
15	X										

TEST INSTRUCTIONS & COMMENTS

* Hold sample for MADEP-EPH-04-MAEPH Aliphatics and Aromatics

1 * see above
4 * see above
6 * see above
11 * see above

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND	Y / N	SAMPLES ACCEPTED	Y / N

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Jason Davis		
Printed Name:	Jason Davis		
Date / Time:	09/20/18 19:00		9/20/18 2040
	RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETL 3.
Signature:	Sargis P		
Printed Name:			Antin
Date / Time:	9/20/18 1900		09/20/18 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

107779

AETL JOB No. 94142

Page 2 of 5

COMPANY	Tetra Tech Inc
PROJECT MANAGER	James Stark
COMPANY ADDRESS	5383 Hollister Ave Suite 150 Santa Barbara, CA 93111
PHONE	805-681-6302
FAX	
PROJECT NAME	OU5D HS # 8 PEA
PROJECT #	38186
SITE NAME AND ADDRESS	1853 Camino Del Sol, Oxnard CA
PO #	100-SBA-T38186

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	SS-21-0	94142.16	09/17/18	1210	Soil	1	
2	SS-11-0	94142.17		1230			
3	SS-20-0	94142.18		1235			
4	SS-10-0	94142.19		1240			
5	Soil Dup2	94142.20		1240			
6	SS-19-0	94142.21		1245			
7	SS-9-0	94142.22		1256			
8	SS-18-0	94142.23		1300			
9	SS-42-0	94142.24		1315			
10	SS-34-0	94142.25		1320			
11	SS-48-0	94142.26		1325			
12	SS-41-0	94142.27		1330			
13	SS-33-0	94142.28		1335			
14	SS-47-0	94142.29		1340			
15	SS-40-0	94142.30		1350			

ANALYSIS REQUESTED

SS-21-0	SS-11-0	SS-20-0	SS-10-0	Soil Dup2	SS-19-0	SS-9-0	SS-18-0	SS-42-0	SS-34-0	SS-48-0	SS-41-0	SS-33-0	SS-47-0	SS-40-0
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
					X			X	X				X	
					X			X	X				X	
					X			X	X				X	
					X			X	X				X	
					X			X	X				X	

EPA 8081A OCPs; 6010 B Arsenic; 8270C, SVOCs; 8310 PAHs; Diesel/Heavy Oil Range TPH 8015 B

TEST INSTRUCTIONS & COMMENTS

* Hold for MADEP-EPH 04 MA EPH Aliphatics and Aromatics

* see note above

* see note above

* see note above

* see note above

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y / (N) / NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	[signature]		
Printed Name:	Jason Dore		Dargis-P
Date / Time:	09/20/18 1900		9/20/18 2040
	RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	[signature]		[signature]
Printed Name:	Dargis-P		Antin
Date / Time:	9/20/18 1900		09/20/18 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

107777

AETL JOB No. 94142

Page 3 of 9

COMPANY: Tetra Tech
PROJECT MANAGER: James Steel
COMPANY ADDRESS: 5383 Hollister Ave Suite 130, Santa Barbara, CA, 93111
PHONE: 805-681-6502
FAX:
PROJECT NAME: OUSD HS#8 PEA
PROJECT #: 38186
SITE NAME AND ADDRESS: 1857 Campus Del Sol, Oxnard CA
PO #: 100-SBA-T38186

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	8081A OCPs	6010B Arsenic	8270C SVOCs	8310 PAHs	Diesel, 8015B heavy oil	TEST INSTRUCTIONS & COMMENTS
1	SS-32-0	94142.31	09/17/18	1355	Soil	1		X					* Hold for MADEP-EPH 04 MA EPH Aliphatics and aromatics
2	SS-46-0	94142.32		1400				X					
3	SS-39-0	94142.33		1405				X					
4	SS-31-0	94142.34		1410				X					
5	SS-45-0	94142.35		1415				X					
6	SS-38-0	94142.36		1420				X	X	X	X	X	* See note above
7	SS-30-0	94142.37		1425				X					
8	SS-44-0	94142.38		1430				X	X	X	X	X	* See note above
9	SS-37-0	94142.39		1440				X					
10	SS-29-0	94142.40		1446				X	X	X	X	X	
11	Soil Dup 3	94142.41		1445				X	X	X	X	X	* See note above
12	SS-43-0	94142.42		1450				X					
13	SS-28-0	94142.43		1500				X					
14	~~SS-18-0~~			1505				X					JD
15	SS-17-0	94142.44		1515				X					

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	14	PROPERLY COOLED (Y / N / NA)	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT (Y / N / NA)	
RECEIVED IN GOOD COND. (Y / N)		SAMPLES ACCEPTED (Y / N)	

TURN AROUND TIME

☒ NORMAL ☐ RUSH
☐ SAME DAY
☐ NEXT DAY
☐ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Jason Dan	Printed Name:	Printed Name: Sargis P
Date: 09/20/18 Time: 1900	Date: Time:	Date: 9/20/18 Time: 2040
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name: Sargis P	Printed Name:	Printed Name: Antin
Date: 9/20/18 Time: 1900	Date: Time:	Date: 09/20/18 Time: 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

AMERICAN ENVIRONMENTAL TESTING LABORATORY
2834 NORTH NAOMI ST. BURBANK, CALIFORNIA 91504 DHS # 1541 LACSD# 10181
TEL (888) 288-AETL (818) 845-8200 FAX (818) 845-8840 www.aetlab.com

COOLER RECEIPT FORM

Client Name: TetraTech
Project Name:
AETL Job Number: 94142, 94143
Date Received: 09/24/18 Received by: Antin
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.2°C, No 2: ____, No 3: ____
Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ ☒ Wide mouth jars, ☐ ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): ____
How are samples preserved: ☐ None, ☐ Ice , ☒ Blue Ice, ☐ Dry Ice
☒ None, ☐ HNO_3, ☐ NaOH, ☐ ZnOAc, ☐ HCl, ☐ $Na_2S_2O_3$, _MeOH
☐ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Project ID: 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94142	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 44 samples with the following specification on 09/20/2018.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94142.01	SS-1-0	09/17/2018	Soil	1
94142.04	SS-4-0	09/17/2018	Soil	1
94142.11	SS-23-0	09/17/2018	Soil	1
94142.21	SS-19-0	09/17/2018	Soil	1
94142.24	SS-42-0	09/17/2018	Soil	1
94142.25	SS-34-0	09/17/2018	Soil	1
94142.29	SS-47-0	09/17/2018	Soil	1
94142.36	SS-38-0	09/17/2018	Soil	1
94142.38	SS-44-0	09/17/2018	Soil	1
94142.40	SS-29-0	09/17/2018	Soil	1
94142.41	SS DUP 3	09/17/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010BSCAN) ^ AS	09/27/2018	2	Normal	mg/Kg
(8081A)	09/27/2018	2	Normal	ug/Kg
(8270C)	09/27/2018	2	Normal	mg/Kg
(8310)	09/27/2018	2	Normal	mg/Kg
(M8015D)	09/27/2018	2	Normal	mg/Kg

94142.02	SS-2-0	09/17/2018	Soil	1
94142.03	SS-3-0	09/17/2018	Soil	1
94142.05	SS-5-0	09/17/2018	Soil	1
94142.07	SS-7-0	09/17/2018	Soil	1
94142.08	SS-8-0	09/17/2018	Soil	1
94142.09	SS-24-0	09/17/2018	Soil	1
94142.10	SS-14-0	09/17/2018	Soil	1
94142.12	SS-13-0	09/17/2018	Soil	1

Continued

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5383 Hollister Avenue Suite 130
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Telephone: (805)681-3100
Attention: James Steele

Project ID: 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94142	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

94142.13	SS-22-0	09/17/2018	Soil	1
94142.14	SS-12-0	09/17/2018	Soil	1
94142.15	Soil DUP 2-1	09/17/2018	Soil	1
94142.16	SS-21-0	09/17/2018	Soil	1
94142.17	SS-11-0	09/17/2018	Soil	1
94142.18	SS-20-0	09/17/2018	Soil	1
94142.19	SS-10-0	09/17/2018	Soil	1
94142.20	Soil DUP 2-2	09/17/2018	Soil	1
94142.22	SS-9-0	09/17/2018	Soil	1
94142.23	SS-18-0	09/17/2018	Soil	1
94142.26	SS-48-0	09/17/2018	Soil	1
94142.27	SS-41-0	09/17/2018	Soil	1
94142.28	SS-33-0	09/17/2018	Soil	1
94142.30	SS-40-0	09/17/2018	Soil	1
94142.31	SS-32-0	09/17/2018	Soil	1
94142.32	SS-46-0	09/17/2018	Soil	1
94142.33	SS-39-0	09/17/2018	Soil	1
94142.34	SS-31-0	09/17/2018	Soil	1
94142.35	SS-45-0	09/17/2018	Soil	1
94142.37	SS-30-0	09/17/2018	Soil	1
94142.39	SS-37-0	09/17/2018	Soil	1
94142.42	SS-43-0	09/17/2018	Soil	1
94142.43	SS-28-0	09/17/2018	Soil	1
94142.44	SS-17-0	09/17/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8081A)	09/27/2018	2	Normal	ug/Kg

94142.06	SS-6-0	09/17/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010BSCAN) ^ AS	09/27/2018	2	Normal	mg/Kg
(8081A)	09/27/2018	2	Normal	ug/Kg

Continued

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Telephone: (805)681-3100
Attention: James Steele

Job Number	Order Date	Client
94142	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

94142.06 SS-6-0 09/17/2018 Soil 1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8270C)	09/27/2018	2	Normal	mg/Kg
(8310)	09/27/2018	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB3

Our Lab I.D.			Method Blank	**94142.01**	**94142.04**	**94142.11**	**94142.21**
Client Sample I.D.				SS-1-0	SS-4-0	SS-23-0	SS-19-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C9-C22)	1.0	10.0	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	10.0	ND	ND	4.30J	ND	ND
TPH Total as Diesel and Heavy HC. C9-C40	1.0	10.0	ND	ND	4.30J	ND	ND
Our Lab I.D.			Method Blank	**94142.01**	**94142.04**	**94142.11**	**94142.21**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Chlorobenzene	75-125		85.1	91.9	80.0	87.3	81.0

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB3

Our Lab I.D.			94142.24	94142.25	94142.29	94142.36	94142.38
Client Sample I.D.			SS-42-0	SS-34-0	SS-47-0	SS-38-0	SS-44-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C9-C22)	1.0	10.0	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	10.0	ND	ND	ND	ND	ND
TPH Total as Diesel and Heavy HC. C9-C40	1.0	10.0	ND	ND	ND	ND	ND
Our Lab I.D.			94142.24	94142.25	94142.29	94142.36	94142.38
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Chlorobenzene	75-125		83.8	91.2	85.6	89.2	93.3

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB3

Our Lab I.D.			**94142.40**	**94142.41**			
Client Sample I.D.			SS-29-0	SS DUP 3			
Date Sampled			09/17/2018	09/17/2018			
Date Prepared			09/26/2018	09/26/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/27/2018	09/27/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Diesel (C9-C22)	1.0	10.0	ND	ND			
TPH as Heavy Hydrocarbons (C23-C40)	1.0	10.0	9.90J	11.3			
TPH Total as Diesel and Heavy HC. C9-C40	1.0	10.0	9.90J	11.3			
Our Lab I.D.			**94142.40**	**94142.41**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Chlorobenzene	75-125		82.5	80.3			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518IB1

Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Client Sample I.D.				SS-1-0	SS-4-0	SS-6-0	SS-23-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Benzo(a)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Chrysene	0.010	0.020	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthylene	0.010	0.020	ND	ND	ND	ND	ND
Anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.010	0.020	ND	ND	ND	ND	ND
Fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Fluorene	0.010	0.020	ND	ND	ND	ND	ND
Naphthalene	0.010	0.020	ND	ND	ND	ND	ND
Phenanthrene	0.010	0.020	ND	ND	ND	ND	ND
Pyrene	0.010	0.020	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.010	0.020	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
p-Terphenyl-D14	75-125		91.8	101	102	103	97.8

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518IB1

Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Client Sample I.D.			SS-19-0	SS-42-0	SS-34-0	SS-47-0	SS-38-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Benzo(a)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Chrysene	0.010	0.020	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthylene	0.010	0.020	ND	ND	ND	ND	ND
Anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.010	0.020	ND	ND	ND	ND	ND
Fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Fluorene	0.010	0.020	ND	ND	ND	ND	ND
Naphthalene	0.010	0.020	ND	ND	ND	ND	ND
Phenanthrene	0.010	0.020	ND	ND	ND	ND	ND
Pyrene	0.010	0.020	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.010	0.020	ND	ND	ND	ND	ND
Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
p-Terphenyl-D14	75-125		102	101	101	101	106

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518IB1

Our Lab I.D.			**94142.38**	**94142.40**	**94142.41**		
Client Sample I.D.			SS-44-0	SS-29-0	SS DUP 3		
Date Sampled			09/17/2018	09/17/2018	09/17/2018		
Date Prepared			09/25/2018	09/25/2018	09/25/2018		
Preparation Method			3550B	3550B	3550B		
Date Analyzed			09/27/2018	09/27/2018	09/27/2018		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Benzo(a)anthracene	0.010	0.020	ND	ND	ND		
Benzo(a)pyrene	0.010	0.020	ND	ND	ND		
Benzo(b)fluoranthene	0.010	0.020	ND	ND	ND		
Benzo(k)fluoranthene	0.010	0.020	ND	ND	ND		
Chrysene	0.010	0.020	ND	ND	ND		
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND	ND		
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND	ND		
Acenaphthene	0.010	0.020	ND	ND	ND		
Acenaphthylene	0.010	0.020	ND	ND	ND		
Anthracene	0.010	0.020	ND	ND	ND		
Benzo(g,h,i)perylene	0.010	0.020	ND	ND	ND		
Fluoranthene	0.010	0.020	ND	ND	0.0100J		
Fluorene	0.010	0.020	ND	ND	ND		
Naphthalene	0.010	0.020	ND	ND	ND		
Phenanthrene	0.010	0.020	ND	ND	0.0117J		
Pyrene	0.010	0.020	ND	ND	ND		
2-Methylnaphthalene	0.010	0.020	ND	ND	ND		
Our Lab I.D.			**94142.38**	**94142.40**	**94142.41**		
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**		
p-Terphenyl-D14	75-125		98.3	101	93.5		

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Client Sample I.D.				SS-1-0	SS-4-0	SS-6-0	SS-23-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acenaphthene	0.25	0.50	ND	ND	ND	ND	ND
Acenaphthylene	0.25	0.50	ND	ND	ND	ND	ND
Anthracene	0.25	0.50	ND	ND	ND	ND	ND
Azobenzene	0.25	0.50	ND	ND	ND	ND	ND
Benzidine	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzoic Acid	0.25	0.50	ND	ND	ND	ND	ND
Benzyl Alcohol	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethoxy)methane	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethyl)ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl) ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Butyl benzyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chloroaniline	0.25	0.50	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Chlorophenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Chrysene	0.25	0.50	ND	ND	ND	ND	ND
Di-n-butyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
Di-n-octyl phthalate (Dioctyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Client Sample I.D.				SS-1-0	SS-4-0	SS-6-0	SS-23-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dibenzofuran	0.25	0.50	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Diethyl phthalate (Diethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dimethyl phthalate (Dimethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dimethylphenol	0.25	0.50	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.25	0.50	ND	ND	ND	ND	ND
2,6-Dinitrotoluene (2,6-DNT)	0.25	0.50	ND	ND	ND	ND	ND
Fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Fluorene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachloroethane	0.25	0.50	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Isophorone	0.25	0.50	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.25	0.50	ND	ND	ND	ND	ND
4-Methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2-Methylphenol (2-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
3-Methylphenol (3-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
N-Nitroso-Di-n-propylamine	0.25	0.50	ND	ND	ND	ND	ND
Naphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
3-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
4-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
Nitrobenzene (NB)	0.25	0.50	ND	ND	ND	ND	ND
4-Nitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2-Nitrophenol (o-Nitrophenol)	0.25	0.50	ND	ND	ND	ND	ND
N-nitrosodiphenylamine	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Client Sample I.D.				SS-1-0	SS-4-0	SS-6-0	SS-23-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Pentachlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Phenanthrene	0.25	0.50	ND	ND	ND	ND	ND
Phenol	0.25	0.50	ND	ND	ND	ND	ND
Pyrene	0.25	0.50	ND	ND	ND	ND	ND
Pyridine	0.25	0.50	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
2-Fluorophenol	25-121		61.6	56.8	56.8	55.2	55.8
2-Fluorobiphenyl	30-115		69.2	64.4	66.0	60.0	62.0
Nitrobenzene-d5	23-120		67.2	62.8	63.6	60.0	57.6
Phenol-d6	21-113		62.6	56.8	59.0	56.2	50.6
p-Terphenyl-D14	18-137		61.6	58.0	65.6	57.2	53.2
2,4,6-Tribromophenol	19-122		57.4	55.2	56.8	51.0	50.2

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ANALYTICAL RESULTS

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1853 Camino Del Sol
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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Client Sample I.D.			SS-19-0	SS-42-0	SS-34-0	SS-47-0	SS-38-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acenaphthene	0.25	0.50	ND	ND	ND	ND	ND
Acenaphthylene	0.25	0.50	ND	ND	ND	ND	ND
Anthracene	0.25	0.50	ND	ND	ND	ND	ND
Azobenzene	0.25	0.50	ND	ND	ND	ND	ND
Benzidine	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzoic Acid	0.25	0.50	ND	ND	ND	ND	ND
Benzyl Alcohol	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethoxy)methane	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethyl)ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl) ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Butyl benzyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chloroaniline	0.25	0.50	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Chlorophenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Chrysene	0.25	0.50	ND	ND	ND	ND	ND
Di-n-butyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
Di-n-octyl phthalate (Dioctyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Client Sample I.D.			SS-19-0	SS-42-0	SS-34-0	SS-47-0	SS-38-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dibenzofuran	0.25	0.50	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Diethyl phthalate (Diethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dimethyl phthalate (Dimethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dimethylphenol	0.25	0.50	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.25	0.50	ND	ND	ND	ND	ND
2,6-Dinitrotoluene (2,6-DNT)	0.25	0.50	ND	ND	ND	ND	ND
Fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Fluorene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachloroethane	0.25	0.50	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Isophorone	0.25	0.50	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.25	0.50	ND	ND	ND	ND	ND
4-Methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2-Methylphenol (2-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
3-Methylphenol (3-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
N-Nitroso-Di-n-propylamine	0.25	0.50	ND	ND	ND	ND	ND
Naphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
3-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
4-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
Nitrobenzene (NB)	0.25	0.50	ND	ND	ND	ND	ND
4-Nitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2-Nitrophenol (o-Nitrophenol)	0.25	0.50	ND	ND	ND	ND	ND
N-nitrosodiphenylamine	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Client Sample I.D.			SS-19-0	SS-42-0	SS-34-0	SS-47-0	SS-38-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Pentachlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Phenanthrene	0.25	0.50	ND	ND	ND	ND	ND
Phenol	0.25	0.50	ND	ND	ND	ND	ND
Pyrene	0.25	0.50	ND	ND	ND	ND	ND
Pyridine	0.25	0.50	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
2-Fluorophenol	25-121		48.6	49.6	50.4	48.8	49.2
2-Fluorobiphenyl	30-115		56.0	58.8	58.4	54.4	51.6
Nitrobenzene-d5	23-120		55.6	57.6	54.8	52.8	52.0
Phenol-d6	21-113		49.6	50.8	50.2	49.2	48.8
p-Terphenyl-D14	18-137		53.6	55.2	53.2	47.2	48.8
2,4,6-Tribromophenol	19-122		46.2	49.2	47.8	44.2	40.6

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ANALYTICAL RESULTS

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94142.38	94142.40	94142.41		
Client Sample I.D.			SS-44-0	SS-29-0	SS DUP 3		
Date Sampled			09/17/2018	09/17/2018	09/17/2018		
Date Prepared			09/25/2018	09/25/2018	09/25/2018		
Preparation Method			3550B	3550B	3550B		
Date Analyzed			09/26/2018	09/26/2018	09/26/2018		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Acenaphthene	0.25	0.50	ND	ND	ND		
Acenaphthylene	0.25	0.50	ND	ND	ND		
Anthracene	0.25	0.50	ND	ND	ND		
Azobenzene	0.25	0.50	ND	ND	ND		
Benzidine	0.25	0.50	ND	ND	ND		
Benzo(a)anthracene	0.25	0.50	ND	ND	ND		
Benzo(a)pyrene	0.25	0.50	ND	ND	ND		
Benzo(b)fluoranthene	0.25	0.50	ND	ND	ND		
Benzo(g,h,i)perylene	0.25	0.50	ND	ND	ND		
Benzo(k)fluoranthene	0.25	0.50	ND	ND	ND		
Benzoic Acid	0.25	0.50	ND	ND	ND		
Benzyl Alcohol	0.25	0.50	ND	ND	ND		
Bis(2-Chloroethoxy)methane	0.25	0.50	ND	ND	ND		
Bis(2-Chloroethyl)ether	0.25	0.50	ND	ND	ND		
Bis(2-chloroisopropyl) ether	0.25	0.50	ND	ND	ND		
Bis(2-ethylhexyl) phthalate	0.25	0.50	ND	ND	ND		
4-Bromophenyl phenyl ether	0.25	0.50	ND	ND	ND		
Butyl benzyl phthalate	0.25	0.50	ND	ND	ND		
4-Chloro-3-methylphenol	0.25	0.50	ND	ND	ND		
4-Chloroaniline	0.25	0.50	ND	ND	ND		
2-Chloronaphthalene	0.25	0.50	ND	ND	ND		
2-Chlorophenol	0.25	0.50	ND	ND	ND		
4-Chlorophenyl phenyl ether	0.25	0.50	ND	ND	ND		
Chrysene	0.25	0.50	ND	ND	ND		
Di-n-butyl phthalate	0.25	0.50	ND	ND	ND		
Di-n-octyl phthalate (Dioctyl ester)	0.25	0.50	ND	ND	ND		
Dibenzo(a,h)anthracene	0.25	0.50	ND	ND	ND		

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94142.38	94142.40	94142.41		
Client Sample I.D.			SS-44-0	SS-29-0	SS DUP 3		
Date Sampled			09/17/2018	09/17/2018	09/17/2018		
Date Prepared			09/25/2018	09/25/2018	09/25/2018		
Preparation Method			3550B	3550B	3550B		
Date Analyzed			09/26/2018	09/26/2018	09/26/2018		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Dibenzofuran	0.25	0.50	ND	ND	ND		
1,2-Dichlorobenzene	0.25	0.50	ND	ND	ND		
1,3-Dichlorobenzene	0.25	0.50	ND	ND	ND		
1,4-Dichlorobenzene	0.25	0.50	ND	ND	ND		
3,3'-Dichlorobenzidine	0.25	0.50	ND	ND	ND		
2,4-Dichlorophenol	0.25	0.50	ND	ND	ND		
Diethyl phthalate (Diethyl ester)	0.25	0.50	ND	ND	ND		
Dimethyl phthalate (Dimethyl ester)	0.25	0.50	ND	ND	ND		
2,4-Dimethylphenol	0.25	0.50	ND	ND	ND		
4,6-Dinitro-2-methylphenol	0.25	0.50	ND	ND	ND		
2,4-Dinitrophenol	0.25	0.50	ND	ND	ND		
2,4-Dinitrotoluene	0.25	0.50	ND	ND	ND		
2,6-Dinitrotoluene (2,6-DNT)	0.25	0.50	ND	ND	ND		
Fluoranthene	0.25	0.50	ND	ND	ND		
Fluorene	0.25	0.50	ND	ND	ND		
Hexachlorobenzene	0.25	0.50	ND	ND	ND		
Hexachlorobutadiene	0.25	0.50	ND	ND	ND		
Hexachlorocyclopentadiene	0.25	0.50	ND	ND	ND		
Hexachloroethane	0.25	0.50	ND	ND	ND		
Indeno(1,2,3-cd)pyrene	0.25	0.50	ND	ND	ND		
Isophorone	0.25	0.50	ND	ND	ND		
2-Methylnaphthalene	0.25	0.50	ND	ND	ND		
4-Methylphenol	0.25	0.50	ND	ND	ND		
2-Methylphenol (2-Cresol)	0.25	0.50	ND	ND	ND		
3-Methylphenol (3-Cresol)	0.25	0.50	ND	ND	ND		
N-Nitroso-Di-n-propylamine	0.25	0.50	ND	ND	ND		
Naphthalene	0.25	0.50	ND	ND	ND		
2-Nitroaniline	0.25	0.50	ND	ND	ND		
3-Nitroaniline	0.25	0.50	ND	ND	ND		
4-Nitroaniline	0.25	0.50	ND	ND	ND		
Nitrobenzene (NB)	0.25	0.50	ND	ND	ND		
4-Nitrophenol	0.25	0.50	ND	ND	ND		
2-Nitrophenol (o-Nitrophenol)	0.25	0.50	ND	ND	ND		
N-nitrosodiphenylamine	0.25	0.50	ND	ND	ND		

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			**94142.38**	**94142.40**	**94142.41**		
Client Sample I.D.			SS-44-0	SS-29-0	SS DUP 3		
Date Sampled			09/17/2018	09/17/2018	09/17/2018		
Date Prepared			09/25/2018	09/25/2018	09/25/2018		
Preparation Method			3550B	3550B	3550B		
Date Analyzed			09/26/2018	09/26/2018	09/26/2018		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Pentachlorophenol	0.25	0.50	ND	ND	ND		
Phenanthrene	0.25	0.50	ND	ND	ND		
Phenol	0.25	0.50	ND	ND	ND		
Pyrene	0.25	0.50	ND	ND	ND		
Pyridine	0.25	0.50	ND	ND	ND		
1,2,4-Trichlorobenzene	0.25	0.50	ND	ND	ND		
2,4,5-Trichlorophenol	0.25	0.50	ND	ND	ND		
2,4,6-Trichlorophenol	0.25	0.50	ND	ND	ND		
Our Lab I.D.			**94142.38**	**94142.40**	**94142.41**		
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**		
2-Fluorophenol	25-121		45.6	55.8	46.6		
2-Fluorobiphenyl	30-115		51.6	62.0	53.2		
Nitrobenzene-d5	23-120		49.2	62.0	48.8		
Phenol-d6	21-113		42.8	56.0	46.4		
p-Terphenyl-D14	18-137		42.8	56.0	48.8		
2,4,6-Tribromophenol	19-122		36.8	50.8	41.0		

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Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1

Our Lab I.D.			Method Blank	94142.01	94142.02	94142.03	94142.04
Client Sample I.D.				SS-1-0	SS-2-0	SS-3-0	SS-4-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	ND	ND	ND	1.00J
Chlordane (alpha)	1.0	2.0	ND	ND	ND	ND	ND
4,4'-DDD (DDD)	1.0	2.0	ND	1.63J	4.61	3.46	1.96J
4,4'-DDE (DDE)	1.0	2.0	ND	18.8	44.1	43.2	32.5
4,4'-DDT (DDT)	1.0	2.0	ND	23.5	56.8	53.7	33.3
Dieldrin	1.0	2.0	ND	ND	ND	1.13J	ND
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	266	289	246	257

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	94142.01	94142.02	94142.03	94142.04
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		80.0	89.2	107	128	121
Tetrachloro-m-xylene	30-150		84.8	78.0	84.0	85.6	90.0

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1

Our Lab I.D.			94142.05	94142.06	94142.07	94142.08	94142.09
Client Sample I.D.			SS-5-0	SS-6-0	SS-7-0	SS-8-0	SS-24-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	1.51J	ND	1.49J	3.25
Chlordane (alpha)	1.0	2.0	ND	ND	ND	ND	1.92J
4,4'-DDD (DDD)	1.0	2.0	1.53J	7.23	2.71	1.84J	23.9
4,4'-DDE (DDE)	1.0	2.0	31.1	75.3	19.0	ND	369
4,4'-DDT (DDT)	1.0	2.0	56.2	156	33.2	16.7	542
Dieldrin	1.0	2.0	ND	2.72	ND	ND	9.57
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	ND	1.33J
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	325	528	ND	ND	1,380

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.05	94142.06	94142.07	94142.08	94142.09
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		100	106	119	88.0	88.0
Tetrachloro-m-xylene	30-150		84.4	76.4	92.0	74.4	78.8

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1

Our Lab I.D.			94142.10	94142.11	94142.12	94142.13	94142.14
Client Sample I.D.			SS-14-0	SS-23-0	SS-13-0	SS-22-0	SS-12-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	4.70	5.47	2.50	2.65	ND
Chlordane (alpha)	1.0	2.0	2.16	2.51	1.37J	ND	ND
4,4'-DDD (DDD)	1.0	2.0	16.3	15.9	10.3	11.2	3.29
4,4'-DDE (DDE)	1.0	2.0	250	150	104	104	25.4
4,4'-DDT (DDT)	1.0	2.0	405	334	226	216	43.3
Dieldrin	1.0	2.0	6.18	6.60	5.75	3.13	ND
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	2.54	2.96	1.13J	1.68J	ND
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	921	704	681	804	214

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.10	94142.11	94142.12	94142.13	94142.14
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		117	114	117	108	108
Tetrachloro-m-xylene	30-150		87.2	71.2	76.8	78.0	83.2

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1

Our Lab I.D.			94142.15	94142.16	94142.17	94142.18	94142.19
Client Sample I.D.			Soil DUP 2-1	SS-21-0	SS-11-0	SS-20-0	SS-10-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	1.18J	ND	1.16J	ND
Chlordane (alpha)	1.0	2.0	ND	ND	ND	ND	ND
4,4'-DDD (DDD)	1.0	2.0	2.56	2.53	4.82	3.61	4.93
4,4'-DDE (DDE)	1.0	2.0	25.8	26.1	32.4	30.6	36.0
4,4'-DDT (DDT)	1.0	2.0	43.4	41.8	54.2	39.5	60.2
Dieldrin	1.0	2.0	ND	1.08J	2.07	ND	ND
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	223	237	199	198	209

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.15	94142.16	94142.17	94142.18	94142.19
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		119	114	116	121	128
Tetrachloro-m-xylene	30-150		74.8	71.6	80.4	81.2	96.0

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1

Our Lab I.D.			94142.20				
Client Sample I.D.			Soil DUP 2-2				
Date Sampled			09/17/2018				
Date Prepared			09/25/2018				
Preparation Method			3550B				
Date Analyzed			09/26/2018				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	1.42J				
Chlordane (alpha)	1.0	2.0	ND				
4,4'-DDD (DDD)	1.0	2.0	5.26				
4,4'-DDE (DDE)	1.0	2.0	37.3				
4,4'-DDT (DDT)	1.0	2.0	66.9				
Dieldrin	1.0	2.0	ND				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	ND				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	85.0	170.0	135J				

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.20				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		117				
Tetrachloro-m-xylene	30-150		89.2				

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2

Our Lab I.D.			Method Blank	94142.21	94142.22	94142.23	94142.24
Client Sample I.D.				SS-19-0	SS-9-0	SS-18-0	SS-42-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	ND	1.01J	1.21J	46.5
Chlordane (alpha)	1.0	2.0	ND	ND	ND	ND	24.4
4,4'-DDD (DDD)	1.0	2.0	ND	3.18	3.18	5.05	51.9
4,4'-DDE (DDE)	1.0	2.0	ND	29.0	38.6	34.8	475
4,4'-DDT (DDT)	1.0	2.0	ND	44.9	63.1	38.4	607
Dieldrin	1.0	2.0	ND	1.31J	1.06J	1.11J	16.2
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	ND	22.1
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	125J	130J	133J	2,140

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	94142.21	94142.22	94142.23	94142.24
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		107	118	119	134	85.6
Tetrachloro-m-xylene	30-150		94.4	88.4	88.0	106	100

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2

Our Lab I.D.			94142.25	94142.26	94142.27	94142.28	94142.29
Client Sample I.D.			SS-34-0	SS-48-0	SS-41-0	SS-33-0	SS-47-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	10.9	25.7	20.3	9.87	19.4
Chlordane (alpha)	1.0	2.0	5.67	13.9	10.7	4.66	11.2
4,4'-DDD (DDD)	1.0	2.0	34.8	69.8	41.6	24.5	40.7
4,4'-DDE (DDE)	1.0	2.0	405	562	363	337	370
4,4'-DDT (DDT)	1.0	2.0	594	663	638	520	520
Dieldrin	1.0	2.0	15.9	24.0	18.1	9.42	12.1
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	5.25	11.8	9.64	5.21	8.16
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	1,560	2,290	2,280	941	1,910

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.25	94142.26	94142.27	94142.28	94142.29
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		95.6	115	90.0	136	124
Tetrachloro-m-xylene	30-150		89.6	96.0	91.6	90.0	99.6

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2

Our Lab I.D.			94142.30	94142.31	94142.32	94142.33	94142.34
Client Sample I.D.			SS-40-0	SS-32-0	SS-46-0	SS-39-0	SS-31-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	13.0	3.22	24.6	12.7	3.04
Chlordane (alpha)	1.0	2.0	6.36	1.66J	14.1	6.66	1.57J
4,4'-DDD (DDD)	1.0	2.0	23.9	11.7	36.4	28.3	6.98
4,4'-DDE (DDE)	1.0	2.0	256	97.4	209	178	51.6
4,4'-DDT (DDT)	1.0	2.0	361	102	428	290	83.4
Dieldrin	1.0	2.0	9.24	4.25	14.2	7.89	2.64
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	6.65	1.56J	10.5	6.02	1.47J
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	1,360	510	1,820	1,540	417

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.30	94142.31	94142.32	94142.33	94142.34
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		142	97.6	108	98.0	121
Tetrachloro-m-xylene	30-150		97.2	88.4	93.2	88.8	91.6

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2

Our Lab I.D.			94142.35	94142.36	94142.37	94142.38	94142.39
Client Sample I.D.			SS-45-0	SS-38-0	SS-30-0	SS-44-0	SS-37-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	28.7	20.8	4.67	24.8	18.6
Chlordane (alpha)	1.0	2.0	14.4	10.0	2.34	12.4	9.72
4,4'-DDD (DDD)	1.0	2.0	37.2	39.6	9.54	60.9	30.9
4,4'-DDE (DDE)	1.0	2.0	352	345	96.7	443	419
4,4'-DDT (DDT)	1.0	2.0	375	415	96.2	441	406
Dieldrin	1.0	2.0	19.3	13.8	4.60	13.8	10.7
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	14.3	10.8	2.33	12.4	8.91
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	2,160	1,770	750	2,040	1,660

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.35	94142.36	94142.37	94142.38	94142.39
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		95.2	106	118	146	98.4
Tetrachloro-m-xylene	30-150		95.6	104	106	99.6	99.2

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2

Our Lab I.D.			94142.40				
Client Sample I.D.			SS-29-0				
Date Sampled			09/17/2018				
Date Prepared			09/25/2018				
Preparation Method			3550B				
Date Analyzed			09/27/2018				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	5.03				
Chlordane (alpha)	1.0	2.0	2.98				
4,4'-DDD (DDD)	1.0	2.0	11.5				
4,4'-DDE (DDE)	1.0	2.0	103				
4,4'-DDT (DDT)	1.0	2.0	103				
Dieldrin	1.0	2.0	2.71				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	ND				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	2.05				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	85.0	170.0	581				

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94142.40				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		103				
Tetrachloro-m-xylene	30-150		102				

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1

Our Lab I.D.			Method Blank	94142.41	94142.42	94142.43	94142.44
Client Sample I.D.				SS DUP 3	SS-43-0	SS-28-0	SS-17-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	6.53	20.8	2.38	1.52J
Chlordane (alpha)	1.0	2.0	ND	2.92	8.29	1.00J	ND
4,4'-DDD (DDD)	1.0	2.0	ND	8.80	45.6	10.3	4.34
4,4'-DDE (DDE)	1.0	2.0	ND	65.9	573	50.1	41.0
4,4'-DDT (DDT)	1.0	2.0	ND	75.5	513	43.0	33.2
Dieldrin	1.0	2.0	ND	2.54	11.0	1.65J	1.09J
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	3.61	12.5	1.38J	ND
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	372	2,220	289	282

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	94142.41	94142.42	94142.43	94142.44
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		83.6	107	98.8	108	140
Tetrachloro-m-xylene	30-150		90.8	96.8	90.0	111	94.0

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C3

Our Lab I.D.			Method Blank	94142.01	94142.04	94142.06	94142.11
Client Sample I.D.				SS-1-0	SS-4-0	SS-6-0	SS-23-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Arsenic	2.5	5.0	ND	ND	ND	ND	ND

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C3

Our Lab I.D.			94142.21	94142.24	94142.25	94142.29	94142.36
Client Sample I.D.			SS-19-0	SS-42-0	SS-34-0	SS-47-0	SS-38-0
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Arsenic	2.5	5.0	ND	2.65J	ND	ND	ND

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Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C3

Our Lab I.D.			94142.38	94142.40	94142.41		
Client Sample I.D.			SS-44-0	SS-29-0	SS DUP 3		
Date Sampled			09/17/2018	09/17/2018	09/17/2018		
Date Prepared			09/26/2018	09/26/2018	09/26/2018		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			09/27/2018	09/27/2018	09/27/2018		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Arsenic	2.5	5.0	ND	ND	ND		

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1853 Camino Del Sol
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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C3; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Arsenic	0.00	100	103	103	100	103	103	<1	75-125	<15

QC Batch No: 0926182C3; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Arsenic	100	104	104	100	103	103	<1	75-125	<15	

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	11.4	57.0	20.0	10.6	53.0	7.3	40-150	<40
4,4'-DDT (DDT)	23.5	50.0	83.5	120	50.0	69.4	91.8	26.6	40-150	<40
Dieldrin	0.628	50.0	33.1	64.9	50.0	30.7	60.1	7.7	40-150	<40
Endrin	0.00	50.0	43.9	87.8	50.0	42.2	84.4	3.9	40-150	<40
Heptachlor	0.00	20.0	10.6	53.0	20.0	10.2	51.0	3.8	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	11.6	58.0	20.0	10.1	50.5	13.8	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	28.8	115	25.0	26.0	104	10.0	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	19.6	78.4	25.0	18.8	75.2	4.2	30-150	<40

QC Batch No: 092518EB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Aldrin	20.0	11.5	57.5	50-150						
4,4'-DDT (DDT)	50.0	46.8	93.6	50-150						
Dieldrin	50.0	34.0	68.0	50-150						
Endrin	50.0	41.7	83.4	50-150						
Heptachlor	20.0	10.2	51.0	50-150						
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	11.4	57.0	50-150						
Surrogates										
Decachlorobiphenyl	25.0	26.0	104	30-150						
Tetrachloro-m-xylene	25.0	21.3	85.2	30-150						

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1853 Camino Del Sol
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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092518EB2; Dup or Spiked Sample: 94142.36; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	12.7	63.5	20.0	13.0	65.0	2.3	40-150	<40
4,4'-DDT (DDT)	415	50.0	525 #	220	50.0	506 #	182	18.9	40-150	<40
Dieldrin	13.8	50.0	55.9	84.2	50.0	51.4	75.2	11.3	40-150	<40
Endrin	0.00	50.0	45.8	91.6	50.0	48.3	96.6	5.3	40-150	<40
Heptachlor	0.00	20.0	12.5	62.5	20.0	13.1	65.5	4.7	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	12.3	61.5	20.0	14.2	71.0	14.3	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	23.0	92.0	25.0	26.3	105	13.2	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	24.6	98.4	25.0	22.9	91.6	7.2	30-150	<40

QC Batch No: 092518EB2; Dup or Spiked Sample: 94142.36; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Aldrin	20.0	12.2	61.0	50-150						
4,4'-DDT (DDT)	50.0	35.8	71.6	50-150						
Dieldrin	50.0	36.4	72.8	50-150						
Endrin	50.0	45.6	91.2	50-150						
Heptachlor	20.0	12.3	61.5	50-150						
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	12.5	62.5	50-150						
Surrogates										
Decachlorobiphenyl	25.0	29.0	116	30-150						
Tetrachloro-m-xylene	25.0	24.2	96.8	30-150						

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	13.7	68.5	20.0	12.4	62.0	10.0	40-150	<40
4,4'-DDT (DDT)	35.0	50.0	108	146	50.0	82.5	95.0	42.3	40-150	<40
Dieldrin	0.00	50.0	39.8	79.6	50.0	37.4	74.8	6.2	40-150	<40
Endrin	0.00	50.0	59.5	119	50.0	54.5	109	8.8	40-150	<40
Heptachlor	0.00	20.0	15.4	77.0	20.0	13.3	66.5	14.6	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	15.5	77.5	20.0	13.0	65.0	17.5	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	27.0	108	25.0	29.5	118	8.8	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	27.3	109	25.0	26.0	104	4.7	30-150	<40

QC Batch No: 092618EB1; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aldrin	20.0	11.6	58.0	20.0	10.7	53.5	8.1	50-150	<40	
4,4'-DDT (DDT)	50.0	42.7	85.4	50.0	37.2	74.4	13.8	50-150	<40	
Dieldrin	50.0	34.8	69.6	50.0	34.6	69.2	<1	50-150	<40	
Endrin	50.0	43.2	86.4	50.0	41.2	82.4	4.7	50-150	<40	
Heptachlor	20.0	11.5	57.5	20.0	11.9	59.5	3.4	50-150	<40	
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	11.9	59.5	20.0	12.3	61.5	3.3	50-150	<40	
Surrogates										
Decachlorobiphenyl	25.0	25.0	100	25.0	23.0	92.0	8.3	30-150	<40	
Tetrachloro-m-xylene	25.0	23.1	92.4	25.0	24.2	96.8	4.7	30-150	<40	

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Acenaphthene	0.00	2.50	1.63	65.2	2.50	1.51	60.4	7.6	46-118	<20
4-Chloro-3-methylphenol	0.00	5.00	3.13	62.6	5.00	2.95	59.0	5.9	39-98	<20
2-Chlorophenol	0.00	5.00	3.24	64.8	5.00	2.89	57.8	11.4	27-123	<20
1,4-Dichlorobenzene	0.00	2.50	1.59	63.6	2.50	1.44	57.6	9.9	36-97	<20
2,4-Dinitrotoluene	0.00	2.50	1.66	66.4	2.50	1.58	63.2	4.9	24-96	<20
N-Nitroso-Di-n-propylamine	0.00	2.50	1.90	76.0	2.50	1.82	72.8	4.3	41-116	<20
4-Nitrophenol	0.00	5.00	2.69	53.8	5.00	2.69	53.8	<1	10-110	<20
Pentachlorophenol	0.00	5.00	2.52	50.4	5.00	2.57	51.4	2.0	40-125	<20
Phenol	0.00	5.00	3.10	62.0	5.00	2.76	55.2	11.6	12-89	<20
Pyrene	0.00	2.50	1.75	70.0	2.50	1.56	62.4	11.5	26-127	<20
1,2,4-Trichlorobenzene	0.00	2.50	1.55	62.0	2.50	1.47	58.8	5.3	39-98	<20
Surrogates										
2-Fluorophenol	0.00	5.00	3.55	71.0	5.00	3.07	61.4	14.5	25-121	<20
2-Fluorobiphenyl	0.00	2.50	1.81	72.4	2.50	1.65	66.0	9.2	30-115	<20
Nitrobenzene-d5	0.00	2.50	1.85	74.0	2.50	1.75	70.0	5.6	23-120	<20
p-Terphenyl-D14	0.00	2.50	1.80	72.0	2.50	1.58	63.2	13.0	18-137	<20
Phenol-d6	0.00	5.00	3.46	69.2	5.00	3.03	60.6	13.3	24-113	<20
2,4,6-Tribromophenol	0.00	5.00	3.26	65.2	5.00	3.06	61.2	6.3	19-122	<20

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Acenaphthene	2.50	2.14	85.6	31-137						
4-Chloro-3-methylphenol	5.00	4.30	86.0	40-99						
2-Chlorophenol	5.00	4.41	88.2	25-102						
1,4-Dichlorobenzene	2.50	2.23	89.2	28-104						
2,4-Dinitrotoluene	2.50	2.22	88.8	28-89						
N-Nitroso-Di-n-propylamine	2.50	2.63	105	41-126						
4-Nitrophenol	5.00	3.86	77.2	11-114						

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Pentachlorophenol	5.00	3.79	75.8	17-125						
Phenol	5.00	3.95	79.0	26-90						
Pyrene	2.50	2.13	85.2	35-142						
1,2,4-Trichlorobenzene	2.50	2.20	88.0	38-107						
Surrogates										
2-Fluorophenol	5.00	5.30	106	25-121						
2-Fluorobiphenyl	2.50	2.42	96.8	30-115						
Nitrobenzene-d5	2.50	2.55	102	23-120						
p-Terphenyl-D14	2.50	2.27	90.8	18-137						
Phenol-d6	5.00	4.88	97.6	24-113						
2,4,6-Tribromophenol	5.00	4.62	92.4	19-122						

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518lB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzo(a)anthracene	0.00	0.0500	0.0485	97.0	0.0500	0.0497	99.4	2.4	75-125	<20
Benzo(a)pyrene	0.00	0.0500	0.0475	95.0	0.0500	0.0495	99.0	4.1	75-125	<20
Naphthalene	0.00	0.500	0.426	85.2	0.500	0.435	87.0	2.1	75-125	<20
Surrogates										
p-Terphenyl-D14	0.00	0.400	0.386	96.5	0.400	0.375	93.8	2.8	75-125	<20

QC Batch No: 092518lB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Benzo(a)anthracene	0.0500	0.0545	109	0.0500	0.0510	102	6.6	75-125	<20	
Benzo(a)pyrene	0.0500	0.0491	98.2	0.0500	0.0465	93.0	5.4	75-125	<20	
Naphthalene	0.500	0.475	95.0	0.500	0.457	91.4	3.9	75-125	<20	
LCS										
Acenaphthene	0.500	0.491	98.2	0.500	0.470	94.0	4.4	75-125	<20	
Acenaphthylene	1.00	1.03	103	1.00	0.992	99.2	3.8	75-125	<20	
Anthracene	0.0500	0.0486	97.2	0.0500	0.0465	93.0	4.4	75-125	<20	
Benzo(b)fluoranthene	0.100	0.103	103	0.100	0.0986	98.6	4.4	75-125	<20	
Benzo(g,h,i)perylene	0.100	0.102	102	0.100	0.0989	98.9	3.1	75-125	<20	
Benzo(k)fluoranthene	0.0500	0.0505	101	0.0500	0.0477	95.4	5.7	75-125	<20	
Chrysene	0.0500	0.0520	104	0.0500	0.0498	99.6	4.3	75-125	<20	
Dibenzo(a,h)anthracene	0.100	0.101	101	0.100	0.0977	97.7	3.3	75-125	<20	
Fluoranthene	0.100	0.102	102	0.100	0.0977	97.7	4.3	75-125	<20	
Fluorene	0.100	0.100	100	0.100	0.0966	96.6	3.5	75-125	<20	
Indeno(1,2,3-cd)pyrene	0.0500	0.0449	89.8	0.0500	0.0486	97.2	7.9	75-125	<20	
Phenanthrene	0.0500	0.0515	103	0.0500	0.0490	98.0	5.0	75-125	<20	
Pyrene	0.0500	0.0520	104	0.0500	0.0491	98.2	5.7	75-125	<20	
Surrogates										
p-Terphenyl-D14	0.400	0.420	105	0.400	0.404	101	3.9	75-125	<20	

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QUALITY CONTROL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele
Page: **49**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94142	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB3; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C9-C22)	0.00	500	434	86.8	500	443	88.6	2.1	75-125	<20
Surrogates										
Chlorobenzene	0.00	100	80.9	80.9	100	80.2	80.2	<1	75-125	<20

QC Batch No: 092618PB3; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
TPH as Diesel (C9-C22)	500	425	85.0	75-125						
Surrogates										
Chlorobenzene	100	80.3	80.3	75-125						

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

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Ordered By

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Number of Pages	**34**
Date Received	**09/20/2018**
Date Reported	**10/02/2018**

Job Number	Order Date	Client
94143	09/20/2018	T/TSB

Project ID: 38186
Project Name: OUHSD HS#8 PEA
Site: 1853 Camino Del Sol
Oxnard, CA 93030

Enclosed please find results of analyses of 28 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

109215

AETL JOB No. 94143

Page 4 of 5

COMPANY	Tetra Tech Inc
PROJECT MANAGER	James Steele
COMPANY ADDRESS	5383 Hollister Ave Suite 130, Santa Barbara CA 93111
PHONE	805-681-6302
FAX	
PROJECT NAME	OUSD HS #P
PROJECT #	38186
SITE NAME AND ADDRESS	1853 Camino Del Sol, Oxnard CA
PO #	100-SBA-T38186

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	8081A OCPs	6010B Arsenic	8270C SVOCs	8310 PAHs	8015B Diesel, heavy oil range TPH	TEST INSTRUCTIONS & COMMENTS
1	SS-27-0	94143.01	09/17/18	1520	Soil	1,90z Jar	None	X					* Hold for MAD EPH04 MA EPH Aliphatics and Aromatics
2	SS-16-0	94143.02		1525				X	X	X	X	X	* See above
3	SS-26-0	94143.03		1530				X					
4	SS-36-0	94143.04		1535				X					
5	SS-15-0	94143.05		1540				X					
6	SS-25-0	94143.06		1545				X					
7	SS-35-0	94143.07		1550				X	X	X	X	X	* See Above
8	SS-49-0	94143.08	09/18/18	1635				X					
9	Soil Dup 3	94143.09		1635				X					
10	SS-55-0	94143.10		1640				X					
11	SS-50-0	94143.11		1645				X					
12	Soil Dup 3	94143.12		1645				X					
13	SS-56-0	94143.13		1650				X					
14	SS-51-0	94143.14		1700				X					
15	Soil Dup 3	94143.15		1700				X					

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15 50	PROPERLY COOLED (Y / N / NA)	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT (Y / N / NA)	
RECEIVED IN GOOD COND (Y / N)		SAMPLES ACCEPTED (Y / N)	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

	1.	2.	3.
RELINQUISHED BY SAMPLER:	Signature: Jason Dunp Printed Name: Jason Dunp Date: 09/20/18 Time: 1900		
RELINQUISHED BY:		Signature: Printed Name: Date: Time:	Signature: Printed Name: Barajas Date: 9/20/18 Time: 2040
RECEIVED BY:	Signature: Printed Name: Barajas Date: 9/20/18 Time: 1900		
RECEIVED BY:		Signature: Printed Name: Date: Time:	
RECEIVED BY LABORATORY:			AETL Signature: Printed Name: Austin Date: 09/20/18 Time: 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

109216

AETL JOB No. 94143

COMPANY: Tetra Tech Inc
PROJECT MANAGER:
COMPANY ADDRESS: 5383 Hollister Ave, Suite 130, Santa Barbara, CA 93111
PHONE: 805-681-6302
FAX:
PROJECT NAME: OUSD HS #8
PROJECT #: 38186
SITE NAME AND ADDRESS: 1853 Camino Del Sol Oxnard CA
PO #: 100-584-T38186

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	SS-57-0	94143.16	09/18/18	1708	Soil	1, 8oz Jar	None
2	Soil Dup 5	94143.17		1708			
3	SS-52-0	94143.18		1715			
4	Soil Dup 3	94143.19		1715			
5	SS-58-0	94143.20		1720			
6	SS-53-0	94143.21		1725			
7	SS-59-0	94143.22		1730			
8	SS-54-0	94143.23		1735			
9	SS-60-0	94143.24		1740			
10	SS-61-0	94143.25	09/19/18	1115			
11	Soil Dup 6	94143.26		1115			
12	Soil Dup 1	94143.27	09/17/18	0946			
13	Soil Dup 2	94143.28		1256			
14	Soil TB	94143.29	09/18/18	0800		2 VOA	
15							

ANALYSIS REQUESTED

	8081A OCPs	6010B Asbestos	8270C SVOCs	8310 PAHs	8015B diesel, heavy oil Range TPH	8082 PCBs					
1	X	X	X	X	X						
2			X	X	X						
3	X										
4	X										
5	X										
6	X										
7	X										
8	X										
9	X	X	X	X	X						
10	~~X~~ JP					X					
11						X					
12	X	X	X	X	X						
13	X										
14											
15											

TEST INSTRUCTIONS & COMMENTS

* Hold for MADEP-EPH04 MA EPH Aliphatics and Aromatics
1 * See above
2 * See above
9 * See above
12 * See above

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15 +5 TB	PROPERLY COOLED (Y / N / NA)	
CUSTODY SEALS Y / N / NA	0	SAMPLES INTACT Y / N / NA	0
RECEIVED IN GOOD COND. Y / N	0	SAMPLES ACCEPTED Y / N	0

TURN AROUND TIME

☒ NORMAL ☐ RUSH
☑ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Jason Dan		
Printed Name:	Jason Dan		
Date / Time:	09/20/18 1900		
	RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: 3.**
Signature:			
Printed Name:	Sargis F		
Date / Time:	9/20/18 1900		09/20/18 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: TetraTech

Project Name:

AETL Job Number: 94142, 94143

Date Received: 09/24/18 Received by: Antin

Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS

☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):

Inside temperature of shipping container No 1: 3.2°C, No 2: _____, No 3: _____

Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ ☒ Wide mouth jars, ☐ ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): _____

How are samples preserved: ☐ None, ☐ Ice , ☒ Blue Ice, ☐ Dry Ice

☒ None, ☐ HNO_3, ☐ NaOH, ☐ ZnOAc, ☐ HCl, ☐ $Na_2S_2O_3$, MeOH

☐ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	2		

Explain all "No" answers for above questions:

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Project ID: 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94143	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 29 samples with the following specification on 09/20/2018.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94143.29	Soil TB	09/18/2018	Aqueous	2

Method ^ Submethod	Req Date	Priority	TAT	Units
ARCHIVE	09/27/2018	2	Normal	--

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94143.01	SS-27-0	09/17/2018	Soil	1
94143.03	SS-26-0	09/17/2018	Soil	1
94143.04	SS-36-0	09/17/2018	Soil	1
94143.05	SS-15-0	09/17/2018	Soil	1
94143.06	SS-25-0	09/17/2018	Soil	1
94143.08	SS-49-0	09/18/2018	Soil	1
94143.09	Soil DUP 3-1	09/18/2018	Soil	1
94143.10	SS-55-0	09/18/2018	Soil	1
94143.11	SS-50-0	09/18/2018	Soil	1
94143.12	Soil DUP 3-2	09/18/2018	Soil	1
94143.13	SS-56-0	09/18/2018	Soil	1
94143.14	SS-51-0	09/18/2018	Soil	1
94143.15	Soil DUP 3-3	09/18/2018	Soil	1
94143.18	SS-52-0	09/18/2018	Soil	1
94143.19	Soil DUP 3-4	09/18/2018	Soil	1
94143.20	SS-58-0	09/18/2018	Soil	1
94143.21	SS-53-0	09/18/2018	Soil	1
94143.22	SS-59-0	09/18/2018	Soil	1
94143.23	SS-54-0	09/18/2018	Soil	1
94143.28	Soil DUP 2	09/17/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8081A)	09/27/2018	2	Normal	ug/Kg

Continued

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Telephone: (805)681-3100
Attention: James Steele

Project ID: 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94143	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94143.02	SS-16-0	09/17/2018	Soil	1
94143.07	SS-35-0	09/17/2018	Soil	1
94143.16	SS-57-0	09/18/2018	Soil	1
94143.24	SS-60-0	09/18/2018	Soil	1
94143.27	Soil DUP 1	09/17/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010BSCAN) ^ AS	09/27/2018	2	Normal	mg/Kg
(8081A)	09/27/2018	2	Normal	ug/Kg
(8270C)	09/27/2018	2	Normal	mg/Kg
(8310)	09/27/2018	2	Normal	mg/Kg
(M8015D)	09/27/2018	2	Normal	mg/Kg

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94143.17	Soil DUP 5	09/18/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8270C)	09/27/2018	2	Normal	mg/Kg
(8310)	09/27/2018	2	Normal	mg/Kg
(M8015D)	09/27/2018	2	Normal	mg/Kg

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94143.25	SS-61-0	09/19/2018	Soil	1
94143.26	Soil DUP 6	09/19/2018	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8082)	09/27/2018	2	Normal	ug/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele
Page: **2**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1

Our Lab I.D.			Method Blank	**94143.02**	**94143.07**	**94143.16**	**94143.17**
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	Soil DUP 5
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C9-C22)	1.0	10.0	ND	ND	8.00J	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	10.0	ND	ND	19.1	12.6	5.80J
TPH Total as Diesel and Heavy HC. C9-C40	1.0	10.0	ND	ND	27.1	12.6	5.80J
Our Lab I.D.			Method Blank	**94143.02**	**94143.07**	**94143.16**	**94143.17**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Chlorobenzene	75-125		79.2	83.6	76.2	77.3	79.2

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ANALYTICAL RESULTS

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Telephone: (805)681-3100
Attn: James Steele
Page: **3**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1

Our Lab I.D.			**94143.24**	**94143.27**			
Client Sample I.D.			SS-60-0	Soil DUP 1			
Date Sampled			09/18/2018	09/17/2018			
Date Prepared			09/26/2018	09/26/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/26/2018	09/26/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Diesel (C9-C22)	1.0	10.0	ND	ND			
TPH as Heavy Hydrocarbons (C23-C40)	1.0	10.0	ND	ND			
TPH Total as Diesel and Heavy HC. C9-C40	1.0	10.0	ND	ND			
Our Lab I.D.			**94143.24**	**94143.27**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Chlorobenzene	75-125		77.1	86.7			

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518IB1

Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	Soil DUP 5
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Benzo(a)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Chrysene	0.010	0.020	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthene	0.010	0.020	ND	ND	ND	ND	ND
Acenaphthylene	0.010	0.020	ND	ND	ND	ND	ND
Anthracene	0.010	0.020	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.010	0.020	ND	ND	ND	ND	ND
Fluoranthene	0.010	0.020	ND	ND	ND	ND	ND
Fluorene	0.010	0.020	ND	ND	ND	ND	ND
Naphthalene	0.010	0.020	ND	ND	ND	ND	ND
Phenanthrene	0.010	0.020	ND	ND	ND	ND	ND
Pyrene	0.010	0.020	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.010	0.020	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
p-Terphenyl-D14	75-125		91.8	98.0	95.5	92.8	92.5

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518IB1

Our Lab I.D.			**94143.24**	**94143.27**			
Client Sample I.D.			SS-60-0	Soil DUP 1			
Date Sampled			09/18/2018	09/17/2018			
Date Prepared			09/25/2018	09/25/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/26/2018	09/26/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Benzo(a)anthracene	0.010	0.020	ND	ND			
Benzo(a)pyrene	0.010	0.020	ND	ND			
Benzo(b)fluoranthene	0.010	0.020	ND	ND			
Benzo(k)fluoranthene	0.010	0.020	ND	ND			
Chrysene	0.010	0.020	ND	ND			
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND			
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND			
Acenaphthene	0.010	0.020	ND	ND			
Acenaphthylene	0.010	0.020	ND	ND			
Anthracene	0.010	0.020	ND	ND			
Benzo(g,h,i)perylene	0.010	0.020	ND	ND			
Fluoranthene	0.010	0.020	ND	ND			
Fluorene	0.010	0.020	ND	ND			
Naphthalene	0.010	0.020	ND	ND			
Phenanthrene	0.010	0.020	ND	ND			
Pyrene	0.010	0.020	ND	ND			
2-Methylnaphthalene	0.010	0.020	ND	ND			
Our Lab I.D.			**94143.24**	**94143.27**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
p-Terphenyl-D14	75-125		89.0	101			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	Soil DUP 5
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acenaphthene	0.25	0.50	ND	ND	ND	ND	ND
Acenaphthylene	0.25	0.50	ND	ND	ND	ND	ND
Anthracene	0.25	0.50	ND	ND	ND	ND	ND
Azobenzene	0.25	0.50	ND	ND	ND	ND	ND
Benzidine	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.25	0.50	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Benzoic Acid	0.25	0.50	ND	ND	ND	ND	ND
Benzyl Alcohol	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethoxy)methane	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-Chloroethyl)ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl) ether	0.25	0.50	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Butyl benzyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chloroaniline	0.25	0.50	ND	ND	ND	ND	ND
2-Chloronaphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Chlorophenol	0.25	0.50	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	0.25	0.50	ND	ND	ND	ND	ND
Chrysene	0.25	0.50	ND	ND	ND	ND	ND
Di-n-butyl phthalate	0.25	0.50	ND	ND	ND	ND	ND
Di-n-octyl phthalate (Dioctyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	Soil DUP 5
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dibenzofuran	0.25	0.50	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Diethyl phthalate (Diethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
Dimethyl phthalate (Dimethyl ester)	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dimethylphenol	0.25	0.50	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	0.25	0.50	ND	ND	ND	ND	ND
2,6-Dinitrotoluene (2,6-DNT)	0.25	0.50	ND	ND	ND	ND	ND
Fluoranthene	0.25	0.50	ND	ND	ND	ND	ND
Fluorene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	0.25	0.50	ND	ND	ND	ND	ND
Hexachloroethane	0.25	0.50	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.25	0.50	ND	ND	ND	ND	ND
Isophorone	0.25	0.50	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.25	0.50	ND	ND	ND	ND	ND
4-Methylphenol	0.25	0.50	ND	ND	ND	ND	ND
2-Methylphenol (2-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
3-Methylphenol (3-Cresol)	0.25	0.50	ND	ND	ND	ND	ND
N-Nitroso-Di-n-propylamine	0.25	0.50	ND	ND	ND	ND	ND
Naphthalene	0.25	0.50	ND	ND	ND	ND	ND
2-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
3-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
4-Nitroaniline	0.25	0.50	ND	ND	ND	ND	ND
Nitrobenzene (NB)	0.25	0.50	ND	ND	ND	ND	ND
4-Nitrophenol	0.25	0.50	ND	ND	ND	ND	ND
2-Nitrophenol (o-Nitrophenol)	0.25	0.50	ND	ND	ND	ND	ND
N-nitrosodiphenylamine	0.25	0.50	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	Soil DUP 5
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Pentachlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Phenanthrene	0.25	0.50	ND	ND	ND	ND	ND
Phenol	0.25	0.50	ND	ND	ND	ND	ND
Pyrene	0.25	0.50	ND	ND	ND	ND	ND
Pyridine	0.25	0.50	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.25	0.50	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.25	0.50	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.17
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
2-Fluorophenol	25-121		61.6	52.8	51.2	42.0	46.6
2-Fluorobiphenyl	30-115		69.2	61.2	60.4	52.4	53.2
Nitrobenzene-d5	23-120		67.2	56.8	57.6	46.8	50.0
Phenol-d6	21-113		62.6	52.8	53.2	42.8	45.2
p-Terphenyl-D14	18-137		61.6	53.6	51.2	46.0	47.2
2,4,6-Tribromophenol	19-122		57.4	48.4	48.8	40.4	40.4

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94143.24	94143.27			
Client Sample I.D.			SS-60-0	Soil DUP 1			
Date Sampled			09/18/2018	09/17/2018			
Date Prepared			09/25/2018	09/25/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/27/2018	09/27/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Acenaphthene	0.25	0.50	ND	ND			
Acenaphthylene	0.25	0.50	ND	ND			
Anthracene	0.25	0.50	ND	ND			
Azobenzene	0.25	0.50	ND	ND			
Benzidine	0.25	0.50	ND	ND			
Benzo(a)anthracene	0.25	0.50	ND	ND			
Benzo(a)pyrene	0.25	0.50	ND	ND			
Benzo(b)fluoranthene	0.25	0.50	ND	ND			
Benzo(g,h,i)perylene	0.25	0.50	ND	ND			
Benzo(k)fluoranthene	0.25	0.50	ND	ND			
Benzoic Acid	0.25	0.50	ND	ND			
Benzyl Alcohol	0.25	0.50	ND	ND			
Bis(2-Chloroethoxy)methane	0.25	0.50	ND	ND			
Bis(2-Chloroethyl)ether	0.25	0.50	ND	ND			
Bis(2-chloroisopropyl) ether	0.25	0.50	ND	ND			
Bis(2-ethylhexyl) phthalate	0.25	0.50	ND	ND			
4-Bromophenyl phenyl ether	0.25	0.50	ND	ND			
Butyl benzyl phthalate	0.25	0.50	ND	ND			
4-Chloro-3-methylphenol	0.25	0.50	ND	ND			
4-Chloroaniline	0.25	0.50	ND	ND			
2-Chloronaphthalene	0.25	0.50	ND	ND			
2-Chlorophenol	0.25	0.50	ND	ND			
4-Chlorophenyl phenyl ether	0.25	0.50	ND	ND			
Chrysene	0.25	0.50	ND	ND			
Di-n-butyl phthalate	0.25	0.50	ND	ND			
Di-n-octyl phthalate (Dioctyl ester)	0.25	0.50	ND	ND			
Dibenzo(a,h)anthracene	0.25	0.50	ND	ND			

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			94143.24	94143.27			
Client Sample I.D.			SS-60-0	Soil DUP 1			
Date Sampled			09/18/2018	09/17/2018			
Date Prepared			09/25/2018	09/25/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/27/2018	09/27/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Dibenzofuran	0.25	0.50	ND	ND			
1,2-Dichlorobenzene	0.25	0.50	ND	ND			
1,3-Dichlorobenzene	0.25	0.50	ND	ND			
1,4-Dichlorobenzene	0.25	0.50	ND	ND			
3,3'-Dichlorobenzidine	0.25	0.50	ND	ND			
2,4-Dichlorophenol	0.25	0.50	ND	ND			
Diethyl phthalate (Diethyl ester)	0.25	0.50	ND	ND			
Dimethyl phthalate (Dimethyl ester)	0.25	0.50	ND	ND			
2,4-Dimethylphenol	0.25	0.50	ND	ND			
4,6-Dinitro-2-methylphenol	0.25	0.50	ND	ND			
2,4-Dinitrophenol	0.25	0.50	ND	ND			
2,4-Dinitrotoluene	0.25	0.50	ND	ND			
2,6-Dinitrotoluene (2,6-DNT)	0.25	0.50	ND	ND			
Fluoranthene	0.25	0.50	ND	ND			
Fluorene	0.25	0.50	ND	ND			
Hexachlorobenzene	0.25	0.50	ND	ND			
Hexachlorobutadiene	0.25	0.50	ND	ND			
Hexachlorocyclopentadiene	0.25	0.50	ND	ND			
Hexachloroethane	0.25	0.50	ND	ND			
Indeno(1,2,3-cd)pyrene	0.25	0.50	ND	ND			
Isophorone	0.25	0.50	ND	ND			
2-Methylnaphthalene	0.25	0.50	ND	ND			
4-Methylphenol	0.25	0.50	ND	ND			
2-Methylphenol (2-Cresol)	0.25	0.50	ND	ND			
3-Methylphenol (3-Cresol)	0.25	0.50	ND	ND			
N-Nitroso-Di-n-propylamine	0.25	0.50	ND	ND			
Naphthalene	0.25	0.50	ND	ND			
2-Nitroaniline	0.25	0.50	ND	ND			
3-Nitroaniline	0.25	0.50	ND	ND			
4-Nitroaniline	0.25	0.50	ND	ND			
Nitrobenzene (NB)	0.25	0.50	ND	ND			
4-Nitrophenol	0.25	0.50	ND	ND			
2-Nitrophenol (o-Nitrophenol)	0.25	0.50	ND	ND			
N-nitrosodiphenylamine	0.25	0.50	ND	ND			

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1

Our Lab I.D.			**94143.24**	**94143.27**			
Client Sample I.D.			SS-60-0	Soil DUP 1			
Date Sampled			09/18/2018	09/17/2018			
Date Prepared			09/25/2018	09/25/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/27/2018	09/27/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Pentachlorophenol	0.25	0.50	ND	ND			
Phenanthrene	0.25	0.50	ND	ND			
Phenol	0.25	0.50	ND	ND			
Pyrene	0.25	0.50	ND	ND			
Pyridine	0.25	0.50	ND	ND			
1,2,4-Trichlorobenzene	0.25	0.50	ND	ND			
2,4,5-Trichlorophenol	0.25	0.50	ND	ND			
2,4,6-Trichlorophenol	0.25	0.50	ND	ND			
Our Lab I.D.			**94143.24**	**94143.27**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
2-Fluorophenol	25-121		46.0	59.4			
2-Fluorobiphenyl	30-115		54.0	66.4			
Nitrobenzene-d5	23-120		52.4	62.4			
Phenol-d6	21-113		47.2	58.0			
p-Terphenyl-D14	18-137		49.6	58.4			
2,4,6-Tribromophenol	19-122		42.0	53.4			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1

Our Lab I.D.			Method Blank	94143.01	94143.02	94143.03	94143.04
Client Sample I.D.				SS-27-0	SS-16-0	SS-26-0	SS-36-0
Date Sampled				09/17/2018	09/17/2018	09/17/2018	09/17/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	1.81J	ND	2.90	ND
Chlordane (alpha)	1.0	2.0	ND	ND	ND	1.29J	ND
4,4'-DDD (DDD)	1.0	2.0	ND	4.80	4.42	3.96	2.19
4,4'-DDE (DDE)	1.0	2.0	ND	66.9	30.5	48.6	25.7
4,4'-DDT (DDT)	1.0	2.0	ND	44.1	35.0	31.9	17.7
Dieldrin	1.0	2.0	ND	1.03J	ND	ND	ND
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	1.61J	ND
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	94143.01	94143.02	94143.03	94143.04
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		83.6	148	105	134	127
Tetrachloro-m-xylene	30-150		90.8	106	110	134	124

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1

Our Lab I.D.			94143.05	94143.06	94143.07	94143.08	94143.09
Client Sample I.D.			SS-15-0	SS-25-0	SS-35-0	SS-49-0	Soil DUP 3-1
Date Sampled			09/17/2018	09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/28/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	ND	1.27J	25.0	31.8
Chlordane (alpha)	1.0	2.0	ND	ND	ND	12.6	16.1
4,4'-DDD (DDD)	1.0	2.0	2.23	3.11	3.20	36.4	74.6
4,4'-DDE (DDE)	1.0	2.0	21.8	43.9	39.5	452	761
4,4'-DDT (DDT)	1.0	2.0	25.1	35.8	33.6	437	814
Dieldrin	1.0	2.0	ND	ND	ND	29.2	37.2
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	ND	ND	12.4	15.7
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	ND	ND	1,560	2,600

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94143.05	94143.06	94143.07	94143.08	94143.09
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		134	136	122	100	106
Tetrachloro-m-xylene	30-150		127	108	103	116	121

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1

Our Lab I.D.			94143.10	94143.11	94143.12	94143.13	94143.14
Client Sample I.D.			SS-55-0	SS-50-0	Soil DUP 3-2	SS-56-0	SS-51-0
Date Sampled			09/18/2018	09/18/2018	09/18/2018	09/18/2018	09/18/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/28/2018	09/28/2018	09/28/2018	09/28/2018	09/28/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	22.7	27.2	30.8	36.7	40.3
Chlordane (alpha)	1.0	2.0	11.3	13.9	14.1	17.9	19.0
4,4'-DDD (DDD)	1.0	2.0	80.2	62.9	63.2	63.1	48.7
4,4'-DDE (DDE)	1.0	2.0	511	576	660	523	468
4,4'-DDT (DDT)	1.0	2.0	434	547	646	490	489
Dieldrin	1.0	2.0	14.8	31.7	25.6	31.9	33.8
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	11.4	13.3	16.7	18.8	21.3
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	1,830	2,360	2,300	2,320	2,270

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94143.10	94143.11	94143.12	94143.13	94143.14
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		108	138	123	100	112
Tetrachloro-m-xylene	30-150		118	118	108	115	106

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092718EB1

Our Lab I.D.			Method Blank	94143.15	94143.16	94143.18	94143.19
Client Sample I.D.				Soil DUP 3-3	SS-57-0	SS-52-0	Soil DUP 3-4
Date Sampled				09/18/2018	09/18/2018	09/18/2018	09/18/2018
Date Prepared			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/28/2018	09/28/2018	09/28/2018	09/28/2018	09/28/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	ND	53.2	35.0	29.0	40.3
Chlordane (alpha)	1.0	2.0	ND	29.8	14.8	14.4	18.7
4,4'-DDD (DDD)	1.0	2.0	ND	64.2	65.4	57.7	70.2
4,4'-DDE (DDE)	1.0	2.0	ND	485	534	256	280
4,4'-DDT (DDT)	1.0	2.0	ND	499	475	301	370
Dieldrin	1.0	2.0	ND	34.7	16.8	23.5	12.1
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	ND	23.4	20.2	14.6	21.6
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	ND	2,180	2,100	1,540	1,650

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	94143.15	94143.16	94143.18	94143.19
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		91.2	96.0	118	130	135
Tetrachloro-m-xylene	30-150		97.2	98.0	115	112	110

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Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092718EB1

Our Lab I.D.			94143.20	94143.21	94143.22	94143.23	94143.24
Client Sample I.D.			SS-58-0	SS-53-0	SS-59-0	SS-54-0	SS-60-0
Date Sampled			09/18/2018	09/18/2018	09/18/2018	09/18/2018	09/18/2018
Date Prepared			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/28/2018	09/28/2018	09/28/2018	09/28/2018	09/28/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Aldrin	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (Total)	1.0	2.0	47.0	45.1	53.4	48.7	35.2
Chlordane (alpha)	1.0	2.0	21.8	21.7	25.0	24.5	16.0
4,4'-DDD (DDD)	1.0	2.0	47.6	44.9	72.3	50.2	63.7
4,4'-DDE (DDE)	1.0	2.0	383	453	427	550	487
4,4'-DDT (DDT)	1.0	2.0	491	721	652	540	505
Dieldrin	1.0	2.0	19.6	19.9	40.4	32.7	27.5
Endosulfan 1	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan 11	1.0	2.0	ND	ND	ND	ND	ND
Endosulfan sulfate	1.0	2.0	ND	ND	ND	ND	ND
Endrin	1.0	2.0	ND	ND	ND	ND	ND
Endrin aldehyde	1.0	2.0	ND	ND	ND	ND	ND
Endrin ketone	1.0	2.0	ND	ND	ND	ND	ND
Chlordane (gamma)	1.0	2.0	25.2	23.4	28.4	24.2	19.2
Heptachlor	1.0	2.0	ND	ND	ND	ND	ND
Heptachlor epoxide	1.0	2.0	ND	ND	ND	ND	ND
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND	ND	ND	ND
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND	ND	ND	ND
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND	ND	ND	ND
Methoxychlor	5.0	10.0	ND	ND	ND	ND	ND
Toxaphene	85.0	170.0	1,840	2,450	2,200	2,030	1,940

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94143.20	94143.21	94143.22	94143.23	94143.24
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Decachlorobiphenyl	30-150		102	146	90.0	130	124
Tetrachloro-m-xylene	30-150		102	105	98.8	112	97.6

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092718EB1

Our Lab I.D.			94143.27	94143.28			
Client Sample I.D.			Soil DUP 1	Soil DUP 2			
Date Sampled			09/17/2018	09/17/2018			
Date Prepared			09/27/2018	09/27/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/28/2018	09/28/2018			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	ND	ND			
Chlordane (alpha)	1.0	2.0	ND	ND			
4,4'-DDD (DDD)	1.0	2.0	7.49	8.65			
4,4'-DDE (DDE)	1.0	2.0	54.9	76.3			
4,4'-DDT (DDT)	1.0	2.0	29.7	48.1			
Dieldrin	1.0	2.0	ND	1.41J			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	ND	ND			
Endrin aldehyde	1.0	2.0	ND	ND			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	ND	ND			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	85.0	170.0	ND	ND			

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ANALYTICAL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			94143.27	94143.28			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		143	124			
Tetrachloro-m-xylene	30-150		101	106			

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Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8082), Polychlorinated Biphenyls (PCBs) by GC

QC Batch No: 092718ZB1

Our Lab I.D.			Method Blank	**94143.25**	**94143.26**		
Client Sample I.D.				SS-61-0	Soil DUP 6		
Date Sampled				09/19/2018	09/19/2018		
Date Prepared			09/27/2018	09/27/2018	09/27/2018		
Preparation Method			3550B	3550B	3550B		
Date Analyzed			09/27/2018	09/27/2018	09/27/2018		
Matrix			Soil	Soil	Soil		
Units			ug/Kg	ug/Kg	ug/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Aroclor-1016 (PCB-1016)	25.0	50.0	ND	ND	ND		
Aroclor-1221 (PCB-1221)	25.0	50.0	ND	ND	ND		
Aroclor-1232 (PCB-1232)	25.0	50.0	ND	ND	ND		
Aroclor-1242 (PCB-1242)	25.0	50.0	ND	ND	ND		
Aroclor-1248 (PCB-1248)	25.0	50.0	ND	ND	ND		
Aroclor-1254 (PCB-1254)	25.0	50.0	ND	ND	ND		
Aroclor-1260 (PCB-1260)	25.0	50.0	ND	ND	ND		
Aroclor-1262 (PCB-1262)	25.0	50.0	ND	ND	ND		
Aroclor-1268 (PCB-1268)	25.0	50.0	ND	ND	ND		
Our Lab I.D.			Method Blank	**94143.25**	**94143.26**		
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**		
Decachlorobiphenyl	30-150		89.6	145	129		
Tetrachloro-m-xylene	30-150		125	150	150		

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Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C2

Our Lab I.D.			Method Blank	94143.02	94143.07	94143.16	94143.24
Client Sample I.D.				SS-16-0	SS-35-0	SS-57-0	SS-60-0
Date Sampled				09/17/2018	09/17/2018	09/18/2018	09/18/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Arsenic	2.5	5.0	ND	ND	ND	ND	ND

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C2

Our Lab I.D.			94143.27				
Client Sample I.D.			Soil DUP 1				
Date Sampled			09/17/2018				
Date Prepared			09/26/2018				
Preparation Method			3050B				
Date Analyzed			09/27/2018				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Arsenic	2.5	5.0	ND				

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (6010BSCAN), Arsenic by ICP

QC Batch No: 0926182C2; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Arsenic	0.00	100	104	104	100	101	101	2.9	75-125	<15

QC Batch No: 0926182C2; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Arsenic	50.0	50.5	101	50.0	51.0	102	<1	75-125	<15	

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092618EB1; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	13.7	68.5	20.0	12.4	62.0	10.0	40-150	<40
4,4'-DDT (DDT)	35.0	50.0	108	146	50.0	82.5	95.0	42.3	40-150	<40
Dieldrin	0.00	50.0	39.8	79.6	50.0	37.4	74.8	6.2	40-150	<40
Endrin	0.00	50.0	59.5	119	50.0	54.5	109	8.8	40-150	<40
Heptachlor	0.00	20.0	15.4	77.0	20.0	13.3	66.5	14.6	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	15.5	77.5	20.0	13.0	65.0	17.5	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	27.0	108	25.0	29.5	118	8.8	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	27.3	109	25.0	26.0	104	4.7	30-150	<40

QC Batch No: 092618EB1; Dup or Spiked Sample: 94143.02; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aldrin	20.0	11.6	58.0	20.0	10.7	53.5	8.1	50-150	<40	
4,4'-DDT (DDT)	50.0	33.5	67.0	50.0	42.8	85.6	24.4	50-150	<40	
Dieldrin	50.0	34.8	69.6	50.0	34.6	69.2	<1	50-150	<40	
Endrin	50.0	43.2	86.4	50.0	41.2	82.4	4.7	50-150	<40	
Heptachlor	20.0	11.5	57.5	20.0	11.9	59.5	3.4	50-150	<40	
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	11.9	59.5	20.0	12.3	61.5	3.3	50-150	<40	
Surrogates										
Decachlorobiphenyl	25.0	25.0	100	25.0	23.0	92.0	8.3	30-150	<40	
Tetrachloro-m-xylene	25.0	23.1	92.4	25.0	24.2	96.8	4.7	30-150	<40	

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 092718EB1; Dup or Spiked Sample: 94143.27; LCS: Clean Sand; QC Prepared: 09/27/2018; QC Analyzed: 09/28/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	11.8	59.0	20.0	13.1	65.5	10.4	40-150	<40
4,4'-DDT (DDT)	29.7	50.0	78.3	97.2	50.0	95.7	132	30.4	40-150	<40
Dieldrin	0.00	50.0	33.9	67.8	50.0	36.6	73.2	7.7	40-150	<40
Endrin	0.00	50.0	45.3	90.6	50.0	56.5	113	22.0	40-150	<40
Heptachlor	0.00	20.0	13.0	65.0	20.0	13.2	66.0	1.5	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	12.2	61.0	20.0	12.8	64.0	4.8	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	27.3	109	25.0	26.0	104	4.7	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	24.5	98.0	25.0	24.6	98.4	<1	30-150	<40

QC Batch No: 092718EB1; Dup or Spiked Sample: 94143.27; LCS: Clean Sand; QC Prepared: 09/27/2018; QC Analyzed: 09/28/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Aldrin	20.0	12.7	63.5	50-150						
4,4'-DDT (DDT)	50.0	36.1	72.2	50-150						
Dieldrin	50.0	36.5	73.0	50-150						
Endrin	50.0	43.9	87.8	50-150						
Heptachlor	20.0	12.7	63.5	50-150						
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	14.2	71.0	50-150						
Surrogates										
Decachlorobiphenyl	25.0	27.5	110	30-150						
Tetrachloro-m-xylene	25.0	24.6	98.4	30-150						

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8082), Polychlorinated Biphenyls (PCBs) by GC

QC Batch No: 092718ZB1; Dup or Spiked Sample: 94189.03; LCS: Clean Sand; QC Prepared: 09/27/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aroclor-1016 (PCB-1016)	0.00	500	505	101	500	505	101	<1	50-150	<40
Aroclor-1260 (PCB-1260)	0.00	500	382	76.4	500	410	82.0	7.1	50-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	24.6	98.4	25.0	30.0	120	19.8	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	36.0	144	25.0	37.5	150	4.1	30-150	<40

QC Batch No: 092718ZB1; Dup or Spiked Sample: 94189.03; LCS: Clean Sand; QC Prepared: 09/27/2018; QC Analyzed: 09/27/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Aroclor-1016 (PCB-1016)	500	436	87.2	50-150						
Aroclor-1260 (PCB-1260)	500	361	72.2	50-150						
Surrogates										
Decachlorobiphenyl	25.0	27.5	110	30-150						
Tetrachloro-m-xylene	25.0	33.8	135	30-150						

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Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Acenaphthene	0.00	2.50	1.63	65.2	2.50	1.51	60.4	7.6	46-118	<20
4-Chloro-3-methylphenol	0.00	5.00	3.13	62.6	5.00	2.95	59.0	5.9	39-98	<20
2-Chlorophenol	0.00	5.00	3.24	64.8	5.00	2.89	57.8	11.4	27-123	<20
1,4-Dichlorobenzene	0.00	2.50	1.59	63.6	2.50	1.44	57.6	9.9	36-97	<20
2,4-Dinitrotoluene	0.00	2.50	1.66	66.4	2.50	1.58	63.2	4.9	24-96	<20
N-Nitroso-Di-n-propylamine	0.00	2.50	1.90	76.0	2.50	1.82	72.8	4.3	41-116	<20
4-Nitrophenol	0.00	5.00	2.69	53.8	5.00	2.69	53.8	<1	10-110	<20
Pentachlorophenol	0.00	5.00	2.52	50.4	5.00	2.57	51.4	2.0	40-125	<20
Phenol	0.00	5.00	3.10	62.0	5.00	2.76	55.2	11.6	12-89	<20
Pyrene	0.00	2.50	1.75	70.0	2.50	1.56	62.4	11.5	26-127	<20
1,2,4-Trichlorobenzene	0.00	2.50	1.55	62.0	2.50	1.47	58.8	5.3	39-98	<20
Surrogates										
2-Fluorophenol	0.00	5.00	3.55	71.0	5.00	3.07	61.4	14.5	25-121	<20
2-Fluorobiphenyl	0.00	2.50	1.81	72.4	2.50	1.65	66.0	9.2	30-115	<20
Nitrobenzene-d5	0.00	2.50	1.85	74.0	2.50	1.75	70.0	5.6	23-120	<20
p-Terphenyl-D14	0.00	2.50	1.80	72.0	2.50	1.58	63.2	13.0	18-137	<20
Phenol-d6	0.00	5.00	3.46	69.2	5.00	3.03	60.6	13.3	24-113	<20
2,4,6-Tribromophenol	0.00	5.00	3.26	65.2	5.00	3.06	61.2	6.3	19-122	<20

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Acenaphthene	2.50	2.14	85.6	31-137						
4-Chloro-3-methylphenol	5.00	4.30	86.0	40-99						
2-Chlorophenol	5.00	4.41	88.2	25-102						
1,4-Dichlorobenzene	2.50	2.23	89.2	28-104						
2,4-Dinitrotoluene	2.50	2.22	88.8	28-89						
N-Nitroso-Di-n-propylamine	2.50	2.63	105	41-126						
4-Nitrophenol	5.00	3.86	77.2	11-114						

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QUALITY CONTROL RESULTS

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8270C), Semivolatile Organic Compounds by GC/MS (SW-846)

QC Batch No: 092518JB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Pentachlorophenol	5.00	3.79	75.8	17-125						
Phenol	5.00	3.95	79.0	26-90						
Pyrene	2.50	2.13	85.2	35-142						
1,2,4-Trichlorobenzene	2.50	2.20	88.0	38-107						
Surrogates										
2-Fluorophenol	5.00	5.30	106	25-121						
2-Fluorobiphenyl	2.50	2.42	96.8	30-115						
Nitrobenzene-d5	2.50	2.55	102	23-120						
p-Terphenyl-D14	2.50	2.27	90.8	18-137						
Phenol-d6	5.00	4.88	97.6	24-113						
2,4,6-Tribromophenol	5.00	4.62	92.4	19-122						

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QUALITY CONTROL RESULTS

Ordered By

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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele
Page: **33**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 092518lB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzo(a)anthracene	0.00	0.0500	0.0485	97.0	0.0500	0.0497	99.4	2.4	75-125	<20
Benzo(a)pyrene	0.00	0.0500	0.0475	95.0	0.0500	0.0495	99.0	4.1	75-125	<20
Naphthalene	0.00	0.500	0.426	85.2	0.500	0.435	87.0	2.1	75-125	<20
Surrogates										
p-Terphenyl-D14	0.00	0.400	0.386	96.5	0.400	0.375	93.8	2.8	75-125	<20

QC Batch No: 092518lB1; Dup or Spiked Sample: 94142.01; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Benzo(a)anthracene	0.0500	0.0545	109	0.0500	0.0510	102	6.6	75-125	<20	
Benzo(a)pyrene	0.0500	0.0491	98.2	0.0500	0.0465	93.0	5.4	75-125	<20	
Naphthalene	0.500	0.475	95.0	0.500	0.457	91.4	3.9	75-125	<20	
LCS										
Acenaphthene	0.500	0.491	98.2	0.500	0.470	94.0	4.4	75-125	<20	
Acenaphthylene	1.00	1.03	103	1.00	0.992	99.2	3.8	75-125	<20	
Anthracene	0.0500	0.0486	97.2	0.0500	0.0465	93.0	4.4	75-125	<20	
Benzo(b)fluoranthene	0.100	0.103	103	0.100	0.0986	98.6	4.4	75-125	<20	
Benzo(g,h,i)perylene	0.100	0.102	102	0.100	0.0989	98.9	3.1	75-125	<20	
Benzo(k)fluoranthene	0.0500	0.0505	101	0.0500	0.0477	95.4	5.7	75-125	<20	
Chrysene	0.0500	0.0520	104	0.0500	0.0498	99.6	4.3	75-125	<20	
Dibenzo(a,h)anthracene	0.100	0.101	101	0.100	0.0977	97.7	3.3	75-125	<20	
Fluoranthene	0.100	0.102	102	0.100	0.0977	97.7	4.3	75-125	<20	
Fluorene	0.100	0.100	100	0.100	0.0966	96.6	3.5	75-125	<20	
Indeno(1,2,3-cd)pyrene	0.0500	0.0449	89.8	0.0500	0.0486	97.2	7.9	75-125	<20	
Phenanthrene	0.0500	0.0515	103	0.0500	0.0490	98.0	5.0	75-125	<20	
Pyrene	0.0500	0.0520	104	0.0500	0.0491	98.2	5.7	75-125	<20	
Surrogates										
p-Terphenyl-D14	0.400	0.420	105	0.400	0.404	101	3.9	75-125	<20	

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QUALITY CONTROL RESULTS

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Attn: James Steele
Page: **34**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94143	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C9-C22)	0.00	500	408	81.6	500	442	88.4	8.0	75-125	<20
Surrogates										
Chlorobenzene	0.00	100	76.7	76.7	100	82.6	82.6	7.4	75-125	<20

QC Batch No: 092618PB1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
TPH as Diesel (C9-C22)	500	401	80.2	500	416	83.2	3.7	75-125	<20	
Surrogates										
Chlorobenzene	100	76.3	76.3	100	77.9	77.9	2.1	75-125	<20	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

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Attention: James Steele

Number of Pages	**34**
Date Received	**09/20/2018**
Date Reported	**10/02/2018**

Job Number	Order Date	Client
94144	09/20/2018	T/TSB

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA
Site: 1853 Camino Del Sol
Oxnard, CA 93030

Enclosed please find results of analyses of 11 soil and 7 water samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

109214

COMPANY: Tetra Tech
PROJECT MANAGER: James Steele
COMPANY ADDRESS: 5383 Hollister Ave Suite 130
PHONE: 805-895-4120
FAX:
PROJECT NAME: OUHSD #18 PEA
PROJECT #: 100-SBA-T 38186
SITE NAME AND ADDRESS: 1853 Camino Del Sol Oxnard
PO #:
AETL JOB No. 94144
Page 1 of 2

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	ANALYSIS REQUESTED: EPA 8260B VOCs	ANALYSIS REQUESTED: EPA 8015B TPHg (gasoline) Diesel, Bio Degr	TEST INSTRUCTIONS & COMMENTS
1	SVGW-30-10	94144.01	09/20/18	0900	W	1/1L, 5/40ml VOA	None, HCl	X	X	Hold for MADEP-EPH-04 - MA EPH Aliphatics and Aromatics
2	SVGW-29-10	94144.02		1716				X	X	
3	SVGW-28-10	94144.03		1620				X	X	
4	SVGW-27-10	94144.04		1510				X	X	
5	GWDUP	94144.05		1510				X	X	
6	SV-26-10	94144.06		1424				X	X	
7	Water TB	94144.07	09/20/18	0800	W	2 VOA	HCl	X		
8	SV-30-15	94144.08		0835	Soil	6" Acetate, 4 VOA		X	X	
9	SV-30-20	94144.09		0840		6" Acetate, 4 VOA		X	X	
10	SV-26-15	94144.10		1406		6" Acetate, 4 VOA		X	X	
11	SV-26-20	94144.11		1405				X	X	
12	SV-27-15	94144.12		1452				X	X	
13	SV-27-20	94144.13		1468				X	X	
14	SV-28-15	94144.14		1605				X	X	
15	SV-28-20	94144.15		1610				X	X	

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS: 76
CUSTODY SEALS Y (N) NA
RECEIVED IN GOOD COND. (Y) N
PROPERLY COOLED (Y) N NA
SAMPLES INTACT (Y) N NA
SAMPLES ACCEPTED (Y) N

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Jason Dane	Printed Name:	Printed Name: Dagis P
Date: 09/20/18 Time: 1900	Date: Time:	Date: 9/20/18 Time: 2040
RECEIVED BY: 1.	**RECEIVED BY:** 2.	**RECEIVED BY LABORATORY:** AETL 3.
Signature:	Signature:	Signature:
Printed Name: Dagis P	Printed Name:	Printed Name: Antin
Date: 9/20/18 Time: 1900	Date: Time:	Date: 09/20/18 Time: 2040

TURN AROUND TIME

☑ NORMAL ☐ RUSH
☐ SAME DAY
☐ NEXT DAY
☐ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

109217

AETL JOB No. 94144

COMPANY | PROJECT MANAGER

COMPANY ADDRESS | PHONE / FAX

PROJECT NAME | PROJECT #

SITE NAME AND ADDRESS | PO #

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	SV-29-15	94144.16	09/20/2018	1654	Soil	1,8" Acetate, 4VOA	
2	SV-29-20	94144.17	"	1658	"	"	
3	~~Dup~~ SoilDup 7	94144.18	"	1458	Soil	"	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

ANALYSIS REQUESTED

	8260 BVOCs	TPHg, diesel, 8015 B heavy (range)								
1	X	X								
2	X	X								
3	X	X								

TEST INSTRUCTIONS & COMMENTS

* Hold for MADEP-EPH-04
MAEPH Aliphatics
Aromatics

1 * See Above
2 * See Above
3 (Hold)

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	10	PROPERLY COOLED (Y) N / NA	
CUSTODY SEALS Y (N) NA		SAMPLES INTACT (Y) N / NA	
RECEIVED IN GOOD COND. (Y) N		SAMPLES ACCEPTED (Y) N	

TURN AROUND TIME

☑ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

	1.	2.	3.
RELINQUISHED BY SAMPLER:	Signature: [signature] Printed Name: Jason Dang Date: 09/20/18 Time: 1900	RELINQUISHED BY: Signature: Printed Name: Date: Time:	RELINQUISHED BY: Signature: [signature] Printed Name: Sargis P Date: 9/20/18 Time: 2040
RECEIVED BY:	Signature: [signature] Printed Name: Sargis P Date: 9/20/18 Time: 1900	RECEIVED BY: Signature: Printed Name: Date: Time:	RECEIVED BY LABORATORY: AETL Signature: [signature] Printed Name: Antin Date: 09/20/18 Time: 2040

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetra Tech
Project Name:
AETL Job Number: 94144
Date Received: 09/24/18 Received by: Alin
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (2) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.3°C, No 2: 3.4°C, No 3:
Type of sample containers: ☒ VOA, ☒ Glass bottles, ☐ ☐Wide mouth jars, ☐ ☐HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): 11x 5035 kits
How are samples preserved: ☐ None, ☐ Ice, ☒ Blue Ice, ☐ Dry Ice
☐ None, ☐ HNO_3, ☐ NaOH, ☐ ZnOAc, ☒ HCl, ☐ $Na_2S_2O_3$,
☒ MeOH $NaHSO_4$ H_2O
☐ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	Y		
2. Are the Sample labels legible?	Y		
3. Do samples match the COC?	Y		
4. Are the required analyses clear?	Y		
5. Is there enough samples for required analysis?	Y		
6. Are samples sealed with evidence tape?		N	
7. Are sample containers in good condition?	Y		
8. Are samples preserved?	Y		
9. Are samples preserved properly for the intended analysis?	Y		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	2		

Explain all "No" answers for above questions:

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Ordered By

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)895-4120
Attention: James Steele

Project ID: 100-SBA-T 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94144	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 18 samples with the following specification on 09/20/2018.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94144.01	SVGW-30-10	09/20/2018	Aqueous	6
94144.02	SVGW-29-10	09/20/2018	Aqueous	6
94144.03	SVGW-28-10	09/20/2018	Aqueous	6
94144.04	SVGW-27-10	09/20/2018	Aqueous	6
94144.05	GW DUP	09/20/2018	Aqueous	6
94144.06	SV-26-10	09/20/2018	Aqueous	6

Method ^ Submethod	Req Date	Priority	TAT	Units
8260B ^ RES-GW	09/27/2018	2	Normal	ug/L
M8015D ^ C13-C40	09/27/2018	2	Normal	mg/L
M8015G	09/27/2018	2	Normal	mg/L

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94144.07	Water TB	09/20/2018	Aqueous	2

Method ^ Submethod	Req Date	Priority	TAT	Units
8260B ^ RES-GW	09/27/2018	2	Normal	ug/L

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
94144.08	SV-30-15	09/20/2018	Soil	5
94144.09	SV-30-20	09/20/2018	Soil	5
94144.10	SV-26-15	09/20/2018	Soil	5
94144.11	SV-26-20	09/20/2018	Soil	5
94144.12	SV-27-15	09/20/2018	Soil	5
94144.13	SV-27-20	09/20/2018	Soil	5
94144.14	SV-28-15	09/20/2018	Soil	5
94144.15	SV-28-20	09/20/2018	Soil	5
94144.16	SV-29-15	09/20/2018	Soil	5
94144.17	SV-29-20	09/20/2018	Soil	5
94144.18	Soil DUP 7	09/20/2018	Soil	5

Method ^ Submethod	Req Date	Priority	TAT	Units

Continued

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Project ID: 100-SBA-T 38186
Date Received 09/20/2018
Date Reported 10/02/2018

Job Number	Order Date	Client
94144	09/20/2018	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

94144.18 Soil DUP 7 09/20/2018 Soil 5

Method ^ Submethod	Req Date	Priority	TAT	Units
(8260B)	09/27/2018	2	Normal	ug/Kg
(M8015D) ^ C13-C40	09/27/2018	2	Normal	mg/Kg
(M8015G)	09/27/2018	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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ANALYTICAL RESULTS

Ordered By

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Page: **2**

Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			Method Blank	94144.08	94144.09	94144.10	94144.11
Client Sample I.D.				SV-30-15	SV-30-20	SV-26-15	SV-26-20
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acetone	25	50	ND	ND	ND	ND	ND
Benzene	1.0	10.0	ND	ND	ND	ND	ND
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND	ND	ND	ND
Bromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromodichloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromoform (Tribromomethane)	25	50	ND	ND	ND	ND	ND
Bromomethane (Methyl bromide)	15	30	ND	ND	ND	ND	ND
2-Butanone (MEK)	25	50	ND	ND	ND	ND	ND
n-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
sec-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
tert-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Carbon Disulfide	25	50	ND	ND	ND	ND	ND
Carbon tetrachloride	5.0	10.0	ND	ND	ND	ND	ND
Chlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
Chloroethane	15	30	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	50	50	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	5.0	10.0	ND	ND	ND	ND	ND
Chloromethane (Methyl chloride)	15	30	ND	ND	ND	ND	ND
2-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	5.0	10.0	ND	ND	ND	ND	ND
Dibromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND	ND	ND	ND
Dibromomethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			Method Blank	94144.08	94144.09	94144.10	94144.11
Client Sample I.D.				SV-30-15	SV-30-20	SV-26-15	SV-26-20
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dichlorodifluoromethane	15	30	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
2,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
Ethylbenzene	1.0	10.0	ND	ND	ND	ND	ND
Hexachlorobutadiene	15	30	ND	ND	ND	ND	ND
2-Hexanone	25	50	ND	ND	ND	ND	ND
Iodomethane	5.0	10.0	ND	ND	ND	ND	ND
Isopropylbenzene	5.0	10.0	ND	ND	ND	ND	ND
p-Isopropyltoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND	ND	ND	ND
Methylene chloride (DCM)	25	50	ND	ND	ND	ND	ND
Naphthalene	5.0	10.0	ND	ND	ND	ND	ND
n-Propylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Styrene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
Tetrachloroethene	2.0	10.0	ND	ND	ND	ND	ND
Toluene (Methyl benzene)	1.0	10.0	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
Trichloroethene	1.5	10.0	ND	ND	ND	ND	ND
Trichlorofluoromethane	5.0	10.0	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			Method Blank	94144.08	94144.09	94144.10	94144.11
Client Sample I.D.				SV-30-15	SV-30-20	SV-26-15	SV-26-20
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
1,2,3-Trichloropropane	1.0	5.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Vinyl Acetate	25	50	ND	ND	ND	ND	ND
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND	ND	ND	ND
o-Xylene	1.0	10.0	ND	ND	ND	ND	ND
m,p-Xylenes	1.0	20.0	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94144.08	94144.09	94144.10	94144.11
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Bromofluorobenzene	75-125		105	99.4	100	99.6	104
Dibromofluoromethane	75-125		108	111	115	118	113
Toluene-d8	75-125		96.8	96.0	96.2	95.5	97.4

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ANALYTICAL RESULTS

Ordered By

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Client Sample I.D.			SV-27-15	SV-27-20	SV-28-15	SV-28-20	SV-29-15
Date Sampled			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5035A	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acetone	25	50	ND	ND	ND	ND	ND
Benzene	1.0	10.0	ND	ND	ND	ND	ND
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND	ND	ND	ND
Bromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromodichloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromoform (Tribromomethane)	25	50	ND	ND	ND	ND	ND
Bromomethane (Methyl bromide)	15	30	ND	ND	ND	ND	ND
2-Butanone (MEK)	25	50	ND	ND	ND	ND	ND
n-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
sec-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
tert-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Carbon Disulfide	25	50	ND	ND	ND	ND	ND
Carbon tetrachloride	5.0	10.0	ND	ND	ND	ND	ND
Chlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
Chloroethane	15	30	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	50	50	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	5.0	10.0	ND	ND	ND	ND	ND
Chloromethane (Methyl chloride)	15	30	ND	ND	ND	ND	ND
2-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	5.0	10.0	ND	ND	ND	ND	ND
Dibromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND	ND	ND	ND
Dibromomethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Client Sample I.D.			SV-27-15	SV-27-20	SV-28-15	SV-28-20	SV-29-15
Date Sampled			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5035A	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dichlorodifluoromethane	15	30	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
2,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
Ethylbenzene	1.0	10.0	ND	ND	ND	ND	ND
Hexachlorobutadiene	15	30	ND	ND	ND	ND	ND
2-Hexanone	25	50	ND	ND	ND	ND	ND
Iodomethane	5.0	10.0	ND	ND	ND	ND	ND
Isopropylbenzene	5.0	10.0	ND	ND	ND	ND	ND
p-Isopropyltoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND	ND	ND	ND
Methylene chloride (DCM)	25	50	ND	ND	ND	ND	ND
Naphthalene	5.0	10.0	ND	ND	ND	ND	ND
n-Propylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Styrene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
Tetrachloroethene	2.0	10.0	ND	ND	ND	ND	ND
Toluene (Methyl benzene)	1.0	10.0	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
Trichloroethene	1.5	10.0	ND	ND	ND	ND	ND
Trichlorofluoromethane	5.0	10.0	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Client Sample I.D.			SV-27-15	SV-27-20	SV-28-15	SV-28-20	SV-29-15
Date Sampled			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5035A	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
1,2,3-Trichloropropane	1.0	5.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Vinyl Acetate	25	50	ND	ND	ND	ND	ND
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND	ND	ND	ND
o-Xylene	1.0	10.0	ND	ND	ND	ND	ND
m,p-Xylenes	1.0	20.0	ND	ND	ND	ND	ND
Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Bromofluorobenzene	75-125		99.6	95.1	98.6	96.8	91.9
Dibromofluoromethane	75-125		122	115	124	123	121
Toluene-d8	75-125		92.5	94.7	96.2	95.5	91.7

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ANALYTICAL RESULTS

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Telephone: (805)895-4120
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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.17	94144.18			
Client Sample I.D.			SV-29-20	Soil DUP 7			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/20/2018	09/20/2018			
Preparation Method			5035A	5035A			
Date Analyzed			09/25/2018	09/25/2018			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Acetone	25	50	ND	ND			
Benzene	1.0	10.0	ND	ND			
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND			
Bromochloromethane	5.0	10.0	ND	ND			
Bromodichloromethane	5.0	10.0	ND	ND			
Bromoform (Tribromomethane)	25	50	ND	ND			
Bromomethane (Methyl bromide)	15	30	ND	ND			
2-Butanone (MEK)	25	50	ND	ND			
n-Butylbenzene	5.0	10.0	ND	ND			
sec-Butylbenzene	5.0	10.0	ND	ND			
tert-Butylbenzene	5.0	10.0	ND	ND			
Carbon Disulfide	25	50	ND	ND			
Carbon tetrachloride	5.0	10.0	ND	ND			
Chlorobenzene	5.0	10.0	ND	ND			
Chloroethane	15	30	ND	ND			
2-Chloroethyl vinyl ether	50	50	ND	ND			
Chloroform (Trichloromethane)	5.0	10.0	ND	ND			
Chloromethane (Methyl chloride)	15	30	ND	ND			
2-Chlorotoluene	5.0	10.0	ND	ND			
4-Chlorotoluene	5.0	10.0	ND	ND			
1,2-Dibromo-3-chloropropane (DBCP)	5.0	10.0	ND	ND			
Dibromochloromethane	5.0	10.0	ND	ND			
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND			
Dibromomethane	5.0	10.0	ND	ND			
1,2-Dichlorobenzene	5.0	10.0	ND	ND			
1,3-Dichlorobenzene	5.0	10.0	ND	ND			
1,4-Dichlorobenzene	5.0	10.0	ND	ND			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.17	94144.18			
Client Sample I.D.			SV-29-20	Soil DUP 7			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/20/2018	09/20/2018			
Preparation Method			5035A	5035A			
Date Analyzed			09/25/2018	09/25/2018			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Dichlorodifluoromethane	15	30	ND	ND			
1,1-Dichloroethane	5.0	10.0	ND	ND			
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND			
1,1-Dichloroethene	5.0	10.0	ND	ND			
cis-1,2-Dichloroethene	5.0	10.0	ND	ND			
trans-1,2-Dichloroethene	5.0	10.0	ND	ND			
1,2-Dichloropropane	5.0	10.0	ND	ND			
1,3-Dichloropropane	5.0	10.0	ND	ND			
2,2-Dichloropropane	5.0	10.0	ND	ND			
1,1-Dichloropropene	5.0	10.0	ND	ND			
cis-1,3-Dichloropropene	5.0	10.0	ND	ND			
trans-1,3-Dichloropropene	5.0	10.0	ND	ND			
Ethylbenzene	1.0	10.0	ND	ND			
Hexachlorobutadiene	15	30	ND	ND			
2-Hexanone	25	50	ND	ND			
Iodomethane	5.0	10.0	ND	ND			
Isopropylbenzene	5.0	10.0	ND	ND			
p-Isopropyltoluene	5.0	10.0	ND	ND			
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND			
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND			
Methylene chloride (DCM)	25	50	ND	ND			
Naphthalene	5.0	10.0	ND	ND			
n-Propylbenzene	5.0	10.0	ND	ND			
Styrene	5.0	10.0	ND	ND			
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND			
1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND			
Tetrachloroethene	2.0	10.0	ND	ND			
Toluene (Methyl benzene)	1.0	10.0	ND	ND			
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND			
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND			
1,1,1-Trichloroethane	5.0	10.0	ND	ND			
1,1,2-Trichloroethane	5.0	10.0	ND	ND			
Trichloroethene	1.5	10.0	ND	ND			
Trichlorofluoromethane	5.0	10.0	ND	ND			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1

Our Lab I.D.			94144.17	94144.18			
Client Sample I.D.			SV-29-20	Soil DUP 7			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/20/2018	09/20/2018			
Preparation Method			5035A	5035A			
Date Analyzed			09/25/2018	09/25/2018			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
1,2,3-Trichloropropane	1.0	5.0	ND	ND			
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND			
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND			
Vinyl Acetate	25	50	ND	ND			
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND			
o-Xylene	1.0	10.0	ND	ND			
m,p-Xylenes	1.0	20.0	ND	ND			
Our Lab I.D.			94144.17	94144.18			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Bromofluorobenzene	75-125		98.7	94.1			
Dibromofluoromethane	75-125		122	119			
Toluene-d8	75-125		92.8	95.4			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB2

Our Lab I.D.			Method Blank	**94144.08**	**94144.09**	**94144.10**	**94144.11**
Client Sample I.D.				SV-30-15	SV-30-20	SV-26-15	SV-26-20
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/25/2018	09/25/2018	09/20/2018	09/25/2018
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	**94144.08**	**94144.09**	**94144.10**	**94144.11**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Bromofluorobenzene	75-125		112	109	110	110	98.2

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB2

Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Client Sample I.D.			SV-27-15	SV-27-20	SV-28-15	SV-28-20	SV-29-15
Date Sampled			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/20/2018	09/25/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5035A	5035A	5035A	5035A	5035A
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND	ND	0.128J	ND
Our Lab I.D.			**94144.12**	**94144.13**	**94144.14**	**94144.15**	**94144.16**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Bromofluorobenzene	75-125		104	91.6	109	82.6	93.2

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB2

Our Lab I.D.			**94144.17**	**94144.18**			
Client Sample I.D.			SV-29-20	Soil DUP 7			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/20/2018	09/25/2018			
Preparation Method			5035A	5035A			
Date Analyzed			09/26/2018	09/26/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND			
Our Lab I.D.			**94144.17**	**94144.18**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Bromofluorobenzene	75-125		123	98.9			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1

Our Lab I.D.			Method Blank	**94144.08**	**94144.09**	**94144.10**	**94144.11**
Client Sample I.D.				SV-30-15	SV-30-20	SV-26-15	SV-26-20
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/27/2018	09/27/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND	ND	ND	ND
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	**94144.08**	**94144.09**	**94144.10**	**94144.11**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Chlorobenzene	75-125		79.2	88.0	75.7	88.5	75.6

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1853 Camino Del Sol
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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1

Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Client Sample I.D.			SV-27-15	SV-27-20	SV-28-15	SV-28-20	SV-29-15
Date Sampled			09/20/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND	ND	2.70J	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND	ND	ND	ND
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND	ND	2.70J	ND
Our Lab I.D.			94144.12	94144.13	94144.14	94144.15	94144.16
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Chlorobenzene	75-125		84.1	82.2	81.0	82.0	84.8

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1853 Camino Del Sol
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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1

Our Lab I.D.			**94144.17**	**94144.18**			
Client Sample I.D.			SV-29-20	Soil DUP 7			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/26/2018	09/26/2018			
Preparation Method			3550B	3550B			
Date Analyzed			09/26/2018	09/26/2018			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND			
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND			
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND			
Our Lab I.D.			**94144.17**	**94144.18**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Chlorobenzene	75-125		79.3	77.0			

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Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			Method Blank	94144.01	94144.02	94144.03	94144.04
Client Sample I.D.				SVGW-30-10	SVGW-29-10	SVGW-28-10	SVGW-27-10
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030B	5030B	5030B	5030B	5030B
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Units			ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Acetone	10	10	ND	ND	ND	ND	ND
Benzene	0.15	1.00	ND	ND	ND	ND	ND
Bromobenzene (Phenyl bromide)	0.50	1.00	ND	ND	ND	ND	ND
Bromochloromethane	0.50	1.00	ND	ND	ND	ND	ND
Bromodichloromethane	0.12	1.00	ND	ND	ND	ND	ND
Bromoform (Tribromomethane)	2.5	5.0	ND	ND	ND	ND	ND
Bromomethane (Methyl bromide)	1.5	3.0	ND	ND	ND	ND	ND
2-Butanone (MEK)	5.0	5.0	ND	ND	ND	ND	ND
n-Butylbenzene	0.50	1.00	ND	ND	ND	ND	ND
sec-Butylbenzene	0.50	1.00	ND	ND	ND	ND	ND
tert-Butylbenzene	0.50	1.00	ND	ND	ND	ND	ND
Carbon Disulfide	0.50	1.00	ND	ND	ND	ND	ND
Carbon tetrachloride	0.10	1.00	ND	ND	ND	ND	ND
Chlorobenzene	0.50	1.00	ND	ND	ND	ND	ND
Chloroethane	1.5	3.0	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	2.5	5.0	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	0.22	1.00	ND	ND	ND	ND	ND
Chloromethane (Methyl chloride)	1.5	3.0	ND	ND	ND	ND	ND
2-Chlorotoluene	0.50	1.00	ND	ND	ND	ND	ND
4-Chlorotoluene	0.50	1.00	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	2.5	5.0	ND	ND	ND	ND	ND
Dibromochloromethane	0.50	1.00	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.075	1.000	ND	ND	ND	ND	ND
Dibromomethane	0.50	1.00	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.50	1.00	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.50	1.00	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.48	1.00	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			Method Blank	94144.01	94144.02	94144.03	94144.04
Client Sample I.D.				SVGW-30-10	SVGW-29-10	SVGW-28-10	SVGW-27-10
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030B	5030B	5030B	5030B	5030B
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Units			ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Dichlorodifluoromethane	1.5	3.0	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.50	1.00	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	0.17	1.00	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.50	1.00	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.50	1.00	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.50	1.00	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.44	1.00	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.50	1.00	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.50	1.00	ND	ND	ND	ND	ND
1,1-Dichloropropene	0.50	1.00	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.50	1.00	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.50	1.00	ND	ND	ND	ND	ND
Ethylbenzene	0.50	1.00	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.14	3.00	ND	ND	ND	ND	ND
2-Hexanone	2.5	5.0	ND	ND	ND	ND	ND
Iodomethane	0.50	1.00	ND	ND	ND	ND	ND
Isopropylbenzene	0.50	1.00	ND	ND	ND	ND	ND
p-Isopropyltoluene	0.50	1.00	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	2.5	5.0	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MTBE)	0.50	1.00	ND	ND	ND	ND	ND
Methylene chloride (DCM)	0.93	4.00	ND	ND	ND	ND	ND
Naphthalene	0.17	1.00	ND	ND	ND	ND	ND
n-Propylbenzene	0.50	1.00	ND	ND	ND	ND	ND
Styrene	0.50	1.00	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.50	1.00	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.076	1.000	ND	ND	ND	ND	ND
Tetrachloroethene	0.082	1.000	ND	ND	ND	ND	ND
Toluene (Methyl benzene)	0.50	1.00	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.50	1.00	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.50	1.00	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.50	1.00	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.28	1.00	ND	ND	ND	ND	ND
Trichloroethene	0.49	1.00	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.50	1.00	ND	ND	ND	ND	ND

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			Method Blank	94144.01	94144.02	94144.03	94144.04
Client Sample I.D.				SVGW-30-10	SVGW-29-10	SVGW-28-10	SVGW-27-10
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/20/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030B	5030B	5030B	5030B	5030B
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Units			ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
1,2,3-Trichloropropane	0.0002	1.0000	ND	ND	ND	ND	ND
Trichlorotrifluoroethane (Freon-113)	0.50	1.00	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.50	1.00	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	0.50	1.00	ND	ND	ND	ND	ND
Vinyl Acetate	0.50	5.00	ND	ND	ND	ND	ND
Vinyl chloride (Chloroethene)	0.019	3.000	ND	ND	ND	ND	ND
o-Xylene	0.50	1.00	ND	ND	ND	ND	ND
m,p-Xylenes	1.0	2.0	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	94144.01	94144.02	94144.03	94144.04
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Bromofluorobenzene	75-125		108	107	108	107	107
Dibromofluoromethane	75-125		120	118	120	125	116
Toluene-d8	75-125		107	106	108	107	106

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Site

1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			94144.05	94144.06	94144.07		
Client Sample I.D.			GW DUP	SV-26-10	Water TB		
Date Sampled			09/20/2018	09/20/2018	09/20/2018		
Date Prepared			09/20/2018	09/20/2018	09/20/2018		
Preparation Method			5030B	5030B	5030B		
Date Analyzed			09/25/2018	09/25/2018	09/25/2018		
Matrix			Aqueous	Aqueous	Aqueous		
Units			ug/L	ug/L	ug/L		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Acetone	10	10	ND	ND	ND		
Benzene	0.15	1.00	ND	ND	ND		
Bromobenzene (Phenyl bromide)	0.50	1.00	ND	ND	ND		
Bromochloromethane	0.50	1.00	ND	ND	ND		
Bromodichloromethane	0.12	1.00	ND	ND	ND		
Bromoform (Tribromomethane)	2.5	5.0	ND	ND	ND		
Bromomethane (Methyl bromide)	1.5	3.0	ND	ND	ND		
2-Butanone (MEK)	5.0	5.0	ND	ND	ND		
n-Butylbenzene	0.50	1.00	ND	ND	ND		
sec-Butylbenzene	0.50	1.00	ND	ND	ND		
tert-Butylbenzene	0.50	1.00	ND	ND	ND		
Carbon Disulfide	0.50	1.00	ND	ND	ND		
Carbon tetrachloride	0.10	1.00	ND	ND	ND		
Chlorobenzene	0.50	1.00	ND	ND	ND		
Chloroethane	1.5	3.0	ND	ND	ND		
2-Chloroethyl vinyl ether	2.5	5.0	ND	ND	ND		
Chloroform (Trichloromethane)	0.22	1.00	ND	ND	ND		
Chloromethane (Methyl chloride)	1.5	3.0	ND	ND	ND		
2-Chlorotoluene	0.50	1.00	ND	ND	ND		
4-Chlorotoluene	0.50	1.00	ND	ND	ND		
1,2-Dibromo-3-chloropropane (DBCP)	2.5	5.0	ND	ND	ND		
Dibromochloromethane	0.50	1.00	ND	ND	ND		
1,2-Dibromoethane (EDB)	0.075	1.000	ND	ND	ND		
Dibromomethane	0.50	1.00	ND	ND	ND		
1,2-Dichlorobenzene	0.50	1.00	ND	ND	ND		
1,3-Dichlorobenzene	0.50	1.00	ND	ND	ND		
1,4-Dichlorobenzene	0.48	1.00	ND	ND	ND		

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			94144.05	94144.06	94144.07		
Client Sample I.D.			GW DUP	SV-26-10	Water TB		
Date Sampled			09/20/2018	09/20/2018	09/20/2018		
Date Prepared			09/20/2018	09/20/2018	09/20/2018		
Preparation Method			5030B	5030B	5030B		
Date Analyzed			09/25/2018	09/25/2018	09/25/2018		
Matrix			Aqueous	Aqueous	Aqueous		
Units			ug/L	ug/L	ug/L		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Dichlorodifluoromethane	1.5	3.0	ND	ND	ND		
1,1-Dichloroethane	0.50	1.00	ND	ND	ND		
1,2-Dichloroethane (EDC)	0.17	1.00	ND	ND	ND		
1,1-Dichloroethene	0.50	1.00	ND	ND	ND		
cis-1,2-Dichloroethene	0.50	1.00	ND	ND	ND		
trans-1,2-Dichloroethene	0.50	1.00	ND	ND	ND		
1,2-Dichloropropane	0.44	1.00	ND	ND	ND		
1,3-Dichloropropane	0.50	1.00	ND	ND	ND		
2,2-Dichloropropane	0.50	1.00	ND	ND	ND		
1,1-Dichloropropene	0.50	1.00	ND	ND	ND		
cis-1,3-Dichloropropene	0.50	1.00	ND	ND	ND		
trans-1,3-Dichloropropene	0.50	1.00	ND	ND	ND		
Ethylbenzene	0.50	1.00	ND	ND	ND		
Hexachlorobutadiene	0.14	3.00	ND	ND	ND		
2-Hexanone	2.5	5.0	ND	ND	ND		
Iodomethane	0.50	1.00	ND	ND	ND		
Isopropylbenzene	0.50	1.00	ND	ND	ND		
p-Isopropyltoluene	0.50	1.00	ND	ND	ND		
4-Methyl-2-pentanone (MIBK)	2.5	5.0	ND	ND	ND		
Methyl-tert-butyl ether (MTBE)	0.50	1.00	ND	ND	ND		
Methylene chloride (DCM)	0.93	4.00	ND	ND	ND		
Naphthalene	0.17	1.00	ND	ND	ND		
n-Propylbenzene	0.50	1.00	ND	ND	ND		
Styrene	0.50	1.00	ND	ND	ND		
1,1,1,2-Tetrachloroethane	0.50	1.00	ND	ND	ND		
1,1,2,2-Tetrachloroethane	0.076	1.000	ND	ND	ND		
Tetrachloroethene	0.082	1.000	ND	ND	ND		
Toluene (Methyl benzene)	0.50	1.00	ND	ND	ND		
1,2,3-Trichlorobenzene	0.50	1.00	ND	ND	ND		
1,2,4-Trichlorobenzene	0.50	1.00	ND	ND	ND		
1,1,1-Trichloroethane	0.50	1.00	ND	ND	ND		
1,1,2-Trichloroethane	0.28	1.00	ND	ND	ND		
Trichloroethene	0.49	1.00	ND	ND	ND		
Trichlorofluoromethane	0.50	1.00	ND	ND	ND		

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ANALYTICAL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1

Our Lab I.D.			**94144.05**	**94144.06**	**94144.07**		
Client Sample I.D.			GW DUP	SV-26-10	Water TB		
Date Sampled			09/20/2018	09/20/2018	09/20/2018		
Date Prepared			09/20/2018	09/20/2018	09/20/2018		
Preparation Method			5030B	5030B	5030B		
Date Analyzed			09/25/2018	09/25/2018	09/25/2018		
Matrix			Aqueous	Aqueous	Aqueous		
Units			ug/L	ug/L	ug/L		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
1,2,3-Trichloropropane	0.0002	1.0000	ND	ND	ND		
Trichlorotrifluoroethane (Freon-113)	0.50	1.00	ND	ND	ND		
1,2,4-Trimethylbenzene	0.50	1.00	ND	ND	ND		
1,3,5-Trimethylbenzene	0.50	1.00	ND	ND	ND		
Vinyl Acetate	0.50	5.00	ND	ND	ND		
Vinyl chloride (Chloroethene)	0.019	3.000	ND	ND	ND		
o-Xylene	0.50	1.00	ND	ND	ND		
m,p-Xylenes	1.0	2.0	ND	ND	ND		
Our Lab I.D.			**94144.05**	**94144.06**	**94144.07**		
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**		
Bromofluorobenzene	75-125		108	108	108		
Dibromofluoromethane	75-125		119	106	110		
Toluene-d8	75-125		108	107	108		

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015G, TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB1

Our Lab I.D.			Method Blank	**94144.01**	**94144.02**	**94144.03**	**94144.04**
Client Sample I.D.				SVGW-30-10	SVGW-29-10	SVGW-28-10	SVGW-27-10
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/25/2018	09/25/2018	09/20/2018	09/20/2018	09/20/2018
Preparation Method			5030B	5030B	5030B	5030B	5030B
Date Analyzed			09/25/2018	09/25/2018	09/25/2018	09/25/2018	09/25/2018
Matrix			Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Gasoline and Light HC. (C4-C12)	0.005	0.010	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	**94144.01**	**94144.02**	**94144.03**	**94144.04**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Bromofluorobenzene	75-125		104	123	121	113	108

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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015G, TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB1

Our Lab I.D.			**94144.05**	**94144.06**			
Client Sample I.D.			GW DUP	SV-26-10			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/20/2018	09/20/2018			
Preparation Method			5030B	5030B			
Date Analyzed			09/25/2018	09/25/2018			
Matrix			Aqueous	Aqueous			
Units			mg/L	mg/L			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Gasoline and Light HC. (C4-C12)	0.005	0.010	ND	ND			
Our Lab I.D.			**94144.05**	**94144.06**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Bromofluorobenzene	75-125		105	113			

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1853 Camino Del Sol
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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015D, TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618DB1

Our Lab I.D.			Method Blank	**94144.01**	**94144.02**	**94144.03**	**94144.04**
Client Sample I.D.				SVGW-30-10	SVGW-29-10	SVGW-28-10	SVGW-27-10
Date Sampled				09/20/2018	09/20/2018	09/20/2018	09/20/2018
Date Prepared			09/26/2018	09/26/2018	09/26/2018	09/26/2018	09/26/2018
Preparation Method			3510C	3510C	3510C	3510C	3510C
Date Analyzed			09/27/2018	09/27/2018	09/27/2018	09/27/2018	09/27/2018
Matrix			Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
TPH as Diesel (C13-C22)	0.1	0.5	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	0.1	0.5	ND	ND	ND	ND	ND
TPH Total as Diesel and Heavy HC.C13-C40	0.1	0.5	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	**94144.01**	**94144.02**	**94144.03**	**94144.04**
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**	**% Rec.**
Chlorobenzene	60-125		72.5	95.5	91.5	78.0	75.0

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Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015D, TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618DB1

Our Lab I.D.			**94144.05**	**94144.06**			
Client Sample I.D.			GW DUP	SV-26-10			
Date Sampled			09/20/2018	09/20/2018			
Date Prepared			09/26/2018	09/26/2018			
Preparation Method			3510C	3510C			
Date Analyzed			09/27/2018	09/27/2018			
Matrix			Aqueous	Aqueous			
Units			mg/L	mg/L			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
TPH as Diesel (C13-C22)	0.1	0.5	ND	ND			
TPH as Heavy Hydrocarbons (C23-C40)	0.1	0.5	ND	ND			
TPH Total as Diesel and Heavy HC.C13-C40	0.1	0.5	ND	ND			
Our Lab I.D.			**94144.05**	**94144.06**			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Chlorobenzene	60-125		82.5	89.0			

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1; Dup or Spiked Sample: B0925181A1; LCS: Clean Water; QC Prepared: 09/20/2018; QC Analyzed: 09/25/2018; Units: ug/L

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzene	0.00	50.0	59.5	119	50.0	59.0	118	<1	75-125	<20
Carbon tetrachloride	0.00	50.0	55.0	110	50.0	57.0	114	3.6	75-125	<20
Chlorobenzene	0.00	50.0	57.0	114	50.0	56.0	112	1.8	75-125	<20
Chloroform (Trichloromethane)	0.00	50.0	55.5	111	50.0	59.0	118	6.1	75-125	<20
1,2-Dichlorobenzene	0.00	50.0	47.2	94.4	50.0	46.8	93.6	<1	75-125	<20
1,1-Dichloroethane	0.00	50.0	59.5	119	50.0	57.5	115	3.4	75-125	<20
1,1-Dichloroethene	0.00	50.0	56.5	113	50.0	59.5	119	5.2	75-125	<20
cis-1,2-Dichloroethene	0.00	50.0	53.5	107	50.0	56.5	113	5.5	75-125	<20
Ethylbenzene	0.00	50.0	58.5	117	50.0	58.0	116	<1	75-125	<20
Methyl-tert-butyl ether (MTBE)	0.00	50.0	57.5	115	50.0	56.5	113	1.8	75-125	<20
n-Propylbenzene	0.00	50.0	51.5	103	50.0	50.5	101	2.0	75-125	<20
Toluene (Methyl benzene)	0.00	50.0	58.5	117	50.0	58.0	116	<1	75-125	<20
1,1,1-Trichloroethane	0.00	50.0	55.5	111	50.0	59.0	118	6.1	75-125	<20
1,1,2-Trichloroethane	0.00	50.0	59.0	118	50.0	58.0	116	1.7	75-125	<20
Trichloroethene	0.00	50.0	56.5	113	50.0	60.0	120	6.0	75-125	<20
1,2,4-Trimethylbenzene	0.00	50.0	51.5	103	50.0	51.0	102	<1	75-125	<20
1,3,5-Trimethylbenzene	0.00	50.0	52.0	104	50.0	51.5	103	<1	75-125	<20
o-Xylene	0.00	50.0	58.0	116	50.0	57.5	115	<1	75-125	<20
m,p-Xylenes	0.00	100	119	119	100	117	117	1.7	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	50.0	45.6	91.1	50.0	45.8	91.5	<1	75-125	<20
Dibromofluoromethane	0.00	50.0	56.0	112	50.0	59.0	118	5.2	75-125	<20
Toluene-d8	0.00	50.0	52.5	105	50.0	53.0	106	<1	75-125	<20

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QUALITY CONTROL RESULTS

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: 8260B, Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925181A1; Dup or Spiked Sample: B0925181A1; LCS: Clean Water; QC Prepared: 09/20/2018; QC Analyzed: 09/25/2018; Units: ug/L

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Benzene	50.0	56.5	113	50.0	54.5	109	3.6	75-125	<20	
Carbon tetrachloride	50.0	62.5	125	50.0	61.0	122	2.4	75-125	<20	
Chlorobenzene	50.0	54.5	109	50.0	54.0	108	<1	75-125	<20	
Chloroform (Trichloromethane)	50.0	59.5	119	50.0	58.0	116	2.6	75-125	<20	
1,2-Dichlorobenzene	50.0	46.7	93.4	50.0	46.0	92.0	1.5	75-125	<20	
1,1-Dichloroethane	50.0	60.5	121	50.0	59.0	118	2.5	75-125	<20	
1,1-Dichloroethene	50.0	56.0	112	50.0	57.0	114	1.8	75-125	<20	
cis-1,2-Dichloroethene	50.0	58.0	116	50.0	56.5	113	2.6	75-125	<20	
Ethylbenzene	50.0	56.5	113	50.0	55.5	111	1.8	75-125	<20	
Methyl-tert-butyl ether (MTBE)	50.0	59.0	118	50.0	57.5	115	2.6	75-125	<20	
n-Propylbenzene	50.0	50.0	100	50.0	49.0	98.0	2.0	75-125	<20	
Toluene (Methyl benzene)	50.0	56.5	113	50.0	56.0	112	<1	75-125	<20	
1,1,1-Trichloroethane	50.0	58.0	116	50.0	56.5	113	2.6	75-125	<20	
1,1,2-Trichloroethane	50.0	55.5	111	50.0	55.0	110	<1	75-125	<20	
Trichloroethene	50.0	59.0	118	50.0	58.0	116	1.7	75-125	<20	
1,2,4-Trimethylbenzene	50.0	51.0	102	50.0	50.0	100	2.0	75-125	<20	
1,3,5-Trimethylbenzene	50.0	51.0	102	50.0	50.0	100	2.0	75-125	<20	
o-Xylene	50.0	56.0	112	50.0	54.5	109	2.7	75-125	<20	
m,p-Xylenes	100	115	115	100	113	113	1.8	75-125	<20	
Surrogates										
Bromofluorobenzene	50.0	45.0	89.9	50.0	45.4	90.8	<1	75-125	<20	
Dibromofluoromethane	50.0	58.0	116	50.0	58.0	116	<1	75-125	<20	
Toluene-d8	50.0	51.0	102	50.0	52.0	104	1.9	75-125	<20	

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015D, TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618DB1; Dup or Spiked Sample: 0926; LCS: Clean Water; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/L

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C13-C22)	0.00	5.00	5.60	112	5.00	5.80	116	3.5	75-125	<20
Surrogates										
Chlorobenzene	0.00	2.00	1.87	93.5	2.00	1.68	84.0	10.7	60-125	<20

QC Batch No: 092618DB1; Dup or Spiked Sample: 0926; LCS: Clean Water; QC Prepared: 09/26/2018; QC Analyzed: 09/27/2018; Units: mg/L

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
TPH as Diesel (C13-C22)	5.00	5.40	108	75-125						
Surrogates										
Chlorobenzene	2.00	1.94	97.0	60-125						

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Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: M8015G, TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB1; Dup or Spiked Sample: B092518NB1; LCS: Clean Water; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: mg/L

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	0.00	0.500	0.625	125	0.500	0.555	111	11.9	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	0.0500	0.0600	120	0.0500	0.0560	112	6.9	75-125	<20

QC Batch No: 092518NB1; Dup or Spiked Sample: B092518NB1; LCS: Clean Water; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: mg/L

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
TPH as Gasoline and Light HC. (C4-C12)	0.500	0.615	123	0.500	0.620	124	<1	75-125	<20	
Surrogates										
Bromofluorobenzene	0.0500	0.0560	112	0.0500	0.0575	115	2.6	75-125	<20	

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1853 Camino Del Sol
Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzene	0.00	50.0	42.3	84.6	50.0	41.8	83.6	1.2	75-125	<20
Carbon tetrachloride	0.00	50.0	49.4	98.8	50.0	49.8	99.6	<1	75-125	<20
Chlorobenzene	0.00	50.0	40.6	81.2	50.0	40.1	80.2	1.2	75-125	<20
Chloroform (Trichloromethane)	0.00	50.0	53.0	106	50.0	51.5	103	2.9	75-125	<20
1,2-Dichlorobenzene	0.00	50.0	39.8	79.6	50.0	40.8	81.6	2.5	75-125	<20
1,1-Dichloroethane	0.00	50.0	43.6	87.2	50.0	43.9	87.8	<1	75-125	<20
1,1-Dichloroethene	0.00	50.0	39.0	78.0	50.0	41.8	83.6	6.9	75-125	<20
cis-1,2-Dichloroethene	0.00	50.0	51.0	102	50.0	50.5	101	<1	75-125	<20
Ethylbenzene	0.00	50.0	38.8	77.6	50.0	38.5	77.0	<1	75-125	<20
Methyl-tert-butyl ether (MTBE)	0.00	50.0	45.7	91.4	50.0	46.6	93.2	2.0	75-125	<20
n-Propylbenzene	0.00	50.0	36.4 #	72.8	50.0	37.6	75.2	3.2	75-125	<20
Toluene (Methyl benzene)	0.00	50.0	39.6	79.2	50.0	38.4	76.8	3.1	75-125	<20
1,1,1-Trichloroethane	0.00	50.0	47.3	94.6	50.0	47.6	95.2	<1	75-125	<20
1,1,2-Trichloroethane	0.00	50.0	45.3	90.6	50.0	46.2	92.4	2.0	75-125	<20
Trichloroethene	0.00	50.0	46.8	93.6	50.0	46.8	93.6	<1	75-125	<20
1,2,4-Trimethylbenzene	0.00	50.0	40.1	80.2	50.0	42.1	84.2	4.9	75-125	<20
1,3,5-Trimethylbenzene	0.00	50.0	40.7	81.4	50.0	42.5	85.0	4.3	75-125	<20
o-Xylene	0.00	50.0	39.6	79.2	50.0	39.0	78.0	1.5	75-125	<20
m,p-Xylenes	0.00	100	78.4	78.4	100	78.1	78.1	<1	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	50.0	50.5	101	50.0	50.5	101	<1	75-125	<20
Dibromofluoromethane	0.00	50.0	57.5	115	50.0	57.0	114	<1	75-125	<20
Toluene-d8	0.00	50.0	46.1	92.2	50.0	46.0	91.9	<1	75-125	<20

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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0925182A1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Benzene	50.0	46.6	93.2	50.0	45.0	90.0	3.5	75-125	<20	
Carbon tetrachloride	50.0	55.5	111	50.0	54.0	108	2.7	75-125	<20	
Chlorobenzene	50.0	49.3	98.6	50.0	48.0	96.0	2.7	75-125	<20	
Chloroform (Trichloromethane)	50.0	51.0	102	50.0	50.0	100	2.0	75-125	<20	
1,2-Dichlorobenzene	50.0	52.5	105	50.0	51.0	102	2.9	75-125	<20	
1,1-Dichloroethane	50.0	44.1	88.2	50.0	43.0	86.0	2.5	75-125	<20	
1,1-Dichloroethene	50.0	41.9	83.8	50.0	41.0	82.0	2.2	75-125	<20	
cis-1,2-Dichloroethene	50.0	50.5	101	50.0	50.0	100	<1	75-125	<20	
Ethylbenzene	50.0	48.7	97.4	50.0	46.0	92.0	5.7	75-125	<20	
Methyl-tert-butyl ether (MTBE)	50.0	46.5	93.0	50.0	47.0	94.0	1.1	75-125	<20	
n-Propylbenzene	50.0	49.7	99.4	50.0	47.5	95.0	4.5	75-125	<20	
Toluene (Methyl benzene)	50.0	47.6	95.2	50.0	45.5	91.0	4.5	75-125	<20	
1,1,1-Trichloroethane	50.0	53.5	107	50.0	52.0	104	2.8	75-125	<20	
1,1,2-Trichloroethane	50.0	53.0	106	50.0	51.5	103	2.9	75-125	<20	
Trichloroethene	50.0	47.4	94.8	50.0	46.0	92.0	3.0	75-125	<20	
1,2,4-Trimethylbenzene	50.0	52.5	105	50.0	53.0	106	<1	75-125	<20	
1,3,5-Trimethylbenzene	50.0	53.5	107	50.0	53.5	107	<1	75-125	<20	
o-Xylene	50.0	48.5	97.0	50.0	42.5	85.0	13.2	75-125	<20	
m,p-Xylenes	100	101	101	100	90.2	90.2	11.3	75-125	<20	
Surrogates										
Bromofluorobenzene	50.0	51.5	103	50.0	50.5	101	2.0	75-125	<20	
Dibromofluoromethane	50.0	48.8	97.5	50.0	50.5	101	3.5	75-125	<20	
Toluene-d8	50.0	47.2	94.3	50.0	46.2	92.3	2.1	75-125	<20	

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Oxnard, CA 93030

Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 092618PB1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C13-C22)	0.00	500	408	81.6	500	442	88.4	8.0	75-125	<20
Surrogates										
Chlorobenzene	0.00	100	76.7	76.7	100	82.6	82.6	7.4	75-125	<20

QC Batch No: 092618PB1; Dup or Spiked Sample: 94144.16; LCS: Clean Sand; QC Prepared: 09/26/2018; QC Analyzed: 09/26/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
TPH as Diesel (C13-C22)	500	401	80.2	500	416	83.2	3.67	75-125	<20	
Surrogates										
Chlorobenzene	100	76.3	76.3	100	77.9	77.9	2.10	75-125	<20	

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Project ID: 100-SBA-T 38186
Project Name: OUHSD HS#8 PEA

AETL Job Number	Submitted	Client
94144	09/20/2018	T/TSB

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 092518NB2; Dup or Spiked Sample: 94144.16AGA; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	0.00	1.00	0.780	78.0	1.00	0.733	73.3	6.2	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	0.0500	0.0540	108	0.0500	0.0620	124	13.8	75-125	<20

QC Batch No: 092518NB2; Dup or Spiked Sample: 94144.16AGA; LCS: Clean Sand; QC Prepared: 09/25/2018; QC Analyzed: 09/25/2018; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
TPH as Gasoline and Light HC. (C4-C12)	1.00	0.916	91.6	1.00	0.990	99.0	7.8	75-125	<20	
Surrogates										
Bromofluorobenzene	0.0500	0.0570	114	0.0500	0.0540	108	5.4	75-125	<20	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

N DATA VALIDATION MEMORANDUM

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TETRA TECH, INC.
DATA VALIDATION MEMORANDUM
FOR THE OXNARD UNION HIGH SCHOOL DISTRICT HIGH SCHOOL NO. 8 PROJECT

1.0 INTRODUCTION

This memorandum summarizes the findings of validation effort conducted on the soil gas and soil sample data results from the Oxnard Union High School Site Project, Preliminary Environmental Assessment (PEA). A typical PEA validation effort consists of a review of 10 percent of the analytical data; however, due to the limited number of analytical batches associated with the subject investigation, 100 percent of the data were reviewed. The validation guidance used in evaluating the data is presented in *USEPA National Functional Guidelines for Inorganic Data Review (2016)* and *USEPA National Functional Guidelines for Organic Data Review (2016).* The data review consisted of an evaluation of all applicable Quality Control (QC) sample results as they relate to the field data under review. Raw data were not reviewed. The review determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

The data reviewed were generated by two different laboratories. The soil gas data from Tedlar polymer bags came from A & R Laboratories Inc from Ontario, California. The soil data came American Environmental Testing Laboratories, Inc. (AETL) located in Burbank, California.

2.0 EVALUATION CRITERIA

The data were evaluated by results from the following QC elements:

- Holding Times
- Method Blanks
- Laboratory Control Samples
- Surrogate Recovery (Organic Methods)
- Field Replicate Analysis
- Spiked Duplicate Analysis
- Relative Percent Difference (RPD) Compliance

3.0 A & R LABORATORIES

The A & R Laboratory data were contained in three Sample Delivery Groups (SDGs) which were 1809-00132, 1809-00133, and 1809-00134. The SDGs contained a total of 66 total soil gas samples were analyzed with the following subset of samples analyzed for the following methods/compounds:

1. Fixed Gases Oxygen, Carbon Dioxide, Carbon Monoxide, Nitrogen) by Method ASTM D-1946 (66 samples)

2. Methane by Method SW8015M (55 samples)

3. Hydrogen Sulfide by Method Hach HS-C

4. Volatile Organic Compounds by Method SW8260B (11 samples)

5. TPHg (C_4-C_{12} carbon range) by Method LUFT GCMS (11 samples)

The data were logged into the laboratory under compliant Chain-Of-Custody documentation. Several volatile organic compounds, fixed gases were detected in many of the samples. Both carbon dioxide and oxygen were detected within reasonable ranges.

A HACH field instrument analyzed hydrogen sulfide. The quality control and calibration of the field instrument met established field procedures.

3.1 Fixed Gases by Method ASTM-1946

3.1.1 Holding Time

The samples were analyzed within the specified holding time.

3.1.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified method reporting limits.

3.1.3 Laboratory Control Sample

Standard LCS analyses are not conducted from Tedlar bags but the calibration of analytes were within acceptance levels.

3.1.4 Surrogate Recovery

Surrogate are not used in this method

3.1.5 Field Duplicate Analysis

All field duplicate results were within control limits

3.1.6 Spiked Duplicate Analysis

All spiked duplicate results were within control limits

3.1.7 Relative Percent Difference (RPD) Compliance

All duplicate results had compliant RPD values.

3.2 Methane by EPA method SW8015M

3.2.1 Holding Time

The samples were analyzed within the method specified holding time.

3.2.2 Method Blank

The results for the method blank were non-detect for Methane at the specified MDL.

3.2.3 Laboratory Control Sample

The LCS recovery was within the specified acceptance limits for extractable TPH.

3.2.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

3.2.5 Field Duplicate Analysis

No field duplicate samples had errors.

3.2.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

3.2.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for extractable TPH.

3.3 Hydrogen Sulfide by H_2S a Jerome H_2S Analyzer Model 631-X Field Meter

3.3.1 Data Results

Hydrogen Sulfide were analyzed by H_2S a Jerome H_2S Analyzer Model 631-X field meter and the data does not meet the definitive data protocols used for other data in this data set. Therefore, no definitive data QC results are available to determine the true data quality. These data are usable as qualitatively determined data only.

3.4 Volatile Organic Compounds (VOCs) by EPA method SW8260B

3.4.1 Holding Time

The samples were analyzed within the method specified holding time.

3.4.2 Method Blank

The results for the method blank were non-detect for VOCs at the specified MDL.

3.4.3 Laboratory Control Sample

The LCS recovery was within the specified acceptance limits for VOCs.

3.4.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

3.4.5 Field Duplicate Analysis

No field duplicate samples had errors.

3.4.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

3.4.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for VOCs.

3.5 TPHg (C_4-C_{12} carbon range) by LUFT GCMS

3.5.1 Holding Time

The samples were analyzed within the method specified holding time.

3.5.2 Method Blank

The results for the method blank were non-detect for TPHg (C_4-C_{12} carbon range) at the specified MDL.

3.5.3 Laboratory Control Sample

The LCS recovery was within the specified acceptance limits for TPHg (C_4-C_{12} carbon range).

3.5.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

3.5.5 Field Duplicate Analysis

No field duplicate samples had errors.

3.5.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

3.5.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for TPHg (C_4-C_{12} carbon range).

3.6 A & R Laboratories Data Summary

Based on the results of this data validation review, it is concluded that the A & R Laboratory's soil gas data are usable as reported. The results are considered correct and reliable The DQOs were satisfied per the Work Plan and the data are usable for their intended purpose.

4.0 AMERICAN ENVIRONMENTAL TESTING LABORATORY

The AETL data consisted of three SDG designated as 94142, 94143, and 94144. The samples were analyzed in multiple batch per method. A total of 86 soil samples and six groundwater samples were analyzed by AETL for a variety of methods as follows:

1. Arsenic using EPA methods SW6010B (17 samples);
2. Extractable TPH (>C12) using EPA method SW8015B (34 samples);
3. Low Level PAHs using EPA method SW8310 (18 samples);
4. SVOCs using EPA method SW8270C (18 samples);
5. PCBs using EPA method SW8082 (2 sample).
6. Volatile TPH (C4-C12) using EPA method SW8015B (17 samples)
7. Organochlorine Pesticides using EPA method SW8081A (69 samples);
8. Volatile Organic Compounds (VOCs) using method SW8260B (18 samples)

The data were logged into the laboratory under compliant Chain-Of-Custody documentation. The samples were shipped in one iced cooler by FedEx overnight delivery.

The sample were received at the lab in good condition and with no exceptions noted. Foe each parameters/methods listed above there are individual method headers listed below that explain the data validation and data quality.

4.1 Arsenic by EPA methods SW6010B

4.1.1 Holding Time

The samples were analyzed within the method specified holding time.

4.1.2 Method Blank

The results for the method blanks were non-detect for all metals at the specified MDL.

4.1.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all metals.

4.1.4 Surrogate Recovery

Not applicable.

4.1.5 Field Duplicate Analysis

No field duplicates errors were noted for the duplicates analyzed.

4.1.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for Arsenic.

4.1.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for Arsenic

4.2 Extractable (C8-C40) TPH by EPA method SW8015B

4.2.1 Holding Time

The samples were analyzed within the method specified holding time.

4.2.2 Method Blank

The results for the method blank were non-detect for extractable TPH at the specified MDL.

4.2.3 Laboratory Control Sample

The LCS recovery was within the specified acceptance limits for extractable TPH.

4.2.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.2.5 Field Duplicate Analysis

No field duplicate samples had errors.

4.2.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.2.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for extractable TPH.

4.3 Polycyclic Aromatic Hydrocarbons by EPA method SW8310

4.3.1 Holding Time

The samples were analyzed within the method specified holding time.

4.3.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.3.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.3.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.3.5 Field Duplicate Analysis

No field duplicate samples reported errors.

4.3.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.3.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.4 Semivolatile Organic Compounds by EPA method SW8270C

4.4.1 Holding Time

The samples were analyzed within the method specified holding time.

4.4.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.4.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.4.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.4.5 Field Duplicate Analysis

No field duplicate samples reported errors.

4.4.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.4.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.5 Polychlorinated Biphenyls by EPA method SW8082

4.5.1 Holding Time

The samples were analyzed within the method specified holding time.

4.5.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.5.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.5.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.5.5 Field Duplicate Analysis

No field duplicate samples reported errors.

4.5.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.5.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.6 Volatile (C4-C12) TPH by EPA method SW8015B

4.6.1 Holding Time

The samples were analyzed within the method specified holding time.

4.6.2 Method Blank

The results for the method blank were non-detect for volatile TPH at the specified MDL.

4.6.3 Laboratory Control Sample

The LCS recovery was within the specified acceptance limits for volatile TPH.

4.6.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.6.5 Field Duplicate Analysis

No field duplicate samples had errors.

4.6.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.6.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for volatile TPH.

4.7 Organochlorine Pesticides by EPA method SW8081A

4.7.1 Holding Time

The samples were analyzed within the method specified holding time.

4.7.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.7.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.7.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.7.5 Field Duplicate Analysis

No field duplicate samples reported errors.

4.7.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds except as listed below.

Field sample ss-38-0 samples' DDT result was qualified for the DDT being outside recovery criteria in the MS/MSD. The DDT was qualified as estimated and assigned a "J" qualifier. The estimated data are usable for the intended purpose.

4.7.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.8 Volatile Organic Compounds by EPA method SW8260B

4.8.1 Holding Time

The samples were analyzed within the method specified holding time.

4.8.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.8.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.8.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.8.5 Field Duplicate Analysis

No field duplicate samples reported errors.

4.8.6 Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.8.7 Relative Percent Difference Compliance

The RPDs between the MS and MSD recoveries were within the specified acceptance limits for all compounds.

4.9 American Environmental Testing Laboratory Data Summary

Based on the results of this data validation review, it is concluded that the AETL soil data are usable as stated and qualified The results are considered correct and reliable The DQOs were satisfied per the Work Plan and the data are usable for their intended purpose.

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H SUPPLEMENTAL SITE INVESTIGATION

Job No. 100-SBA-T39275

Technical Memorandum
Supplemental Site Investigation
Field Sampling Plan
Proposed High School No. 8
APN 214-002-059 on North Rose Avenue
Oxnard, California 93030

Prepared for:

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January 31, 2019

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1.0 INTRODUCTION

This Technical Memorandum Supplemental Site Investigation Field Sampling Plan (SSIFSP) has been prepared by Tetra Tech and is being submitted to the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), School Evaluation and Cleanup Branch on behalf of the Oxnard Union High School District (OUHSD) for their proposed High School No. 8 Supplemental Site Investigation (SSI). The scope of services for this SSI have been developed to assist the OUHSD in further assessing the nature and extent of organochlorine pesticides (OCPs) in soil at concentrations above Screening Levels that were identified in soil samples collected for the *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California* (Tetra Tech 2018b). The SSIFSP is based on the scope of work agreed on by DTSC, Tetra Tech, OUHSD, and Sage Realty (Sage) at the SSI scoping telephone conference conducted on January 4, 2019. The proposed High School No. 8 site (hereinafter referred to as the Site) comprises approximately 48.6-acres in the southern portion of the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The OUHSD proposes to construct High School No. 8 at the Site to provide classroom space for students (Grades 9-12) living in the surrounding area and proposed Maulhardt Ranch Development (currently in the planning stage). The proposed Maulhardt Ranch Development is a planned development that will consist of medium and high-density multi-family residential properties to the north of the Site.

This Technical Memorandum SSIFSP includes limited background and historical use information regarding the Site. A detailed summary of Site background and historical use information for the Site is presented in the *Final Phase I Environmental Site Assessment Proposed Oxnard High School No., 8* (Tetra Tech 2018a) (High School No. 8 Phase I ESA). This Technical Memorandum is intended to provide details of the proposed SSI sampling and analytical work proposed for the Site in the SSI Scoping Meeting conducted on January 4, 2019. Details regarding quality assurance, risk assessment procedures, and the scope of the SSI report will conform to the *PEA Guidance Manual* (DTSC 2015) and will present findings from human health screening evaluations for the Site based upon the potential contaminants of concern identified through field sampling program proposed here.

1.1 DESIGNATED CONTACT PERSONS

The primary designated contact persons for Tetra Tech are Jim Steele and Randy Westhaus. Jim Steele is the Project Manager and Randy Westhaus is Tetra Tech's California Schools Director. Their contact information is:

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The designated contact person for the OUHSD is Jeff Weinstein. Mr. Weinstein is the Assistant Superintendent Business Services for the OUHSD. The contact information for Mr. Weinstein is:

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2.0 SITE DATA

2.1 SITE LOCATION AND DESCRIPTION

The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Site is a 48.6-acre (approximate) portion of the Maulhardt Ranch (APN 214-002-059), a 107.25-acre property in the City of Oxnard, California (Figures 1 and 2). Book 214 page 2 of the County of Ventura's Assessor Map indicates that the Site comprises approximately the southernmost 45 Acres of Parcel 59, within the Rancho El Rio Santa Clara O'La Colonia Portion A of Subdivision 26 in the City of Oxnard.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2). The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas (Figure 2). The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch (APN 214-002-059) is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

3.0 PHYSICAL SETTING AND CONDITIONS

The Site is depicted on the Oxnard, California Quadrangle U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 2015) (Figure 1). The geographic coordinates of the Site are approximately Latitude 34° 12' 23.08" North, Longitude 119° 9' 31.40" West. The USGS 7.5 topographic series map indicates that the Site is at an elevation between 60 and 70 feet above mean sea level (amsl). The Site elevation is approximately 63 feet amsl with a topographic gradient that is generally flat with a gentle slope to the south-southwest (Environmental Data Resources [EDR] 2017).

3.1 REGIONAL GEOLOGY

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa and Pine Mountains, to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (California Geological Survey [CGS] 2002).

3.2 LOCAL GEOLOGY

The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

Based on the Geologic Map of the Oxnard 7.5’ Quadrangle, Ventura County, California the Site is underlain at the ground surface by Holocene deltaic alluvial fan deposits composed predominantly of clay with interbeds of sand and occasional gravel that were deposited by the Santa Clara River and extend to approximately 70 feet below ground surface (bgs) (Clahan, et al 2003; Turner, et al 1975). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

3.3 HYDROLOGY

3.3.1 Hydrogeology

The Site is located in the northern portion of the Oxnard Plain Pressure Groundwater Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975). The Oxnard Plain Groundwater Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Groundwater Basin are grouped into three major units including 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System, and 3) the Lower Aquifer System.

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer zone. The semi-perched aquifer extends to a depth of approximately 75 feet bgs and is underlain by the clay cap that extends from approximately 75 to 150 feet bgs in the Site area (Turner, et al 1975). This aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the Santa Clara River and form lenses perpendicular to the Santa Clara River. Groundwater in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use. Groundwater was encountered at approximately 20 feet bgs at the Site in geotechnical drilling during May and July 2018. Historically groundwater has been as shallow as approximately 10 bgs at the Site (CGS 2002). The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Upper Aquifer System. This clay cap acts as an aquitard. Based on topographic controls, the groundwater in the semi-perched zone in the site vicinity is expected to flow toward the south to south-southwest.

4.0 SITE BACKGROUND

The review of historical aerial photographs and maps, and interviews with the current owner, indicate the Site and adjacent areas have been used for agricultural production (row crops) since at least 1869. The Site is currently being used for strawberry cultivation. Tetra Tech reviewed California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) Map 214 (DOGGR 2001), the online DOGGR Well Finder (DOGGR 2017), and associated well history documents to evaluate potential presence of oil fields or wells within the Site vicinity. Records indicate that the site is located within the Oxnard Oil Field, however no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on 107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. The oil well located nearest to the Site is the Maulhardt Community No. 11A, located approximately 850 feet south of the Site. The Maulhardt Ranch farm yard and residential area are located adjacent to the south and west of the Site (Figures 2 and 3). Formerly, above ground and underground storage tanks were located in the Maulhardt Ranch farm yard and residential area. A more complete description of the historical land use of the Site and surrounding area is provided in the High School No. 8 Phase I ESA (Tetra Tech 2018a).

5.0 HIGH SCHOOL NO. 8 PEA SUMMARY

On behalf of the OUHSD, Tetra Tech completed the Draft PEA on November 9, 2018 and submitted it to DTSC for review (Tetra Tech 2018b). The PEA field sampling program included the collection of surface soil samples from 60 locations at depths of 0 to 0.5 feet below ground surface (bgs) to assess potential OCPs. OCPs were detected at concentrations exceeding the Screening Levels presented in the Draft PEA Report at 34 sample locations including toxaphene in all 34 and dieldrin at three locations (Figure 3 and Table 1). The Draft PEA human health screening evaluation found that assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. The estimated cumulative cancer risk associated with potential exposures to soil based on the 95% UCLs for pesticide maximum detected concentrations for other chemicals is 4×10^{-6}, which is within the low end of the United States Environmental Protection Agency (USEPA) target risk range of 10^{-4} to 10^{-6} and exceeds the point of departure of 1×10^{-6} for potential residential receptors. The PEA concluded that the surface soil sampling performed for the PEA has adequately defined the lateral extent of OCP-impacted soil at concentrations exceeding Screening Levels and recommended that a SSI Workplan be developed and implemented at the Site under DTSC oversight to assess the depth of OCP-impacted soil at the Site at concentrations exceeding Screening Levels (specifically toxaphene and dieldrin). A remedy for the OCP-impacted soil at the Site will be developed following completion of the SSI.

In a letter dated December 27, 2018, the DTSC concurred with the adequacy of the Draft PEA (Reference a) pending review of public comment (DTSC 2018b).

A SSI scoping telephone conference was conducted on January 4, 2019 between DTSC, Tetra Tech, OUHSD, and Sage. The SSI scope of work presented below is based on the scope of work agreed on by DTSC, Tetra Tech, OUHSD, and Sage Realty at the SSI scoping telephone conference.

6.0 SSI FIELD SAMPLING PLAN

6.1 SAMPLING STRATEGY AND APPROACH

The field sampling assessment will consist of a subsurface soil sample collection program using hand auger sampling methods. The following subsections describe the rationale and scope of sampling. The Site ground surface is relatively flat and will be planted in strawberries during implementation of the SSI sampling program.

6.1.1 Rationale

The SSI is being performed to further assess the vertical extent of OCPs at concentrations above the Screening Levels that were identified in the Draft PEA (Tetra Tech 2018b).

6.1.2 Field Coordination

The Site is under active strawberry cultivation with West Coast Berry Farms under lease to the Site owners, the Maulhardt Family. Tetra Tech will conduct one meeting onsite with representatives of the Maulhardt Family and West Coast Berry Farms prior to performing the SSI field sampling to review the SSI sampling plan and coordinate the field sampling effort. The soil sample locations are laid out so that they will be collected from in between the rows of strawberry plants. The soil samples will be collected using hand auger sampling methods that will be executed in a manner that avoids damaging crops and Site infrastructure.

6.1.3 Subsurface Soil Sampling Program

At the January 4, 2019 SSI scoping telephone conference, it was agreed that the lateral extent of OCPs in surface soils at concentrations that exceeded the PEA screening levels had been delineated in the Draft PEA sampling program (Tetra Tech 2018b). To delineate the vertical extent of OCPs in soil at concentrations that exceeded the Draft PEA screening levels, subsurface soil samples will be collected from the PEA surface soil sample locations where the 10 highest surface soil OCP concentrations were detected, at PEA sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59 (Figure 4).

6.2 SAMPLING METHODS AND PROCEDURES

This section describes the methods and procedures that will be used to collect and analyze soil samples.

6.2.1 Sample Site Location and Utility Clearance

The soil sample locations where the 10 highest surface soil OCP concentrations were detected in the PEA sampling program (sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59) were previously mapped in the field using a hand held global positioning system (GPS) unit.

These GPS sample location coordinates will be used to locate the SSI sample locations and sample depths in feet bgs will be recorded on a hand sketched map in our field notes. These data will be presented on figures and in tables in the SSI report. The utility clearance for these soil sample locations will be performed by meeting with representatives of the Maulhardt family and Westcoast Berry Farms as part of the field coordination that will be performed prior to conducting the SSI field sampling. The soil samples will be collected using hand auger sampling methods that will be executed in a manner that avoids damaging crops and Site infrastructure.

6.2.2 Subsurface Soil Sampling Methods

The subsurface soil samples will be collected from 10 locations (sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59) at depths of 1.0 feet bgs, 1.5 feet bgs, and 2.0 feet bgs (Figure 4) using hand auger sampling methods. A total of 30 discrete soil samples will be collected. The subsurface soil samples will be collected using hand auger methods with a hand driven split-spoon sampler. Subsurface soil will be directly transferred from the split-spoon sampler into pre-cleaned glass sample containers provided by the analytical laboratory fitted with Teflon-lined screw-caps. The hand auger sampling equipment, including the split spoon sampler, will be decontaminated between the collection of each soil sample using a phosphate-free detergent wash and successive rinses with potable and deionized water.

The borings will be logged using the Unified Soil Classification System (USCS) as defined in the ASTM methods D 2487-90 (ASTM 1990a) and D 2488-90 (ASTM 1990b). During sampling, a photoionization detector (PID) calibrated with isobutylene gas will be used to monitor the potential presence and concentrations of organic vapors in the breathing zone for workers at each sample location and to screen soil samples. These organic vapor readings will be recorded on field logs prepared by the field geologist/engineer during soil sampling activities. The drill cuttings and soil samples will be evaluated in the field for staining and odor. The labeled samples will be placed in an ice chest containing pre-cooled artificial ice pending delivery to the analytical laboratory with chain-of-custody (COC) records.

The following sampling information will be recorded on the field logs: sample number and location, date and time, sample depth, lithologic description in accordance with the USCS (ASTM 1990a, 1990b), description of any visible evidence of soil contamination (i.e., odor, staining), and PID readings.

6.2.3 Subsurface Soil Sample Analysis Methods

The subsurface soil sample analysis schedule is presented in Table 2. The soil sample analyses will be performed by American Environmental Testing Laboratory, Inc. (AETL), a California State Certified laboratory. The subsurface soil samples will be analyzed for OCPs by United States Environmental Protection Agency (EPA) method 8081A.

For each of the ten sample locations, the subsurface soil collected from 1.0 foot bgs plus one duplicate soil sample will be initially analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Sol Dup 1 on Table 2. The samples collected at 1.5 feet bgs will be analyzed if the corresponding sample from 1.0 foot bgs contains OCPs at concentrations that exceed the PEA screening levels, and the samples from 2.0 feet bgs will be analyzed if the corresponding sample from 1.5 feet bgs contains OCPs at concentrations that exceed the PEA screening levels. Up to 33 samples will be analyzed with a minimum of ten discrete and one duplicate sample and a maximum of 30 discrete and 3 duplicate soil samples analyzed. The sample volume from each soil sample collected will be large enough to run a duplicate sample so that one to three duplicate samples can be analyzed depending on the number of discrete samples analyzed. If more than 10 and less

than 21 discrete subsurface soil samples are analyzed, then an additional duplicate soil sample, Sol Dup 2, will be selected from these soil samples. If more than 20 discrete subsurface soil samples are analyzed, then an additional duplicate soil sample, Sol Dup 3, will be selected from these soil samples.

The laboratory reporting limits and soil sample screening levels for subsurface soil samples are provided in Table 3. The soil samples will be screened by comparison to Residential Soil Screening Levels (RSLs) for OCPs in the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended in *Human Health Risk Assessment (HHRA) NOTE, HERO HHRA NOTE NUMBER: 3, DTSC-modified Screening Levels (DTSC-SLs)* (DTSC 2018a).

7.0 SSI REPORT

Tetra Tech will prepare and submit a SSI Report to DTSC. The report will be prepared in letter format. The SSI report will provide background information about the Site, a description of field assessment activities including any deviations to the SSI Technical Memorandum sampling plan, tabulated analytical data, maps showing sample locations, a comparison of Site data to the EPA Regional Screening Levels (RSLs) with modifications as discussed in the DTSC's HERO Note 3 (DTSC 2018a) and conclusions and recommendations.

At the January 4, 2019 SSI scoping telephone conference, DTSC requested that the SSI Human Health Risk Evaluation include the following four scenarios:

- Maximum cumulative carcinogenic risk estimate;
- 95% upper confidence limit (95% UCL) of the arithmetic mean;
- Unrestricted Land Use; and
- School Based.

It was agreed by DTSC, Tetra Tech, OUHSD, and Sage that the SSI Human Health Risk Evaluation in the SSI Report will include these four scenarios.

A draft and final SSI Report will be prepared for this project and submitted to the DTSC for review and approval.

8.0 SCHEDULE

Tetra Tech proposes to perform the field sampling (combined with the laboratory analysis) from February 18 through 20, 2019. DTSC will be notified at least one week before any field work takes place and will be notified immediately of any schedule changes or revisions to the SSIFSP.

The proposed project schedule key milestones are as follows:

- Submit SSI Field Sampling Plan (Technical Memorandum) to DTSC: January 31, 2019
- DTSC Approval of Field Sampling Plan February 15, 2019
- Conduct SSI Field Work February 18 - 20, 2019
- Submit Draft SSI Report to DTSC March 8, 2019
- Receive DTSC Comments on Draft SSI Report March 29, 2019
- Submit Final SSI Report to DTSC April 5, 2019

- DTSC Approval of Final SSI Report April 19, 2019

9.0 CERTIFICATION

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

TETRA TECH, INC.



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10.0 REFERENCES

American Society for Testing and Materials (ASTM)

1990a *Designation D 2487 - 90, Standard Test Method for Classification of Soils for Engineering Purposes.*

1990b *Designation D 2488 - 90, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).*

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2001 Map 214. February 14.

2017 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.

California Department of Conservation, California Geological Survey (CGS)

2002 *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2015 *Preliminary Endangerment Assessment Guidance Manual*. January 1994 (Revised October 2015).

2018a *Human Health Risk Assessment Note, HERO Note Number 3, DTSC-modified Screening Levels (DTSC-SLs)*. June.

2018b *Adequacy of Draft Preliminary Environmental Assessment Report for Public Comment, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669)*. December 27.

Clahan, Kevin B and Marina Mascorro

2003 *Geologic Map of the Oxnard 7.5' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

Environmental Data Resources, Inc. (EDR)

2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Norris, R.M. and Webb, R.W.

1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Oakeshott, Gordon B.

1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

Turner, John, and Mike Mukae

1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

Tetra Tech, Inc.

2018a *Final Phase I Environmental Site Assessment Proposed Oxnard High School No, 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030* (March 2).

2018b *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California* (November 9).

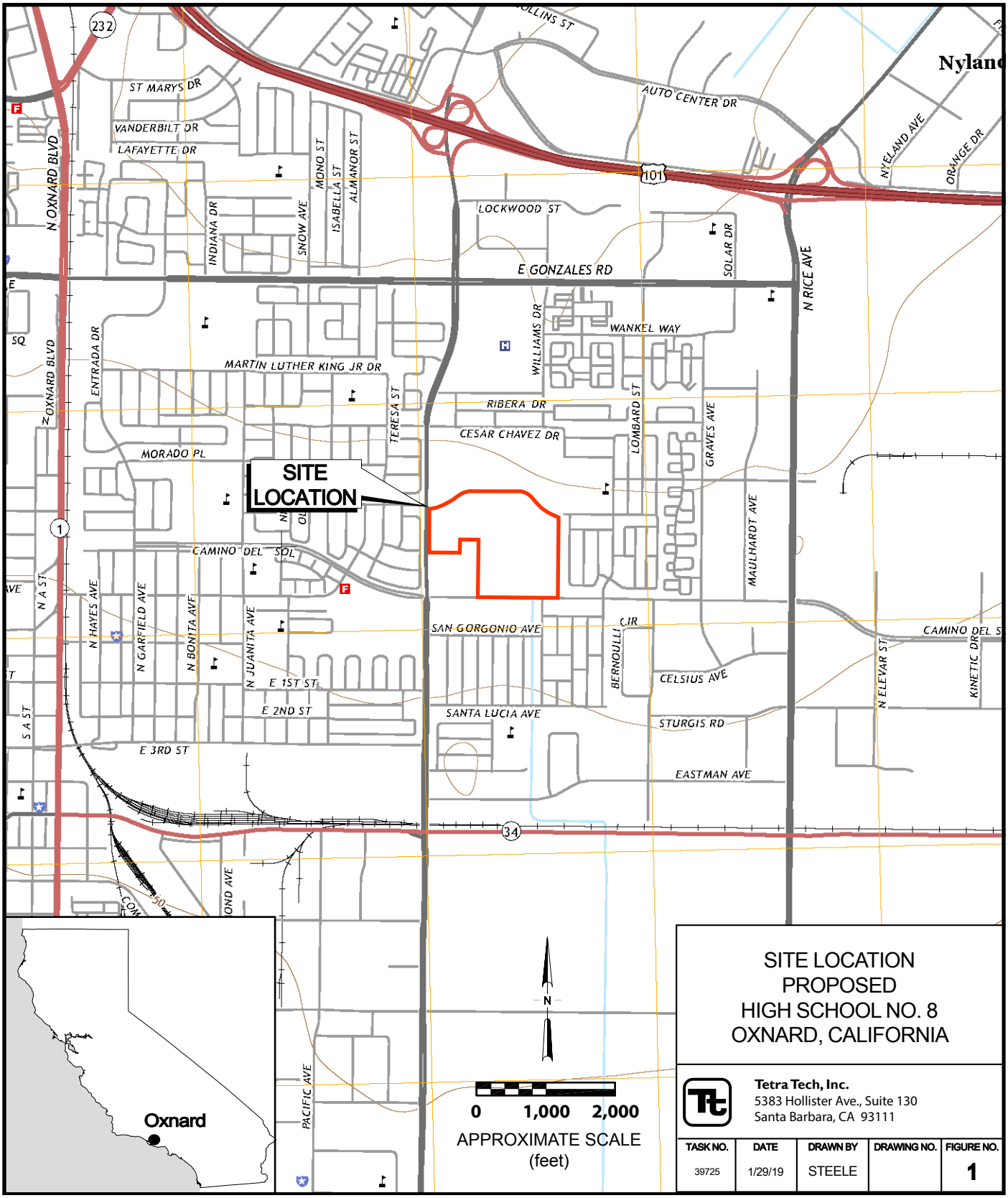
U.S. Environmental Protection Agency (U.S. EPA)

2018 *Regional Screening Levels (RSLs) – Generic Tables at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.* May.

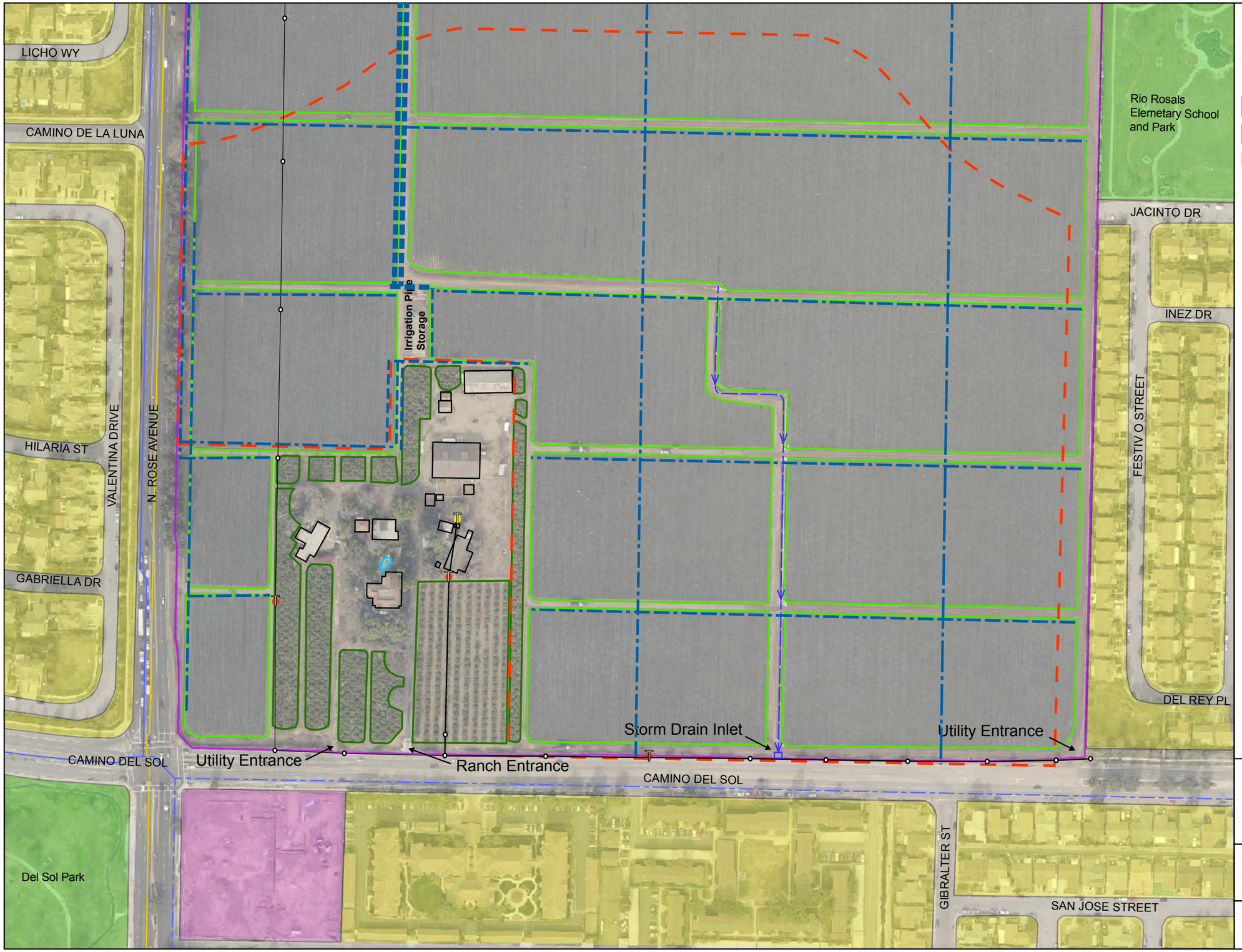
U. S. Geological Survey (USGS)

2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

FIGURES



Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Features

- Building
- Pool
- Orchard
- Strawberries
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inchAsbestos-Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Surrounding Area Land Use

- Residential
- Commercial
- Park

Note: All building and utility locations are approximate.

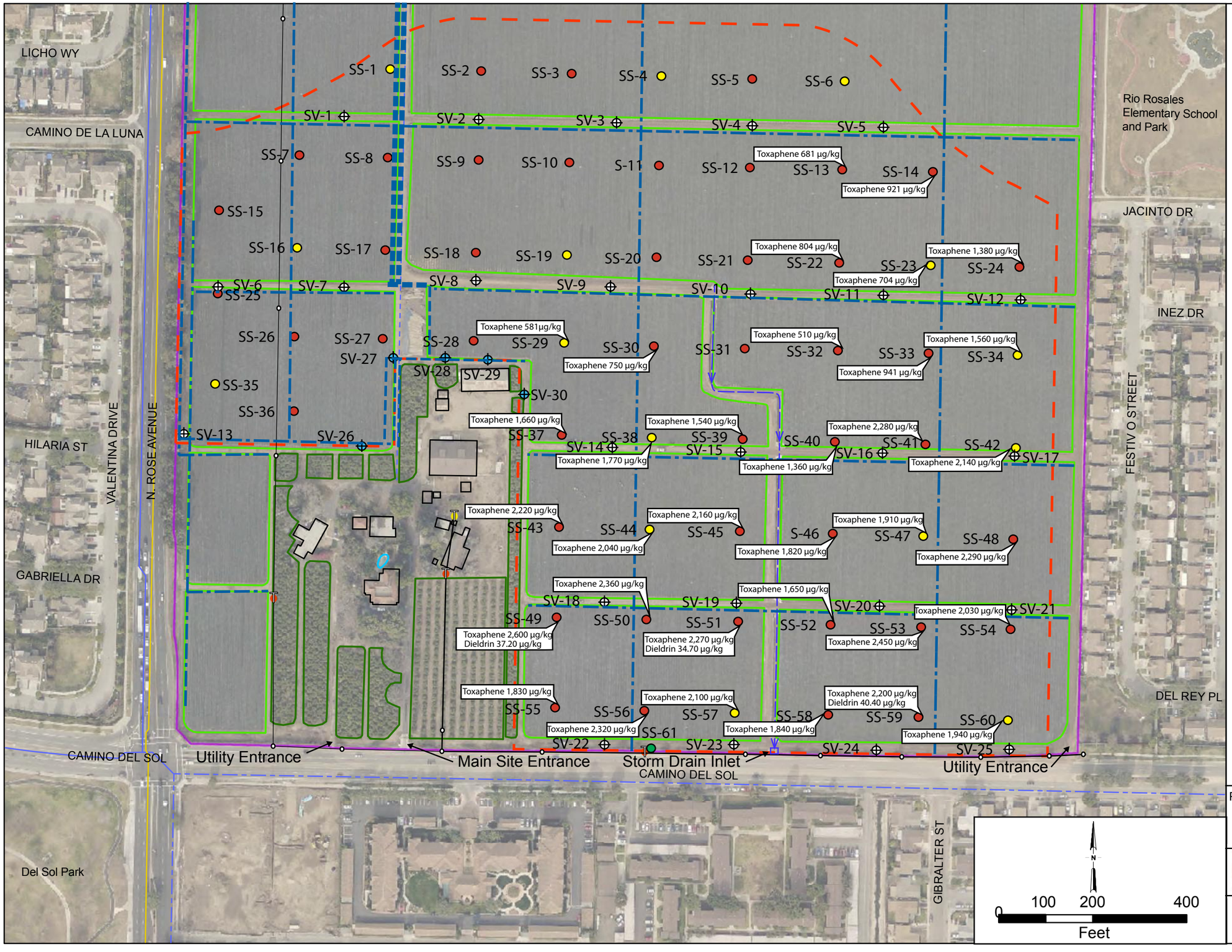
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Background imagery: Ventura County, 2016

SITE PLAN
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	1/29/2019	tr/JS	10045	**2**



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:

1.) All features, including PEA sample, building, utility, and boundary locations are approximate.

2.) The maximum concentrations are show where duplicate soil samples were collected.

Definitions:

As - Arsenic

DTSC - California Department of Toxic Substances Control

ft bgs - feet below ground surface

OCP - Oganochlorine Pesticide

PAH - Polyaromatic Hydrocarbon

PCB - Polychlorinated Biphenyl

µg/L - Micrograms per Kilogram

SVOC - Semivolatile Organic Compond

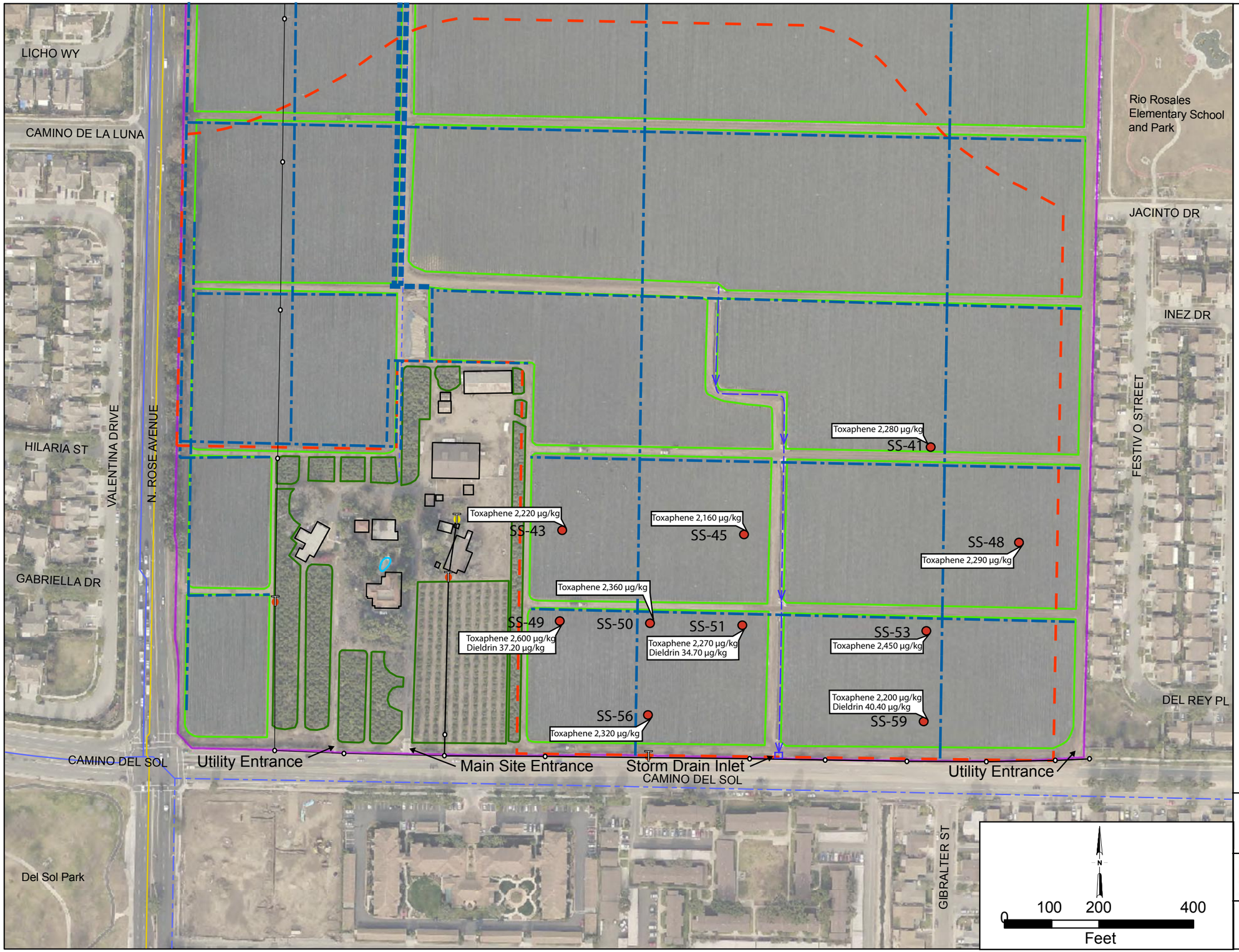
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

Background imagery: Ventura County, 2016

PEA SOIL SAMPLE RESULTS AT CONCENTRATIONS ABOVE SCREENING LEVELS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	1/25/2019	tr/JS	10045	3



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Serving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed SSI Soil Sample Locations

- Proposed SSI subsurface soil sample locations at the PEA surface soil sample locations with the 10 highest OCP results at concentrations greater than the PEA Screening Levels. The SSI soil samples will be collected at 1 ft bgs, 1.5 ft bgs, and 2.0 ft bgs.

Relevant PEA Soil Screening Levels

Toxaphene - 490 µg/kg
Dieldrin - 34 µg/kg

Notes:
1.) All features, including SSI sample, building, utility, and boundary locations are approximate.
2.) The maximum concentrations are shown for the PEA surface soil samples where duplicate soil samples were collected.

Definitions:
DTSC - Department of Toxic Substances Control
ft bgs - feet below ground surface
µg/kg - Micrograms per Kilogram
OCP - Oganochlorine Pesticide

Background imagery: Ventura County, 2016

PROPOSED SSI SOIL SAMPLE LOCATIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	1/25/2019	tr/JS	10045	4

TABLES

Table 1
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-1**	**SS-1**	**SS-2**	**SS-3**	**SS-4**	**SS-5**	**SS-6**	**SS-7**
Sample ID					**SS-1-0**	**Soil Dupe 1**	**SS-2-0**	**SS-3-0**	**SS-4-0**	**SS-5-0**	**SS-6-0**	**SS-7-0**
Collection Date					**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	**1.00**	ND<1.0	**1.51**	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.63**	**7.49**	**4.61**	**3.46**	**1.96**	**1.53**	**7.23**	**2.71**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**18.80**	**54.90**	**44.10**	**43.20**	**32.50**	**31.10**	**75.30**	**19.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**23.50**	**29.70**	**56.80**	**53.70**	**33.30**	**56.20**	**156.00**	**33.20**
Dieldrin	1.0	2.0	34	c, d	<1.0	ND<1.0	<1.0	**1.13**	ND<1.0	ND<1.0	**2.72**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**266.00**	ND<85.0	**125.00**	**246.00**	**257.00**	**325.00**	**528.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-8**	**SS-9**	**SS-9**	**SS-10**	**SS-10**	**SS-11**	**SS-12**	**SS-12**
Sample ID					**SS-8-0**	**SS-9-0**	**Soil Dupe 2**	**SS-10-0**	**Soil Dup 2-2**	**SS-11-0**	**SS-12-0**	**Soil Dup 2-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.49**	**1.01**	ND<1.0	ND<1.0	**6.53**	ND<1.0	ND<1.0	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	ND<1.0	ND<1.0	**2.92**	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.84**	**3.18**	**8.65**	**4.93**	**8.80**	**4.82**	**3.29**	**2.56**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	ND<1.0	**38.60**	**76.30**	**36.00**	**65.90**	**32.40**	**25.40**	**25.80**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**16.70**	**63.10**	**48.10**	**60.20**	**75.50**	**54.20**	**43.30**	**43.40**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**1.06**	**1.41**	ND<1.0	**2.54**	**2.07**	ND<1.0	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**3.61**	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**130.00**	ND<85.0	**209.00**	**372.00**	**199.00**	**214.00**	**223.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-13**	**SS-14**	**SS-15**	**SS-16**	**SS-17**	**SS-18**	**SS-19**	**SS-20**
Sample ID					**SS-13-0**	**SS-14-0**	**SS-15-0**	**SS-16-0**	**SS-17-0**	**SS-18-0**	**SS-19-0**	**SS-20-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**2.50**	**4.70**	ND<1.0	ND<1.0	**1.52**	**1.21**	ND<1.0	**1.16**
Chlordane (alpha)	1.0	2.0	NA		**1.37**	**2.16**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**10.30**	**16.30**	**2.23**	**4.42**	**4.34**	**5.05**	**3.18**	**3.61**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**104.00**	**250.00**	**21.80**	**30.50**	**41.00**	**34.80**	**29.00**	**30.60**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**226.00**	**405.00**	**25.10**	**35.00**	**33.20**	**38.40**	**44.90**	**39.50**
Dieldrin	1.0	2.0	34	c, d	**5.75**	**6.18**	ND<1.0	ND<1.0	**1.09**	**1.11**	**1.31**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**1.13**	**2.54**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**681.00**	**921.00**	ND<85.0	ND<85.0	**282.00**	**133.00**	**125.00**	**198.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-21**	**SS-22**	**SS-23**	**SS-24-0**	**SS-25-0**	**SS-26**	**SS-27-0**	**SS-28-0**
Sample ID					**SS-21-0**	**SS-22-0**	**SS-23-0**	**SS-24-0**	**SS-25-0**	**SS-26-0**	**SS-27-0**	**SS-28-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.18**	**2.65**	**5.47**	**3.25**	ND<1.0	**2.90**	**1.81**	**2.38**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	**2.51**	**1.92**	ND<1.0	**1.29**	ND<1.0	**1.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.53**	**11.20**	**15.90**	**23.90**	**3.11**	**3.96**	**4.80**	**10.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**26.10**	**104.00**	**150.00**	**369.00**	**43.90**	**48.60**	**66.90**	**50.10**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**41.80**	**216.00**	**334.00**	**542.00**	**35.80**	**31.90**	**44.10**	**43.00**
Dieldrin	1.0	2.0	34	c, d	**1.08**	**3.13**	**6.60**	**9.57**	ND<1.0	ND<1.0	**1.03**	**1.65**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**1.68**	**2.96**	**1.33**	ND<1.0	**1.61**	ND<1.0	**1.38**
Toxaphene	85.0	170.0	490	c, d	**237.00**	**804.00**	**704.00**	**1,380.00**	ND<85.0	ND<85.0	ND<85.0	**289.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-29-0**	**SS-29-0**	**SS-30**	**SS-31**	**SS-32**	**SS-33**	**SS-34**	**SS-35**
Sample ID					**SS-29-0**	**Soil Dup 3**	**SS-30-0**	**SS-31-0**	**SS-32-0**	**SS-33-0**	**SS-34-0**	**SS-35-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**5.03**	**6.53**	**4.67**	**3.04**	**3.22**	**9.87**	**10.90**	**1.27**
Chlordane (alpha)	1.0	2.0	NA		**2.98**	**2.92**	**2.34**	**1.57**	**1.66**	**4.66**	**5.67**	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**11.50**	**8.80**	**9.54**	**6.98**	**11.70**	**24.50**	**34.80**	**3.20**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**103.00**	**65.90**	**96.70**	**51.60**	**97.40**	**337.00**	**405.00**	**39.50**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**103.00**	**75.50**	**96.20**	**83.40**	**102.00**	**520.00**	**594.00**	**33.60**
Dieldrin	1.0	2.0	34	c, d	**2.71**	**2.54**	**4.60**	**2.64**	**4.25**	**9.42**	**15.90**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**2.05**	**3.61**	**2.33**	**1.47**	**1.56**	**5.21**	**5.25**	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**581.00**	**372.00**	**750.00**	**417.00**	**510.00**	**941.00**	**1,560.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-36**	**SS-37**	**SS-38**	**SS-39**	**SS-40**	**SS-41**	**SS-42**	**SS-43**
Sample ID					**SS-36-0**	**SS-37-0**	**SS-38-0**	**SS-39-0**	**SS-40-0**	**SS-41-0**	**SS-42-0**	**SS-43-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	ND<1.0	**18.60**	**20.80**	**12.70**	**13.00**	**20.30**	**46.50**	**20.80**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	**9.72**	**10.00**	**6.66**	**6.36**	**10.70**	**24.40**	**8.29**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.19**	**30.90**	**39.60**	**28.30**	**23.90**	**41.60**	**51.90**	**45.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**25.70**	**419.00**	**345.00**	**178.00**	**256.00**	**363.00**	**475.00**	**573.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**17.70**	**406.00**	**415.00**	**290.00**	**361.00**	**638.00**	**607.00**	**513.00**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**10.70**	**13.80**	**7.89**	**9.24**	**18.10**	**16.20**	**11.00**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**8.91**	**10.80**	**6.02**	**6.65**	**9.64**	**22.10**	**12.50**
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**1,660.00**	**1,770.00**	**1,540.00**	**1,360.00**	**2,280.00**	**2,140.00**	**2,220.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-44**	**SS-45**	**SS-46**	**SS-47**	**SS-48**	**SS-49**	**SS-49**
Sample ID					**SS-44-0**	**SS-45-0**	**SS-46-0**	**SS-47-0**	**SS-48-0**	**SS-49-0**	**Soil Dupe 3-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**24.80**	**28.70**	**24.60**	**19.40**	**25.70**	**25.00**	**31.80**
Chlordane (alpha)	1.0	2.0	NA		**12.40**	**14.40**	**14.10**	**11.20**	**13.90**	**12.60**	**16.10**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**60.90**	**37.20**	**36.40**	**40.70**	**69.80**	**36.40**	**74.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**443.00**	**352.00**	**209.00**	**370.00**	**562.00**	**452.00**	**761.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**441.00**	**375.00**	**428.00**	**520.00**	**663.00**	**437.00**	**814.00**
Dieldrin	1.0	2.0	34	c, d	**13.80**	**19.30**	**14.20**	**12.10**	**24.00**	**29.20**	**37.20**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**12.40**	**14.30**	**10.50**	**8.16**	**11.80**	**12.40**	**15.70**
Toxaphene	85.0	170.0	490	c, d	**2,040.00**	**2,160.00**	**1,820.00**	**1,910.00**	**2,290.00**	**1,560.00**	**2,600.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-50**	**SS-50**	**SS-51**	**SS-51**	**SS-52**	**SS-52**	**SS-53**
Sample ID					**SS-50-0**	**Soil Dupe 3-2**	**SS-51-0**	**Soil Dupe 3-3**	**SS-52-0**	**Soil Dupe 3-4**	**SS-53-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**27.20**	**30.80**	**40.30**	**53.20**	**29.00**	**40.30**	**45.10**
Chlordane (alpha)	1.0	2.0	NA		**13.90**	**14.10**	**19.00**	**29.80**	**14.40**	**18.70**	**21.70**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**62.90**	**63.20**	**48.70**	**64.20**	**57.70**	**70.20**	**44.90**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**576.00**	**660.00**	**468.00**	**485.00**	**256.00**	**280.00**	**453.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**547.00**	**646.00**	**489.00**	**499.00**	**301.00**	**370.00**	**721.00**
Dieldrin	1.0	2.0	34	c, d	**31.70**	**25.60**	**33.80**	**34.70**	**23.50**	**12.10**	**19.90**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**13.30**	**16.70**	**21.30**	**23.40**	**14.60**	**21.60**	**23.40**
Toxaphene	85.0	170.0	490	c, d	**2,360.00**	**2,300.00**	**2,270.00**	**2,180.00**	**1,540.00**	**1,650.00**	**2,450.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Table 1
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-54**	**SS-55**	**SS-56**	**SS-57**	**SS-58**	**SS-59**
Sample ID					**SS-54-0**	**SS-55-0**	**SS-56-0**	**SS-57-0**	**SS-58-0**	**SS-59-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**48.70**	**22.70**	**36.70**	**35.00**	**47.00**	**53.40**
Chlordane (alpha)	1.0	2.0	NA		**24.50**	**11.30**	**17.90**	**14.80**	**21.80**	**25.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**50.20**	**80.20**	**63.10**	**65.40**	**47.60**	**72.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**550.00**	**511.00**	**523.00**	**534.00**	**383.00**	**427.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**540.00**	**434.00**	**490.00**	**475.00**	**491.00**	**652.00**
Dieldrin	1.0	2.0	34	c, d	**32.70**	**14.80**	**31.90**	**16.80**	**19.60**	**40.40**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**24.20**	**11.40**	**18.80**	**20.20**	**25.20**	**28.40**
Toxaphene	85.0	170.0	490	c, d	**2,030.00**	**1,830.00**	**2,320.00**	**2,100.00**	**1,840.00**	**2,200.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND

Location ID					**SS-60**
Sample ID					**SS-60-0**
Collection Date					**9/18/2018**
Collection Depth					**0.0**
Dilution					**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**35.20**
Chlordane (alpha)	1.0	2.0	NA		**16.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**63.70**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**487.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**505.00**
Dieldrin	1.0	2.0	34	c, d	**27.50**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**19.20**
Toxaphene	85.0	170.0	490	c, d	**1,940.00**
All other OCPs[e]					ND

Table 1
Organochlorine Pesticides in Soil
High School No. 8
Oxnard, California

Notes:
a - Organochlorine pesticides analyzed by EPA method 8081A.
b - non carcinogenic
c - carcinogenic
d - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
e - Table 3 lists compound-specific MDLs and PQLs for analytes that were not detected.
MDL - method detection limit
ND - not detected
PQL - practical quantitation limit
SL - Screening Level
The analytical results in red font are J-flagged, where concentration of the analyte detected is between MDL and PQL.
The analyte concentrations in yellow highlighted cells exceed their relevant screening level.

Table 2
SSI Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-41	SS-41-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-41	SS-41-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-41	SS-41-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-43	SS-43-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-43	SS-43-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-43	SS-43-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-45	SS-45-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-45	SS-45-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-45	SS-45-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-48	SS-48-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-48	SS-48-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-48	SS-48-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-49	SS-49-1.5	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI

Table 2
SSI Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-49	SS-49-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-49	SS-49-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-50	SS-50-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-50	SS-50-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-50	SS-50-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-51	SS-51-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-51	SS-51-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-51	SS-51-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-53	SS-53-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-53	SS-53-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-53	SS-53-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-56	SS-56-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-56	**Soil Dup 1[2]**	1	Subsurface soil	Subsurface soil	Field duplicate for OCPs.	Quality control

Table 2
SSI Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-56	SS-56-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-56	SS-56-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-59	SS-59-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-59	SS-59-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-59	SS-59-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.

Notes:

1 - The sample locations are shown on Figure 4.

2 - For each of the ten sample locations, the subsurface soil collected from 1.0 foot bgs plus one duplicate soil sample will be initially analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Sol Dup 1 on Table 2. The samples collected at 1.5 feet bgs will be analyzed if the corresponding sample from 1.0 foot bgs contains OCPs at concentrations that exceed the PEA screening levels, and the samples from 2.0 feet bgs will be analyzed if the corresponding sample from 1.5 feet bgs contains OCPs at concentrations that exceed the PEA screening levels. Up to 33 samples will be analyzed with a minimum of ten discrete and one duplicate sample and a maximum of 30 discrete and 3 duplicate soil samples analyzed. The sample volume from each soil sample collected will be large enough to run a duplicate sample so that one to three duplicate samples can be analyzed depending on the number of discrete samples analyzed. If more than 10 and less than 21 discrete subsurface soil samples are analyzed, then an additional duplicate soil sample, Sol Dup 2, will be selected from these soil samples. If more than 20 discrete subsurface soil samples are analyzed, then an additional duplicate soil sample, Sol Dup 3, will be selected from these soil samples.

bgs - below ground surface
EPA - U. S. Environmental Protection Agency
OCP - organochlorine pesticide
SSI - Supplemental Site Investigation

Table 3
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 SSI

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Organochlorine Pesticide Compounds by EPA 8081A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days*							
			Analysis: 40 days							
Aldrin	0.01	0.05	mg/Kg	40	140	40	0.039	NA	1	mg/Kg
Chlordane	0.04	0.2	mg/Kg				1.7	NA	1	mg/Kg
alpha-Chlordane	0.01	0.05	mg/Kg				NA	NA		
4,4'-DDD (DDD)	0.01	0.05	mg/Kg				NA	1.90	1	mg/Kg
4,4'-DDE (DDE)	0.01	0.05	mg/Kg				2	NA	1	mg/Kg
4,4'-DDT (DDT)	0.01	0.05	mg/Kg	40	140	40	1.90	NA	1	mg/Kg
Dieldrin	0.01	0.05	mg/Kg	40	140	40	0.03	NA	1	mg/Kg
Endosulfan 1	0.01	0.05	mg/Kg				NA	470	1	mg/Kg
Endosulfan 11	0.01	0.05	mg/Kg				NA	470	1	mg/Kg
Endosulfan sulfate	0.01	0.05	mg/Kg				NA	NA		
Endrin	0.01	0.05	mg/Kg	40	140	40	NA	19	1	mg/Kg
Endrin aldehyde	0.01	0.05	mg/Kg				NA	NA		
Endrin ketone	0.01	0.05	mg/Kg				NA	NA		mg/Kg
Gamma-Chlordane	0.01	0.05	mg/Kg				1.70	NA	1	mg/Kg
Heptachlor	0.01	0.05	mg/Kg	40	140	40	0.13	NA	1	mg/Kg
Heptachlor epoxide	0.01	0.05	mg/Kg				0.07	NA	1	mg/Kg
alpha-Hexachlorocyclohexane (Alpha-BHC)	0.01	0.05	mg/Kg				0.086	NA	1	mg/Kg
Beta- Hexachlorocyclohexane (Betta-BHC)	0.01	0.05	mg/Kg				0.30	NA	1	mg/Kg
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.01	0.05	mg/Kg	40	140	40	0.57	NA	1	mg/Kg
Methoxychlor	0.01	0.05	mg/Kg				NA	320	1	mg/Kg
Toxaphene	0.04	0.2	mg/Kg				0.49	NA	1	mg/Kg
8081A surrogates										
Tetrachloro-m-xylene			mg/Kg	*30*	*150*		NA	NA		
Decachlorobiphenyl			mg/Kg	*30*	*150*		NA	NA		

Notes:
1 - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018a).
EPA - U.S. Environmental Protection Agency
MDL - method detection limit
PQL - practical quantitation limit
NA - not applicable
mg/kg - milligrams per kilogram
RPD - relative percent difference

Job No. 100-SBA-T39275

Supplemental Site Investigation
Proposed High School No. 8
APN 214-002-059 on North Rose Avenue
Oxnard, California 93030

Prepared for:

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1.0 INTRODUCTION

1.1 BACKGROUND

This Supplemental Site Investigation (SSI) Report was prepared by Tetra Tech for submittal to the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), School Evaluation and Cleanup Branch on behalf of the Oxnard Union High School District (OUHSD) for their proposed High School No. 8 (hereinafter referred to as the Site) (Figure 1). The scope of services for this SSI were developed to assist the OUHSD in further assessing the nature and extent of organochlorine pesticides (OCPs) in soil at concentrations above screening levels that were identified in soil samples collected for the *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California* (Tetra Tech 2018d) (Draft PEA Report). The surface soil sampling performed for the PEA adequately defined the lateral extent of OCP-impacted soil at the Site at concentrations exceeding screening levels. The Draft PEA Report recommended that a SSI workplan be developed and implemented at the Site under DTSC oversight to assess the depth of OCP-impacted soil at the Site at concentrations exceeding screening levels (specifically toxaphene and dieldrin). In a letter dated December 27, 2018, the DTSC concurred with the adequacy of the Draft PEA pending review of public comment (DTSC 2018b).

A SSI scoping telephone conference was conducted on January 4, 2019 between by DTSC, Tetra Tech, OUHSD, and Sage Realty (Sage). The *Technical Work Plan Proposed High School No. 8 APN 214-002-059, on North Rose Avenue, Oxnard, California 93030* (Tetra Tech 2019) (SSIFSP) was prepared in accordance with the scope of work agreed on by DTSC, Tetra Tech, OUHSD, and Sage at the January 4. 2019 SSI scoping telephone conference. The SSIFSP was reviewed and approved by DTSC in their letter dated February 13, 2019 (DTSC 2019a) (Appendix A).

This SSI Report includes limited background and historical use information regarding the Site. A detailed summary of Site background and historical use information for the Site is presented in the *Final Phase I Environmental Site Assessment Proposed Oxnard High School No., 8* (Tetra Tech 2018a) (Phase I ESA) and the High School No. 8 Draft PEA Report (Tetra Tech 2018d). This SSI Report presents the details of the SSI sampling, analytical work, a human health screening evaluation, and conclusions and recommendations for the OCP-impacted soils at the Site based upon the potential contaminants of concern identified through SSI field sampling program and the results of the SSI Human Health Risk Evaluation.

1.2 DESIGNATED CONTACT PERSONS

The primary designated contact persons for Tetra Tech are Jim Steele and Randy Westhaus. Jim Steele is the Project Manager and Randy Westhaus is Tetra Tech's California Schools Director. Their contact information is:

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2.0 SITE LOCATION AND DESCRIPTION

The Site located within the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The proposed High School No. 8 site comprises approximately 48.6-acres in the southern portion of the Maulhardt Ranch at 1853 Camino Del Sol in the City of Oxnard, California in the 93030-zip code area (Figure 1). The Maulhardt Ranch (APN 214-002-059), is a 107.25-acre property in the City of Oxnard, California (Figure 2).

The OUHSD proposes to construct High School No. 8 at the Site to provide classroom space for students (Grades 9-12) living in the surrounding area and proposed Maulhardt Ranch Development (currently in the planning stage). The proposed Maulhardt Ranch Development is a planned development that will consist of medium and high-density multi-family residential properties to the north of the Site.

The Site is located in an area that is developed for commercial, residential, park, and agricultural land use (Figure 2). The Site is situated in the southern portion of the Maulhardt Ranch excluding the 11.59 acre residential and farmyard areas. The Site is bounded by Camino Del Sol on the south with residential and commercial development on the south side of Camino Del Sol, North Rose Avenue on the west with residential development to the west of North Rose Avenue, the residential and farmyard portions of Maulhardt Ranch to the southwest, and areas developed in strawberry cultivation on the Maulhardt Ranch to the north. A residential neighborhood is located to the east of the Site. Del Sol Park is located southwest of the Site across the intersection of Camino Del Sol and North Rose Avenue. The entire Maulhardt Ranch is bound by Camino Del Sol on the South, North Rose Avenue on the west, Cesar Chavez Drive on the north, and Gibraltar Street, the park adjacent to the west side of Rio Rosales Elementary School, and a residential neighborhood on the east. Commercial development consisting of a Carl's Jr. restaurant, 4-Way Meat Market, and the Trinity Community Church is located at the southeast corner of the of Camino Del Sol and North Rose Avenue. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol immediately south of the Site, and neighborhoods of single family housing are located to the east and west of the Site.

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3.0 PHYSICAL SETTING, GEOLOGY, AND HYDROLOGY

3.1 PHYSICAL SETTING

The Site is depicted on the Oxnard, California Quadrangle U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 2015) (Figure 1). The geographic coordinates of the Site are approximately Latitude 34° 12' 23.08" North, Longitude 119° 9' 31.40" West. The USGS 7.5 topographic series map indicates that the Site is at an elevation between 60 and 70 feet above mean sea level (amsl). The Site elevation is approximately 63 feet amsl with a topographic gradient that is generally flat with a gentle slope to the south-southwest (Environmental Data Resources [EDR] 2017).

3.2 REGIONAL GEOLOGY

The Site is located on the Oxnard Plain of the central Ventura Basin within the Western Transverse Ranges geomorphic province of California. The Transverse Ranges Province is a series of ranges and intervening valleys that extends for 325 miles "directly across the structural grain of California" (Oakeshott 1978). The province extends from Point Arguello and San Miguel Island eastward to the Pinto and Eagle Mountains which end in the Mojave and Colorado Deserts respectively. The province ranges in width from 10 to 50 miles. The narrowest points are at the western extreme in the Santa Ynez Mountains and at the Cajon Pass which separates the San Gabriel and San Bernardino Mountains. The province's broadest point is the distance from the Santa Monica coast, across the Santa Monica, Topatopa and Pine Mountains, to the Tehachapi Mountains.

The Ventura Basin is large synclinal structure situated between the Santa Ynez Range and Topatopa Mountains on the north, the Channel Islands and Santa Monica Mountains on the south, the San Gabriel Fault on the east, and extending to the western end of the Santa Barbara Channel (Norris and Webb 1990). Structure in the Oxnard Plain is characterized by a series of broadly folded west-trending and east-northeast–trending anticlines and synclines associated with thrust and reverse faults that formed in the Saugus Formation and may have also deformed the overlying older alluvium (California Geological Survey [CGS] 2002).

3.3 LOCAL GEOLOGY

The Site is located in the Oxnard Plain of the Ventura Basin. The Ventura Basin, including its offshore continuation into the Santa Barbara Channel, is filled with a thick sequence of Cenozoic sedimentary rocks estimated to be more than 20,000 feet in total thickness. Major east trending folds and reverse faults reflect regional north-south compression and are characteristic of the basin (Norris and Webb 1990). The Oxnard Plain is underlain by several thousand feet of Pleistocene-age sediments of the San Pedro Formation. The San Pedro Formation consists of marine and continental deposits of clay, silt, and gravel (Turner, et al 1975). The predominant surface materials in this region include Pleistocene to Recent age alluvial, floodplain, and near-shore deposits, some of which have been uplifted, folded, and faulted.

3.4 EARTH MATERIALS

3.4.1 Stratigraphy

Based on the Geologic Map of the Oxnard 7.5' Quadrangle, Ventura County, California the Site is underlain at the ground surface by Holocene deltaic alluvial fan deposits composed predominantly of clay

with interbeds of sand and occasional gravel that were deposited by the Santa Clara River and extend to approximately 70 feet below ground surface (bgs) (Clahan, et al 2003; Turner, et al 1975). These are conformably underlain by upper Pleistocene alluvial sand and gravel deposits to approximately 400 feet bgs, and the marine – non marine clays and gravels of the Lower Pleistocene San Pedro formation to approximately 2,000 feet bgs.

3.4.2 U.S. Department of Agriculture, Soil Conservation Service Data

The U.S. Department of Agriculture, Soil Conservation Service (USDA) data identifies the native soil types at the Site to be Mocho loam, Pico sandy loam and sandy loam substratum, Hueneme sandy loam, and Camarillo sandy loam. These soils are nearly level and occur on alluvial fans and flood plains. Permeability is rapid and surface runoff is very slow, such that there is no hazard of erosion by water (U.S. Department of Agriculture [USDA], Soil Conservation Service 1970).

3.4.3 High School No 8 Geohazard Assessment/Geotechnical Investigation Soil Boring Data

Fifty three geotechnical soil borings were completed to depths ranging from 10 feet bgs to 51.5 feet bgs during April and July 2018 for the High School No. 8 Geohazard Assessment/Geotechnical Investigation (Tetra Tech 2018c; Earth Systems Pacific 2018a and 2018b). The general subsurface profile observed in the borings consisted of silty sand at the ground surface extending to approximately 3 to 8 feet bgs, underlain by interbedded poorly to well graded sand and occasional gravel with clay and silt layers that are exposed in the borings completed for this project to 51.5 feet bgs. These alluvium and wash deposits were deposited by the ancestral Santa Clara River (Turner, et al 1975). Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the deeper borings completed for this project. The soils were in a slightly moist to moist condition above the water table and wet below the water table. The sandy soils have a loose to very dense consistency while the silt and clay soils were medium stiff to stiff. Several of these soil layers also had varying amounts of fine to coarse gravel and cobbles.

3.5 HYDROLOGY

3.5.1 Hydrogeology

The Site is located in the northern portion of the Oxnard Plain Pressure Groundwater Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975). The Oxnard Plain Groundwater Basin is a relatively flat alluviated area, which ranges in elevation from sea level to approximately 100 feet. The water bearing zones of the Oxnard Plain Groundwater Basin are grouped into three major units including 1) the semi-perched aquifer and clay cap, 2) the Upper Aquifer System, and 3) the Lower Aquifer System.

The semi-perched aquifer and clay cap consists of all of the alluvial materials above the Oxnard aquifer zone. The semi-perched aquifer extends to a depth of approximately 75 feet bgs and is underlain by the clay cap that extends from approximately 75 to 150 feet bgs in the Site area (Turner, et al 1975). This aquifer consists primarily of geologically Recent-aged stream deposited sands and gravels with minor silt and clay interbeds. Sand and gravel deposits are generally parallel to the Santa Clara River and form lenses perpendicular to the Santa Clara River. Groundwater in the semi-perched zone is generally considered to be of poorer quality and of limited beneficial use. Groundwater was encountered at approximately 20 feet bgs at the Site in geotechnical drilling during May and July 2018. Historically groundwater has been as shallow as approximately 10 bgs at the Site (CGS 2002). The "clay cap" underlies the semi-perched groundwater zone separating it from the underlying Upper Aquifer System.

This clay cap acts as an aquitard. Based on topographic controls, the groundwater in the semi-perched zone in the site vicinity is expected to flow toward the south to south-southwest.

3.5.2 Surface Water

No surface water was observed at the Site during the reconnaissance performed on July 2, 2018. It is likely that during periods of moderate rainfall, free surface water that accumulates on the Site may flow south and southwest and possibly into gutters along Camino Del Sol and North Rose Avenue (Figures 1 and 2). However, the U.S. Department of Agriculture, Soil Conservation Service report indicates that soil permeability at the Site is moderate to rapidly moderate and surface runoff is very slow, such that there is a low hazard of erosion by water (USDA 1970).

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4.0 SITE BACKGROUND

The review of historical aerial photographs and maps, and interviews with the current owner, indicate the Site and adjacent areas have been used for agricultural production (row crops) since at least 1869. The Site is currently being used for strawberry cultivation. Tetra Tech reviewed California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) Map 214 (DOGGR 2001), the online DOGGR Well Finder (DOGGR 2017), and associated well history documents to evaluate potential presence of oil fields or wells within the Site vicinity. Records indicate that the site is located within the Oxnard Oil Field, however no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on 107.25-acre Maulhardt Ranch (APN 214-002-059) where the Site is located. The oil well located nearest to the Site is the Maulhardt Community No. 11A, located approximately 850 feet south of the Site. The Maulhardt Ranch farm yard and residential area are located adjacent to the south and west of the Site (Figures 2 and 3). Formerly, above ground and underground storage tanks were located in the Maulhardt Ranch farm yard and residential area. A more complete description of the historical land use of the Site and surrounding area is provided in the High School No. 8 Phase I ESA (Tetra Tech 2018a).

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5.0 HIGH SCHOOL NO. 8 PEA SUMMARY

On behalf of the OUHSD, Tetra Tech completed the Draft PEA Report on November 9, 2018 and submitted it to DTSC for review (Tetra Tech 2018d). The PEA field sampling program included the collection of surface soil samples from 60 locations at depths of 0 to 0.5 feet below ground surface (bgs) to assess potential OCPs. OCPs were detected at concentrations exceeding the screening levels presented in the Draft PEA Report at 34 sample locations including toxaphene in all 34 and dieldrin at three locations (Figure 3 and Table 1). The Draft PEA Report human health screening evaluation found that assumed exposures at the Site result in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. The estimated cumulative cancer risk associated with potential exposures to soil based on the 95% UCLs for pesticide maximum detected concentrations for other chemicals is 4×10^{-6}, which is within the low end of the United States Environmental Protection Agency (USEPA) target risk range of 10^{-4} to 10^{-6} and exceeds the point of departure of 1×10^{-6} for potential residential receptors. The PEA concluded that the surface soil sampling performed for the Draft PEA Report had adequately defined the lateral extent of OCP-impacted soil at concentrations exceeding screening levels and recommended that a SSI Workplan be developed and implemented at the Site under DTSC oversight to assess the depth of OCP-impacted soil at the Site at concentrations exceeding screening levels (specifically toxaphene and dieldrin).

In the letter dated December 27, 2018, the DTSC concurred with the adequacy of the Draft PEA Report pending review of public comment (DTSC 2018b).

The Public Review Period for the Draft PEA Report was held from February 1 through March 4, 2019. The Public Hearing for the Draft PEA Report was held by the OUHSD on February 13, 2019 at the OUHSD District Office Board Room at 220 South K Street in Oxnard, California. No public comments were received by the OUHSD at the Public Hearing and during the Public Review Period on the subject Draft PEA Report.In the letter dated March 12, 2019, the DTSC approved the Draft PEA Report and concurred with the recommendation in the Draft PEA Report to perform a SSI to determine the nature and extent of OCP-impacted soil at the Site (DTSC 2019b).

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6.0 SSI FIELD WORK

6.1 SAMPLING STRATEGY AND APPROACH

The field sampling assessment consisted of a subsurface soil sample collection program using hand auger sampling methods. The following subsections describe the rationale and scope of sampling. The Site ground surface is relatively flat and was planted in strawberries during implementation of the SSI sampling program.

6.1.1 Rationale

The SSI was performed to further assess the vertical extent of OCPs at concentrations above the screening levels that were identified in the Draft PEA (Tetra Tech 2018d).

6.1.2 Field Coordination

The Site is under active strawberry cultivation with West Coast Berry Farms under lease to the Site owners, the Maulhardt Family. Tetra Tech conducted a meeting onsite with representatives of the Maulhardt Family prior to performing the SSI field sampling on February 13, 2019 to review the SSI sampling plan and coordinate the field sampling effort. The soil sample locations were laid out so that the samples were collected from in between the rows of strawberry plants.

6.1.3 Subsurface Soil Sampling Program

At the January 4, 2019 SSI scoping telephone conference, it was agreed that the lateral extent of OCPs in surface soils at concentrations that exceeded the screening levels had been delineated in the Draft PEA sampling program (Tetra Tech 2018b; 2018d). To delineate the vertical extent of OCPs in soil at concentrations that exceeded the screening levels, subsurface soil samples were collected from the PEA surface soil sample locations where the 10 highest surface soil OCP concentrations were detected, at PEA sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59 (Figure 4).

6.2 SAMPLING METHODS AND PROCEDURES

This section describes the methods and procedures that were used to collect and analyze soil samples.

6.2.1 Sample Site Location and Utility Clearance

The soil sample locations where the 10 highest surface soil OCP concentrations were detected in the PEA sampling program (sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59) were previously mapped in the field using a hand held global positioning system (GPS) unit (Figure 4). These GPS sample location coordinates were used to locate the SSI sample locations. The sample collection depths were recorded in feet bgs in our field notes. The utility clearance for these soil sample locations was performed by meeting with representatives of the Maulhardt family on February 13, 2019. The soil samples were collected using hand auger sampling methods in a manner that avoided damaging crops and Site infrastructure.

6.2.2 Subsurface Soil Sampling Methods

The SSI field sampling was performed on February 18, 2019. The subsurface soil samples were collected from 10 locations (sample locations SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and

SS-59) at depths of 1.0 feet bgs, 1.5 feet bgs, and 2.0 feet bgs (Figure 4) using hand auger sampling methods. A total of 21 discrete and three duplicate soil samples were collected. The subsurface soil samples were collected using hand auger methods directly from the hand auger bucket. Subsurface soil was directly transferred from the hand auger bucket into pre-cleaned glass sample containers provided by the analytical laboratory fitted with Teflon-lined screw-caps. The hand auger sampling equipment, including the hand auger bucket, were decontaminated between the collection of each soil sample using a phosphate-free detergent wash and successive rinses with potable and deionized water.

The borings were logged using the Unified Soil Classification System (USCS) as defined in the ASTM methods D 2487-90 (ASTM 1990a) and D 2488-90 (ASTM 1990b). The SSI boring logs are included in in Appendix B. During sampling, a photoionization detector (PID) calibrated with isobutylene gas was used to monitor the potential presence and concentrations of volatile organic compound (VOC) vapors in the breathing zone for workers at each sample location and to screen soil samples. These organic vapor readings were recorded in field notes prepared by the field geologist/engineer during soil sampling activities. The drill cuttings and soil samples were evaluated in the field for staining and odor. The labeled samples were placed in an ice chest containing pre-cooled artificial ice pending delivery to the analytical laboratory with chain-of-custody (COC) records.

The following sampling information was recorded on the field logs: sample number and location, date and time, sample depth, lithologic description in accordance with the USCS (ASTM 1990a, 1990b), description of any visible evidence of soil contamination (i.e., odor, staining), and PID readings.

7.0 SSI FIELD ASSESSMENT RESULTS

7.1 EARTH MATERIALS

The Site geology and soil types are described in Sections 3.2 through 3.4.3. Ten soil borings (borings SS-41, SS-43, SS-45, SS-48, SS-49, SS-50, SS-51, SS-53, SS-56, and SS-59) were completed to 2 feet bgs for the SSI at the locations shown on Figure 4. The boring logs are included in Appendix B. The general subsurface profile observed in the borings consisted of silt, silty sand, and sand at the ground surface extending to the total depth of each boring at 2.0 feet bgs. No VOC vapors, soil staining, or odors indicative of contamination were noted in the soils logged in the ten SSI soil borings.

7.2 GROUNDWATER

The Site area hydrogeology is described in Section 3.5.1. No groundwater was encountered to two feet bgs in the ten borings completed for the SSI. The shallowest groundwater at the Site occurs in the semi-perched aquifer and clay cap of the Oxnard Plain Pressure Basin within the Santa Clara River Hydrologic Unit (Turner, et al 1975; Ventura County Public Works Department [VCPWA] 1975). Groundwater was encountered at depths ranging from approximately 20 to 25 feet bgs in the borings completed for the Geohazard Assessment/Geotechnical Report project during April and July 2018 (Tetra Tech 2018c; ESP 2018a and 2018b).

7.3 SUBSURFACE SOIL SAMPLE ANALYSIS RATIONALE AND METHODS

The subsurface soil sample analysis schedule is presented in Table 2 and their locations are shown on Figure 4. The soil sample analysis was performed by American Environmental Testing Laboratory, Inc. (AETL), a California State Certified laboratory. The subsurface soil samples were analyzed for OCPs by United States Environmental Protection Agency (EPA) method 8081A.

The laboratory reporting limits and soil sample screening levels for subsurface soil samples are provided in Table 3. The soil samples were screened by comparison to Residential Soil Screening Levels (RSLs) for OCPs in the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended in *Human Health Risk Assessment (HHRA) NOTE, HERO HHRA NOTE NUMBER: 3, DTSC-modified Screening Levels (DTSC-SLs)* (DTSC 2018a).

A total of 21 discrete soil samples and three duplicate soil samples (24 samples total) were analyzed for OCPs by EPA method 8081A as summarized below.

For each of the ten sample locations, the subsurface soil collected from 1.0 foot bgs plus one duplicate soil sample was initially analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Soil Dup 1 on Table 2. Soil Dup 1 was collected at the same location as discrete soil sample SS-56-1.

The soil samples collected at 1.5 feet bgs were analyzed if the corresponding sample from 1.0 foot bgs contained OCPs at concentrations that exceed the screening levels. Nine of the discrete soil samples and a duplicate soil sample collected at 1.0 foot bgs contained toxaphene at concentrations that exceeded the screening levels (soil samples SS-41-1, SS-43-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Soil Dup 1). The corresponding discrete soil samples collected at 1.5 feet bgs were analyzed for OCPs (soil samples SS-41-1.5, SS-43-1.5, SS-48-1.5, SS-49-1.5, SS-50-1.5, SS-51-1.5, SS-53-1.5, SS-56-1.5, and SS-59-1.5 [Table 2]). Soil Dup 2 was prepared from sample SS-56-1.5 and analyzed for OCPs.

The soil samples collected at 2.0 feet bgs were analyzed if the corresponding sample from 1.5 feet bgs contained toxaphene at concentrations that exceed the screening levels. Two of the discrete soil samples collected from 1.5 feet bgs contained OCPs at concentrations that exceeded the screening levels (soil samples SS-43-1.5 and SS-53-1.5). The corresponding discrete samples collected at 2.0 feet bgs were analyzed for OCPs (soil samples SS-43-2 and SS-53-2 [Table 2]). Soil Dup 3 was prepared from sample SS-53-2 and analyzed for OCPs.

7.4 SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

The laboratory reporting limits and soil sample screening levels for subsurface soil samples are provided in Table 3, the laboratory analytical results are presented in Table 4, and the laboratory reports are included in Appendix C. Ten of the 22 OCPs in the EPA method 8081A list were detected in all the samples that were analyzed (21 discrete surface soil samples and three duplicate soil samples). The detected OCPs were Chlordane (total) (20 discrete and 3 duplicate samples), Chlordane (alpha) (18 discrete and 3 duplicate samples), 4,4'-DDD (DDD) (17 discrete and 3 duplicate samples), 4,4'-DDE (DDE) (21 discrete and 3 duplicate samples), 4,4'-DDT (DDT) (21 discrete and 3 duplicate samples), Dieldrin (20 discrete and 3 duplicate samples), Endrin (21 discrete and 3 duplicate samples), Endrin Aldehyde (18 discrete and 3 duplicate samples), Chlordane (gamma) (18 discrete and 2 duplicate samples), and Toxaphene (21 discrete and 3 duplicate samples). Chlordane (total), Chlordane (alpha), DDD, DDE. DDT, Dieldrin, Endrin, Endrin Aldehyde, and Chlordane (gamma), were detected at concentrations below their respective screening levels. Toxaphene was detected at concentrations above the screening level (490 µg/kg) in 12 of the 24 samples that were analyzed at concentrations ranging from 898 µg/kg in sample SS-53-1.5 to 3,110 µg/kg in the duplicate sample for SS-56-1, Soil Dup 1. The locations of the soil samples that contain toxaphene at concentrations above the screening level are shown on Figure 5.

In the 11 samples analyzed from 1.0 foot bgs, toxaphene was detected in nine discrete and one duplicate sample at concentrations above the screening level (490 µg/kg) (soil samples SS-41-1, SS-43-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Soil Dup 1). In the 11 samples collected from 1.0 foot bgs with toxaphene at concentrations above the screening level, the toxaphene concentrations ranged from 992 µg/kg in sample SS-51-1 to 3,110 µg/kg in the duplicate sample for SS-56-1, Soil Dup 1 (Table 4 and Figure 5).

For the nine discrete and one duplicate soil sample analyzed from 1.5 feet bgs, (soil samples SS-41-1.5, SS-43-1.5, SS-48-1.5, SS-49-1.5, SS-50-1.5, SS-51-1.5, SS-53-1.5, SS-56-1.5, SS-59-1.5, and Soil Dup 2), two soil samples (soil samples SS-43-1.5 and SS-53-1.5) contained toxaphene at concentrations above the screening level (490 µg/kg). Soil sample SS-43-1.5 contained 2,240 µg/kg toxaphene and soil sample SS-53-1.5 contained 898 µg/kg toxaphene (Table 4 and Figure 5).

Toxaphene was not detected at concentrations above the screening level in the two discrete and one duplicate soil sample analyzed from 2.0 feet bgs (soil samples SS-43-2, SS-53-2, and Soil Dup 3) (Table 4 and Figure 5).

The maximum depth of OCP-impacted soil at the Site at concentrations exceeding screening levels in the ten SSI soil borings is shown schematically on Figure 6. The maximum depth of toxaphene in soil at concentrations exceeding screening levels was defined to be between 0.0 and 1.0 feet bgs boring SS-45, between 1.0 and 1.5 feet bgs in borings SS-41, SS-48, SS-49, SS-50, SS-51, SS-56, and SS-59, and between 1.5 and 2.0 feet bgs in borings SS-43, and SS-53. The maximum depth of dieldrin in soil at concentrations exceeding screening levels was defined to be between 0.0 and 1.0 feet bgs in borings SS-

49, SS-51, and SS-59. No other OCPs were detected at concentrations that exceeded the screening levels in the soil samples collected for the PEA or SSI.

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8.0 HUMAN HEALTH RISK EVALUATION

8.1 INTRODUCTION

The High School No. 8 PEA human health screening evaluation (Tetra Tech 2018d) was conducted for residential exposures to the chemicals of potential concern (COPCs) identified in soil gas, groundwater, and soils at the proposed High School No. 8 Site through sample data collected for the PEA sampling program. The COPCs identified in soils at the Site include OCPs, total petroleum hydrocarbons – diesel range (TPHd), total petroleum hydrocarbons – gasoline range (TPHg), and VOCs. Exposures to these COPCs were evaluated for direct dermal contact with soils, incidental ingestion of soils, inhalation of airborne dusts from soils, and inhalation of vapors migrating from soil gas into indoor air. Receptors were evaluated for: (1) carcinogenic risks and (2) noncarcinogenic hazards. Assumed exposures at the Site resulted in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. Noncarcinogenic hazard from assumed exposures to the COPCs in soil and soil gas at the Site (HI = 0.2) is well below the threshold level of 1.

The estimated risk identified in the High School No. 8 PEA human health screening evaluation (Tetra Tech 2018d) is primarily attributable to toxaphene (71%) and dieldrin (16%). No other chemicals were detected at concentrations that exceeded the corresponding screening levels. Toxaphene was detected at 34 sampling locations at levels that exceeded the corresponding residential screening level of 490 µg/kg. Dieldrin was detected at three sampling locations (SS-49, SS-51, and SS-59) with concentrations ranging from (34.7 µg/kg to 40.4 µg/kg) that slightly exceeded the corresponding residential screening level of 34 µg/kg.

The High School No. 8 SSI Human Health Risk Evaluation uses the combined sample data from the PEA and SSI field sampling programs. As agreed to by DTSC at the January 4, 2019 SSI scoping telephone conference, the SSI Human Health Risk Evaluation includes the following four scenarios:

- Maximum cumulative carcinogenic risk estimate;
- 95% upper confidence limit (95% UCL) of the arithmetic mean;
- Unrestricted Land Use; and
- School-Based (Students and Teachers).

The High School No. 8 SSI Human Health Risk Evaluation consists of three steps: (1) identifying potentially complete exposure pathways based on the conceptual site model, (2) identifying COPCs, and (3) estimating exposures to the COPCs and the associated potential health risks. The findings of the human health screening evaluation are summarized in the Risk Characterization (Section 8.5).

8.2 EXPOSURE PATHWAYS AND MEDIA OF CONCERN

8.2.1 Conceptual Site Model

A conceptual site model (CSM) provides a description of the links between contaminant sources at a site, the chemicals detected at the Site, the mechanisms by which chemical transport or migration may occur in the environment, and the persons potentially exposed to environmental media at the Site. The CSM (Figure 7) identifies the potential sources, mechanisms of transport, environmental media of concern, and exposure routes for current and future human receptors at this Site. The CSM presented in Figure 7 was modified based on DTSC Comment No. 1 in the letter dated December 27, 2018 that concurred with the adequacy of the Draft PEA (DTSC 2018b)

As discussed in Sections 2.0 and 4.0, the Site is a 48.6-acre (approximate) portion of the 107.25-acre Maulhardt Ranch property in the City of Oxnard, California. The Site is bounded by Camino Del Sol on the south, North Rose Avenue on the west, Cesar Chavez Drive on the north, and a residential neighborhood to the east. High density residential development consisting of blocks of apartment buildings are located on the south side of Camino Del Sol, and neighborhoods of single family housing are located to the east and west of the Site.

The Site and adjacent areas have been used for agricultural production (row crops) since at least 1869. The Site is currently being used for strawberry cultivation. Records indicate that the Site is located within the Oxnard Oil Field; however, no known active or abandoned oil wells are present on the Site. Additionally, no oil wells are present on the 107.25-acre Maulhardt Ranch where the Site is located. The oil well located nearest to the site is the Maulhardt Community No. 11A, located approximately 850 feet south of the Site. Formerly, ASTs and USTs were located in the Maulhardt Ranch farm yard and residential area.

Organochlorine pesticides came into wide use in the late 1950s, and prior to that, arsenic-based pesticides were commonly used. Therefore, OCPs and arsenic-based compounds may have been used at the Site during agricultural production activities. Oil production activities and the underlying Oxnard Oil Field may have resulted in the release of contaminants to Site soils and soil gas, including metals, semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), VOCs, TPHd and TPHg. As shown in the CSM (Figure 7), five potential sources of chemicals have been identified at this Site: (1) pesticide and fuel oil releases from former agricultural operations (2), soil gas impacts from the underlying Oxnard Oil Field), (3) petroleum fuel releases from the ASTs and USTs formerly located in the adjacent Maulhardt Ranch farmyard and residential areas, (4), potentially hazardous substances and petroleum products that contained VOCs and TPHg used and stored in the Tin Shed, Horse Barn, Garage, and Storage Shed on the Maulhardt Ranch that may have impacted shallow soil, soil gas, and groundwater in the areas of the Site adjacent to the Maulhardt Ranch farmyard area, and (5) PCB soil contamination from the pole-mounted electrical transformer located onsite along the southern Site boundary along Camino Del Sol. As a result of these findings, soil gas samples were collected at the Site and analyzed for VOCs, methane, and hydrogen sulfide. Soil samples were collected at the Site and analyzed for OCPs, metals, SVOCs, PAHs, PCBs, VOCs, TPHd, and TPHg, and groundwater samples were collected at the Site and analyzed for VOCs, TPHg, and TPHd.

School children and staff at the proposed High School are the receptor groups most likely to be exposed to any chemicals potentially present at the Site. PEA guidance (DTSC 2015) indicates that sites should be evaluated assuming unrestricted residential land use, regardless of current and future uses. Therefore, the unrestricted land use scenario (i.e., residential land use) was evaluated for this Site, which is protective of future school use since the exposure assumptions for a residential scenario are more conservative than those for a school scenario. In addition to the unrestricted land use scenario, DTSC also requested that school-based receptors be evaluated for potential exposures to chemicals in soil. As the proposed site is intended to serve as a high school (grades 9-12), students associated grades 9-12 and teachers have also been evaluated in the human health screening evaluation. For this evaluation, it was conservatively assumed that students attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

8.2.2 Soil Exposure Pathways

Currently, the Site is unpaved and bare soils may be contacted directly. Chemicals of potential concern (COPCs) have been detected in soils at the Site. Therefore, the potential exists for humans to be exposed to COPCs through direct dermal contact with soil and by incidental soil ingestion. In the future, it is

likely buildings will be constructed at the Site. These buildings will act to limit exposures to soils by onsite receptors. However, in accordance with PEA guidance, all soils at the Site were considered available for dermal contact, incidental ingestion, and the generation of dusts (DTSC 2015). Additionally, the school-based exposure guidance (Cal/EPA [Office of Environmental Health Hazard Assessment] OEHHA 2004) assumes that dusts may be tracked indoors where receptors may incidentally ingest them and have dermal contact.

8.2.3 Water Exposure Pathways

Hydrogeologic data from the vicinity of the Site indicate the water table is approximately 20 feet bgs or deeper (Section 3.5.1). Groundwater does not come to the surface at this Site and groundwater at the Site will not be used as a potable water source for the planned high school. Direct exposure to groundwater beneath the Site is, therefore, not likely to occur. The potential release of petroleum products to groundwater from ASTs and USTs formerly located in the Maulhardt Ranch farmyard and residential areas, and from farm maintenance activities in the farmyard areas was assessed as part of the PEA. No evidence for release of petroleum products to groundwater beneath the Site from the adjacent areas of the Maulhardt Ranch farmyard and residential areas was identified in the samples collected for the PEA. Contamination of groundwater beneath the Site from off-site sources is considered unlikely. Therefore, potential groundwater exposure pathways are considered incomplete and were not evaluated in this human health screening evaluation.

No permanent surface water bodies occur on the Site (Section 3.5.2). Therefore, surface water exposure pathways are likely to be incomplete and were not evaluated.

8.2.4 Air Exposure Pathways

There is no documented evidence of releases of hazardous substances to the atmosphere from the Site. Based on the graded agricultural Site land use documented in aerial photographs and images dating from 1943 to 2015 (Tetra Tech 2018), there is a potential for releases to the air from fugitive dust emissions of potentially contaminated surface soils. Nonvolatile chemicals may also sorb to soils. Wind erosion and dispersion of soil particulates could potentially result in exposure to these nonvolatile chemicals associated with airborne soil particulates (i.e., dusts). Therefore, it was assumed that receptors could potentially be exposed to COPCs by the inhalation of airborne dusts.

The prevailing wind direction for the Site area is from the west from April through October and the north from October through April. The average wind speeds are 6.6 miles per hour (mph) from November through May and 4.8 mph from June through October (Weather Spark 2018).

The Site overlies the Oxnard Oil Field and oil wells and oil production activities occurred in the vicinity of the Site area. There is a potential for methane and hydrogen sulfide toxic gas to occur in near surface soil due to former oil production activities in the Site area and the presence of the underlying Oxnard Oil Field. Therefore, it was assumed that receptors could potentially be exposed to COPCs in groundwater and/or soil gas migrating into indoor and ambient air (Tetra Tech 2018d).

The Site is adjacent to the Maulhardt Ranch farmyard and residential areas where ASTs and USTs were formerly used for fuel storage. In addition, farm vehicle and equipment maintenance occurred in the farmyard area and various petroleum containing products have been stored there. There is a potential for VOC gas to occur in near surface soil due to the former ASTs and USTs fuel storage, equipment maintenance, and petroleum containing product storage in the Maulhardt Ranch farmyard and residential

areas. Therefore, it was assumed that receptors could potentially be exposed to COPCs in groundwater and/or soil gas migrating into indoor and ambient air (Tetra Tech 2018d).

8.2.5 Summary of Selected Exposure Pathways

Although the Site is planned as a high school, for the purpose of this screening evaluation, a residential/unrestricted land use scenario was assumed as well as high school student and teacher exposure scenarios. Receptors were assumed to be potentially exposed to chemicals at the Site by direct dermal contact with soils, incidental ingestion of soils, the inhalation of airborne dusts, and the inhalation of volatiles emitted from soil gas to indoor and outdoor air. These potentially complete exposure pathways are shown in the CSM for planned future Site conditions (Figure 7).

8.3 CHEMICALS AND EXPOSURE POINT CONCENTRATIONS

Tables 9 through 12 of the PEA Report present the results of chemical analyses for soil, soil gas, and groundwater samples collected at the Site during the PEA (Tetra Tech 2018d).

8.3.1 Volatile Organic Compounds and H_2S

Soil gas samples collected at the Site were analyzed for VOCs potentially emitted from the Maulhardt Ranch farmyard and residential areas (Tetra Tech 2018d, Table 10). In accordance with *Advisory – Active Soil Gas Investigations* (DTSC and Los Angeles Regional Water Quality Control Board [LARWQCB] 2015), soil gas samples were analyzed for VOCs using EPA method 8260B. All chemicals detected in soil gas were selected as COPCs and are summarized in Table 10 of the PEA Report (Tetra Tech 2018d).

Methane and H_2S were not detected in soil gas and were therefore not selected as COPCs. The methane and H_2S sampling results are presented in Table 9 of the PEA Report (Tetra Tech 2018d).

Groundwater samples collected at the Site were analyzed for VOCs, TPHg, and TPHd associated with potential fuel and petroleum product releases from the ASTs, USTs, and activities in the adjacent Maulhardt Ranch farmyard and residential areas. The groundwater sampling results are presented in Appendix M of the PEA Report (Tetra Tech 2018d).

8.3.2 Total Metals

Consistent with the Tetra Tech PEA Field Sampling Plan (Tetra Tech 2018b), only arsenic was analyzed for in soil during the PEA. This was done based on a review of the Ventura County Agricultural Commissioner's information, which indicated that recently used pesticides are restricted to those with relatively short half-lives (hours to months). Historically, arsenical pesticides may have been used. To determine the presence of arsenic and ensure a health-protective assessment, soil samples were analyzed for arsenic using EPA method 6010B.

Metals present at concentrations equivalent to (or lower than) background concentrations do not need to be considered in the screening evaluation (DTSC 2015). Arsenic was detected at a maximum concentration of 2.65 mg/kg, which is well below the screening level of 12 mg/kg. As indicated in the DTSC *Interim Guidance for Sampling Agricultural Properties* (DTSC 2008), if all arsenic data are equal to or less than 12 mg/kg, then arsenic does not need to be considered a COPC and this determination does not require collection and comparison to a background data set. Therefore, arsenic was not selected as a COPC and was not evaluated.

8.3.3 Pesticides

The OCP soil sample results are summarized in Table 1 for the 66 surface soil samples collected during the PEA and in Table 4 for the 24 subsurface soil samples collected for the SSI. The Site has been used for agricultural production since at least 1869; therefore, it is assumed that OCPs were applied at the Site in the row crop areas.

To determine the presence of pesticides and ensure a health-protective assessment, soil samples collected at the Site were analyzed for OCPs using EPA method 8081A. The following ten organochlorine pesticides were detected in soils at the Site:

- DDD;
- DDE;
- DDT;
- Chlordane (total);
- Chlordane (gamma);
- Chlordane (alpha);
- Dieldrin;
- Endrin;
- Endrin aldehyde; and
- Toxaphene.

All of the detected pesticides were selected as COPCs and evaluated. For chlordane, only the chlordane (total) results were evaluated since these results included gamma-chlordane and alpha-chlordane. This was done so that gamma-chlordane and alpha-chlordane were not double counted in the risk evaluation.

8.3.4 Chemicals of Potential Concern Summary

All of the detected organic chemicals at the Site associated with the PEA and the SSI were selected as COPCs and are evaluated in this screening-level evaluation. As previously indicated, arsenic was the only metal analyzed for in soil and was only detected in one sample at a concentration well below the screening leveling level of 12 mg/kg. Based on this data, arsenic was not selected as a COPC. Soil and soil gas COPCs were identified at the Site as follows:

Soil

- **No Metals**;
- **Eight Organochlorine pesticides** (DDD, DDE, DDT, chlordane (total), dieldrin, endrin, endrin aldehyde, and toxaphene); and

- **Two PAHs** (fluoranthene and phenanthrene).

Soil Gas

- **Two VOCs** (toluene and naphthalene).

Groundwater

- **None** (VOCs, TPHg, and TPHd reported as not detected).

All 12 of the COPCs were included in the human health risk evaluation.

8.3.5 Exposure Point Concentrations

For this evaluation, the maximum detected concentration was used as the exposure point concentration (EPC) in accordance with DTSC's PEA guidance (DTSC 2015). The EPCs used in this screening assessment are summarized in Tables 5 through 9.

In the event that detected concentrations exceeded the corresponding screening level, risk was also calculated based on the 95% upper confidence limit (95% UCL) of the arithmetic mean. 95% UCLs were calculated for the detected OCPs. The 95% UCLs used in this screening are summarized in Tables 10, 12, and 14.

8.4 RISK-BASED SCREENING LEVELS

VOCs found in soil gas may migrate to indoor air. Although the proposed future use of the Site is a school, for this evaluation, a residential/unrestricted land use scenario is included to provide a conservative evaluation in addition to school-based receptors. As the residential scenario provides the most conservative screen of potential receptors (i.e., is protective of school-based exposure scenarios), it is evaluated first. If the estimated risks and hazards for the residential scenario are below target risk and hazard levels, the school-based scenarios are not evaluated.

For COPCs in soil, potential residential and school-based receptors could be exposed via ingestion, dermal contact, and inhalation of dusts and vapors. For this evaluation, soil screening levels were developed to be protective of potential exposures to COPCS in soil through these exposure pathways.

In accordance with the Human and Ecological Risk Office's (HERO's) Human Health Risk Assessment (HHRA) Note 3 (DTSC 2018a), DTSC-modified air and soil screening levels and USEPA regional screening levels (RSLs) for air and soil were used as the basis for developing soil gas and soil screening levels protective of residential receptors potentially exposed via vapor intrusion into indoor air and contact with soil (USEPA 2018). DTSC-modified screening levels were used if available, otherwise USEPA RSLs were used.

For the school-based receptors, risk-based screening levels (RBSLs) were developed using the Schools Risk Screening Model (SCHOOLSCREEN) developed by DTSC (Cal/EPA OEHHA 2010). This model was developed as part of the DTSC guidance for school site risk assessment at proposed and existing school sites (Cal/EPA OEHHA 2004). Toxicity criteria used in the model were updated as needed to be consistent with currently recommended toxicity criteria. As indicated above, for this evaluation, it was conservatively assumed that students attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

Target Risk Levels

For this evaluation, target risk levels were determined according to USEPA and Cal/EPA guidance. USEPA's 1990 guidance indicates that a carcinogenic risk probability between 1 in 1,000,000 and 1 in 10,000 (1×10^{-6} to 1×10^{-4}) are generally acceptable. The lower end of the target risk range is typically applied to residential scenarios, whereas the higher range is typically considered appropriate for commercial/industrial situations. Thus, for this evaluation, carcinogenic air and soil screening levels were developed based on a target risk of 1×10^{-6} for residential receptors and school-based students. For this evaluation, teachers are considered to be consistent with a commercial scenario, so carcinogenic screening levels were developed based on a target risk of 1×10^{-5}. For potential non-carcinogenic effects, (USEPA 1990) indicates that non-carcinogenic chemicals should not be present at levels expected to cause adverse health effects. Therefore, for this evaluation, potential hazards for the residential scenario and school-based receptors are evaluated based on a target hazard index (HI) of 1. Individual chemical exposures that yield HIs of less than one is not expected to result in adverse non-cancer health effects (USEPA 1989).

Soil Gas Risk-Based Screening Levels (RBSLs)

Soil gas screening levels were derived from the DTSC-modified air screening levels and USEPA air RSLs in accordance with HHRA Note Number 3 (DTSC 2018a) using the DTSC default soil gas to indoor air attenuation factor for a future building of 0.001 (DTSC 2011). The soil gas to indoor attenuation factor represents the relationship between soil gas concentrations and the resulting indoor air concentrations. Since the DTSC default soil gas attenuation factor was developed to be applied to soil gas samples collected at a depth of 5 feet bgs, it provides a conservative screening for soil gas samples collected at a depth of 15 feet bgs that would be associated with greater attenuation.

The soil gas RBSLs for this evaluation were derived by dividing the DTSC and USEPA residential air screening levels by the DTSC default soil gas attenuation factor of 0.001 (USEPA 2018). The derivation of the residential soil gas screening levels is summarized in Table 5 of the Tetra Tech PEA Field Sampling Plan (Tetra Tech 2018b), which was approved by DTSC.

Currently, there are no default soil gas attenuation factors for a school scenario. In lieu of conducting site-specific soil gas modeling to derive a school-specific soil gas attenuation factor, a school-specific soil gas attenuation factor was conservatively derived by adjusting the default residential soil gas attenuation factor based on the difference in the DTSC recommended air exchange rates for a residential building and a school building. The DTSC residential default soil gas attenuation factor of 0.001 is based on the DTSC recommended air exchange rate of 0.5 exchanges per hour for a residential building (Cal/EPA OEHHA 2005). For school buildings, the Cal/EPA recommended air exchange rate is 4.7 exchanges per hour (Cal/EPA OEHHA 2004). This means that the recommended air exchange rate for a school building is 9.4-fold greater than the recommended air exchange rate for a residential building. Thus, for a school building, the soil gas attenuation factor will be 9.4-fold lower (0.000106), which will result in school-specific soil gas screening levels that are 9.4-fold higher than residential soil gas screening levels. It is noteworthy, that this is a conservative adjustment since it does not account for the lower exposure frequencies associated with a school scenario (233 to 250 days per year) versus a residential scenario (350 days per year).

Soil Risk-Based Screening Levels (RBSLs)

For this evaluation, DTSC-modified soil screening levels and USEPA soil RSLs protective of residential exposures were conservatively used to evaluate potential residential exposures to soil. The residential screening levels are conservative since they are based on exposure parameters that assume higher levels

of exposure than would be associated with a school site. For example, the exposure frequency and exposure time in a residential scenario are 350 days per year and 24 hours per day, respectively. For a school scenario, the maximum exposure frequency and exposure time are 250 days per year and 10.3 hours per day, respectively.

For the school-based receptors, soil screening levels were developed using the DTSC SCHOOLSCREEN model (Cal/EPA OEHHA 2010). This was done by iteratively entering soil exposure concentrations until the estimated risks and hazards were equal to the target risk and hazard levels identified for the residential and school-based receptors. The school-based receptors are represented by a school-based student scenario who are assumed to be at the school for four years (grades 9-12) and a teacher scenario that is assumed to be present at the school for 40 years. The exposure parameters for the school-based receptor scenarios are those recommended in the DTSC school risk assessment guidance (Cal/EPA OEHHA 2004). For this evaluation, it was conservatively assumed that students attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

8.5 RISK CHARACTERIZATION

Risks were characterized for potential residential and school-based student receptors using the ratio of concentrations measured at the Site to the RBSLs identified for each environmental medium. This evaluation consisted of three steps: (1) specifying the target risk and hazard quotient to use in calculating the RBSLs; (2) estimating EPCs for each environmental medium (i.e., the maximum detected concentration or the 95% upper confidence limit (95% UCL) of the arithmetic mean concentration; and (3) comparing the EPCs to the RBSLs to estimate risks and hazards for potential receptors. Each of these steps is described below.

8.5.1 Risk Estimation Procedures

The RBSLs were calculated for a specified target risk (i.e., a carcinogenic risk of 1 x 10^{-6} for residential receptors and school-based students and 1 x 10^{-5} for teachers) and concentrations greater than the RBSLs represent carcinogenic risks proportionally greater than the target risk. Similarly, concentrations less than the RBSLs represent carcinogenic risks proportionally less than the target risk. Risks were calculated as follows, using the ratio of each COPC's EPC and its media-specific RBSL:

Risk for residential and school-based students:

$$Risk = \frac{\text{EPC}}{\text{carcinogenic RBSL}} \times 10^{-6}$$

Risk for school-based teachers:

$$Risk = \frac{\text{EPC}}{\text{carcinogenic RBSL}} \times 10^{-5}$$

Hazard quotient (HQ) for residential and school-based receptors:

$$HQ = \frac{\text{EPC}}{\text{non - cancer RBSL}}$$

In accordance with USEPA and DTSC guidance, the risk and hazard ratios for each chemical and potentially complete exposure pathway were summed to determine the multi-pathway cumulative carcinogenic risk estimates and noncarcinogenic HI for potential receptors.

8.5.2 Site-Specific Cancer Risk and Hazard Estimates for Soil Gas

8.5.2.1 Soil Gas Sampling Depth of 5 Feet Below Ground Surface

Residential Scenario

As shown in Table 5, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 5 feet bgs, the estimated cancer risk for potential residential receptors exposed to indoor vapors based on the residential soil gas RBSLs is 5×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for residential and school-based student receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.007, which is well below the target HI of 1.

School Scenario

As shown in Table 6, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 5 feet bgs, the estimated cancer risk for potential school receptors exposed to indoor vapors based on the school soil gas RBSLs is 5×10^{-8}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk levels for school-based student receptors (1×10^{-6}) and teachers (1×10^{-5}). The maximum estimated non-carcinogenic HI is 0.0007, which is well below the target HI of 1.

8.5.2.2 Soil Gas Sampling Depth of 15 Feet Below Ground Surface

Residential Scenario

As shown in Table 7, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 15 feet bgs, the estimated cancer risk for potential residential receptors exposed to indoor vapors based on the soil gas RBSLs is 5×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for residential and school-based student receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.007, which is well below the target HI of 1.

School Scenario

As shown in Table 8, based on the maximum detected results for chemicals detected in soil gas at a sampling depth of 15 feet bgs, the estimated cancer risk for potential school receptors exposed to indoor vapors based on the school soil gas RBSLs is 5×10^{-8}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk levels for school-based student receptors (1×10^{-6}) and teachers (1×10^{-5}). The maximum estimated non-carcinogenic HI is 0.0007, which is well below the target HI of 1.

8.5.3 Cancer Risk and Hazard Estimates for Soil

Residential Scenario

As shown in Table 9, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential residential receptors exposed to COPCs in soil based on the residential soil RBSLs is 8×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, but exceeds the target risk level for residential receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.7, which is below the target HI of 1.

The primary contributors to the estimated risk for residential receptors exposed to soil are toxaphene (75%) and dieldrin (15%). No other chemicals were detected at levels exceeding the corresponding soil screening level. Risks estimated for all other COPCs is 8×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk of 1×10^{-6} established for residents. Toxaphene was detected at 43 sampling locations at levels that exceeded the corresponding residential screening level of 490 µg/kg. Dieldrin was detected at three sampling locations (SS-49, SS-51, and SS-59) with concentrations ranging from (34.7 µg/kg to 40.4 µg/kg) that exceeded the corresponding residential screening level of 34 µg/kg.

The estimated cancer risks summarized in Table 9 are conservative as they are based on the maximum detected concentrations for each chemical rather than a representative exposure concentration such as the 95% UCL of the arithmetic mean concentration.

Table 10 provides a risk estimate based on the 95% UCLs for all pesticides detected in soil. The pesticides are the primary contributors to risk at the Site. As shown in Table 10, the estimated cancer risk for potential residential receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and residential soil RBSLs is 4×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} but exceeds the target risk level for residential receptors (1×10^{-6}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.3, which is below the target HI of 1. Only toxaphene is associated with a 95% UCL that exceeds the corresponding screening level. Risks estimated for all other COPCs is 7×10^{-7}, which is below the low end of the of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk of 1×10^{-6} established for residents.

School-Based Student Scenario

As shown in Table 11, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential school-based student receptors exposed to COPCs in soil is 4×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and below the target risk level for school-based student receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.1, which is below the target HI of 1. No detected pesticide is associated with a maximum concentration that exceeds the corresponding screening levels.

Table 12 provides a risk estimate for the school-based student scenario based on the 95% UCLs for all pesticides detected in soil. The pesticides are the primary contributors to risk at the Site. As shown in Table 12, the estimated cancer risk for potential student receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and school-based student soil RBSLs is 2×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school-based student receptors (1×10^{-6}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.06, which is below the target HI of 1. No detected pesticide is associated with a 95% UCL that exceeds the corresponding screening levels.

School-Based Teacher Scenario

As shown in Table 13, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential school-based teacher receptors exposed to COPCs in soil is 2×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and below the target risk level for school-based teacher receptors (1×10^{-5}). The maximum estimated non-carcinogenic HI is 0.09, which is below the target HI of 1.

Table 14 provides a risk estimate for the school-based teacher scenario based on the 95% UCLs for all pesticides detected in soil. The pesticides are the primary contributors to risk at the Site. As shown in Table 14, the estimated cancer risk for potential teacher receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and school-based teacher soil RBSLs is 1×10^{-6}, which is equal to the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school-based teacher receptors (1×10^{-5}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.06, which is below the target HI of 1.

8.5.4 Recommended Update to Toxaphene Screening Levels

Cancer Slope Factor (Toxaphene)

USEPA released its quantitative risk assessment of the carcinogenicity of toxaphene in 1988 (USEPA 1988), which was conducted in accordance with USEPA's guidelines for carcinogen risk assessments published in 1986 (USEPA 1986). The current cancer slope factor (CSF) for toxaphene listed in USEPA's Integrated Risk Information System (IRIS), which was used to derive the soil screening levels used in this evaluation, is still based on the 1988 risk assessment. In 1996, USEPA published a draft document of proposed guidelines for carcinogen risk assessment, which incorporated revisions to the 1986 guidelines (USEPA 1996). In 2005, USEPA published the final version of the updated guidelines for carcinogen risk assessment (USEPA 2005). The 2005 guidelines for carcinogen risk assessment indicate that the USEPA recommended rationale and methods for developing cancer risk assessments have evolved substantially since 1988. USEPA's 2005 guidelines provide the most scientifically appropriate options for evaluating the carcinogenic potential of chemicals to reflect what is currently known about the mechanisms by which chemicals cause cancer.

Application of USEPA's 2005 guidelines would result in a CSF for toxaphene that is lower than the current toxaphene CSF obtained from the 1988 carcinogen risk assessment conducted for toxaphene. Thus, the soil screening levels for toxaphene used in this evaluation that are based on the current toxaphene CSF obtained from USEPA's 1988 carcinogen risk assessment are likely much lower (i.e., more conservative) than those that would be estimated if the 1988 slope factor was updated to be consistent with current USEPA (USEPA 2005) guidelines. This means that the current toxaphene screening levels used in this evaluation are likely lower than required to be protective of public health.

As part of this evaluation, the toxaphene CSF will be modified to incorporate an update that is consistent with USEPA's 2005 guidelines for carcinogen risk assessment. This modification entails updating the mathematical approach used by USEPA for scaling experimental doses from rodents to humans. This modification is described briefly below.

Inter-Species Scaling

Inter-species scaling factors are used to account for differences in body size between laboratory test species (mice in the case of toxaphene) and potential receptor species (e.g., humans) (USEPA 1992) and

is common practice in human health risk assessment (USEPA 2005). The current toxaphene CSF used by EPA, which was developed in 1988, is based on human equivalent doses calculated using a body weight ratio (rodent to human) to the 1/3 power (USEPA EPA 1988). However, in 1992 an updated methodology for calculating inter-species scaling factors was adopted by USEPA, the Food and Drug Administration (FDA), and the Consumer Products Safety Commission (CPSC) as a consensus approach for risk assessment of carcinogens (USEPA 1992). The updated scaling factor is based on a rodent to human body weight ratio to the 1/4 power and is the default approach for inter-species scaling as per USEPA's 2005 Guidelines for Carcinogen Risk Assessment (USEPA 2005).

The derivation of the updated CSF for toxaphene based on the current inter-species scaling factor recommended in EPA guidance (USEPA 2005) was developed using the same toxicological data used by USEPA in its 1988 cancer risk assessment (i.e., those reported in EPA's IRIS). The CSF for toxaphene decreased 1.9-fold from 1.1 to 0.576 $(mg/kg\text{-}day)^{-1}$ using the current inter-species scaling factor recommended in EPA guidance (USEPA 2005) of animal to human body weight ratio to the 1/4 power. The use of the updated CSFs would decrease estimated risks for potentially exposed residents and school-based receptors by a factor of 1.9 for toxaphene. The derivation of the updated CSF for toxaphene is summarized in Table 15.

8.5.5 Cancer Risk and Hazard Estimates for Soil Based on Modified Screening Levels for Toxaphene

Residential Scenario

As shown in Table 16, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential residential receptors exposed to COPCs in soil based on the modified residential soil RBSL for toxaphene is 5×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, but exceeds the target risk level for residential receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.7, which is below the target HI of 1.

Table 17 provides a risk estimate based on the 95% UCLs for all pesticides detected in soil based on the modified soil RBSL for toxaphene. As shown in Table 17, the estimated cancer risk for potential residential receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and the adjusted residential soil RBSL for toxaphene is 2×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} but exceeds the target risk level for residential receptors (1×10^{-6}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.3, which is below the target HI of 1.

School-Based Student Scenario

As shown in Table 18, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential school-based student receptors exposed to COPCs in soil based on the modified residential soil RBSL for toxaphene is 2×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and below the target risk level for school-based student receptors (1×10^{-6}). The maximum estimated non-carcinogenic HI is 0.1, which is below the target HI of 1. No detected pesticide is associated with a maximum concentration that exceeds the corresponding screening levels.

Table 19 provides a risk estimate for the school-based student scenario based on the 95% UCLs for all pesticides detected in soil based on the modified soil RBSL for toxaphene. As shown in Table 19, the estimated cancer risk for potential student receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and the modified school-based student soil RBSL for toxaphene is 1×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school-based

student receptors (1×10^{-6}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.06, which is below the target HI of 1.

School-Based Teacher Scenario

As shown in Table 20, based on the maximum detected results for chemicals detected in soil, the estimated cancer risk for potential school-based teacher receptors exposed to COPCs in soil based on the modified residential soil RBSL for toxaphene is 1×10^{-6}, which is at the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and below the target risk level for school-based teacher receptors (1×10^{-5}). The maximum estimated non-carcinogenic HI is 0.09, which is below the target HI of 1.

Table 21 provides a risk estimate for the school-based teacher scenario based on the 95% UCLs for all pesticides detected in soil based on the modified soil RBSL for toxaphene. As shown in Table 21, the estimated cancer risk for potential teacher receptors exposed to COPCs in soil based on the 95% UCLs for pesticides and the modified school-based teacher soil RBSL for toxaphene is 6×10^{-7}, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for school-based teacher receptors (1×10^{-5}). The estimated non-carcinogenic HI based on the 95% UCLs for pesticides is 0.06, which is below the target HI of 1.

8.5.6 Cumulative Risk and Hazard Estimates for Soil Gas and Soil

Residential Scenario

The maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the residential scenario based on the maximum detected concentrations is 9×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). Based on the modified residential soil RBSL for toxaphene, the maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the residential scenario based on the maximum detected concentrations is 6×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.7, which is below the target HI of 1.

The estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the residential scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 4×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). Based on the modified residential soil RBSL for toxaphene, the estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the residential scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 3×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level for residential receptors (1×10^{-6}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.4, which is below the target HI of 1.

School-Based Student Scenario

The maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based student scenario based on the maximum detected concentrations is 4×10^{-7}, for both soil gas sampling depths, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for residential receptors (1×10^{-6}). Based on the modified student soil RBSL

for toxaphene, the maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based student scenario based on the maximum detected concentrations is 3×10^{-7}, for both soil gas sampling depths, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for residential receptors (1×10^{-6}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.1, which is below the target HI of 1.

The estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based student scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 2×10^{-7}, for both soil gas sampling depths, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for student receptors (1×10^{-6}). Based on the modified student soil RBSL for toxaphene, the estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based student scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 2×10^{-7}, for both soil gas sampling depths, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for student receptors (1×10^{-6}).The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.07, which is below the target HI of 1.

School-Based Teacher Scenario

The maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based teacher scenario based on the maximum detected concentrations is 2×10^{-6}, for both soil gas sampling depths, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for teachers (1×10^{-5}). Based on the modified teacher soil RBSL for toxaphene, the maximum estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based teacher scenario based on the maximum detected concentrations is 1×10^{-6}, for both soil gas sampling depths, which is equal to the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for teachers (1×10^{-5}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.09, which is below the target HI of 1.

The estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based teacher scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 1×10^{-6}, for both soil gas sampling depths, which is equal to the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for teachers (1×10^{-5}). Based on the modified teacher soil RBSL for toxaphene, the estimated cumulative cancer risk associated with potential exposures to soil gas and soil for the school-based teacher scenario based on the 95% UCLs for pesticides and maximum detected concentrations for other chemicals is 7×10^{-7}, for both soil gas sampling depths, which is below the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and below the target risk level for teachers (1×10^{-5}). The estimated cumulative HIs associated with potential exposures to soil gas and soil is 0.06, which is below the target HI of 1.

8.5.7 Risk Characterization Summary

School children and staff at the proposed High School are the receptor groups most likely to be exposed to any chemicals potentially present at the Site. The human health risk was evaluated assuming unrestricted residential land use (residential scenario), regardless of current and future uses. As requested by DTSC at the January 4, 2019 SSI scoping conference, school-based receptors (students and teachers) were also evaluated for potential exposures to chemicals in soil. As the proposed site is intended to serve as a high school (grades 9-12), students associated with grades 9-12 and teachers were evaluated in the human health screening evaluation. For this evaluation, it was conservatively assumed that students

attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

The results of the risk characterization for the residential scenario based on the maximum detected concentrations indicate that toxaphene levels detected in soil result in an estimated risk that exceed the residential target risk level (1×10^{-6}). However, the estimated cumulative risks for the school-based student scenario (range from 2×10^{-7} to 4×10^{-7}) were well below the student target risk level (1×10^{-6}). For the school-based teacher scenario, the estimated cumulative risks ranged from 7×10^{7} to 2×10^{-6}, which are well below the target risk level for teachers (1×10^{-5}). It is noteworthy, that for the teacher scenario, only the estimated risk based on the maximum detected concentrations (2×10^{-6}) exceeded the low end of the USEPA target risk range of 10^{-6} to 10^{-4}. The estimated risks based on the 95% UCL concentrations and modified soil screening level for toxaphene were equal to, or lower than the low end of the USPEA target risk range of 10^{-6} to 10^{-4}. The school-based scenarios best represent the conditions that will be encountered by students and teachers at the High School site. Therefore, the results of this human health risk evaluation indicate that it is unlikely that the COPCs detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated in this SSI report.

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9.0 QUALITY ASSURANCE PROJECT PLAN IMPLEMENTATION

An integral part of the SSI sampling and analysis plan is the QA/QC program to ensure the reliability and compatibility of all data generated during the SSI. The QAPP presented in Appendix A of the Draft PEA Report (Tetra Tech 2018d) was used for the SSI. The QAPP provides specific descriptions of the field and laboratory procedures to be used for verifying and maintaining performance quality for collection of environmental samples and subsequent chemical analysis. The QAPP sets forth the policies, procedures, and activities for the identification and documentation of the precision, accuracy, completeness, and representativeness of the data during the performance of the SSI.

During the SSI, subsurface soil sample data were collected. Each sample was analyzed for a number of OCPs, in accordance with the rationale for sample collection. Data collected were evaluated to determine which of the chemicals identified are likely to be site-related and to assess whether the reported concentrations for these chemicals are of acceptable quality for use in the screening evaluation.

9.1 EVALUATION OF ANALYTICAL METHODS

The analytical methodology used for data collection was assessed for appropriateness for use in the screening evaluation. Analytical results that are not specific for a particular compound or results of screening analytical methods (e.g., PID readings) were not used for the Human Health Screening Evaluation.

9.2 EVALUATION OF DETECTION LIMITS

Detection limits associated with the analytical data were reviewed before eliminating chemicals because they were not detected. In some cases, the detection limit for a chemical may be greater than the corresponding standards, criteria, or concentrations derived from toxicity reference values; therefore, the chemical may be present at levels greater than these corresponding reference concentrations, which may result in undetected risk. In other cases, a particular detection limit may be significantly higher than positively detected values in other samples in a data set. After considering these cases and any other reasonable explanations why contaminants may not have been detected, chemicals that were not detected in any medium were eliminated.

9.3 EVALUATION OF QUALIFIED DATA

For analytical results, various qualifiers pertaining to the quality of the data are attached to certain data points by either the laboratories conducting the analysis or by persons conducting the data validation (procedures for data validation are discussed in Section 8.3 of the QAPP (Tetra Tech 2018d). All qualifiers will be discussed prior to utilizing the chemical data for the screening evaluation. A number of data points were qualified as estimated ("J" flagged) because the detected concentration was below the MRL for the analyte.

No data were rejected as unusable.

9.4 DATA VALIDATION RESULTS

The data validation memorandum for the SSI is provided in Appendix D.

A typical SSI validation effort consists of a review of 10% of the analytical data; however, due to the limited number of analytical batches associated with the subject investigation, 100% of the data were

reviewed. The validation guidance used in evaluating the data is presented in *USEPA National Functional Guidelines for Inorganic Data Review* (U.S. EPA 2014a) and *USEPA National Functional Guidelines for Organic Data Review* (U.S. EPA 2014b). The data review consisted of an evaluation of all applicable Quality Control (QC) sample results as they relate to the field data under review. Raw data were not reviewed. The review determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

The American Environmental Testing Laboratory (AETL) data were contained in data package 96370. The samples were analyzed in multiple batches for Organochlorine Pesticides using EPA method SW8081A (33 total samples).

The data were logged into the laboratory under compliant Chain-Of-Custody documentation. The samples were shipped in one iced cooler delivered to the laboratory.

The samples were received at the laboratory in good condition and with no exceptions noted. For each parameters/method listed above there are individual method headers listed below that explain the data validation and data quality.

9.4.1 Organochlorine Pesticides by EPA Method SW8081A

The data were evaluated by results from the following QC elements:

9.4.1.1 Holding Time

The samples were analyzed within the method specified holding time.

9.4.1.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

9.4.1.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

9.4.1.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

9.4.1.5 Field Duplicate Analysis

No field duplicate samples reported errors except as listed below

Field duplicates Soil Dup 1 had RPD errors that qualified samples SS-56-1. Analytes 4,4'-DDE, 4,4'-DDT, and Dieldren in sample SS-56-1 were qualified as estimated and assigned a "J" qualifier. The estimated data are usable as estimated values.

9.4.1.6 Matrix Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds except as listed below. The MS/MSD RPD values were in control.

Field sample SS-41-1 and SS-43-2 were qualified as estimated and assigned a "J" qualifier due to MS/MSD recovery errors. In each sample, the DDT and Endrin analytes were qualified. The estimated data are usable for the intended purpose.

9.4.1.7 Compound Identification

All compounds were identified by the correct retention as compared to the standard's retention time and the method guidelines for identification were met.

9.4.1.8 Analytical Method Compliance

The data review showed the data to be method compliant and followed the criteria stated in method SW8081A.

9.4.2 Overall Analytical Evaluation

The AETL data for the subsurface soil sample analyses had compliant QC results for all QC samples. Based on the results of this data validation review, it is concluded that the AETL soil data are usable as stated and qualified. The results are considered correct and reliable The DQOs were satisfied per the Work Plan and the data are usable for their intended purpose. The overall analytical evaluation indicates all analytical criteria met for this data set.

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10.0 HEALTH AND SAFETY PLAN IMPLEMENTATION

Tetra Tech prepared a site-specific Health and Safety Plan (HASP) pursuant to Health and Safety Code 1910.120. The HASP is included in Appendix B of the Draft PEA (Tetra Tech 2018d). The plan:

- Identified and described potentially hazardous substances that may be encountered during field operations;
- Specified PPE and clothing for Site activities; and
- Outlined measures to be implemented in the event of an emergency.

Tetra Tech field personnel reviewed the HASP prior to commencing field work. Prior to initiation of field activities each day, a site safety briefing was conducted to identify potential physical and chemical hazards and outline measures to be taken in event of an emergency. All onsite personnel were required to sign the site safety briefing form.

During field activities, appropriate Level D PPE was worn by all personnel within the exclusion zone. Operator breathing zone PID readings were obtained on a regular basis as required by the HASP. All PID readings during field activities were 0.0 ppm. Based on these measurements, an upgrade to Level C PPE was not required.

Potential hazards to public health and safety were minimal due to the nature of the sampling activities and the absence of detectable vapors in the exclusion zone. No incidents or emergency actions occurred during the field program.

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11.0 FIELD VARIANCES

There were no field variances to the implementation of the SSIFSP (Tetra Tech 2019).

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12.0 PUBLIC PARTICIPATION

California Education Code (CEC) 17210.1(b) requires that residents in line-of-sight of the Site be notified, in writing, of the proposed field sampling. The residents nearest to the Site are located along west side of Festivo Street to the east, on the south side of Camino Del Sol to the south, on the west side of North Rose Avenue to west, and the north side of Cesar Chavez Drive to the North (Figure 2). Similar to the PEA, the proposed SSI sample locations are located approximately 150 feet west of residences on Festivo Street, 150 feet north of the residences on Camino Del Sol, 960 feet east of the residences on North Rose Avenue, and over 1,200 feet south of the residences on Cesar Chavez Drive. A covered six-foot-high chain link fence surrounds the entire Maulhardt Ranch, including the Site, and prevents the visual examination of the Site by the residents in the neighborhoods surrounding the Maulhardt Ranch. Given the distance from the surrounding residential properties to the SSI sample locations, and that the Site is not within the line-of-site of the surrounding residential properties, public notification is not necessary for these residences and was not performed. Not performing public notification was approved by DTSC for the PEA field investigation.

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13.0 CONCLUSIONS AND RECOMMENDATIONS

The lateral extent of OCPs in surface soils at the Site at concentrations exceeding Screening Levels was defined in the PEA sampling event and comprises approximately 24 acres (Tetra Tech 2018d). This SSI was performed to assess the depth of OCP-impacted soil at the Site at concentrations exceeding screening levels (specifically toxaphene and dieldrin). Based on the results of the SSI sampling program, the maximum depth of OCP-impacted soil at the Site at concentrations exceeding screening levels has been defined and is between approximately 1.5 and 2.0 feet bgs.

The PEA (Tetra Tech 20108d) concluded that OCPs detected at the Site (primarily toxaphene) appear to be present at concentrations that pose a threat to likely human receptors, including residential/unrestricted land use. Assumed exposures at the Site resulted in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the point of departure of 1×10^{-6} for potential residential receptors. The estimated cumulative cancer risk associated with potential exposures to soil based on the 95% UCLs for pesticides maximum detected concentrations for other chemicals is 4×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the point of departure of 1×10^{-6} for potential residential receptors.

School children and staff at the proposed High School are the receptor groups most likely to be exposed to any chemicals potentially present at the Site. The human health risk was evaluated assuming unrestricted residential land use (residential scenario), regardless of current and future uses. As requested by DTSC at the January 4, 2019 SSI scoping conference, school-based receptors (students and teachers) were also evaluated for potential exposures to chemicals in soil. As the proposed site is intended to serve as a high school (grades 9-12), students associated with grades 9-12 and teachers were evaluated in the human health screening evaluation. For this evaluation, it was conservatively assumed that students attended school on a year-round basis (233 days per year) rather than a 9-month school year (180 days per year).

The results of the SSI risk characterization for the residential scenario based on the maximum detected concentrations indicate that toxaphene levels detected in soil result in estimated risk that exceed the residential target risk level (1×10^{-6}). However, the estimated cumulative risks for the school-based student scenario (range from 2×10^{-7} to 4×10^{-7}) were well below the student target risk level (1×10^{-6}). For the school-based teacher scenario, the estimated cumulative risks ranged from 7×10^{-7} to 2×10^{-6}, which are well below the target risk level for teachers (1×10^{-5}). It is noteworthy, that for the teacher scenario, only the estimated risk based on the maximum detected concentrations (2×10^{-6}) exceeded the low end of the USEPA target risk range of 10^{-6} to 10^{-4}. The estimated risks based on the 95% UCL concentrations and modified soil screening level for toxaphene were equal to, or lower than the low end of the USPEA target risk range of 10^{-6} to 10^{-4}. The school-based scenarios best represent the conditions that will be encountered by students and teachers at the High School site. Therefore, the results of this human health risk evaluation indicate that it is unlikely that the COPCs detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated in this SSI report.

Based on the results of the SSI risk characterization, Tetra Tech recommends a No Further Action determination by DTSC for the High School No. 8 site.

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14.0 CERTIFICATION

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

TETRA TECH, INC.



James R. Steele
Project Manager

California Registered Geologist 5963
Expiration Date May 31, 2019
California Certified Engineering Geologist 1906
Expiration Date May 31, 2019
California Certified Hydrogeologist 247
Expiration Date May 31, 2019

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Mechanical Engineer 025171
Expiration Date September 30, 2019

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15.0 REFERENCES

American Society for Testing and Materials (ASTM)

1990a *Designation D 2487 - 90, Standard Test Method for Classification of Soils for Engineering Purposes.*

1990b *Designation D 2488 - 90, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).*

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

2001 Map 214. February 14.

2017 Division of Oil, Gas & Geothermal Resources Well Finder at: http://maps.conservation.ca.gov/doggr/#close.

California Department of Conservation, California Geological Survey (CGS)

2002 *Seismic Hazard Zone Report of the Oxnard 7.5-Minute Quadrangle, Ventura County California. Report 062*.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC)

2008 *Interim Guidance for sampling Agricultural Properties (Third Revision).* August 7.

2011 *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance).* October.

2015 *Preliminary Endangerment Assessment Guidance Manual*. January 1994 (Revised October 2015).

2018a *Human Health Risk Assessment Note, HERO Note Number 3, DTSC-modified Screening Levels (DTSC-SLs)*. June.

2018b *Adequacy of Draft Preliminary Environmental Assessment Report for Public Comment, Oxnard Union High School District, Proposed High School No. 8, North Rose Avenue, Oxnard (Site Code 304669)*. December 27.

2019a *Approval of Supplemental Site Investigation Technical Memorandum, Oxnard Union High School District. Proposed Oxnard High School No. 8, North Rose Avenue, Oxnard (Site Code 304669).* February 13.

2019b *Approval of Draft Preliminary Environmental Assessment Report, Oxnard Union High School District. Proposed Oxnard High School No. 8, North Rose Avenue, Oxnard (Site Code 304669).* March 12.

California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB)

2015 *Advisory – Active Soil Gas Investigations*. June.

California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (Cal/EPA OEHHA).

2004 *Guidance for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(f): Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites.*

2005 *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil. November 2004; January 2005 revision.*

2010 *SCHOOLSCREEN Schools Risk Screening Model. Spreadsheet adaptation of the OEHHA Guidance for Assessment of Exposures and Health Risks at Existing and Proposed School Sites. January.*

Clahan, Kevin B and Marina Mascorro

2003 *Geologic Map of the Oxnard 7.5' Quadrangle, California.* California Geological Survey and U.S. Geological Survey's National Cooperative Geologic Mapping Program.

Earth Systems Pacific (ESP)

2018a *Preliminary Foundation Design Parameters and Infiltration Testing Report*. May 15.

2018b *Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California.* August 31.

Environmental Data Resources, Inc. (EDR)

2017 Environmental Data Resources. Reports No. 5046760.2, 5046760.2s, 5046760.3 5046760.4, 5046760.5, 5046760.9

Norris, R.M. and Webb, R.W.

1990 *Geology of California, Second Edition.* John Wiley and Sons, New York, NY.

Oakeshott, Gordon B.

1978 *California's Changing Geologic Landscapes, Second Edition*. McGraw-Hill Publishing Company, New York, NY.

Tetra Tech, Inc.

2018a *Final Phase I Environmental Site Assessment Proposed Oxnard High School No, 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030*. March 2.

2018b *Technical Memorandum Field Sampling Plan Proposed High School No. 8 APN 214-002-059 on North Rose Avenue, Oxnard, California*. July 27.

2018c Geohazard Assessment/Geotechnical Investigation, High School No. 8 *APN 214-002-059 on North Rose Avenue, Oxnard, California*. October 11.

2018d *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California.* November 9.

2019 *Technical Memorandum Supplemental Site Investigation Field Sampling Plan, Proposed High School No. 8 APN 214-002-059, on North Rose Avenue, Oxnard, California 93030.* January 31.

Turner, John, and Mike Mukae

1975 *Ventura County Water Resources Management Study, Geologic Formations, Structure and History in the Santa Clara-Calleguas Area*. Ventura County Department of Public Works, Flood Control District, Ventura, California.

U.S. Department of Agriculture, Soil Conservation Service (USDA)

1970 *Soil Survey of Ventura Area, California.* July.

U.S. Environmental Protection Agency (U.S. EPA)

1986 *Guidelines for Carcinogen Risk Assessment.* 51 Federal Register 33992. September 1986.

1988 *Carcinogenicity Assessment of Toxaphene. Integrated Risk Information System.*

1989 *Risk Assessment Guidance for Superfund (RAGS). Human Health Evaluation Manual Part A. Office of Emergency and Remedial Response. EPA/540/1-89/002*.

1990 *National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Final Rule). 40 CFR Part 300: 55 Federal Register 8666.*

1992 *Draft report: A cross-species scaling factor for carcinogenic risk assessment based on equivalence of mg/kg3/4/day.* Federal Register 57(109):24152-24173.

1996 *Proposed Guidelines for Carcinogen Risk Assessment.* 61 Federal Register: 17960-18011. Office of Research and Development.

2005 *Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum, Washington, DC. March.*

2014a *National Functional Guidelines for Inorganic Data Review.*

2014b *National Functional Guidelines for Organic Data Review.*

2018 *Regional Screening Levels (RSLs) – Generic Tables.* https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables. November.

U. S. Geological Survey (USGS)

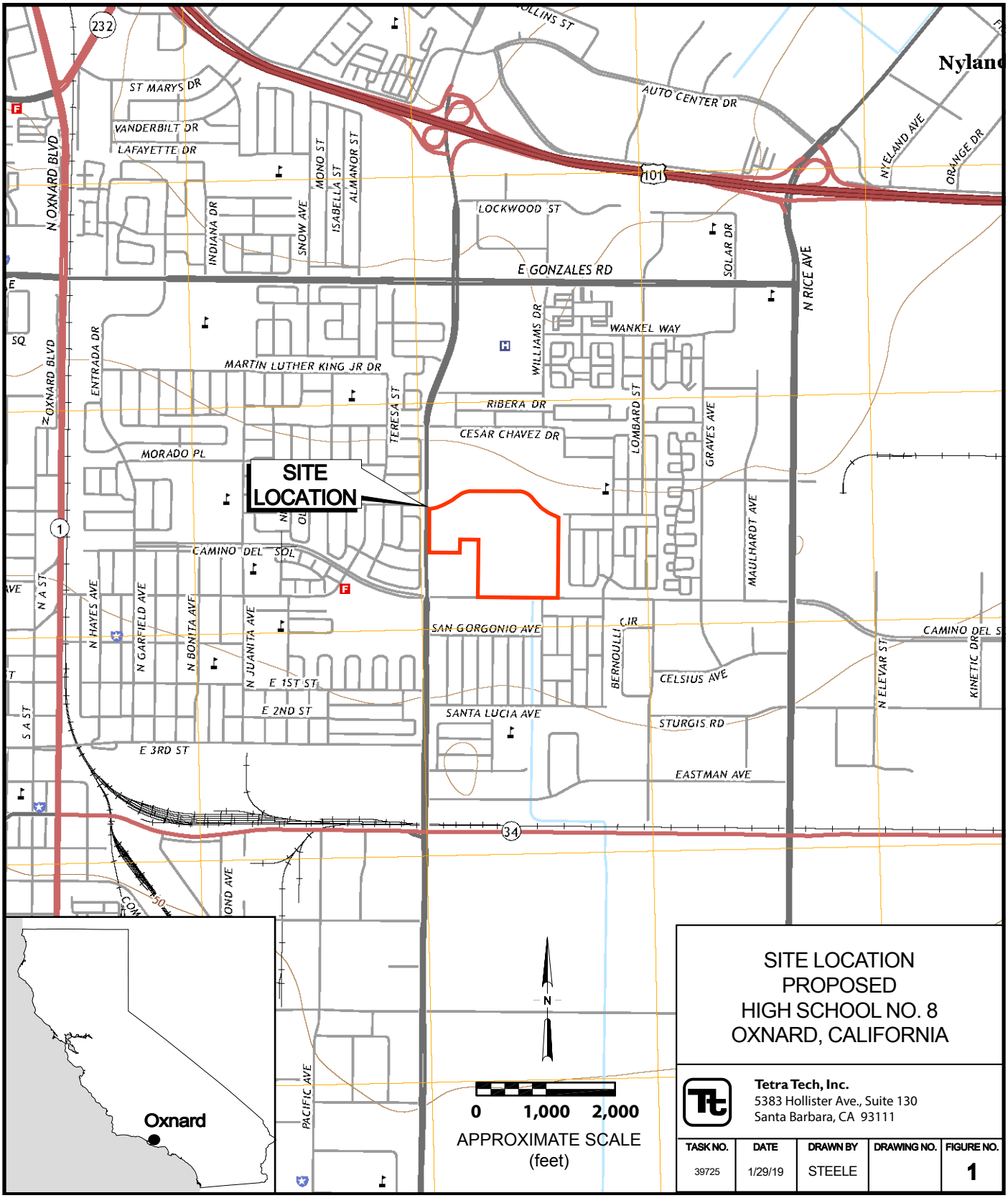
2015 *Oxnard Quadrangle California-Ventura CO., 7.5-Minute Series.*

Weather Spark

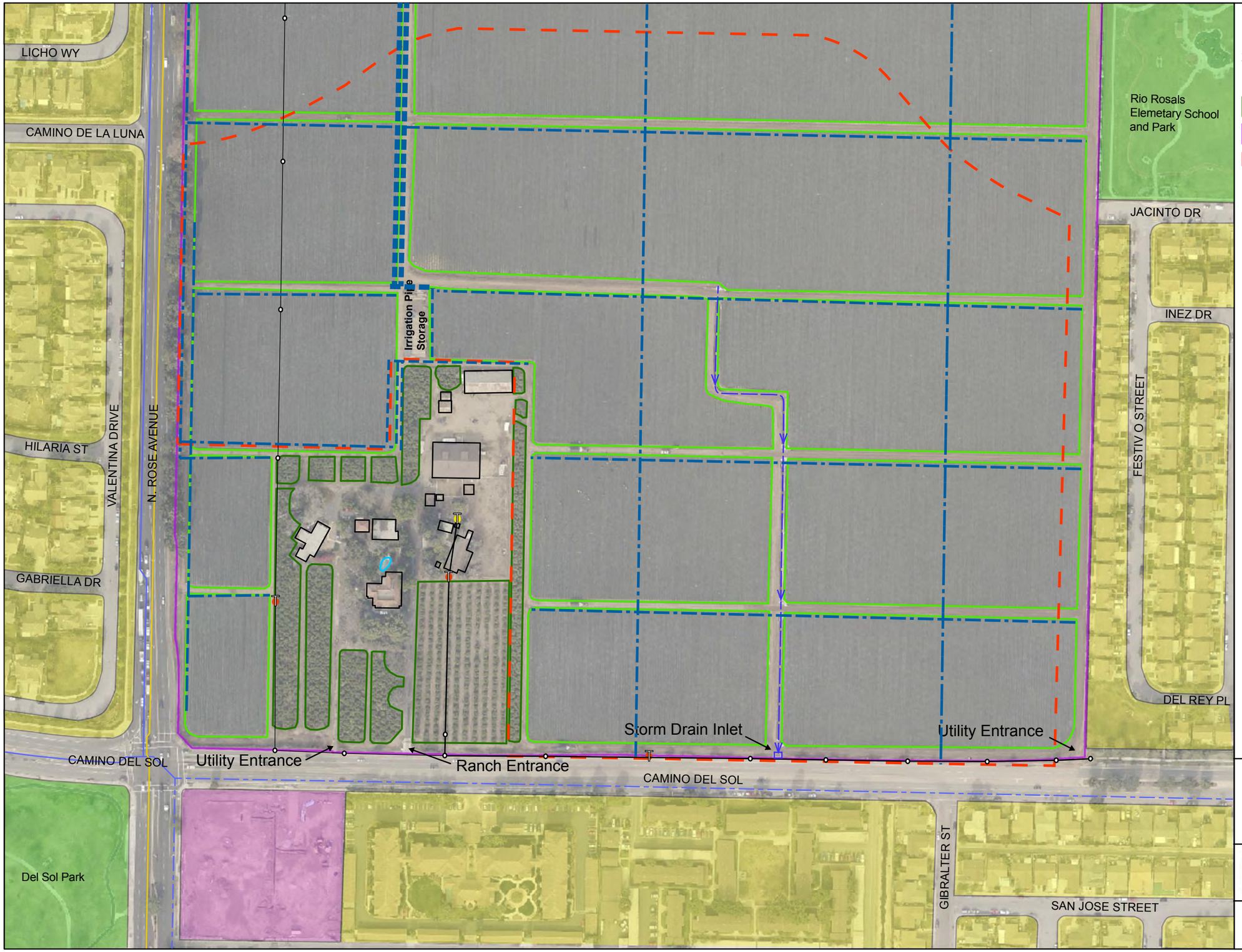
2018 Average Weather in Oxnard., California, United States. https://weatherspark.com/y/1438/Average-Weather-in-Oxnard-California-United-States-Year-Round. October 12.

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FIGURES



Notes: 1) Base Map Oxnard Quadrangle 7.5 Minutes Series, U. S. Geological Survey (2015).
2) Site Boundary Extropolated from *Site Plan* (WLC Associates 2018)



Legend

Site Features

- Building
- Pool
- Orchard
- Strawberries
- Parcel Boundary
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer Location
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inchAsbestos-Concrete Water Pipeline
- United Water Conservation District 42-inch Water Pipeline
- 12-Inch OD Water Pipeline Seving the Farmyard, Residence, and Orchard
- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Surrounding Area Land Use

- Residential
- Commercial
- Park

Note: All building and utility locations are approximate.

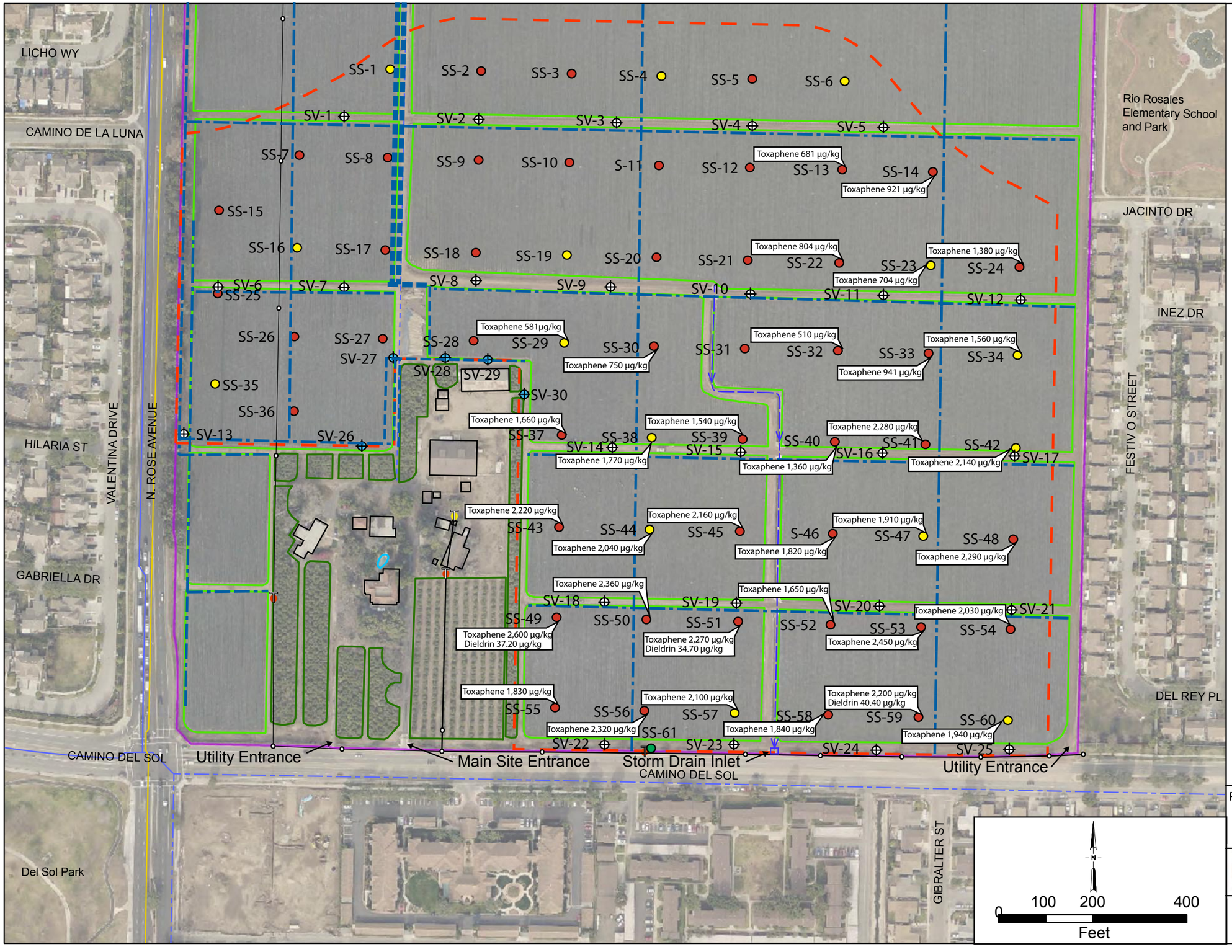
0 50 200 400 Feet

Background imagery: Ventura County, 2016

SITE PLAN
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	1/29/2019	tr/JS	10045	**2**



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
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- City of Oxnard 12-inch PVC Water Pipeline
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- Farmyard, Residence, and Orchard PVC Water Pipelines
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Proposed PEA Sample Locations

- Surface Soil Sample (0 to 0.5 ft bgs) (OCP analysis only)
- Surface Soil Sample (0 to 0.5 ft bgs) (OCP, As, SVOC PAH, and TPHde analyses)
- Surface Soil Sample (0 to 0.5 ft bgs) (PCB analysis only)
- Soil Gas Well (0 to 10 to 15 ft bgs)
- Soil/Groundwater Sample Boring and Soil Gas Well (0 to 10 to 15 ft bgs)

Notes:

1.) All features, including PEA sample, building, utility, and boundary locations are approximate.

2.) The maximum concentrations are show where duplicate soil samples were collected.

Definitions:

As - Arsenic

DTSC - California Department of Toxic Substances Control

ft bgs - feet below ground surface

OCP - Oganochlorine Pesticide

PAH - Polyaromatic Hydrocarbon

PCB - Polychlorinated Biphenyl

µg/L - Micrograms per Kilogram

SVOC - Semivolatile Organic Compond

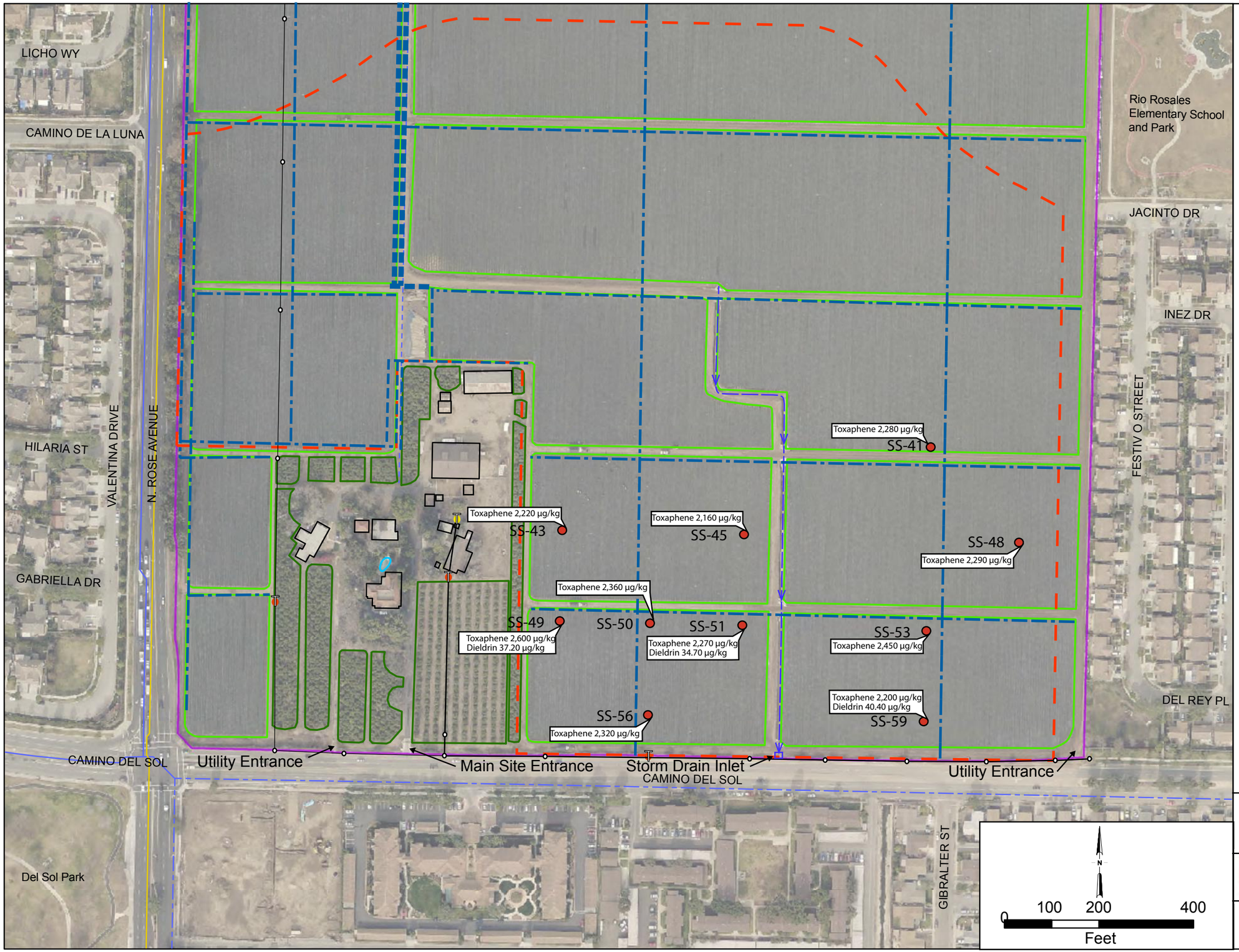
TPHde - Diesel and Heavy Oil Range Total Petroleum Hydrocarbons

Background imagery: Ventura County, 2016

PEA SOIL SAMPLE RESULTS AT CONCENTRATIONS ABOVE SCREENING LEVELS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
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Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
- Drainage Ditch
- City of Oxnard 12-inch PVC Water Pipeline
- City of Oxnard 12-inch Asbestos Concrete Water Pipeline
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- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

Proposed SSI Soil Sample Locations

- Proposed SSI subsurface soil sample locations at the PEA surface soil sample locations with the 10 highest OCP results at concentrations greater than the PEA Screening Levels. The SSI soil samples will be collected at 1 ft bgs, 1.5 ft bgs, and 2.0 ft bgs.

Relevant PEA Soil Screening Levels

Toxaphene - 490 µg/kg
Dieldrin - 34 µg/kg

Notes:
1.) All features, including SSI sample, building, utility, and boundary locations are approximate.
2.) The maximum concentrations are shown for the PEA surface soil samples where duplicate soil samples were collected.

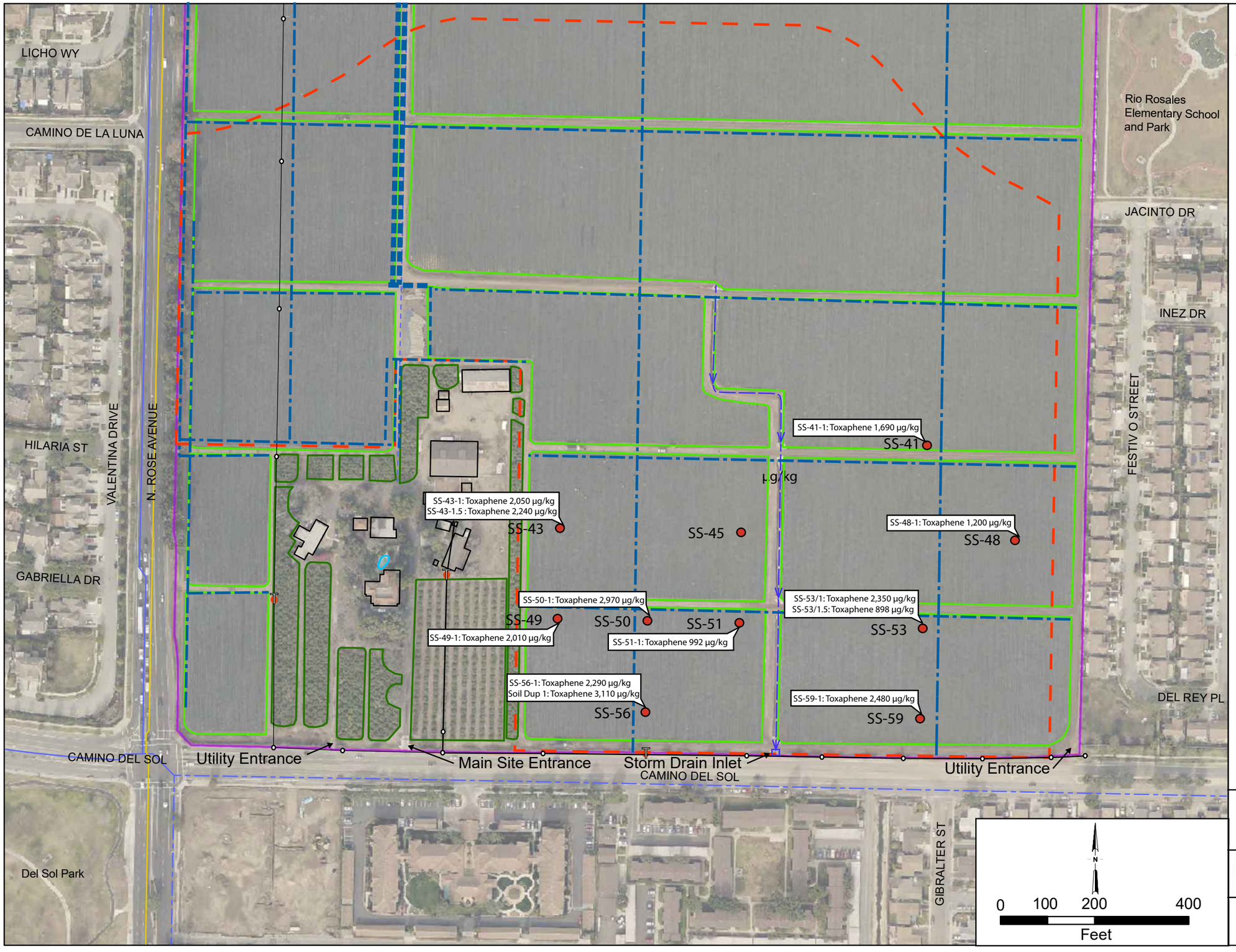
Definitions:
DTSC - Department of Toxic Substances Control
ft bgs - feet below ground surface
µg/kg - Micrograms per Kilogram
OCP - Oganochlorine Pesticide

Background imagery: Ventura County, 2016

PROPOSED SSI SOIL SAMPLE LOCATIONS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	1/25/2019	tr/JS	10045	**4**



Legend

Site Features

- Building
- Parcel Boundary
- Orchard
- Strawberries
- Approximate Site Boundary *(Source, Site Plan, WLC Architects 2018)*
- 16 kV Pole Mounted Power Lines
- Pole Mounted Transformer
- Former Pole Mounted Transformer
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- Farmyard, Residence, and Orchard PVC Water Pipelines
- Strawberry Irrigation PVC Pipelines

SSI Soil Sample Locations

- SSI subsurface soil sample locations. The SSI soil samples were collected at 1 ft bgs, 1.5 ft bgs, and 2.0 ft bgs. The SSI surface soil sample results at concentrations that exceed the PEA screening levels are shown.

Relevant PEA Soil Screening Level

Toxaphene - 490 µg/kg

Note:
All features, including SSI sample, building, utility, and boundary locations are approximate.

Definitions:
DTSC - Department of Toxic Substances Control
ft bgs - feet below ground surface
µg/kg - Micrograms per Kilogram
OCP - Oganochlorine Pesticide

Background imagery: Ventura County, 2016

SSI SOIL SAMPLE RESULTS
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	3/4/2019	tr/JS	10045	5

Depth (ft bgs)	Soil Boring Location[a]												
	SS-41	SS-43	SS-45	SS-48	SS-49		SS-50	SS-51		SS-53	SS-56	SS-59	
0	2,280	2,220	2,160	2,290	2,450	37.20	2,300	2,270	34.70	2,450	2,320	2,200	40.40
1	1,690	2,050	438	1,200	2,010	8.59	2,970	992	6.82	2,350	2,290 3,110[b]	2,480	16.00
1.5	161	2,240	NS	97	235	2.62	340	124	1.6	898	258 379[b]	369	4.11
2		280	NS	NS	NS	NS	NS	NS	NS	462 240[b]	NS	NS	NS

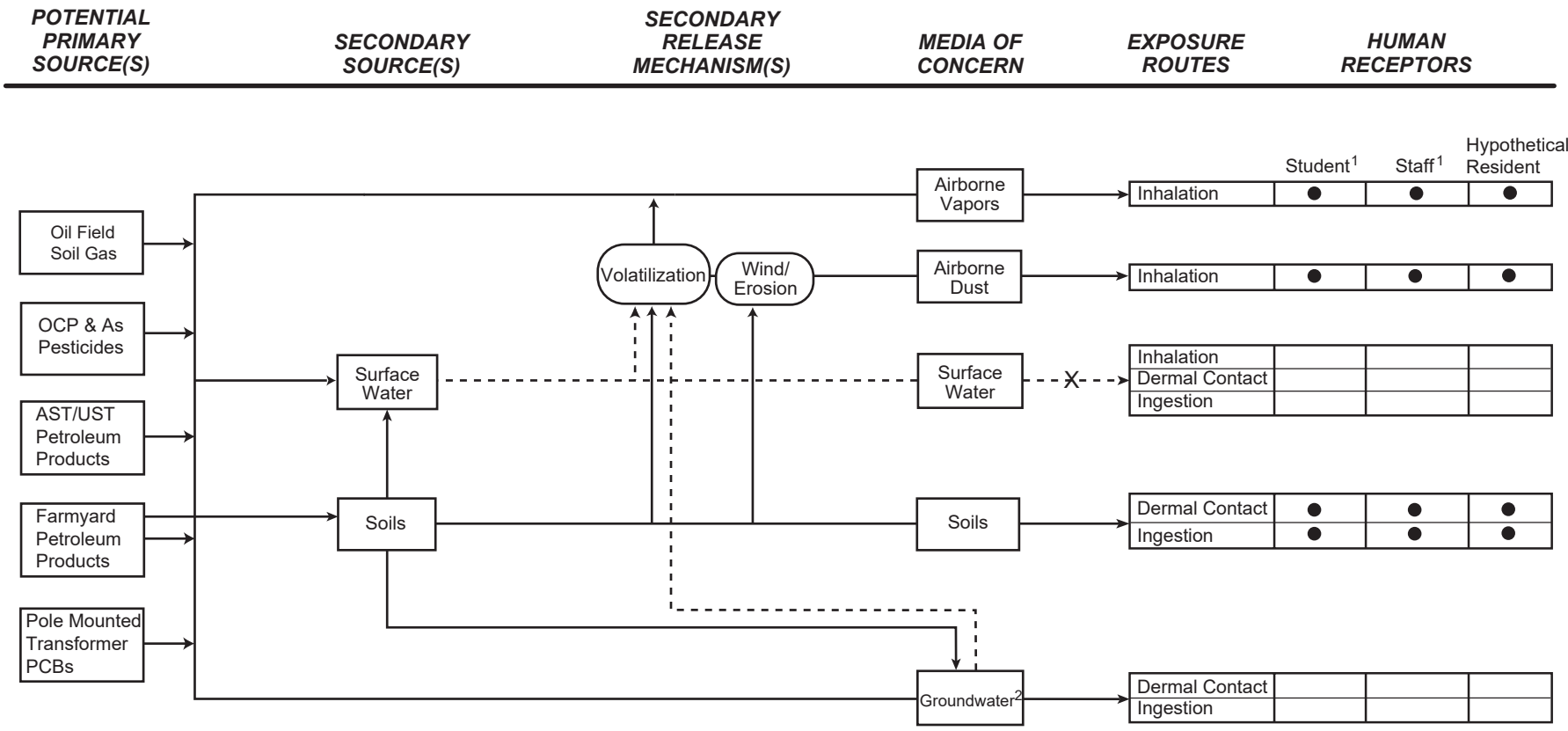
Notes:

a - The soil boring locations are shown on Figure 5.
b - duplicate sample
bgs - below ground surface
ft - feet
NS - No sample collected.
=Approximate vertical extent of toxaphene in soil at concentrations above screening level.
=Approximate vertical extent of dieldrin in soil at concentrations above screening level.
2,220 =Toxaphene soil sample concentration in micrograms per kilogram.
34.7 =Dieldrin soil sample concentration in micrograms per kilogram.

SSI SOIL BORING SCHEMATIC
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
39725	3/15/2019	JRS	10045	6



CONCEPTUAL SITE MODEL FOR
HUMAN RECEPTORS
SCHOOL SITE EXPOSURE SCENARIO
HIGH SCHOOL NO. 8
OXNARD, CALIFORNIA

Tetra Tech, Inc.
5383 Hollister Ave, Suite 130
Santa Barbara, CA 93111

TASK NO.	DATE	DRAWN BY	FIGURE NO.
39275	3/12/19	Steele	7

● Potentially complete exposure route.

1 Students and Staff are assumed to be exposed via inhalation of vapors and dust, ingestion of soil, and dermal contact with soil indoors and outdoors.

2 Groundwater at depth of 20 feet below ground surface.

→ Potentially complete exposure pathway

- - - → Likely Incomplete exposure pathway

- - X - → Incomplete exposure pathway

TABLES

Table 1
Preiminalry Environmental Assessment
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-1**	**SS-1**	**SS-2**	**SS-3**	**SS-4**	**SS-5**	**SS-6**	**SS-7**
Sample ID					**SS-1-0**	**Soil Dupe 1**	**SS-2-0**	**SS-3-0**	**SS-4-0**	**SS-5-0**	**SS-6-0**	**SS-7-0**
Collection Date					**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	**1.00**	ND<1.0	**1.51**	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.63**	**7.49**	**4.61**	**3.46**	**1.96**	**1.53**	**7.23**	**2.71**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**18.80**	**54.90**	**44.10**	**43.20**	**32.50**	**31.10**	**75.30**	**19.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**23.50**	**29.70**	**56.80**	**53.70**	**33.30**	**56.20**	**156.00**	**33.20**
Dieldrin	1.0	2.0	34	c, d	<1.0	ND<1.0	<1.0	**1.13**	ND<1.0	ND<1.0	**2.72**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	<1.0	ND<1.0	<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**266.00**	ND<85.0	**125.00**	**246.00**	**257.00**	**325.00**	**528.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-8**	**SS-9**	**SS-9**	**SS-10**	**SS-10**	**SS-11**	**SS-12**	**SS-12**
Sample ID					**SS-8-0**	**SS-9-0**	**Soil Dupe 2**	**SS-10-0**	**Soil Dup 2-2**	**SS-11-0**	**SS-12-0**	**Soil Dup 2-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/18/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.49**	**1.01**	ND<1.0	ND<1.0	**6.53**	ND<1.0	ND<1.0	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	ND<1.0	ND<1.0	**2.92**	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**1.84**	**3.18**	**8.65**	**4.93**	**8.80**	**4.82**	**3.29**	**2.56**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	ND<1.0	**38.60**	**76.30**	**36.00**	**65.90**	**32.40**	**25.40**	**25.80**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**16.70**	**63.10**	**48.10**	**60.20**	**75.50**	**54.20**	**43.30**	**43.40**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**1.06**	**1.41**	ND<1.0	**2.54**	**2.07**	ND<1.0	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**3.61**	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**130.00**	ND<85.0	**209.00**	**372.00**	**199.00**	**214.00**	**223.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Preiminalry Environmental Assessment
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-13**	**SS-14**	**SS-15**	**SS-16**	**SS-17**	**SS-18**	**SS-19**	**SS-20**
Sample ID					**SS-13-0**	**SS-14-0**	**SS-15-0**	**SS-16-0**	**SS-17-0**	**SS-18-0**	**SS-19-0**	**SS-20-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**2.50**	**4.70**	ND<1.0	ND<1.0	**1.52**	**1.21**	ND<1.0	**1.16**
Chlordane (alpha)	1.0	2.0	NA		**1.37**	**2.16**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**10.30**	**16.30**	**2.23**	**4.42**	**4.34**	**5.05**	**3.18**	**3.61**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**104.00**	**250.00**	**21.80**	**30.50**	**41.00**	**34.80**	**29.00**	**30.60**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**226.00**	**405.00**	**25.10**	**35.00**	**33.20**	**38.40**	**44.90**	**39.50**
Dieldrin	1.0	2.0	34	c, d	**5.75**	**6.18**	ND<1.0	ND<1.0	**1.09**	**1.11**	**1.31**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**1.13**	**2.54**	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**681.00**	**921.00**	ND<85.0	ND<85.0	**282.00**	**133.00**	**125.00**	**198.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-21**	**SS-22**	**SS-23**	**SS-24-0**	**SS-25-0**	**SS-26**	**SS-27-0**	**SS-28-0**
Sample ID					**SS-21-0**	**SS-22-0**	**SS-23-0**	**SS-24-0**	**SS-25-0**	**SS-26-0**	**SS-27-0**	**SS-28-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**1.18**	**2.65**	**5.47**	**3.25**	ND<1.0	**2.90**	**1.81**	**2.38**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	ND<1.0	**2.51**	**1.92**	ND<1.0	**1.29**	ND<1.0	**1.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.53**	**11.20**	**15.90**	**23.90**	**3.11**	**3.96**	**4.80**	**10.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**26.10**	**104.00**	**150.00**	**369.00**	**43.90**	**48.60**	**66.90**	**50.10**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**41.80**	**216.00**	**334.00**	**542.00**	**35.80**	**31.90**	**44.10**	**43.00**
Dieldrin	1.0	2.0	34	c, d	**1.08**	**3.13**	**6.60**	**9.57**	ND<1.0	ND<1.0	**1.03**	**1.65**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**1.68**	**2.96**	**1.33**	ND<1.0	**1.61**	ND<1.0	**1.38**
Toxaphene	85.0	170.0	490	c, d	**237.00**	**804.00**	**704.00**	**1,380.00**	ND<85.0	ND<85.0	ND<85.0	**289.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Preiminalry Environmental Assessment
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-29-0**	**SS-29-0**	**SS-30**	**SS-31**	**SS-32**	**SS-33**	**SS-34**	**SS-35**
Sample ID					**SS-29-0**	**Soil Dup 3**	**SS-30-0**	**SS-31-0**	**SS-32-0**	**SS-33-0**	**SS-34-0**	**SS-35-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**5.03**	**6.53**	**4.67**	**3.04**	**3.22**	**9.87**	**10.90**	**1.27**
Chlordane (alpha)	1.0	2.0	NA		**2.98**	**2.92**	**2.34**	**1.57**	**1.66**	**4.66**	**5.67**	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**11.50**	**8.80**	**9.54**	**6.98**	**11.70**	**24.50**	**34.80**	**3.20**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**103.00**	**65.90**	**96.70**	**51.60**	**97.40**	**337.00**	**405.00**	**39.50**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**103.00**	**75.50**	**96.20**	**83.40**	**102.00**	**520.00**	**594.00**	**33.60**
Dieldrin	1.0	2.0	34	c, d	**2.71**	**2.54**	**4.60**	**2.64**	**4.25**	**9.42**	**15.90**	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	**2.05**	**3.61**	**2.33**	**1.47**	**1.56**	**5.21**	**5.25**	ND<1.0
Toxaphene	85.0	170.0	490	c, d	**581.00**	**372.00**	**750.00**	**417.00**	**510.00**	**941.00**	**1,560.00**	ND<85.0
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-36**	**SS-37**	**SS-38**	**SS-39**	**SS-40**	**SS-41**	**SS-42**	**SS-43**
Sample ID					**SS-36-0**	**SS-37-0**	**SS-38-0**	**SS-39-0**	**SS-40-0**	**SS-41-0**	**SS-42-0**	**SS-43-0**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	ND<1.0	**18.60**	**20.80**	**12.70**	**13.00**	**20.30**	**46.50**	**20.80**
Chlordane (alpha)	1.0	2.0	NA		ND<1.0	**9.72**	**10.00**	**6.66**	**6.36**	**10.70**	**24.40**	**8.29**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**2.19**	**30.90**	**39.60**	**28.30**	**23.90**	**41.60**	**51.90**	**45.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**25.70**	**419.00**	**345.00**	**178.00**	**256.00**	**363.00**	**475.00**	**573.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**17.70**	**406.00**	**415.00**	**290.00**	**361.00**	**638.00**	**607.00**	**513.00**
Dieldrin	1.0	2.0	34	c, d	ND<1.0	**10.70**	**13.80**	**7.89**	**9.24**	**18.10**	**16.20**	**11.00**
Chlordane (gamma)	1.0	2.0	1,700	c, d	ND<1.0	**8.91**	**10.80**	**6.02**	**6.65**	**9.64**	**22.10**	**12.50**
Toxaphene	85.0	170.0	490	c, d	ND<85.0	**1,660.00**	**1,770.00**	**1,540.00**	**1,360.00**	**2,280.00**	**2,140.00**	**2,220.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 1
Preiminalry Environmental Assessment
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-44**	**SS-45**	**SS-46**	**SS-47**	**SS-48**	**SS-49**	**SS-49**
Sample ID					**SS-44-0**	**SS-45-0**	**SS-46-0**	**SS-47-0**	**SS-48-0**	**SS-49-0**	**Soil Dupe 3-1**
Collection Date					**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/17/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**24.80**	**28.70**	**24.60**	**19.40**	**25.70**	**25.00**	**31.80**
Chlordane (alpha)	1.0	2.0	NA		**12.40**	**14.40**	**14.10**	**11.20**	**13.90**	**12.60**	**16.10**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**60.90**	**37.20**	**36.40**	**40.70**	**69.80**	**36.40**	**74.60**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**443.00**	**352.00**	**209.00**	**370.00**	**562.00**	**452.00**	**761.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**441.00**	**375.00**	**428.00**	**520.00**	**663.00**	**437.00**	**814.00**
Dieldrin	1.0	2.0	34	c, d	**13.80**	**19.30**	**14.20**	**12.10**	**24.00**	**29.20**	**37.20**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**12.40**	**14.30**	**10.50**	**8.16**	**11.80**	**12.40**	**15.70**
Toxaphene	85.0	170.0	490	c, d	**2,040.00**	**2,160.00**	**1,820.00**	**1,910.00**	**2,290.00**	**1,560.00**	**2,600.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-50**	**SS-50**	**SS-51**	**SS-51**	**SS-52**	**SS-52**	**SS-53**
Sample ID					**SS-50-0**	**Soil Dupe 3-2**	**SS-51-0**	**Soil Dupe 3-3**	**SS-52-0**	**Soil Dupe 3-4**	**SS-53-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**27.20**	**30.80**	**40.30**	**53.20**	**29.00**	**40.30**	**45.10**
Chlordane (alpha)	1.0	2.0	NA		**13.90**	**14.10**	**19.00**	**29.80**	**14.40**	**18.70**	**21.70**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**62.90**	**63.20**	**48.70**	**64.20**	**57.70**	**70.20**	**44.90**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**576.00**	**660.00**	**468.00**	**485.00**	**256.00**	**280.00**	**453.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**547.00**	**646.00**	**489.00**	**499.00**	**301.00**	**370.00**	**721.00**
Dieldrin	1.0	2.0	34	c, d	**31.70**	**25.60**	**33.80**	**34.70**	**23.50**	**12.10**	**19.90**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**13.30**	**16.70**	**21.30**	**23.40**	**14.60**	**21.60**	**23.40**
Toxaphene	85.0	170.0	490	c, d	**2,360.00**	**2,300.00**	**2,270.00**	**2,180.00**	**1,540.00**	**1,650.00**	**2,450.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND

Table 1
Preiminalry Environmental Assessment
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-54**	**SS-55**	**SS-56**	**SS-57**	**SS-58**	**SS-59**
Sample ID					**SS-54-0**	**SS-55-0**	**SS-56-0**	**SS-57-0**	**SS-58-0**	**SS-59-0**
Collection Date					**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**	**9/18/2018**
Collection Depth					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**48.70**	**22.70**	**36.70**	**35.00**	**47.00**	**53.40**
Chlordane (alpha)	1.0	2.0	NA		**24.50**	**11.30**	**17.90**	**14.80**	**21.80**	**25.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**50.20**	**80.20**	**63.10**	**65.40**	**47.60**	**72.30**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**550.00**	**511.00**	**523.00**	**534.00**	**383.00**	**427.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**540.00**	**434.00**	**490.00**	**475.00**	**491.00**	**652.00**
Dieldrin	1.0	2.0	34	c, d	**32.70**	**14.80**	**31.90**	**16.80**	**19.60**	**40.40**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**24.20**	**11.40**	**18.80**	**20.20**	**25.20**	**28.40**
Toxaphene	85.0	170.0	490	c, d	**2,030.00**	**1,830.00**	**2,320.00**	**2,100.00**	**1,840.00**	**2,200.00**
All other OCPs[e]					ND	ND	ND	ND	ND	ND

Location ID					**SS-60**
Sample ID					**SS-60-0**
Collection Date					**9/18/2018**
Collection Depth					**0.0**
Dilution					**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	**35.20**
Chlordane (alpha)	1.0	2.0	NA		**16.00**
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	**63.70**
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	**487.00**
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	**505.00**
Dieldrin	1.0	2.0	34	c, d	**27.50**
Chlordane (gamma)	1.0	2.0	1,700	c, d	**19.20**
Toxaphene	85.0	170.0	490	c, d	**1,940.00**
All other OCPs[e]					ND

Table 1
Preliminary Environmental Assessment
Organochlorine Pesticides in Soil
High School No. 8
Oxnard, California

Notes:

a - Organochlorine pesticides analyzed by EPA method 8081A.
b - non carcinogenic
c - carcinogenic
d - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
e - Table 3 lists compound-specific MDLs and PQLs for analytes that were not detected.
MDL - method detection limit
ND - not detected
PQL - practical quantitation limit
SL - Screening Level
The analytical results in red font are J-flagged, where concentration of the analyte detected is between MDL and PQL.
The analyte concentrations in yellow highlighted cells exceed their relevant screening level.

Table 2
Supplemental Site Investigation
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-41	SS-41-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-41	SS-41-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-41	SS-41-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-43	SS-43-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-43	SS-43-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-43	SS-43-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-45	SS-45-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-45	SS-45-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-45	SS-45-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-48	SS-48-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-48	SS-48-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-48	SS-48-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-49	SS-49-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI

Table 2
Supplemental Site Investigation
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-49	SS-49-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-49	SS-49-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-50	SS-50-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-50	SS-50-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-50	SS-50-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-51	SS-51-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-51	SS-51-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-51	SS-51-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-53	SS-53-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-53	SS-53-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-53	SS-53-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-56	SS-56-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-56	**Soil Dup 1**[2]	1	Subsurface soil	Subsurface soil	Field duplicate for OCPs.	Quality control

Table 2
Supplemental Site Investigation
Soil Sampling Schedule
High School No. 8 PEA
Oxnard, California

Sample Location	Sample ID	Sample Depth (feet bgs)	Medium	Analysis	Sample Type	Rationale
SS-56	SS-56-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-56	SS-56-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-59	SS-59-1	1	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI
SS-59	SS-59-1.5	1.5	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1 ft. bgs contains OCPs ≥ DTSC Screening Levels.
SS-59	SS-59-2.0	2	Subsurface soil	EPA method 8081A for OCPs	Discrete	Subsurface Soil SSI. Analyze if sample from 1.5 ft. bgs contains OCPs ≥ DTSC Screening Levels.

Notes:

1 - The sample locations are shown on Figure 4.

2 - A total of 31 subsurface soil samples were collected (30 discrete and one duplicate samples). For each of the ten sample locations, the subsurface soil collected from 1.0 foot bgs plus one duplicate soil sample was initially analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-59-1, and Sol Dup 1 on Table 2. The samples collected at 1.5 feet bgs were analyzed if the corresponding sample from 1.0 foot bgs contains OCPs at concentrations that exceed the PEA screening levels, and the samples from 2.0 feet bgs were analyzed if the corresponding sample from 1.5 feet bgs contains OCPs at concentrations that exceed the PEA screening levels. A total of 24 samples were analyzed with 21 discrete and three duplicate samples. The sample volume from each soil sample collected was large enough to run a duplicate sample so that three duplicate samples were analyzed. The laboratory analytical reports for the samples analyzed are presented in Table 4.

bgs - below ground surface

EPA - U. S. Environmental Protection Agency

OCP - organochlorine pesticide

SSI - Supplemental Site Investigation

Table 3
Summary of Analytes and Detection Limits for Soil Samples
High School No. 8 SSI

ANALYTE	MDL	PQL	UNITS	LOWER CONTROL LIMIT %	UPPER CONTROL LIMIT %	RPD LIMIT	Residential Soil Screening Level			UNITS
							Cancer	Noncancer	Note	
Organochlorine Pesticide Compounds by EPA 8081A										
Container: *Clear Wide Mouth Glass, Teflon Lined Cap*			***Amount Required:*** *120 gr*							
Preservation: *Cool, 4°C*			***Holding Time:*** *Extraction: 14 days* *Analysis: 40 days*							
Aldrin	0.01	0.05	mg/Kg	40	140	40	0.039	NA	1	mg/Kg
Chlordane	0.04	0.2	mg/Kg				1.7	NA	1	mg/Kg
alpha-Chlordane	0.01	0.05	mg/Kg				NA	NA		
4,4'-DDD (DDD)	0.01	0.05	mg/Kg				NA	1.90	1	mg/Kg
4,4'-DDE (DDE)	0.01	0.05	mg/Kg				2	NA	1	mg/Kg
4,4'-DDT (DDT)	0.01	0.05	mg/Kg	40	140	40	1.90	NA	1	mg/Kg
Dieldrin	0.01	0.05	mg/Kg	40	140	40	0.03	NA	1	mg/Kg
Endosulfan 1	0.01	0.05	mg/Kg				NA	470	1	mg/Kg
Endosulfan 11	0.01	0.05	mg/Kg				NA	470	1	mg/Kg
Endosulfan sulfate	0.01	0.05	mg/Kg				NA	NA		
Endrin	0.01	0.05	mg/Kg	40	140	40	NA	19	1	mg/Kg
Endrin aldehyde	0.01	0.05	mg/Kg				NA	NA		
Endrin ketone	0.01	0.05	mg/Kg				NA	NA		mg/Kg
Gamma-Chlordane	0.01	0.05	mg/Kg				1.70	NA	1	mg/Kg
Heptachlor	0.01	0.05	mg/Kg	40	140	40	0.13	NA	1	mg/Kg
Heptachlor epoxide	0.01	0.05	mg/Kg				0.07	NA	1	mg/Kg
alpha-Hexachlorocyclohexane (Alpha-BHC)	0.01	0.05	mg/Kg				0.086	NA	1	mg/Kg
Beta- Hexachlorocyclohexane (Betta-BHC)	0.01	0.05	mg/Kg				0.30	NA	1	mg/Kg
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.01	0.05	mg/Kg	40	140	40	0.57	NA	1	mg/Kg
Methoxychlor	0.01	0.05	mg/Kg				NA	320	1	mg/Kg
Toxaphene	0.04	0.2	mg/Kg				0.49	NA	1	mg/Kg
8081A surrogates										
Tetrachloro-m-xylene			mg/Kg	*30*	*150*		NA	NA		
Decachlorobiphenyl			mg/Kg	*30*	*150*		NA	NA		

Notes:
1 - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018a).
EPA - U.S. Environmental Protection Agency
MDL - method detection limit
PQL - practical quantitation limit
NA - not applicable
mg/kg - milligrams per kilogram
RPD - relative percent difference

Table 4
Supplemental Site Investigation
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-41**	**SS-41**	**SS-43**	**SS-43**	**SS-43**	**SS-45**	**SS-48**	**SS-48**
Sample ID					**SS-41-1**	**SS-41-1.5**	**SS-43-1**	**SS-43-1.5**	**SS-43-2**	**SS-45-1**	**SS-48-1**	**SS-48-1.5**
Collection Date					**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**
Collection Depth (ft bgs)					**1.0**	**1.5**	**1.0**	**1.5**	**2.0**	**1.0**	**1.0**	**1.5**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	18.9	1.71	22.7	35.1	3.33	6.21	17	ND<1.0
Chlordane (alpha)	1.0	2.0	NA		9.03	ND<1.0	11.4	16.7	1.45	3.43	8.62	ND<1.0
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	7.8	ND<1.0	5.33	28.7	2.26	1.74	8.6	ND<1.0
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	141	15.1	305	460	55.7	48.3	267	14.9
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	474	29.5	292	538	72	40.5	222	8.31
Dieldrin	1.0	2.0	34	c, d	9.33	1.51	8.18	13.9	ND<1.0	2.49	7.63	1.86
Endrin	1.0	2.0	19,000	b, d	46.9	5.95	80.7	115	15.4	9.61	54.6	4.51
Endrin aldehyde	1.0	2.0	NA		12.6	ND<1.0	11.7	16.2	1.36J	3.15	8.83	ND<1.0
Chlordane (gamma)	1.0	2.0	1,700	c, d	9.83	ND<1.0	11.3	18.4	1.88J	2.78	8.33	ND<1.0
Toxaphene	85.0	170.0	490	c, d	1,690	161	2,050	2,240	280	438	1,200	97
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Location ID					**SS-49**	**SS-49**	**SS-50**	**SS-50**	**SS-51**	**SS-51**	**SS-53**	**SS-53**
Sample ID					**SS-49-1**	**SS-49-1.5**	**SS-50-1**	**SS-50-1.5**	**SS-51-1**	**SS-51-1.5**	**SS-53-1**	**SS-53-1.5**
Collection Date					**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**
Collection Depth (ft bgs)					**1.0**	**1.5**	**1.0**	**1.5**	**1.0**	**1.5**	**1.0**	**1.5**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	39.6	4.83	43	4.31	14.1	1.27	45.4	14.8
Chlordane (alpha)	1.0	2.0	NA		19.4	2.39	20.1	2.33	7.44	ND<1.0	21.9	6.84
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	14.6	2.37	20.8	1.76	5.51	ND<1.0	15.5	5.07
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	439	67.2	495	62.1	143	13.1	270	164
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	339	64.4	366	52.6	102	11.5	356	184
Dieldrin	1.0	2.0	34	c, d	8.59	2.62	11.9	3.54	6.82	1.6	10.8	10.9
Endrin	1.0	2.0	NA		75.7	17.9	102	11.8	22	2.58	67.9	33.8
Endrin aldehyde	1.0	2.0	1,700	c, d	9.33	1.52	18.1	2.06	4.89	ND<1.0	29	11.5
Chlordane (gamma)	1.0	2.0	1,700	c, d	20.2	2.44	22.9	1.98	6.63	ND<1.0	23.5	7.91
Toxaphene	85.0	170.0	490	c, d	2,010	235	2,970	340	992	124	2,350	898
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Table 4
Supplemental Site Investigation
Organochlorine Pesticides in Soil (µg/kg)
High School No. 8
Oxnard, California

Location ID					**SS-53**	**SS-53**	**SS-56**	**SS-56**	**SS-56**	**SS-56**	**SS-59**	**SS-59**
Sample ID					**SS-53-2.0**	**Soil DUP 3**	**SS-56-1**	**Soil DUP 1**	**SS-56-1.5**	**Soil DUP 2**	**SS-59-1**	**SS-59-1.5**
Collection Date					**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**	**2/18/2019**
Collection Depth (ft bgs)					**2.0**	**2.0**	**1.0**	**1.0**	**1.5**	**1.5**	**1.0**	**1.5**
Dilution					**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Organochlorine Pesticide[a]	MDL	PQL	SL	Notes	Result	Result	Result	Result	Result	Result	Result	Result
Chlordane (Total)	1.0	2.0	1,700	c, d	5.33	2.48	30.3	44.4	2.74	4.21	44.4	3.74
Chlordane (alpha)	1.0	2.0	NA		3.24	1.59J	15.5	22.4	1.53	2.21	21.1	1.65
4,4'-DDD (DDD)	1.0	2.0	1,900	b, d	3.87	4.15	13.2	21.8	2.07	4.79	17.6	ND<1.0
4,4'-DDE (DDE)	1.0	2.0	2,000	c, d	70.6	47	385	585	42.9	69.4	322	82.7
4,4'-DDT (DDT)	1.0	2.0	1,900	c, d	84	45.8	261	422	29.1	48.3	463	91.4
Dieldrin	1.0	2.0	34	c, d	2.66	1.49J	9.99	33.3	2.57	2.86	16	4.11
Endrin	1.0	2.0	NA		20	12	69.7	95.9	7.41	12.2	70.3	21
Endrin aldehyde	1.0	2.0	1,700	c, d	2.59	1.39	16.4	15.8	1.69	2.82	10.1	1.8
Chlordane (gamma)	1.0	2.0	1,700	c, d	2.09	ND<1.0	14.8	22	1.21	2	23.3	2.09
Toxaphene	85.0	170.0	490	c, d	462	240	2,290	3,110	258	379	2,480	369
All other OCPs[e]					ND	ND	ND	ND	ND	ND	ND	ND

Notes:
a - Organochlorine pesticides analyzed by EPA method 8081A.
b - non carcinogenic
bgs - below ground surface
c - carcinogenic
d - Residential Soil Screening Level is the USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018).
e - Table 3 lists compound-specific MDLs, PQLs, and Screening Levels for analytes that were not detected.
ft - feet
MDL - method detection limit
ND - not detected
PQL - practical quantitation limit
SL - Screening Level
The analytical results in red font are J-flagged, where concentration of the analyte detected is between MDL and PQL.
The analyte concentrations in yellow highlighted cells exceed their relevant screening level.

Table 5
Maximum Estimated Risk for Potential Residential Vapor Intrusion Exposures from Soil Gas
(Sampling Depth = 5 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	Residential Soil Gas Screening Levels (µg/L)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.042	3.1	4.8E-07	6.5E-03
Toluene	0.070	----	310	----	2.3E-04
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-07	0.007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by the DTSC default future residential soil gas attenuation factor of 0.001 (DTSC 2011).

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

[4] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 6
Maximum Estimated Risk for Potential School Vapor Intrusion Exposures from Soil Gas
(Sampling Depth = 5 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	School-Based Soil Gas Screening Levels (µg/L)[1]		School-Based Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.390	29.1	5.1E-08	6.9E-04
Toluene	0.070	----	2,914	----	2.4E-05
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-08	0.0007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by a school-specific soil gas attenuation factor of 0.000106. Refer to Section 8.4 (Soil Gas Screening Levels) of the text for an explanation of how the school-specific soil gas attenuation factor was derived.

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

[4] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 7
Maximum Estimated Risk for Potential Residential Vapor Intrusion Exposures from Soil Gas
(Sampling Depth = 15 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	Residential Soil Gas Screening Levels (µg/L)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.042	3.1	4.8E-07	6.5E-03
Toluene	0.040	----	310	----	1.3E-04
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-07	0.007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by the DTSC default future residential soil gas attenuation factor of 0.001 (DTSC 2011).

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

[4] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 8
Maximum Estimated Risk for Potential School Vapor Intrusion Exposures from Soil Gas
(Sampling Depth = 15 feet)
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (µg/L)	School-Based Soil Gas Screening Levels (µg/L)[1]		School-Based Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Naphthalene	0.020	0.39	29	5.1E-08	6.9E-04
Toluene	0.040	----	2,914	----	1.4E-05
Maximum Estimated Cumulative Risk and Hazard Index[4]				5.E-08	0.0007

Definitions:

µg/L - micrograms per liter

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Screening levels are derived by dividing residential DTSC-Modified Air Screening Levels, if available, or USEPA Region 9 residential Air RSLs (USEPA 2018) by a school-specific soil gas attenuation factor of 0.000106. Refer to Section 8.4 (Soil Gas Screening Levels) of the text for an explanation of how the school-specific soil gas attenuation factor was derived.

[2] Estimated cancer risk = (soil gas concentration/cancer soil gas screening level) x 10^{-6}.

[3] Estimated hazard = (soil gas concentration/non-cancer soil gas screening level).

[4] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 9
Maximum Estimated Risk for Potential Residential Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	Residential Soil Screening Levels (mg/kg)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	0.44	35	1.2E-07	1.5E-03
4,4'-DDD (DDD)	0.080	2.3	1.9	3.5E-08	4.2E-02
4,4'-DDE (DDE)	0.62	2.0	23	3.1E-07	2.7E-02
4,4'-DDT (DDT)	0.72	1.9	37	3.8E-07	1.9E-02
Dieldrin	0.040	0.034	3.2	1.2E-06	1.3E-02
Endrin	0.115	----	19.0	----	6.1E-03
Endrin aldehyde	0.029	----	19.0	----	1.5E-03
Toxaphene	2.97	0.49	5.7	6.1E-06	5.2E-01
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[4]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[5]				8.E-06	0.7

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Screening value for pyrene used as a surrogate.

[5] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 10
Estimated Risk for Potential Residential Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	Residential Soil Screening Levels (mg/kg)[2]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Estimated Risk[3]	Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	0.44	35	5.2E-08	6.5E-04
4,4'-DDD (DDD)	0.032	2.30	2	1.4E-08	1.7E-02
4,4'-DDE (DDE)	0.31	2.0	23	1.5E-07	1.3E-02
4,4'-DDT (DDT)	0.36	1.9	37	1.9E-07	9.7E-03
Dieldrin	0.011	0.034	3.2	3.3E-07	3.5E-03
Endrin	0.063	----	19.0	----	3.3E-03
Endrin aldehyde	0.011	----	19.0	----	5.6E-04
Toxaphene	1.5	0.49	5.7	3.1E-06	2.6E-01
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[5]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Estimated Cumulative Risk and Hazard Index[6]				4.E-06	0.3

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 11
Maximum Estimated Risk for Potential School-Based Student Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	School-Based Student Soil Screening Levels (mg/kg)[1]		School-Based Student Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	9.05	352	5.9E-09	1.5E-04
4,4'-DDD (DDD)	0.080	54.5	21.1	1.5E-09	3.8E-03
4,4'-DDE (DDE)	0.62	38.0	211	1.6E-08	2.9E-03
4,4'-DDT (DDT)	0.72	38.5	352	1.9E-08	2.0E-03
Dieldrin	0.040	0.815	35	5.0E-08	1.2E-03
Endrin	0.115	----	211	----	5.5E-04
Endrin aldehyde	0.029	----	211	----	1.4E-04
Toxaphene	2.97	10.05	55	3.0E-07	5.4E-02
PAHs					
Fluoranthene	0.010	----	22,000	----	4.5E-07
Phenanthrene[4]	0.012	----	17,950	----	6.5E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[5]				4.E-07	0.1

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for student assumed to be at high school for four years (ages 14 -18 years old for grades 9 -12). TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Screening value for pyrene used as a surrogate.

[5] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 12
Estimated Risk for Potential School-Based Student Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	School-Based Student Soil Screening Levels (mg/kg)[2]		School-Based Student Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[3]	Maximum Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	9.05	352	2.5E-09	6.5E-05
4,4'-DDD (DDD)	0.032	54.5	21.1	5.8E-10	1.5E-03
4,4'-DDE (DDE)	0.31	38.0	211	8.1E-09	1.5E-03
4,4'-DDT (DDT)	0.36	38.5	352	9.4E-09	1.0E-03
Dieldrin	0.011	0.815	35	1.4E-08	3.2E-04
Endrin	0.063	----	211	----	3.0E-04
Endrin aldehyde	0.011	----	211	----	5.1E-05
Toxaphene	1.5	10.05	55	1.5E-07	2.7E-02
PAHs					
Fluoranthene	0.010	----	22,000	----	4.5E-07
Phenanthrene[5]	0.012	----	17,950	----	6.5E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[6]				2.E-07	0.06

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for student assumed to be at high school for four years (ages 14 -18 years old for grades 9 -12). TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 13
Maximum Estimated Risk for Potential School-Based Teacher Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	School-Based Teacher Soil Screening Levels (mg/kg)[1]		School-Based Teacher Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	15.6	408	3.4E-08	1.3E-04
4,4'-DDD (DDD)	0.080	95	24.4	8.4E-09	3.3E-03
4,4'-DDE (DDE)	0.62	67	244	9.2E-08	2.5E-03
4,4'-DDT (DDT)	0.72	67	408	1.1E-07	1.8E-03
Dieldrin	0.040	1.425	41	2.8E-07	9.9E-04
Endrin	0.115	----	244	----	4.7E-04
Endrin aldehyde	0.029	----	244	----	1.2E-04
Toxaphene	2.97	17.4	62	1.7E-06	4.8E-02
PAHs					
Fluoranthene	0.010	----	25,000	----	4.0E-07
Phenanthrene[4]	0.012	----	20,600	----	5.7E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[5]				2.E-06	0.09

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for teacher assumed to be at the high school for forty years. TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-5}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Screening value for pyrene used as a surrogate.

[5] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 14
Estimated Risk for Potential School-Based Teacher Exposures to Soil
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	School-Based Teacher Soil Screening Levels (mg/kg)[2]		School-Based Teacher Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[3]	Maximum Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	15.6	408	1.5E-08	5.6E-05
4,4'-DDD (DDD)	0.032	95	24.4	3.3E-09	1.3E-03
4,4'-DDE (DDE)	0.31	67	244	4.6E-08	1.3E-03
4,4'-DDT (DDT)	0.36	67	408	5.4E-08	8.8E-04
Dieldrin	0.011	1.425	41	7.9E-08	2.7E-04
Endrin	0.063	----	244	----	2.6E-04
Endrin aldehyde	0.011	----	244	----	4.4E-05
Toxaphene	1.5	17.4	62	8.6E-07	2.4E-02
PAHs					
Fluoranthene	0.010	----	25,000	----	4.0E-07
Phenanthrene[5]	0.012	----	20,600	----	5.7E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[6]				1.E-06	0.06

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for teacher assumed to be at the high school for forty years. TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-5}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 15
Summary of Toxaphene Cancer Slope Factor Adjustment Using Current Inter-Species Scaling Methodology
Based on a Animal to Human Body Weight Ratio to the 1/4 Power

Toxicity Study	Test Animal	Gender	Experimental Dose (PPM)[1]	Adminstered Dose mg/kg/day[1]	Human Equivalent Dose $BW^{1/3}$ mg/kg/day[2,3]	Human Equivalent Dose $BW^{1/4}$ mg/kg/day[4]	Human Equivalent Dose Ratio $BW^{1/4}$ to $BW^{1/3}$	IRIS CSF (mg/kg-day) Reported	Adjusted CSF (mg/kg-day)[5]
Litton Bionetics, 1978	Mice	Male	0	0	0.000	0.000	0.00	1.1	0.576
	Mice	Male	7	0.91	0.069	0.131	1.91		
	Mice	Male	20	2.6	0.20	0.374	1.91		
	Mice	Male	50	6.5	0.49	0.935	1.91		

Notes:

[1] Reported in IRIS carcinogenicity summary for toxaphene.

[2] The Litton Bionetics 1978 carcinogenicity assessment cited by IRIS is an unpublished report. For this reason, it was not possible to determine how the reported human equivalent dose (HED) was calculated. However, whatever parameters that were applied to determine the HED based on the body weight to the 1/3 power would also apply to the HED based on body weight to the 1/4 power. For the purposes of this summary, the body weight scaling factors have been applied to the administered dose for mice reported in the IRIS summary for toxaphene to determine what the ratio would be.

[3] HED calculated using the following equation: administered dose * (mouse body weight kg / human body weight kg)^^1/3
weight of mouse = 0.03 kilogram (kg); weight of human = 70 kg

[4] HED calculated using the following equation: administered dose * (mouse body weight kg / human body weight kg)^^1/4
weight of mouse = 0.03 kilogram (kg); weight of human = 70 kg

[5] Adjusted CSF calculated by dividing the reported IRIS CSF by 1.91.

Table 16
Maximum Estimated Risk for Potential Residential Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	Residential Soil Screening Levels (mg/kg)[1]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	0.44	35	1.2E-07	1.5E-03
4,4'-DDD (DDD)	0.080	2.3	1.9	3.5E-08	4.2E-02
4,4'-DDE (DDE)	0.62	2.0	23	3.1E-07	2.7E-02
4,4'-DDT (DDT)	0.72	1.9	37	3.8E-07	1.9E-02
Dieldrin	0.040	0.034	3.2	1.2E-06	1.3E-02
Endrin	0.115	----	19.0	----	6.1E-03
Endrin aldehyde	0.029	----	19.0	----	1.5E-03
Toxaphene[4]	2.97	0.94	5.7	3.2E-06	5.2E-01
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[5]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[6]				5.E-06	0.7

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 17
Estimated Risk for Potential Residential Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	Residential Soil Screening Levels (mg/kg)[2]		Residential Risk Screen	
		Carcinogenic	Non-carcinogenic	Estimated Risk[3]	Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	0.44	35	5.2E-08	6.5E-04
4,4'-DDD (DDD)	0.032	2.30	2	1.4E-08	1.7E-02
4,4'-DDE (DDE)	0.31	2.0	23	1.5E-07	1.3E-02
4,4'-DDT (DDT)	0.36	1.9	37	1.9E-07	9.7E-03
Dieldrin	0.011	0.034	3.2	3.3E-07	3.5E-03
Endrin	0.063	----	19.0	----	3.3E-03
Endrin aldehyde	0.011	----	19.0	----	5.6E-04
Toxaphene[5]	1.5	0.94	5.7	1.6E-06	2.6E-01
PAHs					
Fluoranthene	0.010	----	2,400	----	4.2E-06
Phenanthrene[6]	0.012	----	1,800	----	6.5E-06
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Estimated Cumulative Risk and Hazard Index[7]				2.E-06	0.3

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels are DTSC-Modified Soil Screening Levels, if available, or USEPA Region 9 Soil RSLs (USEPA 2018) as recommended by DTSC HHRA Note 3 (DTSC 2018). For TPHs, residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[6] Screening value for pyrene used as a surrogate.

[7] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 18
Maximum Estimated Risk for Potential School-Based Student Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	School-Based Student Soil Screening Levels (mg/kg)[1]		School-Based Student Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	9.05	352	5.9E-09	1.5E-04
4,4'-DDD (DDD)	0.080	54.5	21.1	1.5E-09	3.8E-03
4,4'-DDE (DDE)	0.62	38.0	211	1.6E-08	2.9E-03
4,4'-DDT (DDT)	0.72	38.5	352	1.9E-08	2.0E-03
Dieldrin	0.040	0.815	35	5.0E-08	1.2E-03
Endrin	0.115	----	211	----	5.5E-04
Endrin aldehyde	0.029	----	211	----	1.4E-04
Toxaphene[4]	2.97	19.20	55	1.5E-07	5.4E-02
PAHs					
Fluoranthene	0.010	----	22,000	----	4.5E-07
Phenanthrene[5]	0.012	----	17,950	----	6.5E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[6]				2.E-07	0.1

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for student assumed to be at high school for four years (ages 14 -18 years old for grades 9 -12). TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 19
Estimated Risk for Potential School-Based Student Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	School-Based Student Soil Screening Levels (mg/kg)[2]		School-Based Student Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[3]	Maximum Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	9.05	352	2.5E-09	6.5E-05
4,4'-DDD (DDD)	0.032	54.5	21.1	5.8E-10	1.5E-03
4,4'-DDE (DDE)	0.31	38.0	211	8.1E-09	1.5E-03
4,4'-DDT (DDT)	0.36	38.5	352	9.4E-09	1.0E-03
Dieldrin	0.011	0.815	35	1.4E-08	3.2E-04
Endrin	0.063	----	211	----	3.0E-04
Endrin aldehyde	0.011	----	211	----	5.1E-05
Toxaphene[5]	1.5	19.20	55	7.8E-08	2.7E-02
PAHs					
Fluoranthene	0.010	----	22,000	----	4.5E-07
Phenanthrene[6]	0.012	----	17,950	----	6.5E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[7]				1.E-07	0.06

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for student assumed to be at high school for four years (ages 14 -18 years old for grades 9 -12). TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-6}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[6] Screening value for pyrene used as a surrogate.

[7] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 20
Maximum Estimated Risk for Potential School-Based Teacher Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	Maximum Detect (mg/kg)	School-Based Teacher Soil Screening Levels (mg/kg)[1]		School-Based Teacher Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[2]	Maximum Estimated Hazard Quotient[3]
Pesticides					
Chlordane (Total)	0.053	15.6	408	3.4E-08	1.3E-04
4,4'-DDD (DDD)	0.080	95	24.4	8.4E-09	3.3E-03
4,4'-DDE (DDE)	0.62	67	244	9.2E-08	2.5E-03
4,4'-DDT (DDT)	0.72	67	408	1.1E-07	1.8E-03
Dieldrin	0.040	1.425	41	2.8E-07	9.9E-04
Endrin	0.115	----	244	----	4.7E-04
Endrin aldehyde	0.029	----	244	----	1.2E-04
Toxaphene[4]	2.97	33.2	62	8.9E-07	4.8E-02
PAHs					
Fluoranthene	0.010	----	25,000	----	4.0E-07
Phenanthrene[5]	0.012	----	20,600	----	5.7E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[6]				1.E-06	0.09

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for teacher assumed to be at the high school for forty years. TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[2] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-5}.

[3] Estimated hazard = (soil concentration/non-cancer soil screening level).

[4] Carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[5] Screening value for pyrene used as a surrogate.

[6] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

Table 21
Estimated Risk for Potential School-Based Teacher Exposures to Soil
Modified Screening Level for Toxaphene
Proposed High School No. 8
Oxnard, California

Chemical	95% UCL (mg/kg)[1]	School-Based Teacher Soil Screening Levels (mg/kg)[2]		School-Based Teacher Risk Screen	
		Carcinogenic	Non-carcinogenic	Maximum Estimated Risk[3]	Maximum Estimated Hazard Quotient[4]
Pesticides					
Chlordane (Total)	0.023	15.6	408	1.5E-08	5.6E-05
4,4'-DDD (DDD)	0.032	95	24.4	3.3E-09	1.3E-03
4,4'-DDE (DDE)	0.31	67	244	4.6E-08	1.3E-03
4,4'-DDT (DDT)	0.36	67	408	5.4E-08	8.8E-04
Dieldrin	0.011	1.425	41	7.9E-08	2.7E-04
Endrin	0.063	----	244	----	2.6E-04
Endrin aldehyde	0.011	----	244	----	4.4E-05
Toxaphene[5]	1.5	33.2	62	4.5E-07	2.4E-02
PAHs					
Fluoranthene	0.010	----	25,000	----	4.0E-07
Phenanthrene[6]	0.012	----	20,600	----	5.7E-07
TPHs					
TPH-gasoline (C4-C12)	0.13	----	430	----	3.0E-04
TPH-diesel (C9-C22)	8.0	----	260	----	3.1E-02
TPH-motor oil (C23-C40)	19	----	12,000	----	1.6E-03
Maximum Estimated Cumulative Risk and Hazard Index[7]				6.E-07	0.06

Definitions:

mg/kg - milligrams per kilogram

---- = screening criteria not calculated as appropriate toxicity data is not available.

Notes:

[1] Listed concentration for pesticides are the 95% UCLs calculated using USEPA's ProUCL software. For other chemicals, the listed concentration is maximum detected concentration.

[2] Listed screening levels for Pesticides and PAHs were derived using the DTSC SCHOOLSCREEN model (DTSC 2010) for teacher assumed to be at the high school for forty years. TPHs were not included in the SCHOOLSCREEN model. Therefore, TPHs were conservatively evaluated using residential risk-based environmental screening levels (ESL) from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2019).

[3] Estimated cancer risk = (soil concentration/cancer soil screening level) x 10^{-5}.

[4] Estimated hazard = (soil concentration/non-cancer soil screening level).

[5] Carcinogenic screening level for toxaphene adjusted hihger by factorof 1.91 based on update to cancer slope factor based on update of inter-species scaling methodology.

[6] Screening value for pyrene used as a surrogate.

[7] Cumulative risk and hazard index represent the sum of chemical-specific cancer risks and hazard quotients.

A - DTSC WORKPLAN APPROVAL LETTER

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

February 13, 2019

Dr. Penelope DeLeon
Superintendent
Assessment & Evaluations
Oxnard Union High School District
309 South K Street
Oxnard, California 93030

APPROVAL OF SUPPLEMENTAL SITE INVESTIGATION TECHNICAL MEMORANDUM, OXNARD UNION HIGH SCHOOL DISTRICT, PROPOSED OXNARD HIGH SCHOOL NO. 8, NORTH ROSE AVENUE, OXNARD (SITE CODE 304669)

Dear Dr. DeLeon:

The Department of Toxic Substances Control (DTSC) reviewed the "Supplemental Site Investigation Technical Memorandum (TM)", prepared by Tetratech, dated and received on January 31, 2019. The TM includes Site background information and proposed investigation activities.

According to the TM, the 48.6-acre vacant Site is located within the Oxnard oil field, and the Maulhardt Ranch. The Site is bounded by Camino Del Sol to the south, North Rose Avenue to the west, residential neighborhood to the east, and strawberry farm to the north. The Site is surrounded by residential neighborhood to the south, east, and west. A commercial plaza is located to the south-east corner of N. Rose and Camino Del Sol Street intersection. Currently, the Site is being used for the cultivation of strawberries. Historically, it was used for cultivation of row crops from as early as 1927 through 2017. To assess the potential impacts to the Site, a Preliminary Environmental Assessment (PEA) was conducted to investigate metals, organochlorine pesticides (OCPs), total petroleum hydrocarbons (TPHs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polyaromatic hydrocarbons (PAHs), and polycyclic biphenyls (PCBs). The PEA Report indicated elevated levels of OCPs in shallow soils

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beneath the Site. Consequently, DTSC requested a Supplemental Site Investigation to delineate the extent of contamination.

DTSC hereby approves the TM. If Site conditions differ from those presented in the approved TM, additional work may be necessary. Please provide a notice approved in form by DTSC, to residents in the immediate area prior to the commencement of field work and notify DTSC a minimum of 48 hours in advance of field work or schedule changes.

If you have any questions please contact Mr. Aslam Shareef, Project Manager, at (714)484-5472 or by email at Aslam.Shareef@dtsc.ca.gov, or me at (714)484-5368 or by email at Shahir.Haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

ar/as/sh

cc: Mr. Jim Steele (via e-mail)
Project Manager
Tetra Tech, Inc.
Jim.STEELE@tetratech.com

B - BORING LOGS

TETRA TECH
5383 Hollister Ave, Ste. 130
Santa Barbara, CA 93111
Tel (805) 681-3100
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BORING LOG
SS-41

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'29.82"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'15.70"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 57 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					SW				Sand with silt, dark brown (7.5YR 3/2), very moist, well graded,	Start drilling at 1110.
									no odor.	
---- 1 ----										
	100	NA	1115	SS-41-1			0.0/0.0			
---- 2 ----	100	NA	1120	SS-41-1.5			0.0/0.0			
	100	NA	1125	SS-41-2			0.0/0.0			
---- 3 ----										
										End drilling at 1125 at
---- 4 ----										total depth of 2.5 feet
										bgs.
---- 5 ----										
---- 6 ----										
---- 7 ----										
---- 8 ----										
---- 9 ----										
---- 10 ----										
---- 11 ----										
---- 12 ----										
---- 13 ----										
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---- 19 ----										
---- 20 ----										

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BORING LOG
SS-43

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'27.98"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'24.77"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 55 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
0					ML				Sandy silt, dark brown (7.5YR 3/2), wet, no odor.	Start drilling at 1010.
1	100	NA	1020	SS-43-1			0.0/0.0			
2	100	NA	1025	SS-43-1.5			0.0/0.0			
	100	NA	1030	SS-43-2			0.0/0.0			
3										End drilling at 1030 at
4										total depth of 2.5 feet
										bgs.
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

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BORING LOG
SS-45

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'27.96"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'20.24"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 55 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					SW				Sand with silt, dark brown (7.5YR 3/2), moist, well graded, no odor.	Start drilling at 1041.
---- 1 ----	100	NA	1050	SS-45-1			0.0/0.0			
---- 2 ----	100	NA	1055	SS-45-1.5			0.0/0.0		brown (7.5YR 4/4) -yellowish brown (10YR 5/4)	
	100	NA	1100	SS-45-2			0.0/0.0		brown (7.5YR 4/4)	
---- 3 ----										End drilling at 1100 at total depth of 2.5 feet bgs.
---- 4 ----										
---- 5 ----										
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TETRA TECH
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Fax (805) 681-3108

BORING LOG
SS-48

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'27.93"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'13.45"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 57 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
0					ML				Silt with sand, dark brown (7.5YR 3/2), wet, no odor.	Start drilling at 1130.
1										
	100	NA	1135	SS-48-1			0.0/0.0			
2	100	NA	1140	SS-48-1.5			0.0/0.0			
	100	NA	1145	SS-48-2			0.0/0.0			
3										
										End drilling at 1145 at
4										total depth of 2.5 feet
										bgs.
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BORING LOG
SS-49

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'26.10"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'24.78"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 54 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
0					ML				Silt with sand, dark brown (7.5YR 3/2), moist, trace sand, no odor.	Start drilling at 1335.
1	100	NA	1340	SS-49-1			0.0/0.0			
2	100	NA	1345	SS-49-1.5			0.0/0.0			
	100	NA	1350	SS-49-2			0.0/0.0			
3										
										End drilling at 1350 at
4										total depth of 2.5 feet
										bgs.
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BORING LOG
SS-50

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'26.09"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'22.52"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 54 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					SM				Silty sand , dark brown (7.5YR 3/2), moist, fine grained	Start drilling at 1310.
									(10 YR 4/2), very moist, trace clay, no odor.	
---- 1 ----										
	100	NA	1315	SS-50-1			0.0/0.0			
---- 2 ----	100	NA	1320	SS-50-1.5	ML		0.0/0.0		Silt with sand, dark brown (7.5YR 3/2) - grayish brown (10YR 5/2),	
	100	NA	1325	SS-50-2			0.0/0.0		moist, fine grained, trace clay.	
---- 3 ----										
										End drilling at 1325 at
---- 4 ----										total depth of 2.5 feet
										bgs.
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TETRA TECH
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BORING LOG
SS-51

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'26.08"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'20.25"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 54 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					SM				Silty sand , dark brown (7.5YR 3/2), moist, fine grained,	Start drilling at 1245.
									no odor.	
---- 1 ----										
	100	NA	1250	SS-51-1			0.0/0.0			
---- 2 ----	100	NA	1255	SS-51-1.5			0.0/0.0			
	100	NA	1300	SS-51-2			0.0/0.0		trace clay	
---- 3 ----										
										End drilling at 1300 at
---- 4 ----										total depth of 2.5 feet
										bgs.
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BORING LOG
SS-53

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'26.06"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'15.73"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 55 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
0					SW				Sand with silt, dark brown (7.5YR 3/2), very moist, well graded,	Start drilling at 1150.
									no odor.	
1										
	100	NA	1155	SS-53-1			0.0/0.0			
2	100	NA	1200	SS-53-1.5			0.0/0.0			
	100	NA	1205	SS-53-2			0.0/0.0			
3										
										End drilling at 1205 at
4										total depth of 2.5 feet
										bgs.
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BORING LOG
SS-56

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'24.21"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'22.53"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 54 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					ML				Silt with sand, dark brown (7.5YR 3/2), moist, trace sand, no odor.	Start drilling at 1355.
---- 1 ----	100	NA	1400	SS-56-1			0.0/0.0			
---- 2 ----	100	NA	1405	SS-56-1.5			0.0/0.0			
	100	NA	1410	SS-56-2			0.0/0.0			
---- 3 ----										End drilling at 1410 at total depth of 2.5 feet bgs.
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BORING LOG
SS-59

Project:	High School No. 8 SSI	Borehole Depth: 2.5 feet	Sampling Method: 2.25-inch split spoon
Location:	Maulhardt Ranch, Oxnard, CA	Borehole Diameter: 2.25 inches	Approximate Groundwater Depth During Drilling: Not encountered
Project	100-SBA-T39275	Drilling Contractor: Tetra Tech	Latitude: 34°12'24.18"N
Logged By:	J. Dane	J. Dane	Longitude: 119° 9'15.74"W *Latitude and Longitude obtained using Google Earth.
Reviewer:	J. R. Steele, P.G. 5963	Drilling Method: Hand Auger	Ground Surface Elevation (feet above MSL): — 56 *Elevation obtained using Google Earth
Date Boring Started:	2.18.19	Date Boring Finished: 2.18.19	Top of Casing Elevation (feet above MSL): Not applicable

Depth (feet bgs)	Recovery	Blow Counts	Time	Sample No.	USCS	Graphic Log	PID (ppm) Sample/Ambient	Sample	Interval and Lithologic Description	Comment
---- 0 ----					ML				Sandy silt, brown (7.5YR 4/3), moist, trace sand, no odor.	Start drilling at 1415.
---- 1 ----	100	NA	1420	SS-59-1			0.0/0.0			
---- 2 ----	100	NA	1425	SS-59-1.5			0.0/0.0			
	100	NA	1430	SS-59-2			0.0/0.0			
---- 3 ----										End drilling at 1430 at total depth of 2.5 feet bgs.
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C - LABORATORY REPORT

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Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Number of Pages	**48**
Date Received	**02/19/2019**
Date Reported	**03/04/2019**

Job Number	Order Date	Client
96370	02/19/2019	T/TSB

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8
Site: Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Enclosed please find results of analyses of 24 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

№ 92694

AETL JOB No. 96370 Page 1 of 3

COMPANY: Tetra Tech Inc
PROJECT MANAGER: Jim Steele
COMPANY ADDRESS: 5383 Hollister Ave Suite 130, Santa Barbara, CA 93111
PHONE: 805-895-4120
FAX: 805-681-3108
PROJECT NAME:
PROJECT #: 100-SBA-T39275
SITE NAME AND ADDRESS: Proposed High School #8, APN 214-002-059 on North Rose Ave, Oxnard, CA, 93033
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	OCP's EPA Method 8081A
1	SS-43-1	96370.01	02/18/2019	1020	Soil	1/4oz glass jar	None	X
2	SS-43-1.5	96370.02		1025				X
3	SS-43-2	96370.03		1030				X
4	SS-45-1	96370.04		1050				X
5	SS-45-1.5	96370.05		1055				X
6	SS-45-2	96370.06		1100				X
7	SS-41-1	96370.07		1115				X
8	SS-41-1.5	96370.08		1120				X
9	SS-41-2	96370.09		1125				X
10	SS-48-1	96370.10		1135				X
11	SS-48-1.5	96370.11		1140				X
12	SS-48-2	96370.12		1145				X
13	SS-53-1	96370.13		1155				X
14	SS-53-1.5	96370.14		1200				X
15	SS-53-2	96370.15		1205				X

ANALYSIS REQUESTED

TEST INSTRUCTIONS & COMMENTS

*For each of the ten sample locations, the subsurface soil collected from 1.0 foot bgs plus one duplicate sample will be analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-50-1, SS-51-1, SS-53-1, SS-56-1, SS-57-1 and Soil Dup 1. The samples collected at 1.5 feet bgs will be analyzed IF the corresponding sample from 1.0 foot bgs contains OCP's at concentrations exceeding the PEA screening levels, and the samples from 2.0 feet bgs will be analyzed if the corresponding sample collected from 1.5 feet bgs, exceeds the PEA screening levels. Tetra Tech with direct lab which additional sample will be run after the initial samples are analyzed.

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	5	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y (N) / NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature	Jason Dan		
Printed Name	Jason Dan		
Date / Time	02/19/2019 12:15	/	2-19-19 1510

	RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: 3.
Signature			AETL
Printed Name	Thomas Coleman		Sergey
Date / Time	2-19-19 1215	/	2-19-19 1510

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

№ 92696

AETL JOB No. 96370

COMPANY: Tetra Tech Inc
PROJECT MANAGER: Jim Steele
COMPANY ADDRESS: 5383 Hollister Ave, suite 130, Santa Barbara, CA, 93111
PHONE: 805-845-4120
FAX: 805-681-3108
PROJECT NAME:
PROJECT #: 100-SBA-T39275
SITE NAME AND ADDRESS: Proposed High School #8, APN - 214-002-059 on North Ross Ave, Oxnard, CA, 93030
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA Method 8081A OCP's									TEST INSTRUCTIONS & COMMENTS
1	SS-51-1	96370.16	02/18/2019	1250	Soil	1/402 glass jar	None	X									* See instructions on page 1 of 3
2	SS-51-1.5	96370.17		1255				X									
3	SS-51-2	96370.18		1300				X									
4	SS-50-1	96370.19		1315				X									
5	SS-50-1.5	96370.20		1320				X									
6	SS-50-2	96370.21		1325				X									
7	SS-49-1	96370.22		1340				X									
8	SS-49-1.5	96370.23		1345				X									
9	SS-49-2	96370.24		1350				X									
10	SS-56-1	96370.25		1400				X									
11	Soil Dup 1	96370.26		1400				X									
12	SS-56-1.5	96370.27		1405				X									
13	SS-56-2	96370.28		1410				X									
14	SS-59-1	96370.29		1420				X									
15	SS-59-1.5	96370.30		1425				X									

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y / (N) / NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH
☐ SAME DAY
☐ NEXT DAY
☐ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Jason Davis	Signature:	Signature:
Printed Name: Jason Davis	Printed Name:	Printed Name:
Date: 02/19/2019 Time: 1215	Date: Time:	Date: 2-19-19 Time: 1500
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Sergey
Date: 2-19-19 Time: 1255	Date: Time:	Date: 2-19-19 Time: 1510

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

№ 92695

AETL JOB No. 96370

COMPANY	Tetra Tech Inc
PROJECT MANAGER	Jim Steele
COMPANY ADDRESS	5383 Hollister Ave, Suite 130. Santa Barbara, CA, 93111
PHONE	805-895-4120
FAX	805-681-3108
PROJECT NAME	
PROJECT #	100-SBA-T39275
SITE NAME AND ADDRESS	Proposed High School #8, APN-214-002-059 on North Rose Ave, Oxnard, CA, 93030
PO #	

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA Method 8081A OCP's	ANALYSIS REQUESTED	TEST INSTRUCTIONS & COMMENTS
1	SS-59-2	96370-31	02/18/2019	1430	Soil	1/40z glass jar	None	X		* See instructions on page 1 of 3
2										
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SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	1	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y / (N) / NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	1.	2.	3.
RELINQUISHED BY SAMPLER:	Jason Davi		
Signature:			
Printed Name:	Jason Davi		
Date:	02/19/2019	Time:	
RELINQUISHED BY:	1245	2	3.
Signature:			
Printed Name:			
Date:		Time:	
RELINQUISHED BY:			3.
Signature:			
Printed Name:			
Date:	2/19/19	Time:	1510
RECEIVED BY:	1.	2.	3.
Signature:			
Printed Name:			
Date:	2/19/19	Time:	1245
RECEIVED BY:			
Signature:			
Printed Name:			
Date:		Time:	
RECEIVED BY LABORATORY:			AETL 3.
Signature:			
Printed Name:			Sergey
Date:	2/19/19	Time:	1510

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

COOLER RECEIPT FORM

Client Name: Tetra Tech

Project Name:

AETL Job Number: 96370

Date Received: 2/19/19 Received by: Sergey

Carrier: ☑ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS

☐ Others:

Samples were received in: ☑ Cooler (1) ☐ Other (Specify):

Inside temperature of shipping container No 1: 3.4°C, No 2: _____, No 3: _____

Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ ☑ Wide mouth jars, ☐ ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify):

How are samples preserved: ☐ None, ☐ Ice , ☑ Blue Ice, ☐ Dry Ice

☑ None, ☐ HNO_3, ☐ NaOH, ☐ ZnOAc, ☐ HCl, ☐ $Na_2S_2O_3$, ☐ MeOH

☐ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	NA		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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CHAIN OF CUSTODY RECORD

№ 92694

AETL JOB No. 96370 Page 1 of 3

COMPANY: Tetra Tech Inc
PROJECT MANAGER: Jim Steele
COMPANY ADDRESS: 5383 Hollister Ave, Suite 130, Santa Barbara CA 93111
PHONE 805-895-4120
FAX 805-681-3108
PROJECT NAME:
PROJECT #: 100-SBA-T39275
SITE NAME AND ADDRESS: Proposed High School #8, APN 214-002-059 on Nolan Rose Ave, Oxnard, CA, 93036
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	OCP's EPA Method 8081A	OCPs (8081A)	OCPs (8081A)
1	SS-43-1	96370.01	02/18/2019	1020	Soil	1/4oz glass jar	None	X		
2	SS-43-1.5	96370.02		1025				X	*	
3	SS-43-2	96370.03		1030				X		*
4	SS-45-1	96370.04		1050				X		
5	SS-45-1.5	96370.05		1055				X		
6	SS-45-2	96370.06		1100				X		
7	SS-41-1	96370.07		1115				X		
8	SS-41-1.5	96370.08		1120				X	*	
9	SS-41-2	96370.09		1125				X		
10	SS-48-1	96370.10		1135				X		
11	SS-48-1.5	96370.11		1140				X	*	
12	SS-48-2	96370.12		1145				X		
13	SS-53-1	96370.13		1155				X		
14	SS-53-1.5	96370.14		1200				X	*	
15	SS-53-2	96370.15		1205				X		*

ANALYSIS REQUESTED

TEST INSTRUCTIONS & COMMENTS

* For each of the ten sample locations, the subsurface soil collected from 1.0 feet bgs plus one duplicate sample will be analyzed. These are identified as soil samples SS-41-1, SS-43-1, SS-45-1, SS-48-1, SS-49-1, SS-51-1, SS-53-1, SS-56-1, SS-57 and Soil Dup 1. The sample collected at 1.5 feet bgs will be analyzed if the corresponding sample from 1.0 feet bgs contains OCPs at concentrations exceeding the PEA screening levels, and the samples from 2.0 feet bgs will be analyzed if the corresponding sample collected from 1.5 feet bgs exceeds the PEA screening levels. Tetra Tech will direct in the additional samples will be collected after the initial samples are analyzed.

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	5	PROPERLY COOLED (Y) N / NA	
CUSTODY SEALS Y (N) / NA		SAMPLES INTACT (Y) N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) N	

TURN AROUND TIME

[X] NORMAL [ ] RUSH [ ] SAME DAY [ ] NEXT DAY [ ] 2 DAYS [ ] 3 DAYS

DATA DELIVERABLE REQUIRED

[ ] HARD COPY [ ] PDF [ ] GEOTRACKER (GLOBAL ID) _____ [ ] OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Jason Dart	Signature:	Signature:
Printed Name: Jason Dart	Printed Name:	Printed Name: Thomas Lollman
Date: 02/19/2019 Time: 1215	Date: Time:	Date: 2-19-19 Time: 1510
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name: Thomas Lollman	Printed Name:	Printed Name: Sandra
Date: 2-19-19 Time: 1515	Date: Time:	Date: 2-19-19 Time: 1512

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

Nº 92696

COMPANY: Tetra Tech Inc. | PROJECT MANAGER: Jim Steele
COMPANY ADDRESS: 5383 Hollister Ave, suite 130, Santa Barbara, CA, 93111 | PHONE: 805-895-4120 | FAX: 805-681-3108
PROJECT NAME | PROJECT #: 100-SBA-139275
SITE NAME AND ADDRESS: Proposed High School #8, APN- 214-002-059 on North Rose Ave, Oxnard, CA, 93030 | PO #

AETL JOB No. 96370 | Page 2 of 3

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	ANALYSIS REQUESTED: EPA method 8081A OCP's	ANALYSIS REQUESTED: OCPs (8081A)	TEST INSTRUCTIONS & COMMENTS
1	SS-51-1	96370.16	02/18/2019	1250	Soil	1/40z glass jar	None	X		*See instructions on page 1 of 3
2	SS-51-1.5	96370.17		1255				X	*	
3	SS-51-2	96370.18		1300				X		
4	SS-50-1	96370.19		1315				X		
5	SS-50-1.5	96370.20		1320				X	*	
6	SS-50-2	96370.21		1325				X		
7	SS-49-1	96370.22		1340				X		
8	SS-49-1.5	96370.23		1345				X	*	
9	SS-49-2	96370.24		1350				X		
10	SS-56-1	96370.25		1400				X		
11	Soil Dup 1	96370.26		1400				X		
12*	SS-56-1.5	96370.27		1405				X	*	
13	SS-56-2	96370.28		1410				X		
14	SS-59-1	96370.29		1420				X		
15	SS-59-1.5	96370.30	↓	1425	↓	↓	↓	X	*	

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y / (N) / NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Jason Davis		
Printed Name:	Jason Davis		
Date:	02/19/2019	Time: 1245	Date:	Time:	Date: 2-19-19	Time: 1500

	RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: 3.
Signature:			
Printed Name:	Thomas Letbetter		Sergey
Date:	2-19-19	Time: 1285	Date:	Time:	Date: 2-19-19	Time: 1510

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

№ 92695

AETL JOB No. 96370

COMPANY: Tetra Tech Inc
PROJECT MANAGER: Jim Steele
COMPANY ADDRESS: 5383 Hollister Ave, Suite 130, Santa Barbara, CA, 93111
PHONE: 805-875-4120
FAX: 805-681-3108
PROJECT NAME:
PROJECT #: 100-58A-739275
SITE NAME AND ADDRESS: Proposed High School #8, APN-214-002-059 PO # on North Rose Ave, Oxnard, CA, 93030

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	SS-59-2	96370.31	02/18/2019	1430	Soil	1/40z glass jar	None
2	Soil Dup 2	96370.32	2/18/19	—	Soil	4oz Jar	↓
3	Soil Dup 3	96370.33	2/18/19	—	Soil	4oz Jar	↓
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

ANALYSIS REQUESTED

	EPA Method 8081A OCP's	OCBs (8081A)	OCPs (8081A)
1	X		
2		*	
3			*

TEST INSTRUCTIONS & COMMENTS

* See instructions on page 1 of 3

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	1	PROPERLY COOLED (Y) / N / NA	
CUSTODY SEALS Y / (N) NA		SAMPLES INTACT (Y) / N / NA	
RECEIVED IN GOOD COND. (Y) / N		SAMPLES ACCEPTED (Y) / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) _____ ☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Jason Davi		
Printed Name:	Jason Davi		
Date:	02/19/2019	Time:	
	RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETL 3.
Signature:			
Printed Name:			
Date:	2/19/19 Time: 215	Time:	Date: 2/19/19 Time: 1510

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

JIM LIN

From: Steele, James <Jim.STEELE@tetratech.com>
Sent: Friday, February 22, 2019 4:20 PM
To: JIM LIN
Cc: Christine Novshadayan (AETL); Westhaus, Randy; Dane, Jason
Subject: RE: Summary Table Results of Samples from "Proposed High School #8, Oxnard, CA"
Attachments: 96370-so_8081a_Rev.pdf; 96370-COC.pdf

Hello Jim.

Nine out of the ten soils samples analyzed collected at 1.0 foot bgs contained toxaphene at concentrations that exceed the screening levels. I have highlighted the results that exceed the screening levels and compared them to the surface soil sample results from the PEA in the attached table.

Please analyze samples SS-41-1.5, SS-43-1.5, SS-48-1.5, SS-49-1.5, SS-50-1.5, SS-51-1.5, SS-53-1.5, SS-56-1.5, and SS-59-1.5 for organochlorine pesticides using EPA method 8081A. Please use sample SS-56-1.5 to make duplicate sample Soil Dup 2 and also analyze it for organochlorine pesticides using EPA method 8081A.

Tetra Tech will review the results from the 1.5 foot samples and provide AETL with instructions on which samples collected from 2.0 feet bgs need to be analyzed. The samples were collected on February 18th, so the holding times expire on March 3rd, a Sunday. If the sample results are not available for review by Tetra Tech by Friday March 1st, please extract samples SS-41-2.0, SS-43-2.0, SS-48-2.0, SS-49-2.0, SS-50-2.0, SS-51-2.0, SS-53-2.0, SS-56-2.0, and SS-59-2.0 to meet the extraction holding time if analysis is required.

Thanks,

Jim

James R. Steele
Associate Director

California Professional Geologist 5963
California Certified Engineering Geologist EG 1906
California Certified Hydrogeologist HG 247

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, California 93111
Office: (805) 681-3100
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Fax: (805) 681-3108

Email: jim.steele@tetratech.com

JIM LIN

From: Steele, James <Jim.STEELE@tetratech.com>
Sent: Wednesday, February 27, 2019 3:05 PM
To: JIM LIN
Cc: Christine Novshadayan (AETL); Westhaus, Randy; Dane, Jason
Subject: RE: Summary Table Results of Samples from "Proposed High School #8, Oxnard, CA"
Attachments: 96370=so_8081a_Rev.pdf; 96370-COC Added 02-27-19_JRS.pdf

Hello Jim.

Two out of the nine soils samples analyzed collected at 1.5 foot bgs contained toxaphene at concentrations that exceed the screening levels. I have highlighted the results that exceed the screening levels from the PEA in the attached table.

Please analyze samples SS-43-2 and SS-53-2 for organochlorine pesticides using EPA method 8081A. Please use sample SS-53-2 to make duplicate sample Soil Dup 3 and also analyze it for organochlorine pesticides using EPA method 8081A.

The samples were collected on February 18th, so the holding times expire on March 3rd, a Sunday. Please extract samples SS-43-2 and SS-53-2to meet the extraction holding time.

Thanks,

Jim

James R. Steele
Associate Director

California Professional Geologist 5963
California Certified Engineering Geologist EG 1906
California Certified Hydrogeologist HG 247

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Email: jim.steele@tetratech.com


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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Project ID: 100-SBA-T39275
Date Received 02/19/2019
Date Reported 03/04/2019

Job Number	Order Date	Client
96370	02/19/2019	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 33 samples with the following specification on 02/19/2019.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
96370.01	SS-43-1	02/18/2019	Soil	1
96370.02	SS-43-1.5	02/18/2019	Soil	1
96370.03	SS-43-2	02/18/2019	Soil	1
96370.04	SS-45-1	02/18/2019	Soil	1
96370.07	SS-41-1	02/18/2019	Soil	1
96370.08	SS-41-1.5	02/18/2019	Soil	1
96370.10	SS-48-1	02/18/2019	Soil	1
96370.11	SS-48-1.5	02/18/2019	Soil	1
96370.13	SS-53-1	02/18/2019	Soil	1
96370.14	SS-53-1.5	02/18/2019	Soil	1
96370.15	SS-53-2	02/18/2019	Soil	1
96370.16	SS-51-1	02/18/2019	Soil	1
96370.17	SS-51-1.5	02/18/2019	Soil	1
96370.19	SS-50-1	02/18/2019	Soil	1
96370.20	SS-50-1.5	02/18/2019	Soil	1
96370.22	SS-49-1	02/18/2019	Soil	1
96370.23	SS-49-1.5	02/18/2019	Soil	1
96370.25	SS-56-1	02/18/2019	Soil	1
96370.26	Soil Dup-1	02/18/2019	Soil	1
96370.27	SS-56-1.5	02/18/2019	Soil	1
96370.29	SS-59-1	02/18/2019	Soil	1
96370.30	SS-59-1.5	02/18/2019	Soil	1
96370.32	Soil DUP 2	02/18/2019	Soil	1
96370.33	Soil DUP 3	02/18/2019	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(8081A)	02/22/2019	4	Rush	ug/Kg

Continued

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Ordered By

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: James Steele

Project ID: 100-SBA-T39275
Date Received 02/19/2019
Date Reported 03/04/2019

Job Number	Order Date	Client
96370	02/19/2019	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
96370.05	SS-45-1.5	02/18/2019	Soil	1
96370.06	SS-45-2	02/18/2019	Soil	1
96370.09	SS-41-2	02/18/2019	Soil	1
96370.12	SS-48-2	02/18/2019	Soil	1
96370.18	SS-51-2	02/18/2019	Soil	1
96370.21	SS-50-2	02/18/2019	Soil	1
96370.24	SS-49-2	02/18/2019	Soil	1
96370.28	SS-56-2	02/18/2019	Soil	1
96370.31	SS-59-2	02/18/2019	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
ARCHIVE	02/22/2019	4	Rush	--

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele
Page: **2**

Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	ND				
Chlordane (alpha)	1.0	2.0	ND				
4,4'-DDD (DDD)	1.0	2.0	ND				
4,4'-DDE (DDE)	1.0	2.0	ND				
4,4'-DDT (DDT)	1.0	2.0	ND				
Dieldrin	1.0	2.0	ND				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	ND				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	ND				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank				
Surrogates	**%Rec.Limit**		**% Rec.**				
Decachlorobiphenyl	30-150		80.8				
Tetrachloro-m-xylene	30-150		85.2				

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele

Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Page: **4**

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			**96370.01**				
Client Sample I.D.			SS-43-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			5				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	5	10	ND				
Chlordane (Total)	5	10	22.7				
Chlordane (alpha)	5	10	11.4				
4,4'-DDD (DDD)	5	10	5.33J				
4,4'-DDE (DDE)	5	10	305				
4,4'-DDT (DDT)	5	10	292				
Dieldrin	5	10	8.18J				
Endosulfan 1	5	10	ND				
Endosulfan 11	5	10	ND				
Endosulfan sulfate	5	10	ND				
Endrin	5	10	80.7				
Endrin aldehyde	5	10	11.7				
Endrin ketone	5	10	ND				
Chlordane (gamma)	5	10	11.3				
Heptachlor	5	10	ND				
Heptachlor epoxide	5	10	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	5	10	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	5	10	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	5	10	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	5	10	ND				
Methoxychlor	25	50	ND				
Toxaphene	125	250	2,050				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.01				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		102				
Tetrachloro-m-xylene	30-150		111				

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ANALYTICAL RESULTS

Ordered By

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Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			Method Blank	96370.02			
Client Sample I.D.				SS-43-1.5			
Date Sampled				02/18/2019			
Date Prepared			02/25/2019	02/25/2019			
Preparation Method			3550B	3550B			
Date Analyzed			02/25/2019	02/26/2019			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	ND	35.1			
Chlordane (alpha)	1.0	2.0	ND	16.7			
4,4'-DDD (DDD)	1.0	2.0	ND	28.7			
4,4'-DDE (DDE)	1.0	2.0	ND	460			
4,4'-DDT (DDT)	1.0	2.0	ND	538			
Dieldrin	1.0	2.0	ND	13.9			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	ND	115			
Endrin aldehyde	1.0	2.0	ND	16.2			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	ND	18.4			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	25.0	50.0	ND	2,240			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	96370.02			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		118	133			
Tetrachloro-m-xylene	30-150		87.2	106			

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 030119EB1

Our Lab I.D.			Method Blank	96370.03			
Client Sample I.D.				SS-43-2			
Date Sampled				02/18/2019			
Date Prepared			03/01/2019	03/01/2019			
Preparation Method			3550B	3550B			
Date Analyzed			03/01/2019	03/01/2019			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	ND	3.33			
Chlordane (alpha)	1.0	2.0	ND	1.45J			
4,4'-DDD (DDD)	1.0	2.0	ND	2.26			
4,4'-DDE (DDE)	1.0	2.0	ND	55.7			
4,4'-DDT (DDT)	1.0	2.0	ND	72.0			
Dieldrin	1.0	2.0	ND	ND			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	ND	15.4			
Endrin aldehyde	1.0	2.0	ND	1.36J			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	ND	1.88J			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	25.0	50.0	ND	280			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			Method Blank	96370.03			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		114	142			
Tetrachloro-m-xylene	30-150		68.4	106			

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.04	96370.07			
Client Sample I.D.			SS-45-1	SS-41-1			
Date Sampled			02/18/2019	02/18/2019			
Date Prepared			02/21/2019	02/21/2019			
Preparation Method			3550B	3550B			
Date Analyzed			02/21/2019	02/21/2019			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	6.21	18.9			
Chlordane (alpha)	1.0	2.0	3.43	9.03			
4,4'-DDD (DDD)	1.0	2.0	1.74J	7.80			
4,4'-DDE (DDE)	1.0	2.0	48.3	141			
4,4'-DDT (DDT)	1.0	2.0	40.5	474			
Dieldrin	1.0	2.0	2.49	9.33			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	9.61	46.9			
Endrin aldehyde	1.0	2.0	3.15	12.6			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	2.78	9.83			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	25.0	50.0	438	1,690			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.04	96370.07			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		82.4	57.6			
Tetrachloro-m-xylene	30-150		93.2	78.4			

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N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.08**				
Client Sample I.D.			SS-41-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	1.71J				
Chlordane (alpha)	1.0	2.0	ND				
4,4'-DDD (DDD)	1.0	2.0	ND				
4,4'-DDE (DDE)	1.0	2.0	15.1				
4,4'-DDT (DDT)	1.0	2.0	29.5				
Dieldrin	1.0	2.0	1.51J				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	5.95				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	161				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.08				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		120				
Tetrachloro-m-xylene	30-150		98.0				

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Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.10				
Client Sample I.D.			SS-48-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	17.0				
Chlordane (alpha)	1.0	2.0	8.62				
4,4'-DDD (DDD)	1.0	2.0	8.60				
4,4'-DDE (DDE)	1.0	2.0	267				
4,4'-DDT (DDT)	1.0	2.0	222				
Dieldrin	1.0	2.0	7.63				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	54.6				
Endrin aldehyde	1.0	2.0	8.83				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	8.33				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	1,200				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.10				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		66.4				
Tetrachloro-m-xylene	30-150		84.8				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.11**				
Client Sample I.D.			SS-48-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	ND				
Chlordane (alpha)	1.0	2.0	ND				
4,4'-DDD (DDD)	1.0	2.0	ND				
4,4'-DDE (DDE)	1.0	2.0	14.9				
4,4'-DDT (DDT)	1.0	2.0	8.31				
Dieldrin	1.0	2.0	1.86J				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	4.51				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	97.0				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.11				
Surrogates	**%Rec.Limit**		**% Rec.**				
Decachlorobiphenyl	30-150		147				
Tetrachloro-m-xylene	30-150		124				

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Proposed High School #8
APN 214-002-059
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Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.13				
Client Sample I.D.			SS-53-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	45.4				
Chlordane (alpha)	1.0	2.0	21.9				
4,4'-DDD (DDD)	1.0	2.0	15.5				
4,4'-DDE (DDE)	1.0	2.0	270				
4,4'-DDT (DDT)	1.0	2.0	356				
Dieldrin	1.0	2.0	10.8				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	67.9				
Endrin aldehyde	1.0	2.0	29.0				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	23.5				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	2,350				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.13				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		91.2				
Tetrachloro-m-xylene	30-150		92.0				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.14**				
Client Sample I.D.			SS-53-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	14.8				
Chlordane (alpha)	1.0	2.0	6.84				
4,4'-DDD (DDD)	1.0	2.0	5.07				
4,4'-DDE (DDE)	1.0	2.0	164				
4,4'-DDT (DDT)	1.0	2.0	184				
Dieldrin	1.0	2.0	10.9				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	33.8				
Endrin aldehyde	1.0	2.0	11.5				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	7.91				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	898				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.14				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		131				
Tetrachloro-m-xylene	30-150		112				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 030119EB1

Our Lab I.D.			**96370.15**				
Client Sample I.D.			SS-53-2				
Date Sampled			02/18/2019				
Date Prepared			03/01/2019				
Preparation Method			3550B				
Date Analyzed			03/01/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	5.33				
Chlordane (alpha)	1.0	2.0	3.24				
4,4'-DDD (DDD)	1.0	2.0	3.87				
4,4'-DDE (DDE)	1.0	2.0	70.6				
4,4'-DDT (DDT)	1.0	2.0	84.0				
Dieldrin	1.0	2.0	2.66				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	20.0				
Endrin aldehyde	1.0	2.0	2.59				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	2.09				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	462				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.15				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		120				
Tetrachloro-m-xylene	30-150		108				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.16				
Client Sample I.D.			SS-51-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	14.1				
Chlordane (alpha)	1.0	2.0	7.44				
4,4'-DDD (DDD)	1.0	2.0	5.51				
4,4'-DDE (DDE)	1.0	2.0	143				
4,4'-DDT (DDT)	1.0	2.0	102				
Dieldrin	1.0	2.0	6.82				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	22.0				
Endrin aldehyde	1.0	2.0	4.89				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	6.63				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	992				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.16				
Surrogates	**%Rec.Limit**		**% Rec.**				
Decachlorobiphenyl	30-150		79.2				
Tetrachloro-m-xylene	30-150		92.0				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.17**				
Client Sample I.D.			SS-51-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	1.27J				
Chlordane (alpha)	1.0	2.0	ND				
4,4'-DDD (DDD)	1.0	2.0	ND				
4,4'-DDE (DDE)	1.0	2.0	13.1				
4,4'-DDT (DDT)	1.0	2.0	11.5				
Dieldrin	1.0	2.0	1.60J				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	2.58				
Endrin aldehyde	1.0	2.0	ND				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	124				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.17				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		120				
Tetrachloro-m-xylene	30-150		100				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.19				
Client Sample I.D.			SS-50-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	43.0				
Chlordane (alpha)	1.0	2.0	20.1				
4,4'-DDD (DDD)	1.0	2.0	20.8				
4,4'-DDE (DDE)	1.0	2.0	495				
4,4'-DDT (DDT)	1.0	2.0	366				
Dieldrin	1.0	2.0	11.9				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	102				
Endrin aldehyde	1.0	2.0	18.1				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	22.9				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	2,970				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.19				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		85.6				
Tetrachloro-m-xylene	30-150		96.0				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.20**				
Client Sample I.D.			SS-50-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	4.31				
Chlordane (alpha)	1.0	2.0	2.33				
4,4'-DDD (DDD)	1.0	2.0	1.76J				
4,4'-DDE (DDE)	1.0	2.0	62.1				
4,4'-DDT (DDT)	1.0	2.0	52.6				
Dieldrin	1.0	2.0	3.54				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	11.8				
Endrin aldehyde	1.0	2.0	2.06				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	1.98J				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	340				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.20				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		142				
Tetrachloro-m-xylene	30-150		126				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			**96370.22**				
Client Sample I.D.			SS-49-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	39.6				
Chlordane (alpha)	1.0	2.0	19.4				
4,4'-DDD (DDD)	1.0	2.0	14.6				
4,4'-DDE (DDE)	1.0	2.0	439				
4,4'-DDT (DDT)	1.0	2.0	339				
Dieldrin	1.0	2.0	8.59				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	75.7				
Endrin aldehyde	1.0	2.0	9.33				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	20.2				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	2,010				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.22				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		78.4				
Tetrachloro-m-xylene	30-150		90.0				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.23**				
Client Sample I.D.			SS-49-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	4.83				
Chlordane (alpha)	1.0	2.0	2.39				
4,4'-DDD (DDD)	1.0	2.0	2.37				
4,4'-DDE (DDE)	1.0	2.0	67.2				
4,4'-DDT (DDT)	1.0	2.0	64.4				
Dieldrin	1.0	2.0	2.62				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	17.9				
Endrin aldehyde	1.0	2.0	1.52J				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	2.44				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	235				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.23				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		150				
Tetrachloro-m-xylene	30-150		121				

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ANALYTICAL RESULTS

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Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			96370.25	96370.26			
Client Sample I.D.			SS-56-1	Soil Dup-1			
Date Sampled			02/18/2019	02/18/2019			
Date Prepared			02/21/2019	02/21/2019			
Preparation Method			3550B	3550B			
Date Analyzed			02/21/2019	02/21/2019			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	30.3	44.4			
Chlordane (alpha)	1.0	2.0	15.5	22.4			
4,4'-DDD (DDD)	1.0	2.0	13.2	21.8			
4,4'-DDE (DDE)	1.0	2.0	385	585			
4,4'-DDT (DDT)	1.0	2.0	261	422			
Dieldrin	1.0	2.0	9.99	33.3			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	69.7	95.9			
Endrin aldehyde	1.0	2.0	16.4	15.8			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	14.8	22.0			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	25.0	50.0	2,290	3,110			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.25	96370.26			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		87.2	94.0			
Tetrachloro-m-xylene	30-150		92.4	104			

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			**96370.27**				
Client Sample I.D.			SS-56-1.5				
Date Sampled			02/18/2019				
Date Prepared			02/25/2019				
Preparation Method			3550B				
Date Analyzed			02/26/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	2.74				
Chlordane (alpha)	1.0	2.0	1.53J				
4,4'-DDD (DDD)	1.0	2.0	2.07				
4,4'-DDE (DDE)	1.0	2.0	42.9				
4,4'-DDT (DDT)	1.0	2.0	29.1				
Dieldrin	1.0	2.0	2.57				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	7.41				
Endrin aldehyde	1.0	2.0	1.69J				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	1.21J				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	258				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.27				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		132				
Tetrachloro-m-xylene	30-150		110				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1

Our Lab I.D.			**96370.29**				
Client Sample I.D.			SS-59-1				
Date Sampled			02/18/2019				
Date Prepared			02/21/2019				
Preparation Method			3550B				
Date Analyzed			02/21/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	44.4				
Chlordane (alpha)	1.0	2.0	21.1				
4,4'-DDD (DDD)	1.0	2.0	17.6				
4,4'-DDE (DDE)	1.0	2.0	322				
4,4'-DDT (DDT)	1.0	2.0	463				
Dieldrin	1.0	2.0	16.0				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	70.3				
Endrin aldehyde	1.0	2.0	10.1				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	23.3				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	2,480				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			**96370.29**				
Surrogates	**%Rec.Limit**		**% Rec.**				
Decachlorobiphenyl	30-150		84.4				
Tetrachloro-m-xylene	30-150		85.2				

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1

Our Lab I.D.			96370.30	96370.32			
Client Sample I.D.			SS-59-1.5	Soil DUP 2			
Date Sampled			02/18/2019	02/18/2019			
Date Prepared			02/25/2019	02/25/2019			
Preparation Method			3550B	3550B			
Date Analyzed			02/26/2019	02/26/2019			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aldrin	1.0	2.0	ND	ND			
Chlordane (Total)	1.0	2.0	3.74	4.21			
Chlordane (alpha)	1.0	2.0	1.65J	2.21			
4,4'-DDD (DDD)	1.0	2.0	ND	4.79			
4,4'-DDE (DDE)	1.0	2.0	82.7	69.4			
4,4'-DDT (DDT)	1.0	2.0	91.4	48.3			
Dieldrin	1.0	2.0	4.11	2.86			
Endosulfan 1	1.0	2.0	ND	ND			
Endosulfan 11	1.0	2.0	ND	ND			
Endosulfan sulfate	1.0	2.0	ND	ND			
Endrin	1.0	2.0	21.0	12.2			
Endrin aldehyde	1.0	2.0	1.80J	2.82			
Endrin ketone	1.0	2.0	ND	ND			
Chlordane (gamma)	1.0	2.0	2.09	2.00			
Heptachlor	1.0	2.0	ND	ND			
Heptachlor epoxide	1.0	2.0	ND	ND			
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND	ND			
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND	ND			
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND	ND			
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND	ND			
Methoxychlor	5.0	10.0	ND	ND			
Toxaphene	25.0	50.0	369	379			

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.30	96370.32			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Decachlorobiphenyl	30-150		134	132			
Tetrachloro-m-xylene	30-150		114	150			

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 030119EB1

Our Lab I.D.			96370.33				
Client Sample I.D.			Soil DUP 3				
Date Sampled			02/18/2019				
Date Prepared			03/01/2019				
Preparation Method			3550B				
Date Analyzed			03/01/2019				
Matrix			Soil				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aldrin	1.0	2.0	ND				
Chlordane (Total)	1.0	2.0	2.48				
Chlordane (alpha)	1.0	2.0	1.59J				
4,4'-DDD (DDD)	1.0	2.0	4.15				
4,4'-DDE (DDE)	1.0	2.0	47.0				
4,4'-DDT (DDT)	1.0	2.0	45.8				
Dieldrin	1.0	2.0	1.49J				
Endosulfan 1	1.0	2.0	ND				
Endosulfan 11	1.0	2.0	ND				
Endosulfan sulfate	1.0	2.0	ND				
Endrin	1.0	2.0	12.0				
Endrin aldehyde	1.0	2.0	1.39J				
Endrin ketone	1.0	2.0	ND				
Chlordane (gamma)	1.0	2.0	ND				
Heptachlor	1.0	2.0	ND				
Heptachlor epoxide	1.0	2.0	ND				
alpha-Hexachlorocyclohexane (Alpha-BHC)	1.0	2.0	ND				
beta-Hexachlorocyclohexane (Betta-BHC)	1.0	2.0	ND				
delta-Hexachlorocyclohexane (Delta-BHC)	1.0	2.0	ND				
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	1.0	2.0	ND				
Methoxychlor	5.0	10.0	ND				
Toxaphene	25.0	50.0	240				

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ANALYTICAL RESULTS

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

Our Lab I.D.			96370.33				
Surrogates	%Rec.Limit		% Rec.				
Decachlorobiphenyl	30-150		101				
Tetrachloro-m-xylene	30-150		114				

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QUALITY CONTROL RESULTS

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Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022119EB1; Dup or Spiked Sample: 96370.07; LCS: Clean Sand; QC Prepared: 02/21/2019; QC Analyzed: 02/21/2019; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	24.6	123	20.0	24.2	121	1.6	40-150	<40
4,4'-DDT (DDT)	474	50.0	489 #	30.0	50.0	549	150	133.3	40-150	<40
Dieldrin	9.33	50.0	70.3	122	50.0	77.8	137	11.6	40-150	<40
Endrin	46.9	50.0	157 #	220	50.0	176 #	258	15.9	40-150	<40
Heptachlor	0.00	20.0	18.2	91.0	20.0	19.3	96.5	5.9	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	17.7	88.5	20.0	19.2	96.0	8.1	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	21.2	84.8	25.0	21.5	86.0	1.4	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	23.2	92.8	25.0	23.3	93.2	<1	30-150	<40

QC Batch No: 022119EB1; Dup or Spiked Sample: 96370.07; LCS: Clean Sand; QC Prepared: 02/21/2019; QC Analyzed: 02/21/2019; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aldrin	20.0	17.2	86.0	20.0	18.4	92.0	6.7	50-150	<40	
4,4'-DDT (DDT)	50.0	35.2	70.4	50.0	38.5	77.0	9.0	50-150	<40	
Dieldrin	50.0	43.0	86.0	50.0	44.8	89.6	4.1	50-150	<40	
Endrin	50.0	34.5	69.0	50.0	38.1	76.2	9.9	50-150	<40	
Heptachlor	20.0	16.4	82.0	20.0	17.4	87.0	5.9	50-150	<40	
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	15.6	78.0	20.0	16.4	82.0	5.0	50-150	<40	
Surrogates										
Decachlorobiphenyl	25.0	18.1	72.4	25.0	18.4	73.6	1.6	30-150	<40	
Tetrachloro-m-xylene	25.0	20.7	82.8	25.0	20.5	82.0	<1	30-150	<40	

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QUALITY CONTROL RESULTS

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Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 022519EB1; Dup or Spiked Sample: 96370.05; LCS: Clean Sand; QC Prepared: 02/25/2019; QC Analyzed: 02/25/2019; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	21.4	107	20.0	19.7	98.5	8.27	40-150	<40
4,4'-DDT (DDT)	0.00	50.0	58.1	116	50.0	58.4	117	<1	40-150	<40
Dieldrin	0.00	50.0	59.0	118	50.0	56.7	113	4.33	40-150	<40
Endrin	0.00	50.0	59.7	119	50.0	57.4	115	3.42	40-150	<40
Heptachlor	0.00	20.0	21.4	107	20.0	19.4	97.0	9.80	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	20.2	101	20.0	18.8	94.0	7.18	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	29.3	117	25.0	29.7	119	1.71	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	26.6	106	25.0	21.3	85.2	19.6	30-150	<40

QC Batch No: 022519EB1; Dup or Spiked Sample: 96370.05; LCS: Clean Sand; QC Prepared: 02/25/2019; QC Analyzed: 02/25/2019; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aldrin	20.0	13.8	69.0	20.0	20.3	102	38.6	50-150	<40	
4,4'-DDT (DDT)	50.0	55.7	111	50.0	56.7	113	1.79	50-150	<40	
Dieldrin	50.0	51.5	103	50.0	60.5	121	16.1	50-150	<40	
Endrin	50.0	47.5	95.0	50.0	51.6	103	8.08	50-150	<40	
Heptachlor	20.0	14.0	70.0	20.0	20.6	103	38.2	50-150	<40	
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	14.0	70.0	20.0	19.8	99.0	34.3	50-150	<40	
Surrogates										
Decachlorobiphenyl	25.0	29.0	116	25.0	29.7	119	2.59	30-150	<40	
Tetrachloro-m-xylene	25.0	14.6	58.4	25.0	23.5	94.0	61.0	30-150	<40	

American Environmental Testing Laboratory Inc.
2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: James Steele
Page: **48**

Site

Proposed High School #8
APN 214-002-059
N. Rose Ave.,Oxnard,CA 93030

Project ID: 100-SBA-T39275
Project Name: Proposed High School #8

AETL Job Number	Submitted	Client
96370	02/19/2019	T/TSB

Method: (8081A), Organochlorine Pesticides by GC

QC Batch No: 030119EB1; Dup or Spiked Sample: 96370.03; LCS: Clean Sand; QC Prepared: 03/01/2019; QC Analyzed: 03/01/2019; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aldrin	0.00	20.0	21.8	109	20.0	20.0	100	8.6	40-150	<40
4,4'-DDT (DDT)	72.0	50.0	263 #	382	50.0	110	76.0	133.6	40-150	<40
Dieldrin	0.697	50.0	68.7	136	50.0	62.2	123	10.0	40-150	<40
Endrin	15.4	50.0	123 #	215	50.0	106 #	181	17.2	40-150	<40
Heptachlor	0.00	20.0	21.4	107	20.0	19.3	96.5	10.3	40-150	<40
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	0.00	20.0	19.7	98.5	20.0	17.9	89.5	9.6	40-150	<40
Surrogates										
Decachlorobiphenyl	0.00	25.0	31.5	126	25.0	27.0	108	15.4	30-150	<40
Tetrachloro-m-xylene	0.00	25.0	23.7	94.8	25.0	22.4	89.6	5.6	30-150	<40

QC Batch No: 030119EB1; Dup or Spiked Sample: 96370.03; LCS: Clean Sand; QC Prepared: 03/01/2019; QC Analyzed: 03/01/2019; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aldrin	20.0	15.9	79.5	20.0	14.8	74.0	7.2	50-150	<40	
4,4'-DDT (DDT)	50.0	42.4	84.8	50.0	43.7	87.4	3.0	50-150	<40	
Dieldrin	50.0	48.2	96.4	50.0	46.0	92.0	4.7	50-150	<40	
Endrin	50.0	63.0	126	50.0	61.5	123	2.4	50-150	<40	
Heptachlor	20.0	15.5	77.5	20.0	14.6	73.0	6.0	50-150	<40	
gamma-Hexachlorocyclohexane (Gamma-BHC, Lindane)	20.0	15.1	75.5	20.0	14.1	70.5	6.8	50-150	<40	
Surrogates										
Decachlorobiphenyl	25.0	25.5	102	25.0	24.2	96.8	5.2	30-150	<40	
Tetrachloro-m-xylene	25.0	18.9	75.6	25.0	15.8	63.2	17.9	30-150	<40	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

D - DATA VALIDATION MEMORANDUM

TETRA TECH, INC.
DATA VALIDATION MEMORANDUM
FOR THE OXNARD UNION SCHOOL SITE PROJECT

1.0 INTRODUCTION

This memorandum summarizes the findings of validation effort conducted on the soil gas and soil sample data results from the Oxnard Union High School Site Project, Supplemental Site Investigation (SSI). A typical PEA validation effort consists of a review of 10 percent of the analytical data; however, due to the limited number of analytical batches associated with the subject investigation, 100 percent of the data were reviewed. The validation guidance used in evaluating the data is presented in *USEPA National Functional Guidelines for Inorganic Data Review (2017)* and *USEPA National Functional Guidelines for Organic Data Review (2017).* The data review consisted of an evaluation of all applicable Quality Control (QC) sample results as they relate to the field data under review. Raw data were not reviewed. The review determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

2.0 EXECUTIVE SUMMARY

The data reviewed were generated by American Environmental Testing Laboratories, Inc. (AETL) located in Burbank, California and were contained in one data package named 96370. Analyses were conducted on 30 normal environmental soil samples and three field duplicates using EPA method SW8081A for organochlorine pesticides. The results of the data validation indicate all data are usable and some data were qualified as estimated due to matrix spike recovery and duplicate imprecision errors. The errors and qualified data are denoted in section 4.1. The Data Quality Indicators (DQOs) of accuracy, precision, representativeness, comparability, and sensitivity all met their criteria.

3.0 EVALUATION CRITERIA

The data were evaluated by results from the following QC elements:

- Holding Times
- Method Blanks
- Laboratory Control Samples
- Surrogate Recovery (Organic Methods)
- Field Replicate Analysis
- Spiked Duplicate Analysis
- Compound Identification
- Analytical Method Compliance

4.0 AMERICAN ENVIRONMENTAL TESTING LABORATORY

The AETL data were contained in data package 96370.The samples were analyzed in multiple batches for the method(s) as listed below.

1. Organochlorine Pesticides using EPA method SW8081A (33 total samples)

The data were logged into the laboratory under compliant Chain-Of-Custody documentation. The samples were shipped in one iced cooler delivered to the lab.

The sample were received at the lab in good condition and with no exceptions noted. For each parameters/method listed above there are individual method headers listed below that explain the data validation and data quality.

4.1 Organochlorine Pesticides by EPA method SW8081A

4.1.1 Holding Time

The samples were analyzed within the method specified holding time.

4.1.2 Method Blank

The results for the method blank were non-detect for all compounds at the specified MDL.

4.1.3 Laboratory Control Sample

The LCS recoveries were within the specified acceptance limits for all compounds.

4.1.4 Surrogate Recovery

The surrogate recoveries were within the specified acceptance limits for all samples.

4.1.5 Field Duplicate Analysis

No field duplicate samples reported errors except as listed below

Field duplicates Soil Dup 1 had RPD errors that qualified samples SS-56-1. Analytes 4,4'-DDE, 4,4'-DDT, and Dieldren in sample SS-56-1 were qualified as estimated and assigned a "J" qualifier. The estimated data are usable as estimated values.

4.1.6 Matrix Spiked Duplicate Analysis

The MS and MSD recoveries were within the specified acceptance limits for all compounds except as listed below. The MS/MSD RPD values were in control.

Field sample SS-41-1 and SS-43-2 were qualified as estimated and assigned a "J" qualifier due to MS/MSD recovery errors. In each sample the DDT and Endrin analytes were qualified. The estimated data are usable for the intended purpose.

4.1.7 Compound Identification

All compounds were identified by the correct retention as compared to the standard's retention time and the method guidelines for identification were met.

4.1.8 Analytical Method Compliance

The data review showed the data to be method compliant and followed the criteria stated in method SW8081A.

4.2 Overall Analytical Evaluation

Based on the results of this data validation review, it is concluded that the AETL soil data are usable as stated and qualified. The results are considered correct and reliable The DQOs were satisfied per the Work Plan and the data are usable for their intended purpose. The overall analytical evaluation indicates all analytical criteria met for this data set.

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PLACEWORKS

TECHNICAL MEMORANDUM

DATE January 14, 2019

TO James R. Steele, P.G., C.E.G., C.H.G.
Associate Director

Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111

FROM Steve Bush, P.E., Senior Engineer

SUBJECT Maulhardt Ranch High School No. 8
Water Pipeline Safety Hazard Assessment
TETR-02.0

Introduction

PlaceWorks was retained by Tetra Tech Inc. on behalf of the Oxnard Union High School District (District) to conduct a Water Pipeline Safety Hazard Assessment (WPSHA) for Maulhardt Ranch High School No. 8. The District proposes to develop a new high school on an approximately 48.2-acre site within the 108-acre Maulhardt Ranch property at 1853 Camino Del Sol in the City of Oxnard. Four large volume (12-inch diameter and larger) water pipelines were identified within 1,500 feet of the project site. The WPSHA evaluates potential flooding impacts to the project site, and was conducted as required by California Code of Regulations (CCR), Title 5, Section 14010(h).

1.1 PROJECT LOCATION

The project site is located at the northeast corner of N. Rose Avenue and Camino Del Sol in the City of Oxnard, Ventura County, California (Figure 1). The site is relatively flat; gently sloping from northeast to southwest. Site elevations are between approximately 60 and 70 feet above mean sea level (amsl). The property is bounded by Camino Del Sol to the south, N. Rose Avenue to the west, and predominately residences to the north and east. Rio Rosales Elementary School is also located east of the proposed school site. Commercial and residential uses are located to the south across from Camino Del Sol. The remaining land uses within the Maulhardt Ranch property include residences, open space, parks, and neighborhood commercial. US Route 101 is approximately 1 mile to the north of the school site.

2. Water Pipeline Safety Hazard Assessment

2.1 REGULATORY REQUIREMENTS

Under Education Code Section 17251, the California Department of Education (CDE) has authority to approve the acquisition of proposed school sites. The school district must obtain CDE approval for sites to receive state funds under the state's School Facilities Program administered by the State Allocation Board. CDE standards and regulations for this process are presented in CCR, Title 5, Sections 14010, 14011, and 14012. Information on assessing safety hazard related to pipelines is discussed in Section 14010 (h):

> *The site shall not be located near an above-ground water or fuel storage tank or within 1,500 feet of the easement of an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission.*

No high pressure natural gas pipelines or hazardous liquid pipelines were identified within 1,500 feet of the project site.[1] The CDE School Site Selection and Approval Guide also contains provisions for evaluating high-pressure water pipelines:[2]

> *To ensure the protection of students, faculty, and school property if the proposed school site is within 1,500 feet of the easement of an aboveground or underground pipeline that can pose a safety hazard, the school district should obtain the following information from the pipeline owner and operator:*
>
> - *Pipeline alignment, size, type of pipe, depth of cover,*
> - *Operating water pressures in pipelines near the proposed school site,*
> - *Estimated volume of water that might be released from the pipeline should a rupture occur on the site, and*
> - *Owner's assessment of the structural condition of the pipeline.*

[1] National Pipeline Mapping System (NPMS), 2018. Hazardous liquids pipeline map produced by the NPMS Public Viewer at https://pvnpms.phmsa.dot.gov/PublicViewer/. Accessed on January 4, 2019.

[2] California Department of Education (CDE), 2000. Resources for School Facilities Planning, School Selection and Approval Guide. Prepared by School Facilities Planning Division, CDE, Sacramento, CA.

2.2 ASSESSMENT METHODOLOGY

To meet the requirements of CCR Title 5 Sections 14010 (d) and (h) and CDE's policy on pipelines, this WPSHA is designed to meet the following objectives:

» Identify all high pressure/high volume water pipelines within 1,500 feet of the proposed school site and evaluate the potential for flooding, and
» Where appropriate, identify and develop mitigation measures to reduce flooding impacts to acceptable levels.

The CDE has developed risk analysis procedures for evaluating flooding associated with releases from large diameter water pipelines, as described in CDE's Guidance Protocol for School Site Pipeline Risk Analysis.[3] A safety issue associated with large diameter water pipelines is the potential for flooding. Also, releases from underground water pipelines can cause subterranean erosion of saturated soil, leading to subsidence or formation of a sinkhole. The most likely cause of failure is a large magnitude earthquake and associated strong ground shaking.

Although no specific criteria have been established by the CDE as a threshold of significance for flooding at a project site, a water depth of 12 inches or greater is a trigger that could warrant further evaluation.[4]

2.3 PIPELINE LOCATION AND OPERATIONAL DATA

Based on maps provided by Tetra Tech and United Water Conservation District (UWCD), there are four high volume (≥12 inch diameter) water pipelines within 1,500 feet of the project site, as summarized in Table 1. The alignments of the pipelines are shown on Figure 1.

Table 1 Water Pipelines

PIPELINE DIAMETER	PIPELINE LOCATION	OWNER	MATERIAL OF CONSTRUCTION
12- inch	N. Rose Avenue	City of Oxnard	Polyvinyl chloride (PVC)
12- inch	Camino Del Sol	City of Oxnard	Asbestos Cement Pipe (ACP)
12- inch	Kohala Street	City of Oxnard	ACP
42-inch	N. Rose Avenue	United Water Conservation District	Cement Mortar Lined and Coated (CCLC) Steel Pipe

[3] California Department of Education (CDE), 2007. Guidance Protocol for School Site Pipeline Risk Analysis, Prepared by URS Corporation. Dated February 2007.

[4] Ibid.

2.4 WATER PIPELINE FLOODING ANALYSIS

The CDE requires that the risk of releases from large volume (≥12 inches) water pipelines be evaluated. The CDE Guidance Protocol for School Pipeline Risk Analysis provides a methodology for evaluating the potential for flooding. A probability analysis is not required.

All water pipelines listed in Table 1 are located beneath streets. According to the preliminary grading and site plan for the project, curbing will be installed on all the streets surrounding the development, including the east side of N. Rose Avenue. Additionally, N. Rose Avenue will undergo improvements and street widening with project implementation.

A pipeline flooding analysis was conducted for these pipelines to determine the depth and location of water flow within the street in the event of a pipeline leak or rupture. For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. In addition, no credit was taken for the presence of storm drains along these streets. Release impacts were calculated based on the procedures specified in the CDE manual. The release rate was determined by multiplying the pipe area by an assumed velocity of 5 feet per second (fps). Then the release rate was compared to the carrying capacity of the street, taking into account longitudinal slope, to determine if the water would be contained within the confines of the street curbing.[5] The result is provided in Table 2.

Table 2 Street Flow

PIPELINE DIAMETER	PIPELINE LOCATION	RELEASE RATE (CFS)	STREET WIDTH (FT)	DEPTH OF FLOW IN STREET (IN)	EXCEEDS STREET CARRYING CAPACITY?[1]
12- inch	N. Rose Avenue	3.93	104	3.8	No
12- inch	Camino Del Sol	3.93	72	4.1	No
12- inch	Kohala Street	3.93	40	4.1	No
42-inch	N. Rose Avenue	48.1	104	9.8	Yes

[1] Assuming 8-inch curbing for arterial streets and 6-inch curbing for residential streets.

Assuming a standard 8-inch curb for arterial roadways (e.g., N. Rose Avenue and Camino Del Sol) and 6-inch curb for all residential streets (e.g., Kohala Street), the water released from a full-flow rupture of the 12-inch water mains would be entirely contained within the confines of the curbing and would not result in flooding at the school site. However, a release from the 42-inch UWCD pipeline along N. Rose Avenue would exceed the carrying capacity of the street, and could potentially impact the project site.

The predicted worst-case depth of flow in the street was 9.8 inches for a full release of the 42-inch water line. Assuming a standard 8-inch curb for N. Rose Avenue, released water from the 42-inch

[5] Jeffers & Associates, 2006. Modified Manning's Equation Solver. Version 3.0.

water line would exceed the carrying capacity of the street by 1.8 inches. However, the CDE has postulated a level of concern as a water depth of 12 inches or greater at the school site. Therefore, the calculated water depth of 1.8 inches would be less than CDE's level of concern and would not pose a significant risk to occupants at the project site in the unlikely event of a water pipeline break.

For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. Given that the pipeline is buried approximately 2 to 3 feet bgs, only a portion of the water released from the pipeline would reach the surface.[6] In addition, no credit was taken for the existing surface topography and the presence of storm drains along the streets.

3. Conclusions

In summary, a potential break in any of the water pipelines located within 1,500 feet of the site would not result in significant flooding at the project site.

Respectfully submitted,

PlaceWorks

Steve Bush, PE
Senior Engineer



[6] United Water Conservation District (UWCD). Correspondence provided by Robert Richardson, Associate Engineer, to Dina El Chammas Gass, Project Engineer, PlaceWorks. Dated January 4, 2019.



Source: ESRI, 2019

Figure 1
Site Location and Pipeline Map

Appendix A – Water Analysis

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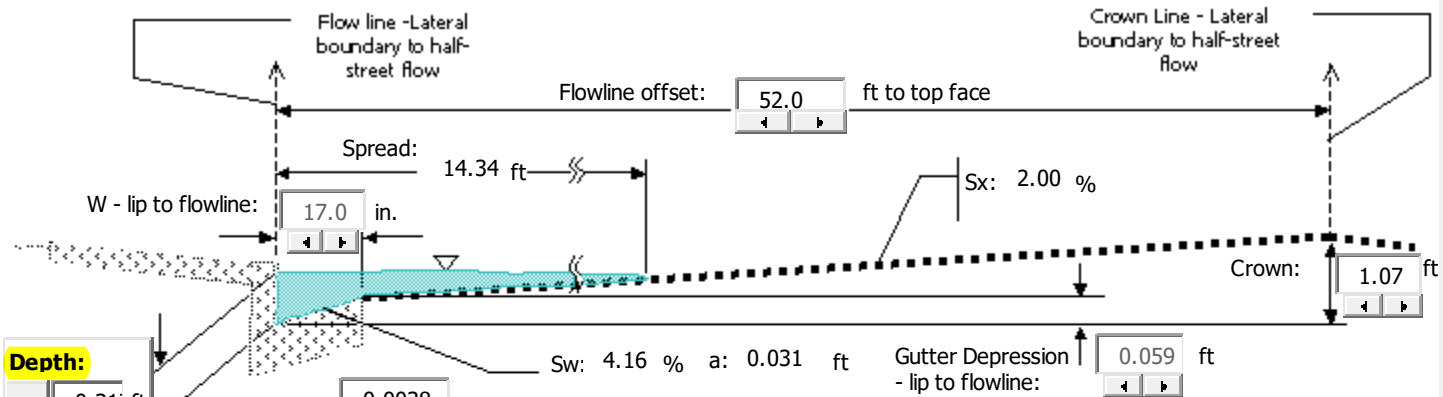
Modified Manning's Equation Solver

Version: 3.0<>2/26/2018 4:59:12 PM

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Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.61 %

Length of curb opening inlet: 12.0 ft

Lt: 13.48 ft

80 % Clear Efficiency 89.4 %

Curb opening flowby: 0.42 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.67 ft/s

Eo: 99.96 %

Rs: 19.71 % Rf: 100.00 %

Side flow captured: 0.04 cfs Frontal captured: 0.21 cfs

Total combined CB flowby: 0.17 cfs

Street Parameters:

Q: 3.93 cfs

K: 63.8

Vel: 1.89 ft/s

Eo: 26.0 %

W/T: 0.0988

Standard Manning's:

Q: 3.23 cfs

K: 52.5

Vel: 1.56 ft/s

Rh: 0.14 ft

Area: 2.08 sf

Street Flow - N Rose Avenue
12-inch Water Main

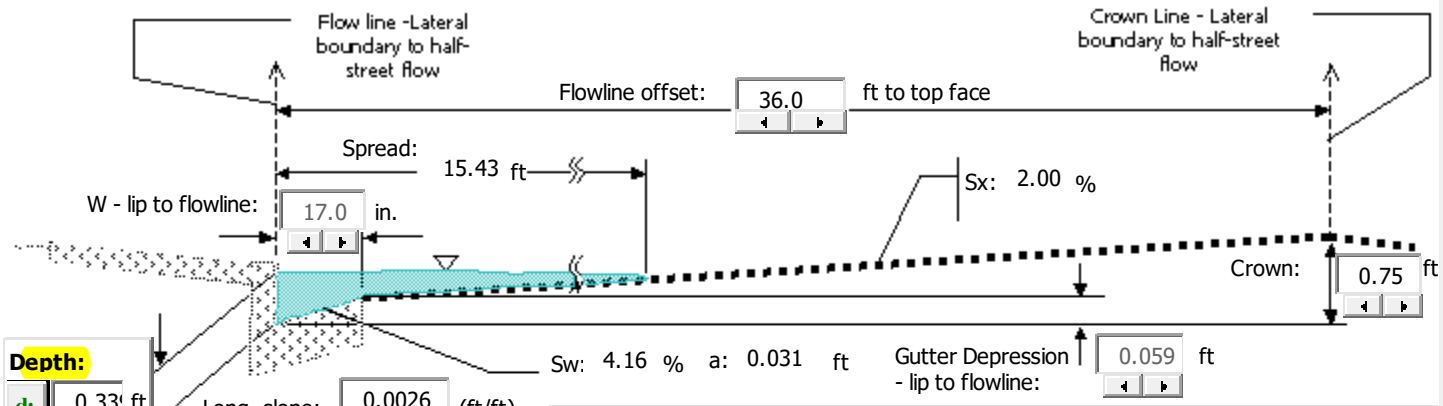
Modified Manning's Equation Solver

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Street Parameters:

Q:	3.93	cfs
K:	77.2	
Vel:	1.64	ft/s
Eo:	24.2	%
W/T:	0.0918	

Standard Manning's:

Q:	3.24	cfs
K:	63.6	
Vel:	1.35	ft/s
Rh:	0.15	ft
Area:	2.40	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.37 %

Length of curb opening inlet: 12.0 ft

Lt: 12.36 ft

80 % Clear Efficiency 93.3 %

Curb opening flowby: 0.27 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.30 ft/s

Eo: 100.00 %

Rs: 25.87 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.13 cfs

Total combined CB flowby: 0.10 cfs

Street Flow - Camino Del Sol
12-inch Water Main

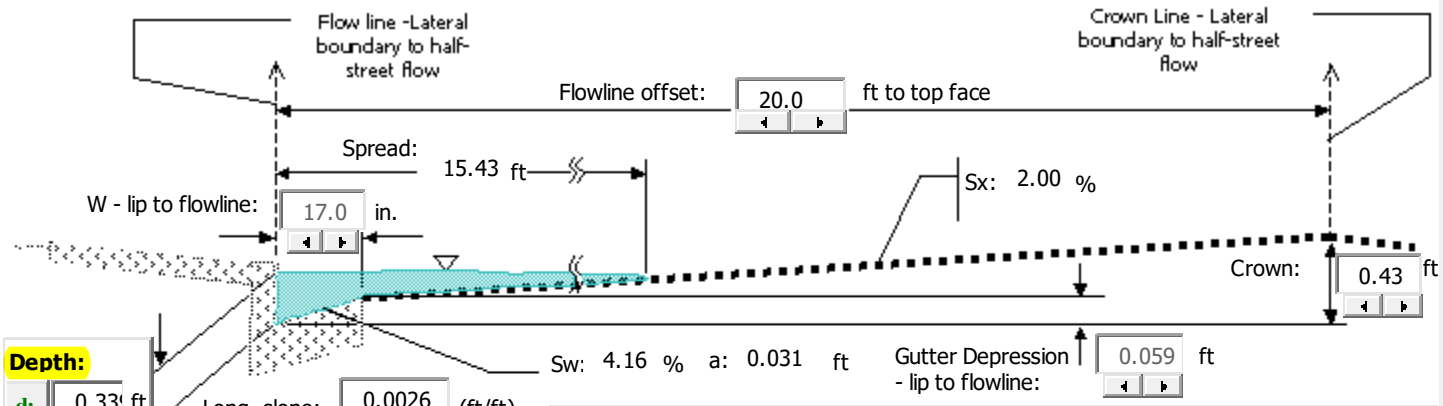
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Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	77.1	
Vel:	1.64	ft/s
Eo:	24.2	%
W/T:	0.0918	

Standard Manning's:

Q:	3.24	cfs
K:	63.5	
Vel:	1.35	ft/s
Rh:	0.15	ft
Area:	2.40	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.37 %

Length of curb opening inlet: 12.0 ft

Lt: 12.36 ft

80 % Clear Efficiency 93.3 %

Curb opening flowby: 0.26 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 1.29 ft/s

Eo: 100.00 %

Rs: 25.86 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.13 cfs

Total combined CB flowby: 0.10 cfs

Street Flow - Kohala Street
12-inch Water Main

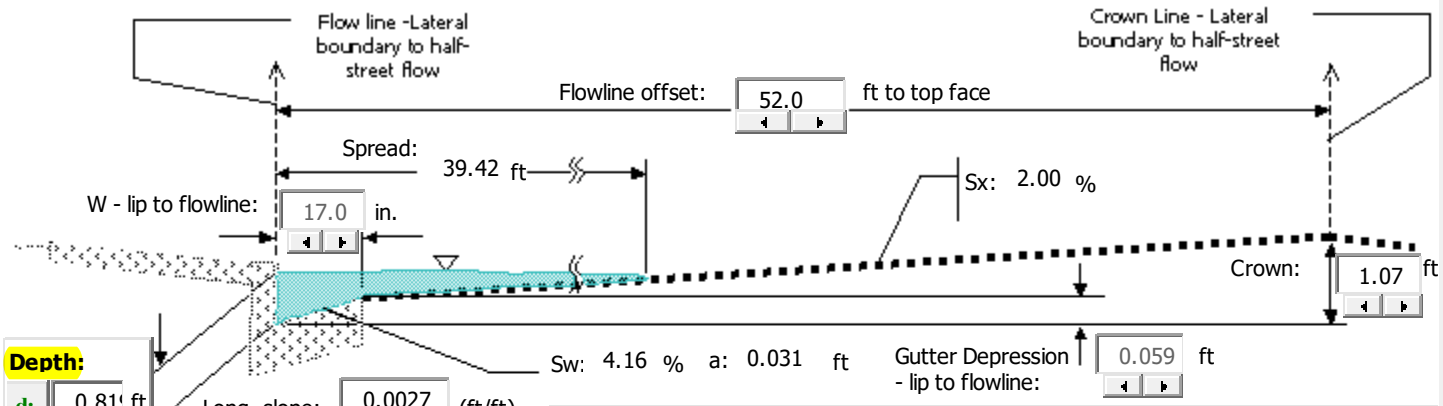
Modified Manning's Equation Solver

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Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 3.33 %

Length of curb opening inlet: 12.0 ft

Lt: 47.63 ft

80 % Clear Efficiency 33.3 %

Curb opening flowby: 32.08 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 3.99 ft/s

Eo: 18.36 %

Rs: 8.82 % Rf: 100.00 %

Side flow captured: 2.57 cfs Frontal captured: 2.94 cfs

Total combined CB flowby: 26.56 cfs

Street Parameters:

Q: 48.10 cfs

K: 925.7

Vel: 3.09 ft/s

Eo: 9.6 %

W/T: 0.0359

Standard Manning's:

Q: 39.82 cfs

K: 766.3

Vel: 2.56 ft/s

Rh: 0.39 ft

Area: 15.55 sf

Street Flow - N Rose Avenue
42-inch Water Pipeline

Appendix B – Agency Correspondence

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SEE MAP R-19

Site

CAMINO DEL SOL

61-220 B SHT # 1

CITY OF OXNARD

DEL REY PL

SAN JOSE ST

SAN GORGONIO AVE

GIBRALTAR ST

HALCON ST

IMPERIAL ST

JULIAN ST

SAN JACINTO ST

SAN LUIS ST

KOHALA ST

BERNOULLI CIR

BALSAM ST

CORDOVA ST

N DRISKILL ST

EVEREST ST

FEATHERSTONE ST

ALTAR ST

4"FIRE LINE

BURIED OR MISSING

BACKFLOW DEVICE

IRRIG

SEE MAP Q-20

SEE MAP S-20

SEE MAP R-21

R-20	City of Oxnard	0 180 360 FEET	WATER ATLAS	June 2011	§	FH: 35 W V: 93	R-20

SEE MAP Q-19

FLORENTINA DR

SHT # 34

8" PVC

12" PVC

42" UWCD

90-57A SHT # 49

CITY OF OXNARD

95-06A SHT # 36

ABANDONED

CAMINO DEL SOL

91-171A SHT # 9

95-06A SHT # 30

4" BLOWOFF VALVE

12"X10" RED.

CITY OF OXNARD

10" ACP

12" ACP

61-222 B SHT # 2

4" RP

AR

GLORIA CT

H-1

H-2

H-3

H-4

H-5

H-6

H-7

H-8

H-9

H-10

H-11

H-12

H-13

H-14

H-15

H-16

H-17

H-18

H-20

H-21

H-22

61-221 B SHT # 1

4" PVC

4"FIRE LINE

4" DEVICE

N ROSE AVE

SAN GORGONIO AVE

8" ACP

6" CIP

CARMELITA CT

DOLORES CT

ELIZA CT

ALPINE ST

BALSAM ST

E FIRST ST

Site

SEE MAP P-20

SEE MAP R-20

SEE MAP Q-21

Q-20	City of Oxnard	0 160 320 FEET	WATER ATLAS		February 2010	§	FH: 21 W V: 44	Q-20

Steve Bush

From: Robert Richardson <robertr@unitedwater.org>
Sent: Friday, January 4, 2019 1:10 PM
To: Dina El Chammas
Cc: Maryam Bral; Christy Ramirez; Mike Ellis; Craig Morgan; Adrian Quiroz
Subject: RE: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard
Attachments: OH-100-024.tif; OH-100-025.tif

Hello Ms. Chammas,

I am responding to your inquiry regarding the 42-inch UWCD-owned pipeline on Rose Ave. The pipeline material is cement mortar lined and coated cylindrical steel with spirally wound reinforcing rods. Attached are drawings for your reference. If you have any additional questions, please do not hesitate to contact me.

Thank you and respectfully,

Robert Richardson, PE
Associate Engineer
United Water Conservation District
(805) 317-8982 ext 124
robertr@unitedwater.org

From: Mike Ellis
Sent: Friday, January 4, 2019 12:47 PM
To: Craig Morgan <craigm@unitedwater.org>; Robert Richardson <robertr@unitedwater.org>; Adrian Quiroz <AdrianQ@unitedwater.org>
Cc: Maryam Bral <Maryamb@unitedwater.org>; Christy Ramirez <christyr@unitedwater.org>
Subject: Fwd: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard

Engineers,
Can you provide the requested OH pipeline information to Ms. Chammas please?

Michael Ellis
Chief Operations Officer
United Water Conservation District
3561 N. Rose Ave.
Oxnard, CA 93036
(805) 485-5114 ext. 16
mikee@unitedwater.org

Begin forwarded message:

> **From:** "Dina El Chammas" <delchammas@placeworks.com>
> **To:** "Mike Ellis" <mikee@unitedwater.org>
> **Subject: Water Pipeline Information Request - 1853 Camino Del Sol, Oxnard**
>
> Good morning,

The Oxnard Union High School District is evaluating a site for a proposed school campus, located at 1853 Camino Del Sol in the City of Oxnard. In compliance with CCR Title V Section 14010 (h), the District has contracted the services of PlaceWorks to complete a safety hazard assessment related to water pipelines 12-inches in diameter or greater located within a 1,500-foot radius of the school site. The water atlas attached shows a UWCD 42" water pipeline in North Rose Avenue directly west of the proposed school site.

Would it be possible to get more information regarding the pipeline material?

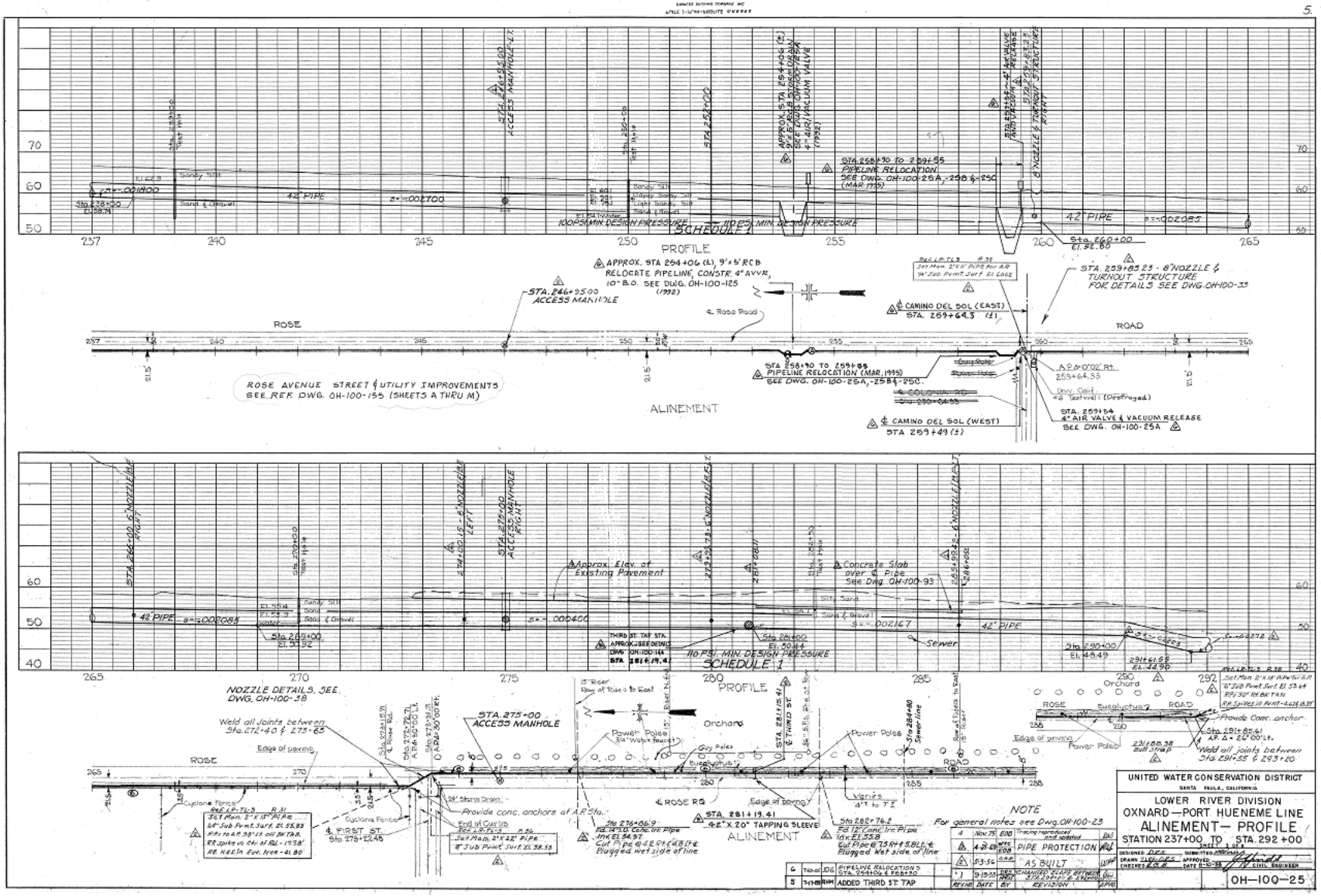
Thank you in advance,

DINA EL CHAMMAS GASS
Project Engineer/Planner, Environmental Services

3 MacArthur Place, Suite 1100 | Santa Ana, California 92707
714.966.9220 | delchammas@placeworks.com | placeworks.com

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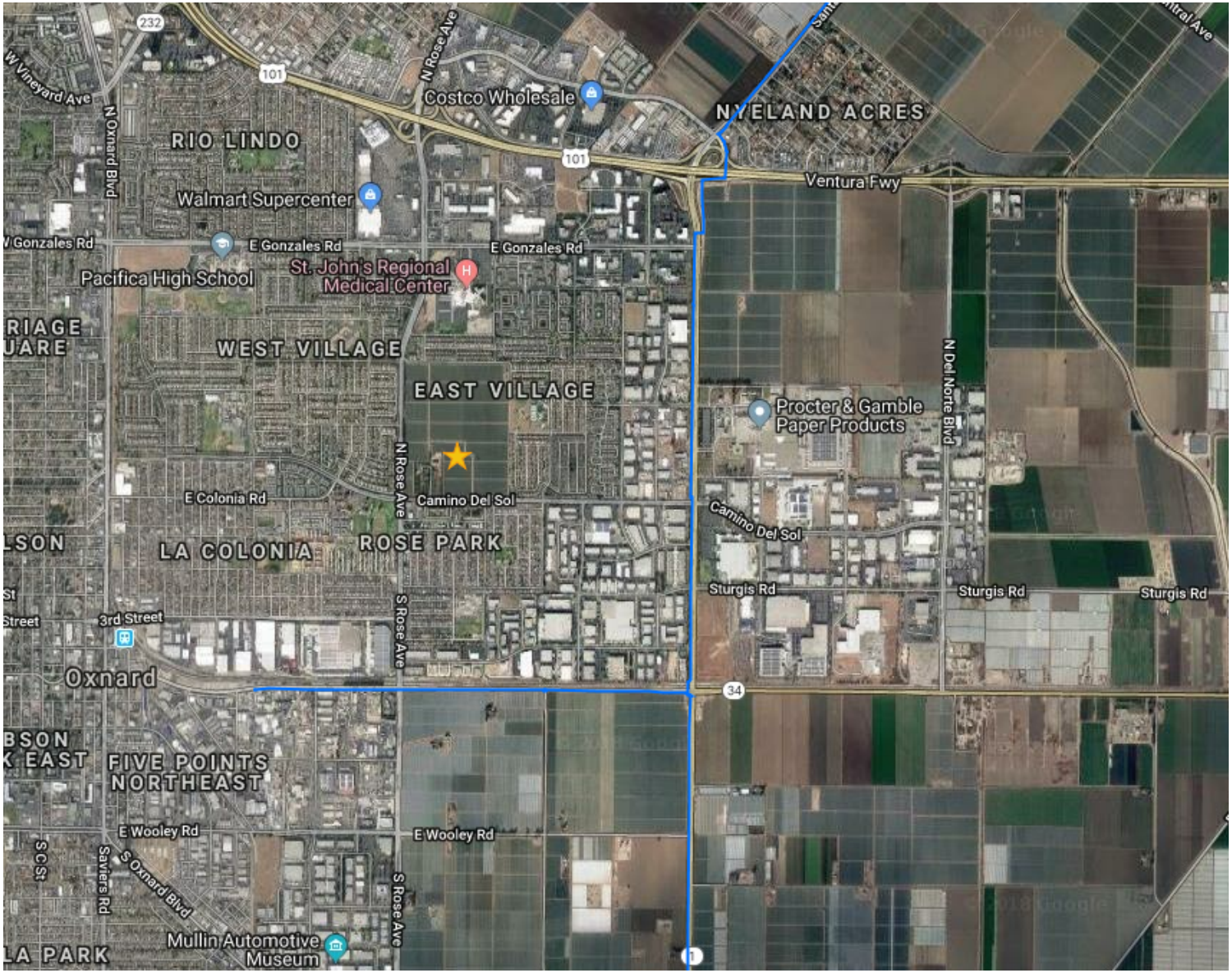
6	Tread	JDG	PIPELINE RELOCATIONS STA. 254+06 & 258+90		
5	7-11-69	RWH	ADDED THIRD ST TAP		
4	Nov 75	EMB	Tracing reproduced and updated	DAJ	
3	4-2-69	WYC	PIPE PROTECTION	WAL	
2	5-3-56	GAR	AS BUILT	WAL	
1	9-15-55	REM	CHANGED SLOPE BETWEEN STA 13+41 & 14+00	DAJ	
REVNO	DATE	BY	REVISION	APPD	

UNITED WATER CONSERVATION DISTRICT
SANTA PAULA, CALIFORNIA

LOWER RIVER DIVISION
OXNARD—PORT HUENEME LINE
ALINEMENT— PROFILE
STATION 237+00 TO STA. 292+00

SHEET 1 OF 4
DESIGNED DFS SUBMITTED
DRAWN JDG/GES APPROVED
CHECKED RSB DATE 8-10-55 CIVIL ENGINEER

OH—100—25



Legend

- Gas Transmission Pipelines
- Hazardous Liquid Pipelines

500 m
1000 ft

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: Jan 14, 2019

811 Know what's below. Call before you dig.

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J WATER RESOURCES SYSTEM REPORTS

JENSEN
DESIGN & SURVEY, INC.
Delivering excellence through experience

1672 Donlon Street
Ventura, CA 93003
Local 805 654-6977
Fax 805 654-6979
www.jdscivil.com

PAR01.5808
April 25, 2019

City of Oxnard
Asitha Withanage
c/o Paul Wendt
305 West Third Street – Third Floor
Oxnard, CA 93030

Subject: Sewer Calculations
Northeast Corner of Rose Avenue and Camino del Sol

Dear Mr. Withanage,

The approximately 100 acre property at the northeast corner of Rose Avenue and Camino del Sol, commonly called the Maulhardt property, is the proposed site of a new high school, a residential development, and a smaller commercial development. This letter is an update to the previous site plan and calculations that were submitted in June 2018.

Updated calculations for the proposed sewer flows from the site are included for your review and use. We understand the City of Oxnard will run the City's sewer model with these new flows to determine whether the existing downstream facilities can accommodate the proposed sewer flows.

The calculations reflect two options for sewering the proposed site. See attached exhibits for the proposed layouts and peak flows. Option 1 has half of the residential development and all of the commercial development draining to Rose Ave sewer; and the other half of the residential and all of the high school site draining to Camino del Sol sewer. Option 2 shows all of the residential and all of the commercial directed to Rose Ave and all of the high school directed to Camino del Sol. Also attached are the calculations for determining sewer flow rates for the site.

Your analysis of these flows through the City's sewer model will allow us to determine how best to proceed with design of the project site. We look forward to your input. Feel free to contact us with any questions or concerns.

Sincerely,
Jensen Design & Survey, Inc.

Ava Ediger, P.E.
Senior Civil Engineer

Enclosures

REFERENCE 1

AVERAGE SEWAGE FLOW RATES

TYPE OF DEVELOPMENT		GALLONS/PERSON/DAY	
Mobil Home Parks (Average)	.....	180	per space
(Delux)..	.....	225	per space
Overnight & Travel Trailer	.....	150	per space
Restaurants - Cafeterias..	.....	15	per employee
Add Kitchen Waste..	.....	7	per meal served
Add Garbage Grinder	.....	1	per meal served
Toilet & Kitchen Waste	.....	10	per customer
Day time Operation	.....	70	per seat space
24-hr. Operation...	.....	100	per seat space
Curb Service	.....	50	per car
With Tavern, add...	.....	2	per customer
Schools and Colleges			
Staff and Office...	.....	20	per person
Elementry students.	.....	15	per student
Intermediate and High	.....	20	per student
Day Schools w/cafeteria only....		15	per student
w/showers	.....	20	per student
Boarding school....	.....	80	per student
College Dormitories	.....	85	per student
Hospitals	.....	100	per bed
.....	.....	150	per patient & Staff
Institutions (Resident)	.....	100	per person
Nursing homes	.....	100	per person
Rest homes	.....	100	per person
Convalescent	.....	85	per bed
Hotel/Motels - No private bath	.....	100	per room (2 persons)
with Private bath	.....	150	per room (2 persons)
Apartment Buildings:			
Bachelor or Single Dwelling units (Studio)	.....	100	per dwelling unit
1 bedroom dwelling unit	.....	150	per dwelling unit
2 bedroom dwelling unit	.....	200	per dwelling unit
3 bedroom dwelling unit	.....	250	per dwelling unit

REV. APPR. BY DATE

CITY OF Oxnard

GENERAL REQUIREMENTS – SEWER

DRAWN: SOHER CKD. Jay Patel APPR. BY Benjamin Y. Wong

Public Works Department

STANDARD PLAN

PLATE 43

SHEET 2 OF 2

REFERENCE 2

SEWAGE GENERATION FACTOR AND LAND USE

BASED ON CURRENT PLANNING DESIGNATION

SIMBOL	LAND USE DESCRIPTION	ASSUMED UNIT/ AC.	FLOW RATE GPM / AC.	FLOW RATE GPD / AC.	FLOW RATE GPD/ UNIT
R1	SINGLE FAMILY RESIDENTIAL	4.0	0.853	1,228.32	307.1
R2	DUPLEX (MULTI FAMILY RESIDENTIAL)	11.2	1.751	2,521.44	225.2
R3	GARDEN APTS. (TRI & QUADPLEX)	20.0	3.143	4,525.92	226.3
R4	HIGH RISE RESIDENTIAL	38.3	6.000	8,640.00	225.6
RPD	RESIDENTIAL PLANNED DEVELOPMENT	11.2	1.751	2,521.44	225.2
MHP	MOBIL HOME PARK	4.0	----	612.00	153.0
		ASSUMED T.S.F./AC.			GPD/ T.S.F.
CO	COMMERCIAL OFFICE	10.0	2.083	3,000.00	300.0
C1	NEIGHBORHOOD COMMERCIAL	13.6	1.042	1,500.00	110.0
C2	GENERAL COMMERCIAL	19.8	1.042	1,500.00	76.0
C3	HEAVY COMMERCIAL	10.0	4.167	6,000.00	600.0
CB	CENTRAL BUSINESS DISTRICT	10.0	3.125	4,500.00	450.0
CPD	COMMERCIAL PLANNED DEVELOPMENT	11.0	2.083	3,000.00	300.0
TP	TRAILER PARK	13.0	1.391	2,003.00	153.0
M1	LIGHT MANUFACTURING	11.75	2.244	3,232.00	275.0
M2	HEAVY MANUFACTURING	19.38	2.065	2,974.00	153.5
M3	HEAVY MANUFACTURING AND GROUP HOUSING	19.38	2.065	2,974.00	153.5
MPD	MANUFACTURING PLANNED DEVELOPMENT	19.38	2.065	2,974.00	153.5
CR	COMMUNITY RESERVE	---	0.449	646.60	----
AO	AGRICULTURAL - OIL DRILLING	---	0.449	646.60	----

REV. APPR BY DATE

CITY OF Oxnard

GENERAL REQUIREMENTS – SEWER

DRAWN: SOHER CKD. Jay Patel APPR. BY Benjamin J. Wong

Public Works Department

STANDARD PLAN

PLATE 44

SHEET 1 OF 1

RIBERA DRIVE

POSADA DR.

CESAR CHAVEZ DR.

CESAR CHAVEZ DRIVE

FOCAL POINT

VILLAGE SERVICES
1
2.0 AC

10
0.3 AC

PASEO

PLANNING AREA 'A'- PROPOSED URBAN VILLAGE 43.7 ACRES GROSS

3
4.42 AC

14
0.25 AC

5
5.06 AC

11
0.4 AC

PASEO

7
2.03 AC

OCASO PL.

MILAGRO

EXST. CURB RETURN

13
0.7 AC

STRIPED BIKE LANES
ON PRIMARY STREETS

PARKS AND PASEOS
8.5 ACRES

9
0.36 AC

PASEO

4
4.66 AC

6
5.64 AC

8
4.8 AC

EXISTING EAST VILLAGE PARK
6.0 ACRES

2
3.32 AC

12
1.94 AC

CENTRAL ST.

GREENBELT WITH BIKE PATH

12
1.94 AC

TOTAL NEW EAST VILLAGE PARK AREA
10.8 ACRES

PLANNING AREA 'B'- PROPOSED
HIGH SCHOOL SITE
49.75 ACRES

CAMINO DE LA LUNA

JACINTO DRIVE

50'
32'
15'
8' SIDEWALK

EASTERN PASEO
.40 AC.

ROSE AVENUE

FESTIVO STREET

CIVIC USE AREAS
20.3 ACRES

PLANNING AREA 'C'- PROPOSED
AFFORDABLE HOUSING
10.65 ACRES

PARK
1.0 AC

EXISTING FARMHOUSE TO BE PRESERVED

SOUTH OF CENTRAL ST.
PARKS AND PASEOS
3.0 ACRES

DRAINAGE BASIN

40'

CAMINO DEL SOL

FOCAL POINT

SHARED ACCESS TO HOME SITE PARCEL & OUHSD SITE

LAND USE DATA

GROSS PROPERTY AREA: 107.2 AC

EXISTING N.E.C.S.P. LAND USE DESIGNATIONS

LOW DENSITY RESIDENTIAL	101.2 AC
NEIGHBORHOOD COMMERCIAL	6 AC

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

URBAN VILLAGE	107.2 AC

*WITH 30 ACRE PARK RESERVE, RESIDENTIAL LOW-MEDIUM: 460-790 UNITS, COMMERCIAL GENERAL

PROPOSED LAND USE DESIGNATIONS

1) PLANNING AREA 'A': PROPOSED URBAN VILLAGE (43.7 AC.)

RESIDENTIAL:	APPROX. 25.15 AC. APPROX. 750-900 D.U. (35 D.U./AC.)
COMMERCIAL:	APPROX. 2 AC.
PARKS:	APPROX. 8.5 AC.

5) PLANNING AREA 'B': PROPOSED HIGH SCHOOL (49.75 AC.)

CIVIC USE AREA:	APPROX. 20.3 AC.
PARKS:	APPROX. 0.4 AC. (EASTERN PASEO)

6) PLANNING AREA 'C': PROPOSED URBAN VILLAGE (10.65 AC.)

RESIDENTIAL:	APPROX. 6.88 AC. APPROX. 150-200 D.U. (28 D.U./AC.) AFFORDABLE HOUSING SITE
PARKS:	APPROX. 3.0 AC.

TOTAL DWELLING UNITS: APPROX. 900-1,100 D.U.

PARK AREA NOTES

PLANNING AREA 'A': 8.5 ACRES OF PARKS & GREENBELTS (AREAS 8, 9, 10, 11, 12, 13, & 14 ON PROPOSED PLAN)

PLANNING AREA 'B': 20.3 ACRES OF CIVIC CENTER ACT PUBLIC RECREATIONAL USE AREA
0.40 ACRES OF PASEO

PLANNING AREA 'C': 3.0 ACRES OF PARKS & GREENBELTS

TOTAL PARK AREAS: 32.2 ACRES

LEGEND

- PROPOSED RESIDENTIAL AREAS
- PROPOSED COMMERCIAL AREAS
- PROPOSED PARKS/RECREATION AREAS
- PARKS AND PASEOS (11.9 ACRES)
- CIVIC USE ACT AREA (20.3 ACRES)

VICINITY MAP



NOT TO SCALE

80' 40' 0' 80' 160'

GRAPHIC SCALE: 1"=80'

NOTES:

STREET AREAS SHOWN TO EXISTING BOUNDARY; SUBJECT TO FUTURE STREET DEDICATIONS REQUIRED BY THE CITY OF OXNARD. PRELIM CAMINO DEL SOL AND ROSE AVE. STRIPING & SECTIONS BASED ON CITY TRAFFIC MARKUPS

PARK DESIGNS AND LANDSCAPING SHOWN ARE CONCEPTUAL IN NATURE AND FOR ILLUSTRATIVE PURPOSES ONLY.

REFERENCE 3

REVISION	DATE
PRE-APP	06/2018
PRE-APP #2	02/2019

SUBDIVIDER/OWNER:

MAULHARDT FAMILY
C/O
MIKE PENROD
PARKSTONE COMPANIES
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 931361

OXNARD UNION HIGH SCHOOL DISTRICT
309 SOUTH 'K' STREET
OXNARD, CA 93030

ENGINEER & LAND PLANNER:

JENSEN DESIGN & SURVEY, INC
www.jdscivil.com

1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

NORTHEAST COMMUNITY SPECIFIC PLAN

MAULHARDT PROPERTY

URBAN VILLAGE SITE PLAN

CITY OF OXNARD COUNTY OF VENTURA STATE OF CALIFORNIA

LEGAL DESCRITION HERE

SCALE: 1"=100' J.N.: PAR 15808

DATE: Feb 28, 2019 DWG. NAME: 5808 REVISED URBAN VILLAGE SITE PLAN AND PARKS EXHIBIT.dwg

SHEET 1 OF 1

J:\PAR15808\Planning\Concept\5808 REVISED URBAN VILLAGE SITE PLAN AND PARKS EXHIBIT.dwg Feb 28, 2019, 11:18am tshelton

RIBERA DRIVE

POSADA DR.

CESAR CHAVEZ DR.

CESAR CHAVEZ DRIVE

OCASO PL.

MILAGRO

FOCAL POINT

VILLAGE SERVICES

1
2.0 AC

10
0.3 AC

PASEO

PLANNING AREA 'A'- PROPOSED

3
4.42 AC

URBAN VILLAGE 43.7 ACRES GROSS

14
0.25 AC

5
5.06 AC

11
0.4 AC

PASEO

7
2.03 AC

13
0.7 AC

STRIPED BIKE LANES
ON PRIMARY STREETS

9
0.36 AC

PASEO

4
4.66 AC

PARKS AND PASEOS
8.5 ACRES

6
5.64 AC

8
5.4 AC

2
3.32 AC

12
1.40 AC

CENTRAL ST.

12
1.40 AC

12.30 RES. ACRES
+ 2.0 COMM. ACRES AREA A

CAMINO DE LA LUNA

PLANNING AREA 'B'- PROPOSED
HIGH SCHOOL SITE
49.75 ACRES

12.73 RES. ACRES AREA A

JACINTO DRIVE

ROSE AVENUE

HIGH SCHOOL

FESTIVO STREET

AREA C

PLANNING AREA 'C'- PROPOSED
AFFORDABLE HOUSING
10.65 ACRES

PARK
1.0 AC

HIGH SCHOOL

CAMINO DEL SOL

.TER STREET

100' 50' 0' 100' 200'

GRAPHIC SCALE: 1"=100'

SUBDIVIDER/OWNER:

MAULHARDT FAMILY
C/O
MIKE PENROD
PARKSTONE COMPANIES
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 931361

OXNARD UNION HIGH
SCHOOL DISTRICT
309 SOUTH 'K' STREET
OXNARD, CA 93030

ENGINEER & LAND PLANNER:

JENSEN DESIGN & SURVEY, INC
www.jdscivil.com
1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

SEWER OPTION 1

MAULHARDT PROPERTY

CITY OF OXNARD COUNTY OF VENTURA STATE OF CALIFORNIA

SCALE: 1"=100'

J.N.: PAR 15808

DATE: Apr 25, 2019

DWG. NAME: PAR15808 SEWER EXHIBIT.dwg

SHEET 1 OF 2

J:\PAR15808\Planning\Exhibits\PAR15808 SEWER EXHIBIT.dwg Apr 25, 2019, 8:29am rharvey

RIBERA DRIVE

POSADA DR.

CESAR CHAVEZ DR.

CESAR CHAVEZ DRIVE

OCASO PL.

MILAGRO

JACINTO DRIVE

CAMINO DE LA LUNA

CAMINO DEL SOL

ROSE AVENUE

FESTIVO STREET

CENTRAL ST.

FOCAL POINT

PASEO

VILLAGE SERVICES

PLANNING AREA 'A'- PROPOSED

URBAN VILLAGE 43.7 ACRES GROSS

1
2.0 AC

2
3.32 AC

3
4.42 AC

4
4.66 AC

5
5.06 AC

6
5.64 AC

7
2.03 AC

8
5.4 AC

9
0.36 AC

10
0.3 AC

11
0.4 AC

12
1.40 AC

13
0.7 AC

14
0.25 AC

STRIPED BIKE LANES ON PRIMARY STREETS

PARKS AND PASEOS 8.5 ACRES

PLANNING AREA 'B'- PROPOSED
HIGH SCHOOL SITE
49.75 ACRES

100% AREA A

HIGH SCHOOL

HIGH SCHOOL

AREA C

PLANNING AREA 'C'- PROPOSED
AFFORDABLE HOUSING
10.65 ACRES

PARK
1.0 AC

100' 50' 0' 100' 200'

GRAPHIC SCALE: 1"=100'

SUBDIVIDER/OWNER:

MAULHARDT FAMILY
C/O
MIKE PENROD
PARKSTONE COMPANIES
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 931361

OXNARD UNION HIGH SCHOOL DISTRICT
309 SOUTH 'K' STREET
OXNARD, CA 93030

ENGINEER & LAND PLANNER:

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1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

SEWER OPTION 2

MAULHARDT PROPERTY

CITY OF OXNARD COUNTY OF VENTURA STATE OF CALIFORNIA

SCALE: 1"=100'

J.N.: PAR 15808

DATE: Apr 25, 2019

DWG. NAME: PAR15808 SEWER EXHIBIT.dwg

SHEET 2 OF 2

J:\PAR15808\Planning\Exhibits\PAR15808 SEWER EXHIBIT.dwg Apr 25, 2019, 8:32am rharvey

Oxnard Sewer Calculations

Job No. PAR01.5808

Project Rose Ave and Camino del Sol/ Maulhardt Site

References: 1. City of Oxnard Standard Plans, Plates 40-44
2. Tentative Map PAR01.5808

Avg Sewage Flow Rate (plate 43)						Option 1 peak flows (cfs)			Option 2 peak flows (cfs)		
Planning Area B	gal/person/ day (Ref 1)	students*	Avg gpd	Avg cfs	Peak cfs	SMH BF+17	SMH BK+64	SMH BK+62	SMH BF+17	SMH BK+64	SMH BK+62
High School	20	3000	60000	0.093	0.2839	0.2839	0	0	0.2839	0	0

*Projected enrollment is 2400

Planning Area A						Option 1 peak flows (cfs)			Option 2 peak flows (cfs)		
Land Use (Plate 44)	Units or T.S.F. (Ref 2)	GPD/unit (Ref 1)	Avg GPD	Avg cfs	Peak cfs	SMH BF+17	SMH BK+64	SMH BK+62	SMH BF+17	SMH BK+64	SMH BK+62
Residential Units	900	225.6	203,040.0	0.3147	0.7732						
Commercial T.S.F	27.2	110	2,992.0	0.0046	0.0241						
				Total	0.7974	0.3987	0.3987	0	0	0.7974	0

Planning Area C						Option 1 peak flows (cfs)			Option 2 peak flows (cfs)		
Land Use (Plate 44)	Units (Ref 2)	GPD/TSF (Ref 1)	Avg GPD	Avg cfs	Peak cfs	SMH BF+17	SMH BK+64	SMH BK+62	SMH BF+17	SMH BK+64	SMH BK+62
Residential Units	200	225.6	45.12	0.0001	0.0008	0	0	0.0008	0	0	0.0008

						Option 1 peak flows (cfs)			Option 2 peak flows (cfs)		
			Avg GPD	Avg cfs	Peak cfs	SMH BF+17	SMH BK+64	SMH BK+62	SMH BF+17	SMH BK+64	SMH BK+62
Overall Totals			**266,077.1**	**0.41**	**1.0820**	**0.6826**	**0.3987**	**0.0008**	**0.2839**	**0.7974**	**0.0008**

SEE MAP Q-18

SEE MAP P-19

SEE MAP R-19

SEE MAP Q-20

LORENA DR

CAMINO DE LA LUNA

LICHO WY

VIVIANA DR

VALENTINA DR

ROSALINDA DR

SARA DR

TERESA ST

URSULA DR

HILARIA ST

GABRIELLA DR

CAMINO DEL SOL

PANAL CT

N ROSE AV

SANTA CLARA WASTE WATER CO.

99-67A SHT # 14

99-28A SHT # 33

99-28A SHT # 34

99-28A SHT # 30

99-28A SHT # 32

99-28A SHT # 29

95-06A SHT # 18

95-06A SHT # 19

95-06A SHT # 23

95-06A SHT # 22

95-06A SHT # 21

95-06A SHT # 24

97-36A SHT # 7

60-71 B SHT # 5

90-57 A SHT # 23

0.3987 CFS Peak

0.0008 CFS Peak

Maulhardt Sewer Connections
Option 1
April 25, 2019

BK+64
FL1=51.39' (S)
FL2=51.41' (N)
FL3=51.61' (W)
C=13.21'

BK+63
FL1=50.17' (S)
FL2=50.19' (N)
FL3=50.39' (W)
C=13.01'

BK+62
FL1=48.96' (S)
FL2=48.97' (N)
FL3=49.17' (W)
C=12.78'

BK+61
FL1=47.75' (S)
FL2=47.76' (N)

BKD21
FL1=54.95' (N)
FL2=55.02' (W)
C=8.85'

BKD22
FL1=56.08' (E)
FL2=56.12' (W)
C=8.13'

BKD23
FL1=56.86' (E)
C=7.52'

BKD24
FL1=58.12' (S)
FL2=58.22' (W)
C=6.73'

BKD25
FL1=57.18' (S)
FL2=57.21' (N)
C=6.65'

BKD26
FL1=59.54' (E)
C=5.96'

BKD27
FL1=59.17' (W)
C=6.5'

BKD28
FL1=58.04' (S)
FL2=58.22' (W)
FL3=58.23' (E)
C=7.07'

BKD30

BKD32

BKD33

BKD34

BKD35

BKD36

BKD37

BKD38

BKD42

BKD43

BKD44

BKD46

BKD47

BKD48

BKD49

BKD50

BKD51

BKD52

BKD53

BKD56

BKD57

BKD58

BKD61

BKD62

BKD63

BKD64
FL1=57.01' (S)
FL2=57.01' (N)
C=7.74'

BKD66

BKD106
FL1=59.34' (E)
FL2=59.44' (W)
C=6.56'

BKD108
FL1=59.05' (W)
C=6.55'

BHF17

BHF19

6209723.8 E

1899758.2 N

Q-19	City of Oxnard	0 160 320 FEET	SEWER ATLAS	DATUM NOTE: ALL ELEVATIONS ARE ON CITY OF OXNARD DATUM UNLESS OTHERWISE SHOWN. AN ASTERISK (*) INDICATES N.G.V. DATUM.	October 2009		Q-19

SEE MAP R-19

0.6826 CFS Peak

CAMINO DEL SOL

DEL REY PL

KOHALA ST

SAN JOSE ST

SAN GORGONIO AV

GIBRALTAR ST

TRACT 1364-2

HALCON ST

IMPERIAL ST

JULIAN ST

KOHALA ST

TRACT 1363-3

SAN LUIS ST

SAN JACINTO ST

THOMPSON PARK

CORDOVA ST

TRACT 1363-1

N DRISKILL ST

EVEREST ST

FEATHERSTONE ST

GIBRALTAR ST

TRACT 1363-1

61-103 A SHT # 3

61-151 A SHT # 11

61-151 A SHT # 12

64-122 A SHT # 8

61-151 A SHT # 13

62-208 A SHT # 13

62-208 A SHT # 14

62-208 A SHT # 12

64-122 A SHT # 9

64-122 A SHT # 10

64-122 A

62-177 X

61-103 A

62-208 A

61-151 A

98-72A SHT # 31

BFF01 BFF02 BFF16 BFF20 BFF25 BFF26 BFF27

BF+11 FL1=39.62' (N) FL2=39.62' (S) C=12.38'

BF+12 FL1=40.28' (N) FL2=40.18' (S) C=12.22'

BF+13 FL1=40.96' (N) FL2=40.96' (S) C=9.24'

BF+14 FL1=41.02' (N) FL2=41.02' (S) C=9.18'

BF+15 FL1=9999.99' (W) FL2=41.25' (N) FL3=41.25' (S) C=9.55'

BF+16 FL1=41.95' (E) FL2=41.85' (S) C=9.75'

BF+17 FL1=42.44' (E) FL2=42.44' (W) C=10.06'

BF+18 FL1=43.04' (E) FL2=43.04' (W) C=10.46'

BFC01 FL1=47.05' C=3.86'

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BFC28 FL1=45.45' C=6.06'

BFC29 FL1=46.06' C=6.1'

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BFC32 FL1=45.88' C=6.06'

BFC33 FL1=46.5' C=6.09'

BFC34 FL1=47.15' C=6.09'

BFC35 FL1=43.77' C=5.59'

BFC36 FL1=44.45' C=5.65'

BFC37 FL1=45.13' (S) FL2=45.23' (E) C=5.67'

BFC38 FL1 = 45.45' C=5.02'

BFC39 FL1=44.55' C=5.23'

BFC40 FL1=45.3' C=5.15'

BFC41 FL1=46.06' C=5.06'

BFC42 FL1=45.25' C=4.99'

BFC43 FL1=46' C=4.9'

BFC44 FL1=46.76' C=4.8'

BFC45 FL1=45.92' C=5.28'

BFC46 FL1=46.64' C=5.16'

BFC47 FL1=47.46' C=5.03'

BFC48 FL1=46.63' C=4.97'

BFC49 FL1=47.35' C=4.85'

BFC50 FL1=48.17' C=4.72'

BFC57 FL1=45.79' (E) FL2=45.89' (N) C=5.01'

BFC58 FL1=46.91' C=4.94'

6211692.95 E

1898198.22 N

Maulhardt Sewer Connections
Option 1
April 25, 2019

R-20	City of Oxnard	0 160 320 FEET	SEWER ATLAS	DATUM NOTE: ALL ELEVATIONS ARE ON CITY OF OXNARD DATUM UNLESS OTHERWISE SHOWN. AN ASTERISK (*) INDICATES N.G.V. DATUM.	October 2009		R-20

SEE MAP R-21

SEE MAP Q-20

SEE MAP S-20

SEE MAP Q-18

SEE MAP P-19

SEE MAP R-19

SEE MAP Q-20

LORENA DR

CAMINO DE LA LUNA

LICHO WY

VIVIANA DR

VALENTINA DR

ROSALINDA DR

SARA DR

TERESA ST

URSULA DR

HILARIA ST

GABRIELLA DR

CAMINO DEL SOL

PANAL CT

N ROSE AV

SANTA CLARA WASTE WATER CO.

99-67A SHT # 14

99-28A SHT # 34

99-28A SHT # 33

99-28A SHT # 32

99-28A SHT # 30

99-28A SHT # 29

95-06A SHT # 19

95-06A SHT # 18

95-06A SHT # 23

95-06A SHT # 22

95-06A SHT # 21

95-06A SHT # 24

97-36A SHT # 7

60-71 B SHT # 5

90-57 A SHT # 23

BKD21 FL1=54.95' (N) FL2=55.02' (W) C=8.85'

BKD22 FL1=56.08' (E) FL2=56.12' (W) C=8.13'

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BKD30

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BKD43

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BKD51

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BKD53

BKD56

BKD57

BKD58

BKD61

BKD62

BKD63

BKD64 FL1=57.01' (S) FL2=57.01' (N) C=7.74'

BKD66

BKD108 FL1=59.05' (W) C=6.55'

BK+64 FL1=51.39' (S) FL2=51.41' (N) FL3=51.61' (W) C=13.21'

BK+63 FL1=50.17' (S) FL2=50.19' (N) FL3=50.39' (W) C=13.01'

BK+62 FL1=48.96' (S) FL2=48.97' (N) FL3=49.17' (W) C=12.78'

BK+61 FL1=47.75' (S) FL2=47.76' (N)

0.7974 CFS Peak

0.0008 CFS Peak

Maulhardt Sewer Connections
Option 2
April 25, 2019

BHF19

BHF17

BHF16

1099782.2 N

6209723.8 E

Q-19	City of Oxnard	0 160 320 FEET	SEWER ATLAS	DATUM NOTE: ALL ELEVATIONS ARE ON CITY OF OXNARD DATUM UNLESS OTHERWISE SHOWN. AN ASTERISK (*) INDICATES N.G.V. DATUM.	October 2009		Q-19

SEE MAP R-19

0.2839 CFS Peak

CAMINO DEL SOL

DEL REY PL

KOHALA ST

SAN JOSE ST

GIBRALTAR ST

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FEATHERSTONE ST

TRACT 1363-3

BERNOULLI CIR

61-103 A

62-177 X

62-208 A

61-151 A

64-122 A

62-208 A SHT # 12

64-122 A SHT # 9

61-151 A SHT # 12

61-103 A SHT # 3

61-151 A SHT # 11

64-122 A SHT # 8

61-151 A SHT # 13

62-208 A SHT # 13

64-122 A SHT # 10

98-72A SHT # 31

62-208 A SHT # 14

64-122 A

BF+16 FL1=41.95' (E) FL2=41.85' (S) C=9.75'

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BFF01

BFF02

BFF16

BFF20

BFF25

BFF26

BFF27

Maulhardt Sewer Connections
Option 2
April 25, 2019

SEE MAP Q-20

SEE MAP S-20

SEE MAP R-21

R-20	City of Oxnard	0 160 320 FEET	SEWER ATLAS	DATUM NOTE: ALL ELEVATIONS ARE ON CITY OF OXNARD DATUM UNLESS OTHERWISE SHOWN. AN ASTERISK (*) INDICATES N.G.V. DATUM.	October 2009		R-20

JENSEN
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Ventura, CA 93003
Local 805 654-6977
Fax 805 654-6979
www.jdscivil.com

PAR01.5808
April 29, 2019

City of Oxnard
Paul Wendt
305 West Third Street
Oxnard, CA 93030

RE: Maulhardt Property & Oxnard High School #8 Overall Hydrology Concept

Dear Paul,

In an effort to streamline the design and plan checking process for Oxnard High School #8, I have outlined the overall drainage concepts for the entire 107.9 acre Maulhardt Property. Two existing City owned RCB systems in Camino del Sol, were designed for conveyance of stormwater from nearly 1,000 acres. This area spans from the Rose Shopping Center to Rice Road and south to Camino del Sol and is part of the Rice Road Drain Watershed. The Rice Road Drain is County Redline Channel. Allowable discharge rates for the property stem from the 1987 Rice Road Watershed Agreement between the City of Oxnard and the County of Ventura Watershed Protection District (formerly Flood Control District). Developed properties north of 5th Street are allowed to discharge 1 cfs/acre in all storm events and must detain the balance of developed runoff. Improvement Plans and Reports for the RCB Construction are consistent with agreement and show that the system was designed to convey 1cfs/acre from the Maulhardt Property. I confirmed with Sergio Vargas, Deputy Director of VCWPD by phone and email between April 4 and April 9, 2019 that the District will hold the project to the 1 cfs/ac discharge rate.

Reference Material and Historical Hydrologic Data

I have reviewed the following reference material to determine how the Maulhardt Property was intended to join the existing storm drain system.

- West Camino del Sol RCB System: Improvement Plans 87-2A. Tract 4827 Hydrologic and Hydraulic Drainage Report for Rose Ave./Colonia Rd. Storm Drain (SUP 1489, 1992, Charles Hilsmann) with Improvement Plans 92-43A.
- East Camino del Sol RCB System: Improvement Plans 88-50A. Tract 4021 and Tract 4373 Drainage Study (1989, William J. Ghormley Consulting). Improvement Plans 98-72A with Tract 5136 Hydrology Report (1999, DH Civil Engineering, Inc.).

The Tract 4827 Report accounts for 88 acres of the Maulhardt Property as tributary to the West RCB System. An additional 11 acres contributes to the East RCB system. This accounts for 99 acres of the 108 acre property. Referenced from the County Rice road Drain Report from June, 1992, subarea 97D (33 acres) contains the 11 acres plus the balance of the Maulhardt Property (9 acres) to reach the total 108 acres. The Report for Tract 4021 (East RCB) shows location 110 BD as the most downstream subarea of 32 acres, which seems to match the County subarea 97D. Even with 1-acre difference, it is clear that the

entire Maulhardt Property has been accounted for in the design and construction of the City RCB systems. Both Subareas 97D and 11BD seem to include about 23 acres of the Maulhardt Property, so the 20 acres is conservative. In the developed condition, 88 acres should drain to the West RCB and 20 acres to the East RCB, each with 1cfs/ac maximum discharge.

Developed Hydrologic Concept

The PROPERTY BOUNDARIES EXHIBIT shows the breakdown of what will be the Maulhardt Development, Oxnard High School #8, and the respective dedications for public street right-of-way. Each development will be responsible for the treatment and detention of the respective gross areas so public street dedication areas are included. I have also shown the proposed public storm drain alignments that will convey the developed runoff to the Camino del Sol RCBs. The East SD will convey flow from the northeast portion of Planning Area A with 20 cfs max. The West SD will convey rest of Planning Area A with 24.55 cfs max (gross 44.55 acres at 1 cfs/ac – 20 cfs in the East).

Two main drainage areas make up the High School site (Planning Area B) – North Campus (33.44 acres) and South Campus (18.35 acres), each with their own pre-treatment, infiltration, and detention systems. The West SD line will run south through the school (with an easement to the City of Oxnard) and pick up the North Campus discharge. Although the North Campus are is much larger, the two subareas each account for about 50% of the discharge. So the public West SD will carry the 24.55 cfs from Planning Area A and 23 cfs from North Campus. South Campus will discharge about 23 cfs to a 24" stub directly north of the Rice Road Drain beginning. There will be approximately 5 cfs of undetained flow from 1.5 acres to account for within the HS design. All three connections will utilize existing laterals to minimize the costly construction of new connections to the RCB systems. (The High School discharge rates are not finalized as of the writing of this letter.) The remaining 10.6 acre Planning Area C and 0.95 acre Barn Parcel will contribute their respective flows, also at 1 cfs/ac, bringing the total to 107.9 acres. The table below summarizes the overall hydrology.

Overall SD Concept

	Area (Ac)	Q (1 cfs/ac)
Public East SD		
Maulhardt	20	20
Public West		
Maulhardt	24.55	24.55
North Campus	33.4	23
South Campus	18.4	23
Campus Undetained	-	5
Area C & Barn Parcel	11.55	11.55
Total	**107.9**	**107.1**

Developed Hydraulics on Existing System

On the West box, the Maulhardt Property is intended to connect in two locations: 33" stub at Station 1+02.76 (23 cfs) and a 45" stub at 11+05.48 (53 cfs). These flows are routed values, slightly lower than the actual allowable discharge. The proposed connections to the systems will be adjusted to fit design needs. South Campus will use a 24" stub just downstream of the 33" connection. Runoff here will be about 23-25 cfs. North Campus and the public line from the northern Maulhardt development will join

downstream of the modeled connection at Station 6+77, where a 24" stub was constructed. Discharge here will be about 50 cfs. The remaining 11.5 acres (and cfs) will likely join Station 10+47. This is one of the existing Maulhardt catch basins that ties into the RCB. The datum difference to this plan set is 2.28' (52.35 inv at RCB outlet vs 50.07 inv plan set 92-43A). HGL for the South Campus connection is 58.1, North Campus is 58.7, and Planning Area C & Barn is 59.34. These values come directly from the Tract 4827 WSPG run for the West Box.

The Tract 4021 hydrology report included a WSPG run for the east box. I have duplicated that run and adjusted to our datum to provide a check in the developed model. The datum difference is 1.9' and the duplicated run matches the original report. The allowable 20 cfs to the east box was intended to join at Station 226+11.50. The Tract 4021 report and plans show different HGL information. The WSPG run has a WSE of 54.77 (56.67 adjusted for the datum difference) and the plans show 54.37 at the same location. I have used the higher HGL as the tailwater for the east public SD line to the Maulhardt property.

Two catch basin locations are planned along the easterly Public Road. One set near Camino del Sol to catch street runoff before entering the existing SD system, and a second set near Central Street at a design low point. The westerly catch basins will direct street runoff into the High School site storm drain system for infiltration and detention. Given design grades, the easterly catch basins cannot cross the main SD line so will tie directly in the public SD. Detention will be accounted for in the High School design and treatment will be mitigated with a grass swale or other option acceptable to the City. Several catch basins along Central Street will also tie into the High School North Campus SD system. Inlets on the north side of Central will be tied into the Maulhardt System where possible.

Attachments

The exhibits and data in order are:

1. Property Boundaries Exhibit – shows the breakdown of Maulhardt Development and High School land areas, and public SD alignments.
2. Tract 4827 West Box Plans and Report Excerpts.
3. Tract 4021 East Box Plans and Report Excerpts.

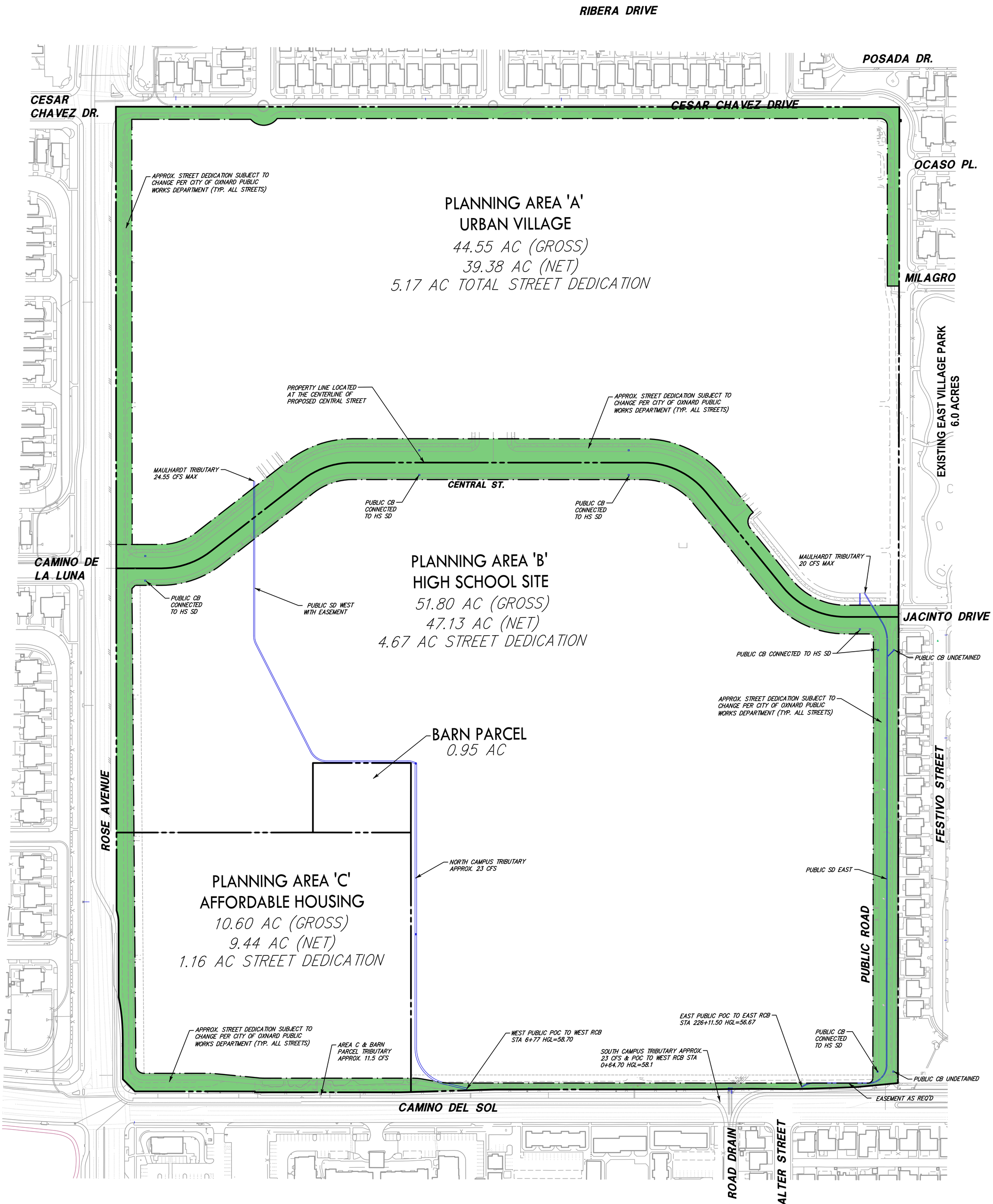
The proposed development of the Maulhardt Site with the new Oxnard High School will join the existing storm drain system as intended. Each project will deal with infiltration and detention as they come to the design phase. The High School is the first portion to go to final design. A detailed report for the storm drain connections will be available in the coming weeks.

Please feel free to call and discuss if you have questions.

Regards,

Ava Ediger, P.E.
Senior Civil Engineer





PROPOSED PARCEL DATA

PLANNING AREA 'A': URBAN VILLLAGE

PARCEL SIZE (GROSS):	44.55 ACRES 1,940,460.77 S.F.	44.55 AC
APPROX. STREET DEDICATIONS:	5.17 ACRES 225,279 S.F.	
PARCEL SIZE (NET):	39.38 ACRES 1,715,181.77 S.F.	

PLANNING AREA 'B': HIGH SCHOOL SITE

PARCEL SIZE (GROSS):	51.80 ACRES 2,256,498.51 S.F.	51.80 ACRES
APPROX. STREET DEDICATIONS:	4.67 ACRES 203,586 S.F.	
PARCEL SIZE (NET):	47.13 ACRES 2,052,912.51 S.F.	

PLANNING AREA 'C': AFFORDABLE URBAN VILLAGE

PARCEL SIZE (GROSS):	10.60 ACRES 461,987.68 S.F.	10.60 ACRES
APPROX. STREET DEDICATIONS:	1.16 ACRES 50,561 S.F.	
PARCEL SIZE (NET):	9.44 ACRES 411,426.68 S.F.	

BARN PARCEL

PARCEL SIZE (GROSS):	0.95 ACRES 41,694.10 S.F.	0.95 ACRES
	TOTAL AREA:	107.9 ACRES

LEGEND

- PROPOSED STREET DEDICATIONS TO THE CITY OF OXNARD. SUBJECT TO CHANGE
- PROPOSED PARCEL BOUNDARIES
- PROPOSED PUBLIC STORM DRAIN

VICINITY MAP



NOT TO SCALE

80' 40' 0' 80' 160'

GRAPHIC SCALE: 1"=80'

NOTES:

STREET AREAS SHOWN TO EXISTING BOUNDARY; SUBJECT TO FUTURE STREET DEDICATIONS REQUIRED BY THE CITY OF OXNARD. PRELIM CAMINO DEL SOL AND ROSE AVE. STRIPING & SECTIONS BASED ON CITY TRAFFIC MARKUPS

PARK DESIGNS AND LANDSCAPING SHOWN ARE CONCEPTUAL IN NATURE AND FOR ILLUSTRATIVE PURPOSES ONLY.

REVISION	DATE
PRE-APP	06/2018
PRE-APP #2	02/2019

SUBDIVIDER/OWNER:

MAULHARDT FAMILY
C/O
MIKE PENROD
PARKSTONE COMPANIES
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 91361

OXNARD UNION HIGH SCHOOL DISTRICT
309 SOUTH 'K' STREET
OXNARD, CA 93030

ENGINEER & LAND PLANNER:

NORTHEAST COMMUNITY SPECIFIC PLAN

MAULHARDT PROPERTY

PROPERTY BOUNDARIES EXHIBIT

CITY OF OXNARD | COUNTY OF VENTURA | STATE OF CALIFORNIA

LEGAL DESCRITION HERE

SCALE: 1"=100' | J.N.: PAR 15808

DATE: Apr 29, 2019 | DWG. NAME: 5808 PROPERTY BOUNDARIES EXHIBIT with PUBLIC SD.dwg

SHEET 1 OF 1

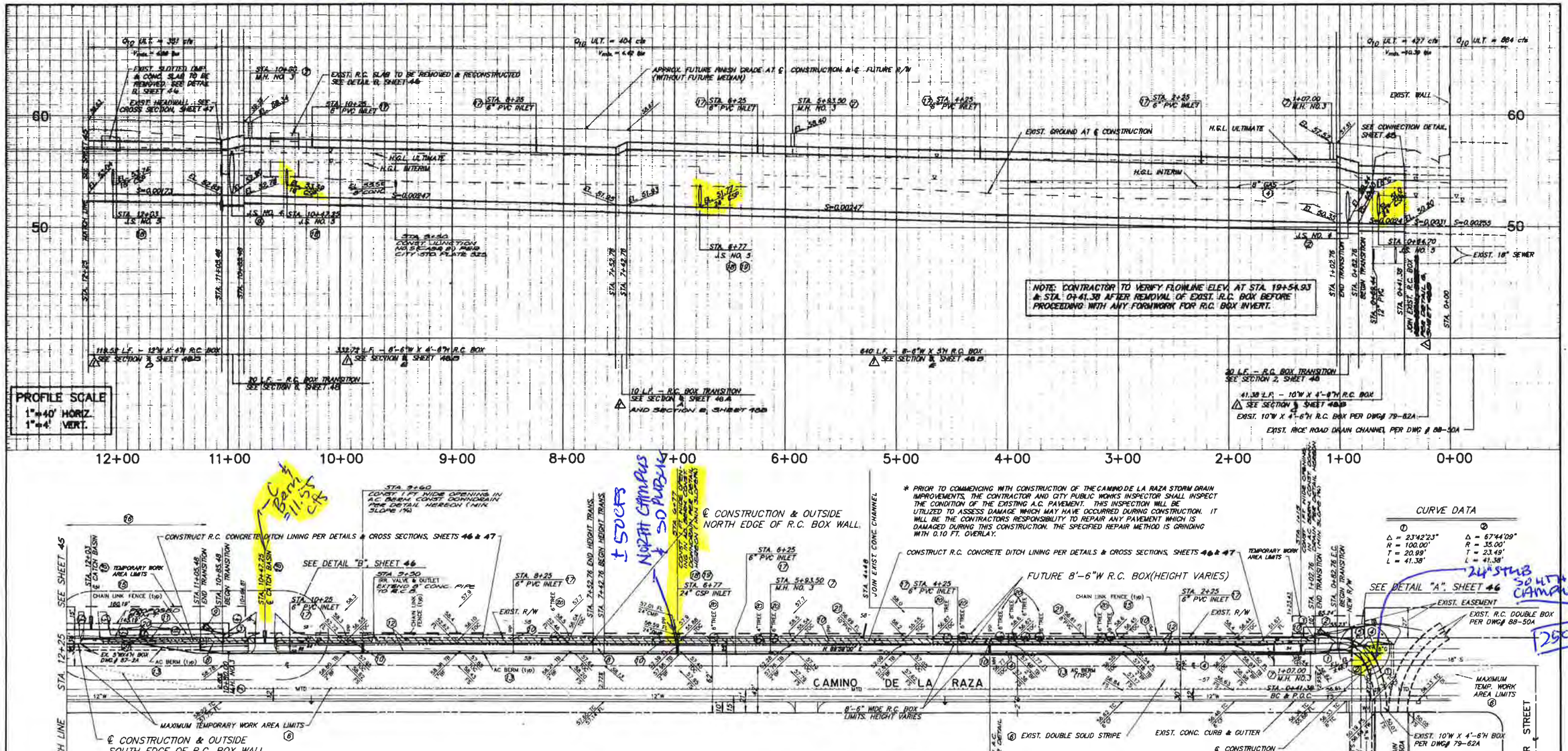
J:\PAR15808\Eng\Exhibits\5808 PROPERTY BOUNDARIES EXHIBIT with PUBLIC SD.dwg Apr 29, 2019, 2:49pm aediger

427-351 = 76 CFS ROUTED VS. 88 (Ac) = CFS max

DRAWING NUMBER 92-43A 44/62

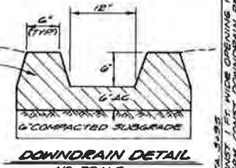
DRAWING NUMBER

DRAWING NUMBER 92-43A 44/62



NOTES

1. CONSTRUCT R.C. BOX TRANSITION STRUCTURE PER DETAIL, SHEET 48.
2. CONSTRUCT JUNCTION STRUCTURE NO.4 PER STD. PLATE 524, A=35', B=33', C=8', ELEV. S=50.44, ELEV. R=50.50. SEAL OPENING WITH 8" THICK BRICK & MORTAR.
3. CONSTRUCT R.C. BULKHEAD PER DETAIL, SHEET 46.
4. 8" HIGH PRESSURE GAS LINE TO BE RELOCATED.
5. CONSTRUCT 27' OF 12" PVC SEWER PIPE, SDR 35 UNDER NEW R.C. BOX AT 1% GRADE (F.L. ELEV.=46.9 AT SOUTHERLY END OF PIPE). BEGIN NORTHERLY END OF PIPE AT NEW R/W. SEAL ENDS WITH 3"THICK MORTAR.
6. ONE 12' WIDE TRAFFIC LANE FOR CAMINO DE LA RAZA (BETWEEN STA. 0+00 TO 11+05) MAY BE PROVIDED WITH FLAGMEN BETWEEN THE HOURS OF 9AM & 3PM. MAXIMUM LENGTH OF SINGLE LANE FLAGGED TRAFFIC SHALL BE 200' AT ANY TIME. THE CONTRACTOR SHALL MAINTAIN ONE 12'WIDE TRAFFIC LANE IN EACH DIRECTION AT ALL OTHER TIMES. EXISTING STRIPING TO BE ERADICATED AND NEW TEMPORARY STRIPING PROVIDED 12' FROM CURB. ORIGINAL STRIPING TO BE RESTORED AT COMPLETION OF CONSTRUCTION. FOR ALL OTHER AREAS THE CENTERLINE OF STREET REPRESENTS THE SOUTHERLY & WESTERLY WORK AREA LIMITS. SUBMIT BARRICADE & SIGNING PLAN TO CITY TRAFFIC ENGINEER FOR REVIEW.
7. CONSTRUCT MANHOLE NO.3 PER STD. PLATE 515.
8. CONSTRUCT R.C. BOX TRANSITION STRUCTURE PER DETAIL, SHEET 48.
9. CONSTRUCT JUNCTION STRUCTURE NO.4 PER STD. PLATE 524, A=45', B=45', C=6.5', ELEV. S=52.90, ELEV. R=53.03. SEAL OPENING WITH 8" THICK BRICK & MORTAR.
10. POWER POLES TO BE BRACED AS NECESSARY DURING CONSTRUCTION.
11. POWER POLES TO BE RELOCATED.
12. REMOVE & DISPOSE OF CONCRETE CHANNEL LINING & FILL CHANNEL PER DETAIL, SHEET 47.
13. REMOVE INTERFERING PORTIONS OF 6" AC BERM. REPLACE IN KIND AND TO SAME GRADE UPON COMPLETION OF CONSTRUCTION.
14. ALL TREES TO BE PROTECTED IN PLACE UNLESS OTHERWISE INDICATED.
15. CONTRACTOR SHALL INSTALL TEMPORARY FENCING CONCURRENTLY WITH ANY REMOVAL OF EXISTING CHAIN LINK FENCING. THE TEMPORARY FENCING SHALL BE SAME TYPE AS REMOVED OR CAN BE EXISTING FENCING REUSED. CONTRACTOR SHALL REUSE AS MUCH OF THE REMOVED FENCING AS POSSIBLE IN TEMPORARY LOCATION AS WELL AS PERMANENT LOCATIONS SHOWN ON THIS PLANS. FENCING THAT IS REMOVED SHALL BE RELOCATED TO OUTSIDE RIGHT-OF-WAY LINES AS SHOWN ON THIS PLANS OR DETAILS AFTER CONSTRUCTION.
16. THE CONTRACTOR SHALL COORDINATE & COOPERATE WITH THE PROPERTY OWNER FOR CONSIDERATION OF SALVAGING AND STOCKPILING THE UPPER 3" OF TOPSOIL (BETWEEN STA. 11+00 TO 15+25 & 18+00 TO 19+54) AT THE OWNERS DIRECTION. FINAL SURFACE TO BE RIPPED 2 FT. FOR RANCHER. (CONT. TO RIGHT)
17. CONSTRUCT 6" PVC INLET IN TOP SLAB PER DETAIL, SHEET 46.
18. CONNECT 18" OR 24" CSP (12 GA.) TO R.C. BOX WITH JUNCTION STRUCTURE NO. 5 PER STD. PLATE 525 (CASE 1). A=90° FOR 18" CSP, A=77° FOR 24" CSP.
19. EXTEND EXIST. 24" CSP & CONNECT AT STA. 6+77. SEE CROSS SECTIONS, SHEET 47.
20. REMOVE & DISPOSE OF INTERFERING TREES.
21. EXTEND EXIST. TEMPORARY FIELD DRAINS TO NEW CONCRETE DITCH LINING IF NECESSARY. CUT PIPES FLUSH WITH LINING. REMOVE & RECONSTRUCT EXIST. FIELD DRAIN AT STA. 11+59 ± TO NEW R/W. (SEE SHEET 46 DETAIL B)



DOWNDRAIN DETAIL
NO SCALE

STA. 3+55 1'FT WIDE OPENING IN A.C. BERM. CONST. DOWNDRAIN PER DETAIL HEREON (MIN. SLOPE 1%)

BENCH MARK

CITY OF OXNARD "KOHALA" : ALUMINUM DISK SET IN THE SW CORNER OF KOHALA ST. AND COLONIA RD., 3 FEET WEST OF THE WEST SIDE OF THE HANDICAPPED RAMP. ELEV. = 58.409 (ADJUSTED 1980)

CITY OF OXNARD "FIRE" : FROM THE INTERSECTION OF ROSE AVE. AND CAMINO DE LA RAZA WEST TO THE ANGLE POINT IN THE ROAD (AT FIRE STATION) ON THE SOUTH SIDE OF STREET, 4 FEET EAST OF EAST SIDE OF THE HANDICAPPED RAMP. ELEV. = 60.865 (ADJUSTED 1980)

CONT OF NOTE 13: COMPLETION OF CONSTRUCTION, THIS WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE PROPERTY OWNER.

GRAPHIC SCALE
SCALE: 1"=40'

N

10/18/93

DANIEL ENGINEERING
PLANNING — CIVIL ENGINEERING
300 MONTGOMERY AVENUE SUITE 100
OXNARD, CA 93030 (805)988-4390
PREPARED BY: Charles Hilsmann 11-5-92
CHARLES HILSMANN R.C.E. 22748 EXP. 12-31-93 DATE

AS BUILT CERTIFICATE

I HEREBY CERTIFY THAT THE WORK SHOWN ON DRAWING No. ___ SHEET No.___ THROUGH ___ MARKED AS "AS BUILT" HAS BEEN CONSTRUCTED IN CONFORMANCE WITH LINES AND GRADES AS SHOWN ON SAID PLANS, DRAWINGS, REFERENCED SPECIFICATIONS, AND APPROVED CHANGE ORDERS AS INDICATED IN REVISION BLOCK.

10/8/93 DATE
SIGNATURE
NAME R.C.E.

REVISIONS			
MARK	DATE	DESCRIPTION	BY
1	3/16/93	ADDED PAVEMENT GRADE SECTION & DRAINAGE DETAIL	

APPROVAL RECOMMENDED BY: DATE 3/16/93
R.C.E. #1083 EXP. 3-31-95

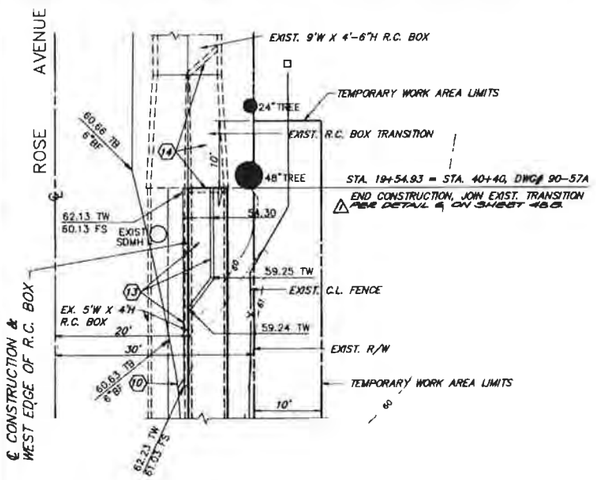
CITY OF OXNARD, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
RICE AVE./ CAMINO DE LA RAZA
STORM DRAIN
STA. 0+00 TO 12+25

APPROVED BY: ASST. PUBLIC WORKS DIR. R.C.E. 28366 EXP. 3-31-94 DATE
APPROVED BY: PUBLIC WORKS DIR. R.C.E. 15337 EXP. 3-31-95 DATE 3/19/93
SCALE: HORIZ. 1"=40' VERT. 1"=4'
SHEET NO. 44 OF 62
DRAWN BY: D.G.
CHECKED BY: C.H.
DRAWING NUMBER 92-43A

DRAWING NUMBER 92-43A 46/62

DRAWING NUMBER

DRAWING NUMBER 92-43A 46/62

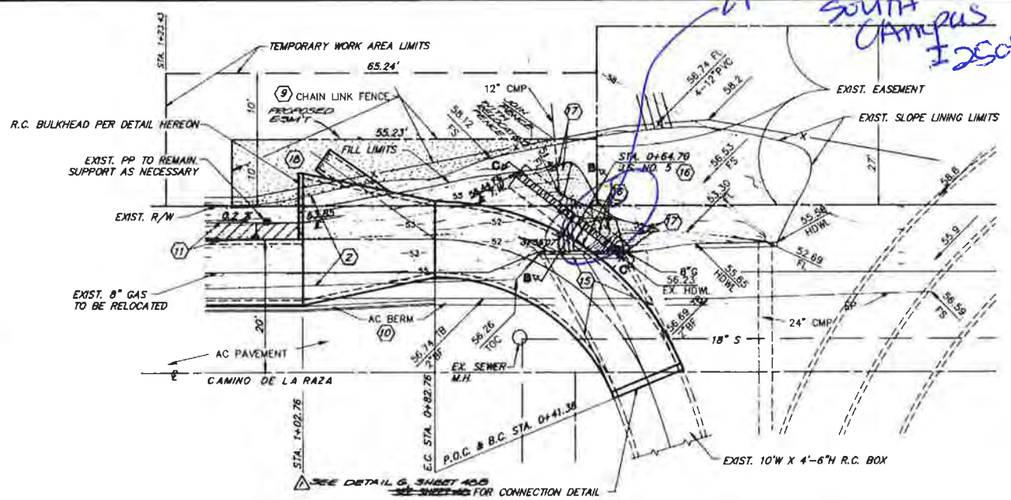


DETAIL "C"

SCALE: 1"=10'

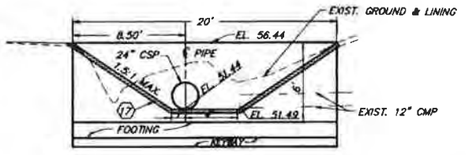
NOTES

1. CONSTRUCT ALLEY (LONGITUDINAL) CATCH BASIN WITH 2 GRATES PER STD. PLATE 504, CONNECT 18" CSP (12 GA.) TO R.C. BOX WITH JUNCTION STRUCTURE NO. 5 (CASE 1) PER STD. PLATE 525. SEE CROSS SECTIONS, SHEET 47, STA. 12+00
2. REMOVE & DISPOSE OF EXIST. CONCRETE LINING. SEE CROSS SECTIONS, SHEET 47.
3. EXISTING PILASTERS TO REMAIN. PROTECT IN PLACE.
4. A.C. PAVEMENT REMOVAL LIMITS. RECONSTRUCT PAVEMENT & BASE TO MATCH EXISTING. WARP TO DRAIN TO CATCH BASIN.
5. REMOVE EXIST. CONCRETE SLABS & SLOTTED CSP AND REPLACE WITH A.C. PAVEMENT & BASE TO MATCH EXISTING THICKNESS.
6. SAWCUT, REMOVE & DISPOSE OF INTERFERING PORTION OF EXIST. HEADWALL. SEE CROSS SECTION, SHEET 47.
7. POWER POLE TO BE RELOCATED.
8. TREES TO BE REMOVED.
9. RELOCATE EXIST. CHAIN LINK FENCE 6" OUTSIDE OF EX. R/W LIMITS OR AS SHOWN. REFERED TO NOTE (9) ON SHEET 44 AND DETAIL ON SHEET 45.
10. REMOVE INTERFERING PORTIONS OF EXIST. A.C. BERM. CONSTRUCT NEW A.C. BERM PER STD. PLATE 111. SEE CROSS SECTIONS, SHEET 47.
11. CONSTRUCT NEW CONCRETE DITCH LINING PER DETAILS, SHEET 47.
12. EXTEND EXIST. CONC. FIELD DRAIN TO NEW CONCRETE LINING
13. REMOVE & DISPOSE OF EXIST. CONCRETE CHANNEL WALL & SLAB, BLOCK WALL & RAILING.
14. REMOVE & DISPOSE OF EXIST. BLOCK WALLS & SAND IN EXIST. TRANSITION STRUCTURE.
15. REMOVE & DISPOSE OF EXIST. HEADWALL & R.C. BOX.
16. CONSTRUCT PIPE CULVERT HEADWALL (TYPE B) PER STATE STD. PLATE D90. TOP OF HEADWALL EL.=56.44, TOTAL LENGTH=20', INVERT EL.=51.44, H=6'. CONNECT 24" CSP (12 GA.) TO R.C. BOX WITH JUNCTION STRUCTURE NO. 5 (CASE 1) PER STD. PLATE 525. A=90°. FOOTING TO EXTEND FULL LENGTH OF WALL.
17. MODIFY EXIST. SLOPE LINING TO DRAIN TO NEW INLET. NEW LINING TO BE 4" AIR PLACED P.C.C. WITH 6"X6"-10X10 W.W.M. AT 1 1/2:1 MAX. SLOPE.
18. INSTALL 4" AIR PLACED P.C.C. WITH 6"X6"-10X10 W.W.M. LIMITS MAY BE EXTENDED IN THE FIELD DUE TO DAMAGE OF EXISTING LINING DURING CONSTRUCTION OR APPEARANCE REASONS. COORDINATE WITH THE INSPECTOR.
19. CONSTRUCT 12" OPENING IN A.C. BERM
20. INSTALL MAGNETIC LOOP FOR GATE IN SAME LOCATION AS LOOPED REMOVED.



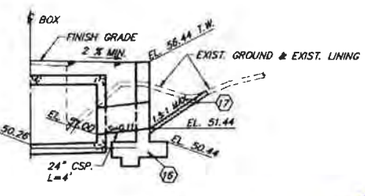
DETAIL "A"

SCALE: 1"=10'



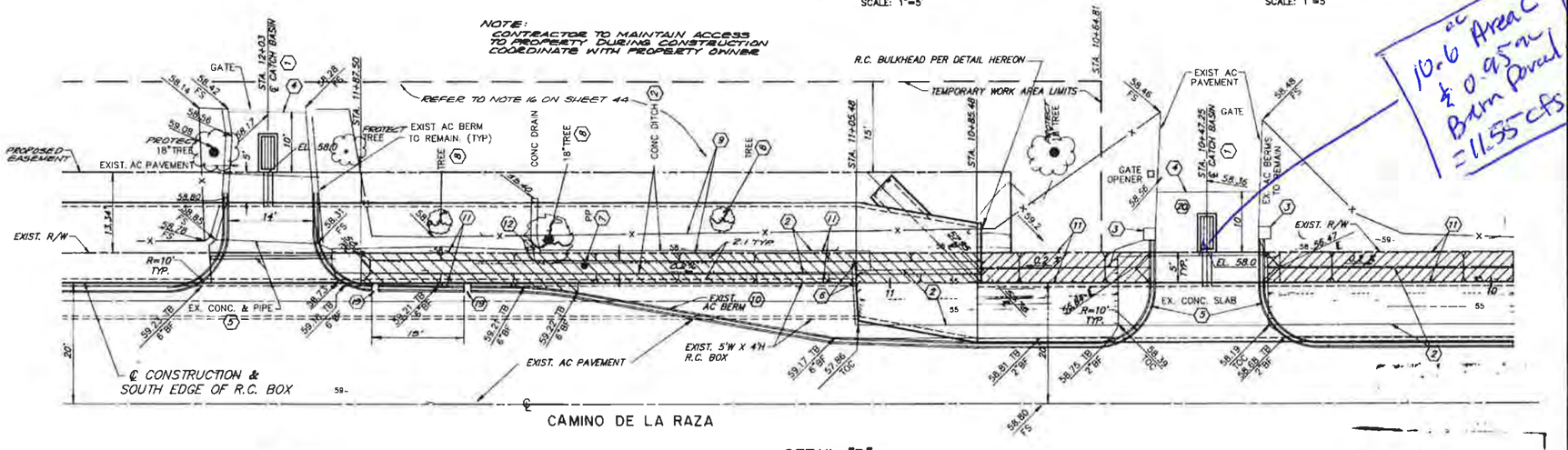
SECTION C–C

SCALE: 1"=5'



SECTION B–B

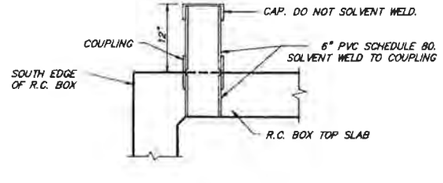
SCALE: 1"=5'



DETAIL "B"

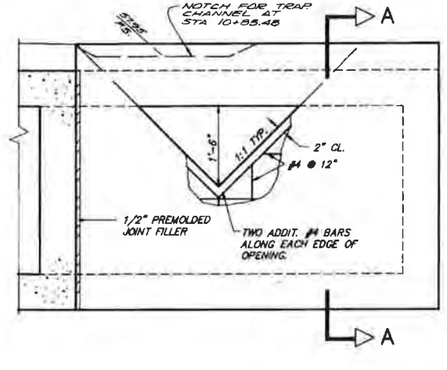
SCALE: 1"=10'

10.6 "C" & 0.95 ac Basin Area = 11.55 cfs



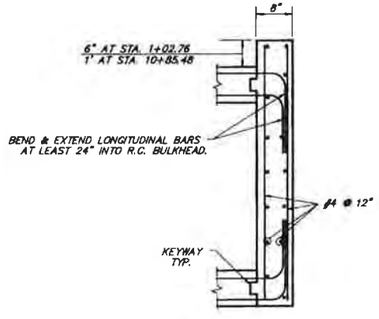
6" PVC INLET

NOT TO SCALE



REINFORCED CONCRETE BULKHEAD

NOT TO SCALE



SECTION A–A

NOT TO SCALE

AS BUILT CERTIFICATE

I HEREBY CERTIFY THAT THE WORK SHOWN ON DRAWING No. ____ SHEET No.____ THROUGH ____ MARKED AS "AS BUILT" HAS BEEN CONSTRUCTED IN CONFORMANCE WITH LINES AND GRADES AS SHOWN ON SAID PLANS, DRAWINGS, REFERENCED SPECIFICATIONS, AND APPROVED CHANGE ORDERS AS INDICATED IN REVISION BLOCK.

DATE 10/8/93 SIGNATURE

NAME R.C.E.

DANIEL ENGINEERING
PLANNING – CIVIL ENGINEERING
300 MONTGOMERY AVENUE SUITE 100
OXNARD, CA 93030 (805)988-4390

PREPARED BY: Charles Hilsmann 11-6-92
CHARLES HILSMANN R.C.E. 22748 EXP. 12-31-93 DATE

REVISIONS

MARK	DATE	DESCRIPTION	BY
1	10/8/93	ADDED REFERENCE TO DETAIL G SHEET	

APPROVAL RECOMMENDED BY: 2/16/93 DATE
R.C.E. 41083 EXP. 3-31-95

CITY OF OXNARD, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

RICE AVE. / CAMINO DE LA RAZA
STORM DRAIN
MISCELLANEOUS DETAILS

APPROVED BY: ASST. PUBLIC WORKS DIR. R.C.E. 28598 EXP. 3-31-94 DATE
APPROVED BY: PUBLIC WORKS DIR. R.C.E. 15327 EXP. 3-31-93 DATE 3/19/93
SCALE: HORIZ. VARIES VERT. VARIES
SHEET NO. 46 OF 62
DRAWN BY: D.R.
CHECKED BY: C.H.
DRAWING NUMBER 92-43A

8-82.
11/12/92

HYDROLOGIC & HYDRAULIC DRAINAGE REPORT
FOR
ROSE AVE./COLONIA RD. STORM DRAIN

In Conjunction With
SHOPPING AT THE ROSE
TRACT 4827
SUP 1489

Hydrology for West RCB System

Prepared by:
Charles Hilsmann, P.E.
1002 Westridge Drive
Ventura, CA. 93003

REGISTERED PROFESSIONAL ENGINEER
CHARLES H. HILSMANN
No. 22748
Exp. 12-31-93
CIVIL
STATE OF CALIFORNIA

July 1992
Revised August, 1992
Revised October, 1992

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INTERIM CONDITIONS	11
CONCLUSIONS	12

APPENDIX A - REFERENCE INFO FROM PREVIOUS REPORTS	31 pages
APPENDIX B - HYDROLOGY CALCULATIONS	12 pages
APPENDIX C - HYDRAULICS CALCULATIONS	48 pages
APPENDIX D - STRUCTURAL CALCULATIONS	5 pages

HYDROLOGY MAP - ULTIMATE CONDITIONS

HYDROLOGY MAP - INTERIM CONDITIONS

REFERENCES

The following Report and Study References were utilized in the preparation of this report and associated calculations:

1. "Hydrologic and Hydraulic Drainage Report (Ultimate Design)", prepared January 16, 1992 by V.T.N. West, Inc. for the St. John's Regional Medical Center, Phase II.
2. "Drainage Study for Tract 4021 and Tract 4373" prepared July 14, 1989 by William J. Ghormley, Consulting Civil Engineers, Inc.
3. Ventura County Flood Control District Modified Rational Method Hydrology Study Titled: "Rice RD DRN, Q100W/OXQ10-10%, Wal-Mart/F=Rice0692.99I, DT/TB, 6/92.

Pertinent portions of the drainage reports are included in Appendix A. The VCFCD Hydrology Study Computer Printouts and Drainage Map are included in Appendix B.

The following "as built" plans or plans approved for construction were utilized in the preparation of the project drawings:

4. Rose Avenue widening - Street Improvements, (Sup1252) Drawing No. 90-57A, Sheet 3.
5. Storm Drain Plan Improvements (Sup1252), Drawing No. 90-57A, Sheets 29 through 38.
6. Rose Avenue Widening Project - Specification No. PW 87-6, Drawing No. 87-2A, Sheets 1 through 10.
7. Tract No. 1362-1 Streets, Drawing No. 61-104A, Sheet 2.
8. Tract No. 1362-2 Street Improvements, Drawing No. 1961-152A, Sheet 9.
9. Northeast Industrial Assessment District No. 86-3, Contract No. 2, Drawing No. 88-50A, Sheets 33 through 35.
10. Tract No. 3147 - Offsite Drainage, Drawing No. 79-62A, Sheet 10 & 11A.

PROCEDURE

Hydrology

The runoff rates used in the design of the storm drain facilities were determined using two different criteria; ultimate and interim watershed development. Refer to 1"=500' hydrology maps at the end of this report.

For ultimate conditions, the VCFCD data provided in Appendix B was utilized. The maximum peak flow in the system was determined to be 427 CFS just before the junction with Rice Road Drain.

For interim conditions, the V.T.N. West Drainage Report was used for reference upstream of the intersection of Rose Avenue and Colonia Road. The 10-year interim peak flow in that study had been determined to be 148.8 CFS (See Appendix A). Due to the proposed "Shopping at the Rose" development, an increase of 64.9 CFS will occur (67 ac. x 1 CFS/acre -2.1 CFS). V.T.N. had estimated that 2.1 CFS would be released from the proposed site before development. In addition, the Maulhardt property will convey 0.4 CFS/Acre for the interim condition for a 10-year storm. The V.T.N. study had estimated the contributing Maulhardt area to be 77.6 acres. The VCFCD Hydrology Study shows the area to be 88 acres. Based on a field review, it appears that an additional 11 acres could drain to the facility until the property to the East is developed and runoff is conveyed to the final collection points as designed and shown on drawing # 88-50A. Therefore, the total maximum interim peak flow is expected to be 224.1 CFS (150.6 -2.1 +67 + (88 + 11 - 77.6) 0.4 CFS/acre) just before the junction with Rice Road Drain.

Hydraulics

The Los Angeles County Flood Control District's WSPG Computer Program was used to generate the hydraulic grade line in the storm drain. The input data and computer output is included in Appendix

R.C. Box at 200 foot intervals for pickup of drainage from the future landscaped center median.

DETENTION

This drainage facility does not provide detention in itself but is designed to convey runoff for a 100-year event from a fully developed watershed with each developing property intercepting all runoff and limiting the discharge to 1 CFS/Acre into the facility. However, the limitation on conveyance size would serve somewhat to reduce the magnitude of direct discharge into the Rice Road Drain if individual project detention were not being provided.

Ultimate Conditions

The VCFCD modified rational hydrology contained in Appendix B assumes a maximum release rate of 1 CFS/Acre from the watershed areas that were to be developed since the formation of the plan to limit discharge into Rice Road Drain. For older areas of development, 1.1 CFS/Acre was assumed (10-year runoff for high density areas per City of Oxnard Master Plan of Drainage). This latest VCFCD hydrology includes an additional area of 33 acres west of Rose Avenue requested to be added by the City since the earlier Hydrology Studies were completed in 1986. In addition, approximately 15 acres have been added to the contributing watershed (subarea 49B) to the westerly drain in Colonia Road and 15 acres reduced from the contributing watershed to the easterly drain, based on more detailed drainage review and analysis by V.T.N.

Some routings have been revised to more accurately reflect the scheme for intercepting and conveying runoff. The net result after routing is that 427 CFS will contribute to the Rice Road Drain from 440 acres. A summary of the hydrology is shown in the following table. The figures assume an ultimate release of 1 CFS/Acre from the St. Johns medical center site. Presently the runoff from 73 acres is being routed through a detention basin which results in a discharge of 32.8 CFS.

Total Area from 59B/60BE & 62B/63BE = 88 Acres. Remaining 11 acres tributary to East RCB.

It appears the 55.5 acres was broken up into 23 acres in 62B/63BE and the remaining 32.5 acres applied to node 59B/60BE.

HYDROLOGY SUMMARY TABLE - ULTIMATE DEVELOPMENT

SUBAREA NO.	AREA (ACRES)	Q100 GENERATED	Q100 AFTER DETENTION AND/OR ROUTING	REMARKS
44A/45AE	67	145	67	"SHOPPING AT THE ROSE" SITE
46B/47BE	60	119	66	USING 1.1 CFS/ACRE FOR EXIST. DEV.
48AB	127	---	133	AT GONZALES & ROSE
49B/50BE	86	176	86	
52C/53CE	55	123	55	
55A	268	---	267	2100' DOWNSTREAM OF GONZALES
56D/57DE	84	195	84	
58AD	352	---	351	AT ROSE & COLONIA
59B/60BE	65	146	65	
61AB	417	---	404	CONFLUENCE WITH PORTION OF MAULHARDT PROPERTY
62B/63BE	23	52	23	
64AB	440	---	427	AT DOWNSTREAM END OF PROJECT & CONFLUENCE WITH RICE ROAD DRAIN
99BD	483	---	458	CONTRIBUTING DRAINAGE FROM EAST
100AB	923	---	884	COMBINED FLOW IN RICE ROAD DRAIN

Interim Conditions

The VCFCD has not developed hydrology for the present watershed development conditions with the St. John's Project completed. However, the V.T.N. West Report covers the situation on a conservative basis since no reduction from routing was assumed or calculated. The interim runoff being picked up at the intersection of Colonia & Rose was calculated to be 6.4 cfs by V.T.N. No contributing flow was assumed from the force main due to different peaking times.

A Field Review of the Maulhardt property indicates that approximately 21.8 acres will drain to the entrance road and interim catch basin at Sta.12+03. See Interim Condition Hydrology Map. The 10-year flow would be 8.7 CFS (21.8 AC x 0.4 CFS/Acre). Approximately 10.7 acres, contributing 4.3 CFS, drains to a concrete lined field outlet at Sta. 11+58 which is conveyed in a new ditch/lining to the inlet at Sta. 10+85.48. A catch basin is being placed in the entrance road at Sta. 10+47.25. However, the basin is intended for pickup of nuisance road flow and as a safety factor for possible overflow due to poor grade conditions in the field. The remaining flow from 55.5 acres (22.2 CFS) will drain to a new lined ditch and enter the system at Sta. 6+77 and 1+02.76. Presently the field is graded so that all of the runoff drains to an existing 24" CMP which will be connected to the new facilities at Sta. 6+77. The inlet in the bulkhead at Sta. 1+02.76 has been provided in case there is some overflow from the field drainage. Finally, a 24" CMP has been provided at Sta. 0+64.70 to intercept excess field runoff estimated at 4.4 CFS from 11 acres east of the project. However, the pipe could accept 31 CFS. A CMP has been provided instead of a RCP because it is an interim connection and will eventually be abandoned.

Peak flow in Rice Road Drain for the interim condition assumes ultimate development from the watershed east of Rice Road Drain.

Maulhardt Areas highlighted above equal 99 acres. 88 Acres (21.8+10.7 +55.5) is tributary to West RCB. Remaining 11 acres tributary to East RCB.

HYDROLOGY MAP

INTERIM CONDITIONS

ROSE AVE./COLONIA RD. STORM DRAIN

LEGEND

171.3 → PEAK FLOW IN MAIN LINE

1.6 → CONTRIBUTING FLOW TO SYSTEM

NOTE: CONTRIBUTING AREAS WEST & NORTH OF THE MAULHARDT PROPERTY AND CONTRIBUTING FLOWS UPSTREAM OF STA. 12+03 ARE FROM THE V.T.N. WEST STUDY. THE PEAK FLOW OF 184.5 CFS (DOWNSTREAM OF STA 19+54.93) INCLUDES 11.2 CFS CONTRIBUTED BY THE STREETS.

1" = 500'

Maulhardt Property

Overlap of Maulhardt Areas shown in East RCB Report (23.7 ac)

Rice Road Drain

67 ACRES

60 ACRES

55 Ac.

86 ACRES

84 ACRES

21.8 ACRES

10.7 ACRES

55.5 ACRES

11 ACRES

32.8 INCLUDES DETENTION

8.5

11.6

1.6

1.8

1.9

1.2

1.6

1.6

171.3

184.5

197.5

218.7

224.1

63.6

TENT. TRACT 4655

P.M. 90-12

ML 4.5 AC.

ML 9 AC.

ML

FREEWAY

GONZALES

LOCKWOOD STREET

WILLIAMS DR.

HOSPITAL

SOCORRO WAY

SAN GORGONIO AVE

SAN JOSE ST.

COLONIA

COLONIA RD

RIO LINDO SCHOOL

RIO LINDO ST.

EMERALD ST

SNOW

MONO

ISABELLA

ALMANOR

SABRINA

LAFAYETTE

VENTURA

FRAZER

HOLSER

ROSE

GLORIA CT.

FELICIA CT.

COLONIA VILLAGE TR.

JUANITA SCHOOL

COLONIA PARK

RAMONA SCHOOL

AMELIA

BERNARDA

CARMELITA

DOLORES

ELIZA

MORRIS

ALPINE

BALSAM

CORDOVA

DRISKILL

EVEREST

FEATHERSTONE

GIBRALTAR

RICE ROAD DRAIN

SAN LUIS THOMPSON PARK

SAN JACINTO

IMPERIAL

JULIAN

KOHALA

BERNOULLI CIRCLE

CELSIUS

I 4183

WANKEL WAY

GRAVES

STURGIS

COOPER

HAYES AVE

GARDENS

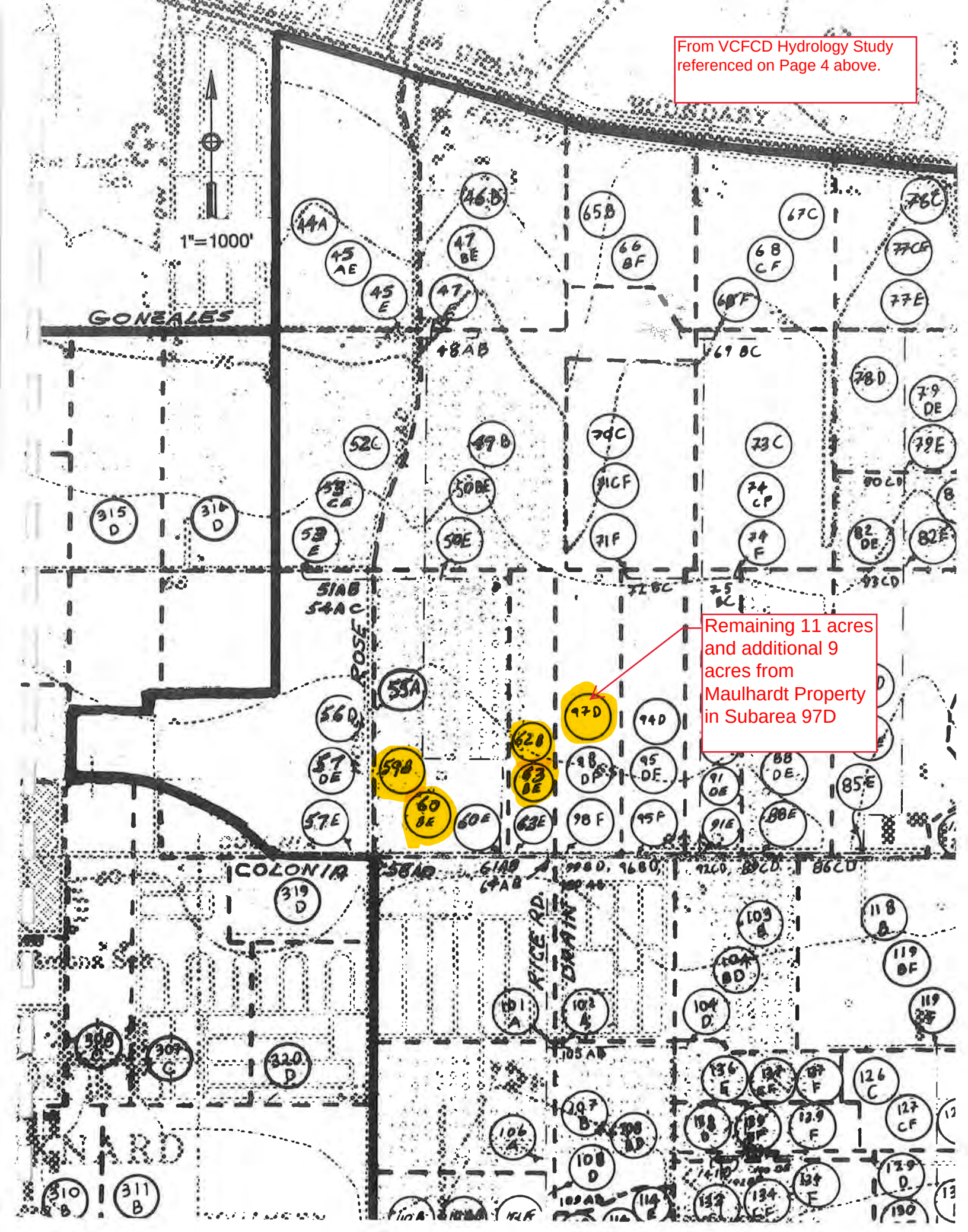
FIELD

SANTA LUCIA WY

APPENDIX B

HYDROLOGY

From VCFCD Hydrology Study
referenced on Page 4 above.


From VCFCD Hydrology Study referenced on Page 4 above.
1"=1000'
GONEALES
ROSE
COLONIA
RICE RD.
DRAIN
Remaining 11 acres and additional 9 acres from Maulhardt Property in Subarea 97D

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005 82310   44A RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92
005 82310   44A RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92
005 82310   47BEQ100 W/OXNARD Q10 RELEASE (1.1 CFS/AC)
005 82310   55A ROSE AVE BOX. Q100W/1.1CFS ON47B  PRIOR TO JCT.F=RICE0692.99I
005 82310   58ADRICE RD DRN.W/1.1 CFS ON 47B.Q100W/OXQ10-10% F=RICE0692.99I
005 82310   64ABRICE RD DRN W/WALMART PROPOSED BOX F=RICE0692.99I, DT/TB,6/92
005 82310  112ABWALMART W/DESIGN CHANNELS/Q1000XQ10-10%.NO RTG.DT/TB,6/92
999
999
006 82310   44A 050 50  6717B98                          1 G1
006 82310   45AE050         B984 0800 00500            673
006 82310   45E 050      099B98
006 82310   46B 060 50  6017B98
006 82310   47BE060         B98                       663 11
006 82310   47E 060      099B98
006 82310   48AB060         B985 2500 00200              1
006 82310   49B 060 50  8616B98
006 82310   50BE060         B984 0200 00400            863  1
006 82310   50E 060      099B98
006 82310   51AB060         B98                          1
006 82310   52C 040 50  5517B98
006 82310   53CE040         B984 1000 00300            553  1
006 82310   53E 040      099B98
006 82310   54AC040         B985 2500 00200              1
006 82310   55A 040      099B98                         1
006 82310   56D 040 50  8416B98
006 82310   57DE040         B984 1200 00180            843  1
006 82310   57E 040      099B98
006 82310   58AD040         B985 1200 00200             11
006 82310   59B 040 50  6517B98
006 82310   60BE040         B98                        653  1
006 82310   60E 040      099B98
006 82310   61AB040         B98                          1
006 82310   62B 040 50  2317B98
006 82310   63BE040         B984 0200 00150            233  1
006 82310   63E 040      099B98
006 82310   64AB040         B98                         11
006 82310   65B 050 50  3221B98
006 82310   66BF050         B98                        323  1
006 82310   66F 050      099B98
006 82310   67C 030 50  4220B98
006 82310   68CF030         B98                        423  1
006 82310   68F 030      099B98
006 82310   69BC030         B984 2060 00200              1
006 82310   70C 050 50  4817B98
006 82310   71CF050         B984 0500 00400            483  1
006 82310   71F 050      099B98
006 82310   72BC050         B98                          1
006 82310   73C 040 50  5813B98
006 82310   74CF040         B98                        583  1
006 82310   74F 040      099B98
006 82310   75BC030         B985 2450 00300              1
006 82310   76C 030 50  4319B98
006 82310   77CE030         B984 1250 00170            433  1
006 82310   77E 030      099B98
006 82310   78D 030 50  3720B98
006 82310   79DE030         B98                        373  1
006 82310   79E 030      099B98
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006 82310   80CD030         B985 0900 00170                1
 06 82310   81D 030 50  2817B98
 06 82310   82DE030          B98                      283  1
006 82310   82E 030       099B98
 06 82310   83CD030         B985 2750 00200                1
 06 82310   84D 030 50  5818B98
006 82310   85DE030          B98                      583  1
006 82310   85E 030       099B98
 06 82310   86CD030         B985 0770 00150                1
006 82310   87D 030 50  4319B98
006 82310   88DE030          B98                      433  1
 06 82310   88E 030       099B98
 06 82310   89CD030         B985 0630 00150                1
006 82310   90D 030 50  2814B98
 06 82310   91DE030          B98                      283  1
 06 82310   91E 030       099B98
006 82310   92CD030         B985 0500 00150                1
006 82310   93BC030         B985 0600 00150                1
 06 82310   94D 030 50  3316B98
006 82310   95DF030          B98                      333  1
006 82310   95F 030       099B98
 06 82310   96BD030         B985 0600 00150                1
 06 82310   97D 040 50  3316B98
006 82310   98DF040          B98                      333  1
006 82310   98F 040       099B98
 06 82310   99BD040         B985 0200 00170                1
006 82310  100AB040         B985 1600 00187                1
006 82310  101A 040 23  5517B98
 06 82310  102A 030 23  3716B985 0150 00224
006 82310  103B 040 50  4015B98
006 82310  104BD040          B98                      403  1
006 82310  104D 040       099B98
 06 82310  105AB030         B985 0840 00224                1
006 82310  106A 050 37  3317B985 0450 00224
006 82310  107B 030 50  2417B98
006 82310  108BF030          B98                      243  1
006 82310  108F 030       099B98
006 82310  109AB030         B985 0250 00224                1
006 82310  110B 050 37  2217B98
006 82310  111BF030          B98                      223  1
006 82310  111F 030       099B98
006 82310  112AB050          B98                       11  2
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VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	44A	67.	145.	67.	145.	0	0.	0.00000	0.00	0.00	0.	50	17	B98	0.50
82310	45AE	0.	78.	67.	67.	4	800.	0.00500	3.50	0.00	67.	50	0	B98	0.00
82310	45E	0.	0.	0.	78.	0	0.	0.00000	0.00	0.00	0.	50	99	B98	0.00
82310	46B	60.	119.	60.	119.	0	0.	0.00000	0.00	0.00	0.	60	17	B98	0.50

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* CONFLUENCE Q'S *

* 82310 47B TB 1156 QB 119. QBE 66. QE 53. 82310 47E TE 1156 QE 53. QEB 66. QB 119. *

* 82310 47BE TBE 1149 QBE 66. QB 70. QE 4. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	47BE	0.	53.	60.	66.	0	0.	0.00000	0.00	0.00	66.	60	0	B98	0.00
82310	47E	0.	0.	0.	53.	0	0.	0.00000	0.00	0.00	0.	60	99	B98	0.00

****

* CONFLUENCE Q'S *

* 82310 48A TA 1167 QA 67. QAB 133. QB 66. 82310 48B TB 1149 QB 66. QBA 130. QA 64. *

* 82310 48AB TAB 1167 QAB 133. QA 67. QB 66. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	48AB	60.	66.	127.	133.	5	2500.	0.00200	7.00	0.00	0.	60	0	B98	0.00
82310	49B	86.	176.	86.	176.	0	0.	0.00000	0.00	0.00	0.	60	16	B98	0.50

****

* CONFLUENCE Q'S *

* 82310 50B TB 1156 QB 176. QBE 86. QE 90. 82310 50E TE 1156 QE 90. QEB 86. QB 176. *

* 82310 50BE TBE 1148 QBE 86. QB 86. QE 0. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	50BE	0.	90.	86.	86.	4	200.	0.00400	4.00	0.00	86.	60	0	B98	0.00
82310	50E	0.	0.	0.	90.	0	0.	0.00000	0.00	0.00	0.	60	99	B98	0.00

****

* CONFLUENCE Q'S *

* 82310 51A TA 1172 QA 132. QAB 167. QB 34. 82310 51B TB 1150 QB 86. QBA 173. QA 87. *

* 82310 51AB TAB 1167 QAB 217. QA 131. QB 86. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	51AB	86.	86.	213.	217.	0	0.	0.00000	0.00	0.00	0.	60	0	B98	0.00
82310	52C	55.	123.	55.	123.	0	0.	0.00000	0.00	0.00	0.	40	17	B98	0.50

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* CONFLUENCE Q'S *

* 82310 53C TC 1156 QC 123. QCE 55. QE 68. 82310 53E TE 1156 QE 68. QEC 55. QC 123. *

* 82310 53CE TCE 1147 QCE 55. QC 58. QE 3. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310	53CE	0.	68.	55.	55.	4	1000.	0.00300	3.50	0.00	55.	40	0	B98	0.00
82310	53E	0.	0.	0.	68.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
CONFLUENCE Q'S														
82310 54A TA 1167 QA	217. QAC	272. QC	55.	82310 54C TC 1170 QC	55. QCA	233. QA	178.							
82310 54AC TAC 1167 QAC	272. QA	217. QC	55.											
82310 54AC	55.	55.	268.	272.	5	2500.	0.00200	9.00	0.00	0.	40	0	B98	0.00
82310 55A	0.	0.	268.	267.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
82310 56D	84.	195.	84.	195.	0	0.	0.00000	0.00	0.00	0.	40	16	B98	0.50
CONFLUENCE Q'S														
82310 57D TD 1156 QD	195. QDE	84. QE	111.	82310 57E TE 1156 QE	111. QED	84. QD	195.							
82310 57DE TDE 1146 QDE	84. QD	85. QE	1.											
82310 57DE	0.	111.	84.	84.	4	1200.	0.00180	4.50	0.00	84.	40	0	B98	0.00
82310 57E	0.	0.	0.	111.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
CONFLUENCE Q'S														
82310 58A TA 1171 QA	267. QAD	350. QD	83.	82310 58D TD 1170 QD	84. QDA	351. QA	267.							
82310 58AD TAD 1170 QAD	351. QA	267. QD	84.											
82310 58AD	84.	84.	352.	351.	5	1200.	0.00200	10.00	0.00	0.	40	0	B98	0.00
82310 59B	65.	146.	65.	146.	0	0.	0.00000	0.00	0.00	0.	40	17	B98	0.50
CONFLUENCE Q'S														
82310 60B TB 1156 QB	146. QBE	65. QE	81.	82310 60E TE 1156 QE	81. QEB	65. QB	146.							
82310 60BE TBE 1147 QBE	65. QB	69. QE	4.											
82310 60BE	0.	81.	65.	65.	0	0.	0.00000	0.00	0.00	65.	40	0	B98	0.00
82310 60E	0.	0.	0.	81.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
CONFLUENCE Q'S														
82310 61A TA 1173 QA	348. QAB	378. QB	30.	82310 61B TB 1147 QB	65. QBA	261. QA	196.							
82310 61AB TAB 1168 QAB	404. QA	339. QB	65.											
82310 61AB	65.	65.	417.	404.	0	0.	0.00000	0.00	0.00	0.	40	0	B98	0.00
82310 62B	23.	52.	23.	52.	0	0.	0.00000	0.00	0.00	0.	40	17	B98	0.50

Maulhardt Property 88 acres previously referenced tributary to West RCB

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
CONFLUENCE Q'S														
82310 63B TB 1156 QB	52. QBE	23. QE	29.	82310 63E TE 1156 QE	29. QEB	23. QB	52.							
82310 63BE TBE 1147 QBE	23. QB	24. QE	1.											
82310 63BE	0.	29.	23.	23.	4	200.	0.00150	3.00	0.00	23.	40	0	B98	0.00
82310 63E	0.	0.	0.	29.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
CONFLUENCE Q'S														
82310 64A TA 1168 QA	404. QAB	427. QB	23.	82310 64B TB 1154 QB	23. QBA	337. QA	314.							
82310 64AB TAB 1168 QAB	427. QA	404. QB	23.											
82310 64AB	23.	23.	440.	427.	0	0.	0.00000	0.00	0.00	0.	40	0	B98	0.00
82310 65B	32.	61.	32.	61.	0	0.	0.00000	0.00	0.00	0.	50	21	B98	0.50
CONFLUENCE Q'S														
82310 66B TB 1157 QB	61. QBF	32. QF	29.	82310 66F TF 1157 QF	29. QFB	32. QB	61.							
82310 66BF TBF 1149 QBF	32. QB	37. QF	5.											
82310 66BF	0.	29.	32.	32.	0	0.	0.00000	0.00	0.00	32.	50	0	B98	0.00
82310 66F	0.	0.	0.	29.	0	0.	0.00000	0.00	0.00	0.	50	99	B98	0.00
82310 67C	42.	89.	42.	89.	0	0.	0.00000	0.00	0.00	0.	30	20	B98	0.50
CONFLUENCE Q'S														
82310 68C TC 1156 QC	89. QCF	42. QF	47.	82310 68F TF 1156 QF	47. QFC	42. QC	89.							
82310 68CF TCF 1146 QCF	42. QC	42. QF	0.											
82310 68CF	0.	47.	42.	42.	0	0.	0.00000	0.00	0.00	42.	30	0	B98	0.00
82310 68F	0.	0.	0.	47.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
CONFLUENCE Q'S														
82310 69B TB 1149 QB	32. QBC	74. QC	42.	82310 69C TC 1146 QC	42. QCB	71. QB	29.							
82310 69BC TBC 1149 QBC	74. QB	32. QC	42.											
82310 69BC	42.	42.	74.	74.	4	2060.	0.00200	4.25	0.00	0.	30	0	B98	0.00
82310 70C	48.	104.	48.	104.	0	0.	0.00000	0.00	0.00	0.	50	17	B98	0.50

VENTURA COUNTY FLOOD CONTROL DISTRICT
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RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
* 82310 71C TC 1156 QC 104. QCF 48. QF 56. 82310 71F TF 1156 QF 56. QFC 48. QC 104. *														
* 82310 71CF TCF 1147 QCF 48. QC 49. QF 1. *														
82310 71CF	0.	56.	48.	48.	4	500.	0.00400	3.25	0.00	48.	50	0	B98	0.00
82310 71F	0.	0.	0.	56.	0	0.	0.00000	0.00	0.00	0.	50	99	B98	0.00
* 82310 72B TB 1176 QB 74. QBC 92. QC 18. 82310 72C TC 1160 QC 48. QCB 120. QB 72. *														
* 82310 72BC TBC 1169 QBC 122. QB 74. QC 48. *														
82310 72BC	48.	48.	122.	122.	0	0.	0.00000	0.00	0.00	0.	50	0	B98	0.00
82310 73C	58.	151.	58.	151.	0	0.	0.00000	0.00	0.00	0.	40	13	B98	0.50
* 82310 74C TC 1154 QC 151. QCF 58. QF 93. 82310 74F TF 1154 QF 93. QFC 58. QC 151. *														
* 82310 74CF TCF 1145 QCF 58. QC 59. QF 1. *														
82310 74CF	0.	93.	58.	58.	0	0.	0.00000	0.00	0.00	58.	40	0	B98	0.00
82310 74F	0.	0.	0.	93.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
* 82310 75B TB 1169 QB 122. QBC 152. QC 30. 82310 75C TC 1145 QC 58. QCB 147. QB 89. *														
* 82310 75BC TBC 1165 QBC 179. QB 121. QC 58. *														
82310 75BC	58.	58.	180.	179.	5	2450.	0.00300	7.00	0.00	0.	30	0	B98	0.00
82310 76C	43.	93.	43.	93.	0	0.	0.00000	0.00	0.00	0.	30	19	B98	0.50
* 82310 77C TC 1156 QC 93. QCE 43. QE 50. 82310 77E TE 1156 QE 50. QEC 43. QC 93. *														
* 82310 77CE TCE 1146 QCE 43. QC 44. QE 1. *														
82310 77CE	0.	50.	43.	43.	4	1250.	0.00170	3.50	0.00	43.	30	0	B98	0.00
82310 77E	0.	0.	0.	50.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
82310 78D	37.	78.	37.	78.	0	0.	0.00000	0.00	0.00	0.	30	20	B98	0.50

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALHART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
* CONFLUENCE Q'S *														
* 82310 79D TD 1156 QD		78. QDE		37. QE		41.	82310 79E TE 1156 QE			41. QED		37. QD		78. *
* 82310 79DE TDE 1146 QDE		37. QD		37. QE		0.								*
82310 79DE	0.	41.	37.	37.	0	0.	0.00000	0.00	0.00	37.	30	0	B98	0.00
82310 79E	0.	0.	0.	41.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
* CONFLUENCE Q'S *														
* 82310 80C TC 1174 QC		43. QCD		65. QD		22.	82310 80D TD 1146 QD			37. QDC		72. QC		35. *
* 82310 80CD TCD 1171 QCD		80. QC		43. QD		37.								*
82310 80CD	37.	37.	80.	80.	5	900.	0.00170	6.00	0.00	0.	30	0	B98	0.00
82310 81D	28.	65.	28.	65.	0	0.	0.00000	0.00	0.00	0.	30	17	B98	0.50
* CONFLUENCE Q'S *														
* 82310 82D TD 1156 QD		65. QDE		28. QE		37.	82310 82E TE 1156 QE			37. QED		28. QD		65. *
* 82310 82DE TDE 1145 QDE		28. QD		28. QE		0.								*
82310 82DE	0.	37.	28.	28.	0	0.	0.00000	0.00	0.00	28.	30	0	B98	0.00
82310 82E	0.	0.	0.	37.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
* CONFLUENCE Q'S *														
* 82310 83C TC 1172 QC		80. QCD		96. QD		16.	82310 83D TD 1145 QD			28. QDC		89. QC		61. *
* 82310 83CD TCD 1168 QCD		108. QC		80. QD		28.								*
82310 83CD	28.	28.	108.	108.	5	2750.	0.00200	6.00	0.00	0.	30	0	B98	0.00
82310 84D	58.	130.	58.	130.	0	0.	0.00000	0.00	0.00	0.	30	18	B98	0.50
* CONFLUENCE Q'S *														
* 82310 85D TD 1156 QD		130. QDE		58. QE		72.	82310 85E TE 1156 QE			72. QED		58. QD		130. *
* 82310 85DE TDE 1146 QDE		58. QD		60. QE		2.								*
82310 85DE	0.	72.	58.	58.	0	0.	0.00000	0.00	0.00	58.	30	0	B98	0.00
82310 85E	0.	0.	0.	72.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 86C TC 1174 QC 106. QCD 136. QD 30. 82310 86D TD 1146 QD 58. QDC 127. QC 69.														
82310 86CD TCD 1169 QCD 163. QC 105. QD 58.														
82310	86CD	58.	58.	166.	163.	5	770.	0.00150	8.00	0.00	0.	30	0	B98	0.00
82310	87D	43.	93.	43.	93.	0	0.	0.00000	0.00	0.00	0.	30	19	B98	0.50
82310 88D TD 1156 QD 93. QDE 43. QE 50. 82310 88E TE 1156 QE 50. QED 43. QD 93.														
82310 88DE TDE 1146 QDE 43. QD 44. QE 1.														
82310	88DE	0.	50.	43.	43.	0	0.	0.00000	0.00	0.00	43.	30	0	B98	0.00
82310	88E	0.	0.	0.	50.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
82310 89C TC 1170 QC 161. QCD 204. QD 43. 82310 89D TD 1146 QD 43. QDC 160. QC 117.														
82310 89CD TCD 1170 QCD 204. QC 161. QD 43.														
82310	89CD	43.	43.	209.	204.	5	630.	0.00150	8.00	0.00	0.	30	0	B98	0.00
82310	90D	28.	72.	28.	72.	0	0.	0.00000	0.00	0.00	0.	30	14	B98	0.50
82310 91D TD 1154 QD 72. QDE 28. QE 44. 82310 91E TE 1154 QE 44. QED 28. QD 72.														
82310 91DE TDE 1145 QDE 28. QD 30. QE 2.														
82310	91DE	0.	44.	28.	28.	0	0.	0.00000	0.00	0.00	28.	30	0	B98	0.00
82310	91E	0.	0.	0.	44.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
82310 92C TC 1171 QC 203. QCD 218. QD 15. 82310 92D TD 1145 QD 28. QDC 174. QC 146.														
82310 92CD TCD 1166 QCD 226. QC 198. QD 28.														
82310	92CD	28.	28.	237.	226.	5	500.	0.00150	9.00	0.00	0.	30	0	B98	0.00
82310 93B TB 1168 QB 177. QBC 400. QC 223. 82310 93C TC 1167 QC 224. QCB 401. QB 176.														
82310 93BC TBC 1167 QBC 401. QB 176. QC 224.														

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 93BC	237.	224.	417.	401.	5	600.	0.00150	11.00	0.00	0.	30	0	B98	0.00
82310 94D	33.	79.	33.	79.	0	0.	0.00000	0.00	0.00	0.	30	16	B98	0.50

* CONFLUENCE Q'S *
* 82310 95D TD 1156 QD 79. QDF 33. QF 46. 82310 95F TF 1156 QF 46. QFD 33. QD 79. *
* 82310 95DF TDF 1145 QDF 33. QD 34. QF 1. *

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 95DF	0.	46.	33.	33.	0	0.	0.00000	0.00	0.00	33.	30	0	B98	0.00
82310 95F	0.	0.	0.	46.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00

* CONFLUENCE Q'S *
* 82310 96B TB 1169 QB 400. QBD 424. QD 24. 82310 96D TD 1145 QD 33. QDB 301. QB 268. *
* 82310 96BD TBD 1168 QBD 431. QB 399. QD 32. *

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 96BD	33.	33.	450.	431.	5	600.	0.00150	11.00	0.00	0.	30	0	B98	0.00
82310 97D	33.	77.	33.	77.	0	0.	0.00000	0.00	0.00	0.	40	16	B98	0.50

* CONFLUENCE Q'S *
* 82310 98D TD 1156 QD 77. QDF 33. QF 44. 82310 98F TF 1156 QF 44. QFD 33. QD 77. *
* 82310 98DF TDF 1146 QDF 33. QD 34. QF 1. *

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 98DF	0.	44.	33.	33.	0	0.	0.00000	0.00	0.00	33.	40	0	B98	0.00
82310 98F	0.	0.	0.	44.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00

* CONFLUENCE Q'S *
* 82310 99B TB 1169 QB 429. QBD 451. QD 22. 82310 99D TD 1146 QD 33. QDB 327. QB 294. *
* 82310 99BD TBD 1167 QBD 458. QB 425. QD 33. *

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 99BD	33.	33.	483.	458.	5	200.	0.00170	11.00	0.00	0.	40	0	B98	0.00

* CONFLUENCE Q'S *
* 82310 100A TA 1168 QA 427. QAB 884. QB 458. 82310 100B TB 1168 QB 458. QBA 884. QA 427. *
* 82310 100AB TAB 1168 QAB 884. QA 427. QB 458. *

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
82310 100AB	483.	458.	923.	884.	5	1600.	0.00187	14.00	0.00	0.	40	0	B98	0.00
82310 101A	55.	114.	978.	922.	0	0.	0.00000	0.00	0.00	0.	40	17	B98	0.23
82310 102A	37.	83.	1015.	980.	5	150.	0.00224	14.00	0.00	0.	30	16	B98	0.23
82310 103B	40.	96.	40.	96.	0	0.	0.00000	0.00	0.00	0.	40	15	B98	0.50

Remaining 11 acres to East RCB and additional 9 acres of Maulhardt Property to East RCB.

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICE0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
* CONFLUENCE Q'S *														
* 82310 104B TB 1155 QB	96.	QBD	40.	QD	56.	82310 104D TD 1155 QD	56.	QDB	40.	QB	96.	*		
* 82310 104BD TBD 1146 QBD	40.	QB	42.	QD	2.	*								
82310 104BD	0.	56.	40.	40.	0	0.	0.00000	0.00	0.00	40.	40	0	B98	0.00
82310 104D	0.	0.	0.	56.	0	0.	0.00000	0.00	0.00	0.	40	99	B98	0.00
* CONFLUENCE Q'S *														
* 82310 105A TA 1165 QA	978.	QAB	1018.	QB	40.	82310 105B TB 1146 QB	40.	QBA	647.	QA	607.	*		
* 82310 105AB TAB 1165 QAB	1018.	QA	978.	QB	40.	*								
82310 105AB	40.	40.	1055.	1018.	5	840.	0.00224	14.00	0.00	0.	30	0	B98	0.00
82310 106A	33.	68.	1088.	1067.	5	450.	0.00224	14.00	0.00	0.	50	17	B98	0.37
82310 107B	24.	55.	24.	55.	0	0.	0.00000	0.00	0.00	0.	30	17	B98	0.50
* CONFLUENCE Q'S *														
* 82310 108B TB 1156 QB	55.	QBF	24.	QF	31.	82310 108F TF 1156 QF	31.	QFB	24.	QB	55.	*		
* 82310 108BF TBF 1145 QBF	24.	QB	24.	QF	0.	*								
82310 108BF	0.	31.	24.	24.	0	0.	0.00000	0.00	0.00	24.	30	0	B98	0.00
82310 108F	0.	0.	0.	31.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00
* CONFLUENCE Q'S *														
* 82310 109A TA 1166 QA	1065.	QAB	1089.	QB	24.	82310 109B TB 1145 QB	24.	QBA	628.	QA	604.	*		
* 82310 109AB TAB 1166 QAB	1089.	QA	1065.	QB	24.	*								
82310 109AB	24.	24.	1112.	1089.	5	250.	0.00224	14.00	0.00	0.	30	0	B98	0.00
82310 110B	22.	45.	22.	45.	0	0.	0.00000	0.00	0.00	0.	50	17	B98	0.37
* CONFLUENCE Q'S *														
* 82310 111B TB 1156 QB	45.	QBF	22.	QF	23.	82310 111F TF 1156 QF	23.	QFB	22.	QB	45.	*		
* 82310 111BF TBF 1149 QBF	22.	QB	26.	QF	4.	*								
82310 111BF	0.	23.	22.	22.	0	0.	0.00000	0.00	0.00	22.	30	0	B98	0.00
82310 111F	0.	0.	0.	23.	0	0.	0.00000	0.00	0.00	0.	30	99	B98	0.00

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-999

RICE RD DRN.Q100W/OXQ10-10%.WALMART/F=RICR0692.99I,DT/TB.6/92 STORM DAY 4

LOCATION	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
CONFLUENCE Q'S														
82310 112A TA 1166 QA		1087. QAB		1109. QB		22.	82310 112B TB 1149 QB			22. QBA		717. QA		695.
82310 112AB TAB 1166 QAB				1109. QA			1087. QB			22.				
82310 112AB	22.	22.	1134.	1109.	0	0.	0.00000	0.00	0.00	0.	50	0	B98	0.00

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0
T1 RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE
T2 ULTIMATE CONDITIONS
T3 DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992
SO  -1684.00   46.01   1                          52.01
R   -1556.00   46.40   1       .013
WX  -1556.00   46.40   2
R   -1511.00   46.33   2       .013
JX  -1509.00   46.32   2    20.013          77.0          48.62          90.00
R   -1496.00   46.31   2       .013
WE  -1496.00   46.31   3       .5
R    -988.00   47.55   3       .013
R    -534.00   48.67   3       .013
WX   -534.00   48.67   4
R    -492.00   48.62   4       .013
JX   -490.00   48.63   4    20.013          19.0          50.84          90.00
R    -474.00   48.86   4       .013
WE   -474.00   48.86   5       .5
R       0.00   50.07   5       .013
JX      0.00   50.07   7  6    .013   457.0          50.07           0.10
R      41.38   50.20   7       .013                                  23.71
R      82.76   50.30   7       .013                                  67.74
JX    102.76   50.35   9 22    .013    23.0          50.44          35.00
WX    102.76   50.35  12
R     742.76   51.93  12       .013                                                2
TS    752.76   51.95   8       .013
R    1085.48   52.78   8       .013                                                1
WE   1085.48   52.78  11       .200
JX   1105.48   52.83  23 16    .013    53.0          52.90          45.00
WX   1105.48   52.83  24
R    1510.20   53.53  24       .013
JX   1535.20   53.57  10 16    .013    55.3          53.57          31.83
R    1580.83   53.65  10       .013                                  58.10
R    1954.93   54.30  10       .013                                                2
TS   1971.93   54.33  17       .013
R    2021.41   54.43  17       .013                                  30.00
R    2074.77   54.54  17       .013
R    2124.25   54.64  17       .013                                  30.00
R    2414.93   55.22  17       .013
TS   2424.93   55.24  21       .013
R    2526.54   55.44  21       .013
SH                    21
CD   1  2                  6.50   32.00
CD   2  3   1     .67     4.75   30.17
CD   3  2                  6.50   30.00
CD   4  3   1     .67     4.50   30.17
CD   5  2                  7.50   30.00
CD   6  3   1     .67     4.00   16.17
CD   7  3                  4.50   10.00
CD   8  3   2    0.67     4.50   18.33
CD   9  3                  5.00   18.33
CD  10  3   2    0.50     4.00   11.00
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CD	11	3			4.50	18.33			
CD	12	3	2	0.67	5.00	18.33			
CD	13	3	2	0.50	4.50	13.00			
CD	14	3			6.50	13.00			
CD	15	4			4.25				
CD	16	4			3.75				
CD	17	3			4.50	9.00			
CD	18	1			1.00	3.00	1.00	1.00	
CD	19	4			1.50				
CD	20	4			2.00				
CD	21	3			5.0	9.00			
CD	22	4			2.75				
CD	23	3			4.00	18.00			
CD	24	3	1	1.17	4.00	18.17			

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE

HEADING LINE NO 2 IS -

ULTIMATE CONDITIONS

HEADING LINE NO 3 IS -

DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

F0515P
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	0.00	6.50	32.00			0.00										
CD	2	3	1	0.67	4.75	30.17	0.00	0.00	0.00										
CD	3	2	0	0.00	6.50	30.00			0.00										
CD	4	3	1	0.67	4.50	30.17	0.00	0.00	0.00										
CD	5	2	0	0.00	7.50	30.00			0.00										
CD	6	3	1	0.67	4.00	16.17	0.00	0.00	0.00										
CD	7	3	0	0.00	4.50	10.00	0.00	0.00	0.00										
CD	8	3	2	0.67	4.50	18.33	0.00	0.00	0.00										
CD	9	3	0	0.00	5.00	18.33	0.00	0.00	0.00										
CD	10	3	2	0.50	4.00	11.00	0.00	0.00	0.00										
CD	11	3	0	0.00	4.50	18.33	0.00	0.00	0.00										
CD	12	3	2	0.67	5.00	18.33	0.00	0.00	0.00										
CD	13	3	2	0.50	4.50	13.00	0.00	0.00	0.00										
CD	14	3	0	0.00	6.50	13.00	0.00	0.00	0.00										
CD	15	4			4.25														
CD	16	4			3.75														
CD	17	3	0	0.00	4.50	9.00	0.00	0.00	0.00										
CD	18	1	0	0.00	1.00	3.00	1.00	1.00	0.00										
CD	19	4			1.50														
CD	20	4			2.00														
CD	21	3	0	0.00	5.00	9.00	0.00	0.00	0.00										
CD	22	4			2.75														
CD	23	3	0	0.00	4.00	18.00	0.00	0.00	0.00										
CD	24	3	1	1.17	4.00	18.17	0.00	0.00	0.00										

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	-1684.00	46.01	1	52.01

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN
	-1556.00	46.40	1	0.013	0.00	0.00	0.00	0

ELEMENT NO 3 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	-1556.00	46.40	2

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN
	-1511.00	46.33	2	0.013	0.00	0.00	0.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	-1509.00	46.32	2	0	20	0.013	0.0	77.0	0.00	48.62	0.00	90.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-1496.00	46.31	2	0.013	0.00	0.00	0.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	-1496.00	46.31	3	0.500

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-988.00	47.55	3	0.013	0.00	0.00	0.00	0

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-534.00	48.67	3	0.013	0.00	0.00	0.00	0

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	-534.00	48.67	4

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-492.00	48.62	4	0.013	0.00	0.00	0.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	-490.00	48.63	4	0	20	0.013	0.0	19.0	0.00	50.84	0.00	90.00

ELEMENT NO 13 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	-474.00	48.86	4	0.013	0.00	0.00	0.00	0

ELEMENT NO 14 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	-474.00	48.86	5	0.500

ELEMENT NO 15 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	0.00	50.07	5	0.013	0.00	0.00	0.00	0

ELEMENT NO 16 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	0.00	50.07	7	6	0	0.013	457.0	0.0	50.07	0.00	0.10	0.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 17 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	41.38	50.20	7	0.013	0.00	23.71	0.00	0

ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	82.76	50.30	7	0.013	0.00	67.74	0.00	0

ELEMENT NO 19 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	102.76	50.35	9	22	0	0.013	23.0	0.0	50.44	0.00	35.00	0.00

ELEMENT NO 20 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	102.76	50.35	12

ELEMENT NO 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	742.76	51.93	12	0.013	0.00	0.00	0.00	2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 22 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	752.76	51.95	8	0.013

ELEMENT NO 23 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1085.48	52.78	8	0.013	0.00	0.00	0.00	1

ELEMENT NO 24 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1085.48	52.78	11	0.200

ELEMENT NO 25 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1105.48	52.83	23	16	0	0.013	53.0	0.0	52.90	0.00	45.00	0.00

ELEMENT NO 26 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1105.48	52.83	24

ELEMENT NO 27 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1510.20	53.53	24	0.013	0.00	0.00	0.00	0

ELEMENT NO 28 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1535.20	53.57	10	16	0	0.013	55.3	0.0	53.57	0.00	31.83	0.00

ELEMENT NO 29 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1580.83	53.65	10	0.013	0.00	58.10	0.00	0

ELEMENT NO 30 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1954.93	54.30	10	0.013	0.00	0.00	0.00	2

ELEMENT NO 31 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	1971.93	54.33	17	0.013

ELEMENT NO 32 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2021.41	54.43	17	0.013	0.00	30.00	0.00	0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 33 IS A REACH * * *

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	2074.77	54.54	17	0.013	0.00	0.00	0.00	0

ELEMENT NO 34 IS A REACH * * *

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	2124.25	54.64	17	0.013	0.00	30.00	0.00	0

ELEMENT NO 35 IS A REACH * * *

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	2414.93	55.22	17	0.013	0.00	0.00	0.00	0

ELEMENT NO 36 IS A TRANSITION * * *

	STATION	INVERT	SECT	N
U/S DATA	2424.93	55.24	21	0.013

ELEMENT NO 37 IS A REACH * * *

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	2526.54	55.44	21	0.013	0.00	0.00	0.00	0

ELEMENT NO 38 IS A SYSTEM HEADWORKS * *

	STATION	INVERT	SECT	W S ELEV
U/S DATA	2526.54	55.44	21	0.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE
ULTIMATE CONDITIONS
DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVB
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
-1684.00	46.01	6.000	52.010	980.0	5.10	0.405	52.415	0.00	3.078		6.50	32.00	0.00	0	0.(
86.95	0.00305					.000301	0.03			2.749			0.00		
-1597.05	46.27	5.721	51.996	980.0	5.35	0.445	52.441	0.00	3.078		6.50	32.00	0.00	0	0.(
41.05	0.00305					.000334	0.01			2.749			0.00		
-1556.00	46.40	5.588	51.988	980.0	5.48	0.466	52.454	0.00	3.078		6.50	32.00	0.00	0	0.(
WALL EXIT													0.00		
-1556.00	46.40	5.589	51.989	980.0	7.02	0.765	52.754	0.00	3.249		4.75	30.17	0.00	1	0.6
45.00	-.00156					.001735	0.08			0.000			0.00		
-1511.00	46.33	5.737	52.067	980.0	7.02	0.765	52.832	0.00	3.249		4.75	30.17	0.00	1	0.6
JUNCT STR	-.00500					.001604	0.00						0.00		
-1509.00	46.32	5.981	52.301	903.0	6.47	0.649	52.950	0.00	3.077		4.75	30.17	0.00	1	0.6
13.00	-.00077					.001473	0.02			0.000			0.00		
-1496.00	46.31	6.010	52.320	903.0	6.47	0.649	52.969	0.00	3.077		4.75	30.17	0.00	1	0.6
WALL ENTRANCE													0.00		
-1496.00	46.31	6.676	52.986	903.0	4.51	0.316	53.302	0.00	3.042		6.50	30.00	0.00	0	0.0(
125.53	0.00244					.000217	0.03			2.931			0.00		
-1370.47	46.62	6.366	52.982	903.0	4.73	0.347	53.329	0.00	3.042		6.50	30.00	0.00	0	0.00
119.36	0.00244					.000249	0.03			2.931			0.00		
-1251.11	46.91	6.069	52.977	903.0	4.96	0.382	53.359	0.00	3.042		6.50	30.00	0.00	0	0.00
113.44	0.00244					.000287	0.03			2.931			0.00		
-1137.67	47.19	5.787	52.972	903.0	5.20	0.420	53.392	0.00	3.042		6.50	30.00	0.00	0	0.00
107.74	0.00244					.000331	0.04			2.931			0.00		

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE
ULTIMATE CONDITIONS
DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	A
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR		
-1029.93	47.45	5.518	52.966	903.0	5.46	0.462	53.428	0.00	3.042	6.50	30.00	0.00	0	0
41.93	0.00244					.000365	0.02		2.931			0.00		
-988.00	47.55	5.413	52.963	903.0	5.56	0.480	53.443	0.00	3.042	6.50	30.00	0.00	0	0.
98.84	0.00247					.000405	0.04		2.921			0.00		
-889.16	47.79	5.161	52.955	903.0	5.83	0.528	53.483	0.00	3.042	6.50	30.00	0.00	0	0.(
93.64	0.00247					.000466	0.04		2.921			0.00		
-795.52	48.02	4.921	52.946	903.0	6.12	0.581	53.527	0.00	3.042	6.50	30.00	0.00	0	0.0
88.59	0.00247					.000538	0.05		2.921			0.00		
-706.93	48.24	4.692	52.935	903.0	6.42	0.639	53.574	0.00	3.042	6.50	30.00	0.00	0	0.0(
83.66	0.00247					.000622	0.05		2.921			0.00		
-623.27	48.45	4.473	52.923	903.0	6.73	0.703	53.626	0.00	3.042	6.50	30.00	0.00	0	0.00
78.81	0.00247					.000718	0.06		2.921			0.00		
-544.46	48.64	4.265	52.909	903.0	7.06	0.773	53.682	0.00	3.042	6.50	30.00	0.00	0	0.00
10.46	0.00247					.000777	0.01		2.921			0.00		
-534.00	48.67	4.237	52.907	903.0	7.10	0.784	53.691	0.00	3.042	6.50	30.00	0.00	0	0.00
WALL EXIT														
-534.00	48.67	4.238	52.908	903.0	7.22	0.810	53.718	0.00	3.077	4.50	30.17	0.00	1	0.67
42.00	-.00119					.001018	0.04		0.000			0.00		
-492.00	48.62	4.384	53.004	903.0	6.98	0.757	53.761	0.00	3.077	4.50	30.17	0.00	1	0.67
JUNCT STR	0.00500					.000925	0.00					0.00		
-490.00	48.63	4.464	53.094	884.0	6.71	0.700	53.794	0.00	3.033	4.50	30.17	0.00	1	0.67
10.26	0.01438					.000946	0.01		1.740			0.00		

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE

ULTIMATE CONDITIONS

DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBP
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
-479.74	48.78	4.256	53.033	884.0	7.04	0.770	53.803	0.00	3.033		4.50	30.17	0.00	1	0.6
5.74	0.01438					.001054	0.01			1.740			0.00		
-474.00	48.86	4.133	52.993	884.0	7.25	0.816	53.809	0.00	3.033		4.50	30.17	0.00	1	0.6
WALL ENTRANCE													0.00		
-474.00	48.86	4.218	53.078	884.0	6.99	0.758	53.836	0.00	3.000		7.50	30.00	0.00	0	0.0
69.63	0.00255					.000822	0.06			2.850			0.00		
-404.37	49.04	4.022	53.060	884.0	7.33	0.834	53.894	0.00	3.000		7.50	30.00	0.00	0	0.0
64.79	0.00255					.000951	0.06			2.850			0.00		
-339.58	49.20	3.835	53.038	884.0	7.68	0.917	53.955	0.00	3.000		7.50	30.00	0.00	0	0.0
59.73	0.00255					.001100	0.07			2.850			0.00		
-279.85	49.36	3.656	53.012	884.0	8.06	1.009	54.021	0.00	3.000		7.50	30.00	0.00	0	0.0
54.16	0.00255					.001273	0.07			2.850			0.00		
-225.69	49.49	3.486	52.980	884.0	8.45	1.109	54.089	0.00	3.000		7.50	30.00	0.00	0	0.0
8.34	0.00255					.001382	0.01			2.850			0.00		
-217.35	49.52	3.462	52.977	884.0	8.51	1.125	54.102	0.00	3.000		7.50	30.00	0.00	0	0.0
HYDRAULIC JUMP													0.00		
-217.35	49.52	2.579	52.094	884.0	11.42	2.026	54.120	0.00	3.000		7.50	30.00	0.00	0	0.0
49.43	0.00255					.003668	0.18			2.850			0.00		
-167.92	49.64	2.500	52.141	884.0	11.79	2.157	54.298	0.00	3.000		7.50	30.00	0.00	0	0.0
61.86	0.00255					.004158	0.26			2.850			0.00		
-106.06	49.80	2.384	52.183	884.0	12.36	2.372	54.555	0.00	3.000		7.50	30.00	0.00	0	0.0
55.41	0.00255					.004832	0.27			2.850			0.00		

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE

ULTIMATE CONDITIONS

DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
-50.65	49.94	2.273	52.214	884.0	12.96	2.610	54.824	0.00	3.000		7.50	30.00	0.00	0	0.00
50.65	0.00255					.005618	0.28			2.850			0.00		
0.00	50.07	2.167	52.237	884.0	13.60	2.871	55.108	0.00	3.000		7.50	30.00	0.00	0	0.00
JUNCT STR	0.00000					.004701	0.00						0.00		
0.00	50.07	3.841	53.911	427.0	11.12	1.919	55.830	0.00	3.841		4.50	10.00	0.00	0	0.00
32.47	0.00314					.003252	0.11			3.937			0.00		
32.47	50.17	3.937	54.109	427.0	10.85	1.827	55.936	0.00	3.841		4.50	10.00	0.00	0	0.00
8.91	0.00314					.003141	0.03			3.937			0.00		
41.38	50.20	3.937	54.137	427.0	10.85	1.827	55.964	0.00	3.841		4.50	10.00	0.00	0	0.00
41.38	0.00242					.002966	0.12			4.334			0.00		
82.76	50.30	4.111	54.411	427.0	10.39	1.675	56.086	0.00	3.841		4.50	10.00	0.00	0	0.01
JUNCT STR	0.00250					.001700	0.03						0.00		
102.76	50.35	5.467	55.817	404.0	4.42	0.303	56.120	0.00	2.472		5.00	18.33	0.00	0	0.01
WALL	EXIT												0.00		
102.76	50.35	5.467	55.817	404.0	4.80	0.357	56.174	0.00	2.600		5.00	18.33	0.00	2	0.6
391.96	0.00247					.001222	0.48			3.194			0.00		
494.72	51.32	5.000	56.318	404.0	4.80	0.357	56.675	0.00	2.600		5.00	18.33	0.00	2	0.6
120.94	0.00247					.000847	0.10			3.194			0.00		
615.66	51.62	4.766	56.382	404.0	4.99	0.386	56.768	0.00	2.600		5.00	18.33	0.00	2	0.6
119.92	0.00247					.000942	0.11			3.194			0.00		
735.58	51.91	4.545	56.457	404.0	5.23	0.425	56.882	0.00	2.600		5.00	18.33	0.00	2	0.6
7.18	0.00247					.001001	0.01			3.194			0.00		

EAST SD TW+2.28'

WEST SD TW=56.42 +2.28'

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE

ULTIMATE CONDITIONS

DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
742.76	51.93	4.532	56.462	404.0	5.25	0.428	56.890	0.00	2.600		5.00	18.33	0.00	2	0.67
TRANS STR	0.00200					.001319	0.01						0.00		
752.76	51.95	4.513	56.463	404.0	5.34	0.442	56.905	0.00	2.600		4.50	18.33	0.00	2	0.67
16.41	0.00249					.001633	0.03			3.181			0.00		
769.17	51.99	4.500	56.491	404.0	5.34	0.442	56.933	0.00	2.600		4.50	18.33	0.00	2	0.67
118.03	0.00249					.001106	0.13			3.181			0.00		
887.20	52.28	4.290	56.575	404.0	5.54	0.477	57.052	0.00	2.600		4.50	18.33	0.00	2	0.67
119.91	0.00249					.001228	0.15			3.181			0.00		
1007.11	52.59	4.090	56.675	404.0	5.81	0.525	57.200	0.00	2.600		4.50	18.33	0.00	2	0.67
78.37	0.00249					.001355	0.11			3.181			0.00		
1085.48	52.78	3.968	56.748	404.0	5.99	0.558	57.306	0.00	2.600		4.50	18.33	0.00	2	0.67
WALL	ENTRANCE												0.00		
1085.48	52.78	4.166	56.946	404.0	5.29	0.435	57.381	0.00	2.472		4.50	18.33	0.00	0	0.00
JUNCT STR	0.00250					.000741	0.01						0.00		
1105.48	52.83	4.232	57.062	351.0	4.89	0.372	57.434	0.00	2.278		4.00	18.00	0.00	0	0.00
WALL	EXIT												0.00		
1105.48	52.83	4.232	57.062	351.0	5.20	0.420	57.482	0.00	2.366		4.00	18.17	0.00	1	1.17
404.72	0.00173					.001387	0.56			2.986			0.00		
1510.20	53.53	4.093	57.623	351.0	5.20	0.420	58.043	0.00	2.366		4.00	18.17	0.00	1	1.17
JUNCT STR	0.00160					.002811	0.07						0.00		
1535.20	53.57	3.637	57.207	295.7	8.13	1.027	58.234	0.00	3.007		4.00	11.00	0.00	2	0.50
37.37	0.00175					.004005	0.15			4.000			0.00		

WATER SURFACE PROFILE LISTING

RICE RD. DRAIN - ROSE AVE./COLONIA RD. STORM DRAIN - SHOPPING AT THE ROSE
ULTIMATE CONDITIONS
DANIEL ENGINEERING, C. HILSMANN, AUGUST 1992

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
1572.57	53.64	3.814	57.450	295.7	7.75	0.933	58.383	0.00	3.007		4.00	11.00	0.00	2	0.50
8.26	0.00175					.003738	0.03			4.000			0.00		
1580.83	53.65	3.846	57.496	295.7	7.69	0.918	58.414	0.00	3.007		4.00	11.00	0.00	2	0.50
61.67	0.00174					.003643	0.22			4.000			0.00		
1642.50	53.76	4.000	57.757	295.7	7.53	0.881	58.638	0.00	3.007		4.00	11.00	0.00	2	0.50
312.43	0.00174					.005059	1.58			4.000			0.00		
1954.93	54.30	5.111	59.411	295.7	7.53	0.881	60.292	0.00	3.007		4.00	11.00	0.00	2	0.50
TRANS STR	0.00177					.003743	0.06						0.00		
1971.93	54.33	5.192	59.522	295.7	7.35	0.838	60.360	0.00	3.225		4.50	9.00	0.00	0	0.00
49.48	0.00202					.002426	0.12			3.909			0.00		
2021.41	54.43	5.309	59.739	295.7	7.35	0.838	60.577	0.00	3.225		4.50	9.00	0.00	0	0.00
53.36	0.00206					.002426	0.13			3.880			0.00		
2074.77	54.54	5.329	59.869	295.7	7.35	0.838	60.707	0.00	3.225		4.50	9.00	0.00	0	0.00
49.48	0.00202					.002426	0.12			3.909			0.00		
2124.25	54.64	5.445	60.085	295.7	7.35	0.838	60.923	0.00	3.225		4.50	9.00	0.00	0	0.00
290.68	0.00199					.002426	0.71			3.927			0.00		
2414.93	55.22	5.570	60.790	295.7	7.35	0.838	61.628	0.00	3.225		4.50	9.00	0.00	0	0.00
TRANS STR	0.00200					.002107	0.02						0.00		
2424.93	55.24	5.748	60.988	295.7	6.61	0.678	61.666	0.00	3.225		5.00	9.00	0.00	0	0.00
101.61	0.00197					.001788	0.18			3.947			0.00		
2526.54	55.44	5.729	61.169	295.7	6.61	0.678	61.847	0.00	3.225		5.00	9.00	0.00	0	0.00

EQUIV. TO VTN STA. 46+11.61

88-50A
35/69

REVIEWED BY:

WILLIAM J. GHORMLEY
CONSULTING CIVIL ENGINEERS, INC.
4587 TELEPHONE ROAD, SUITE 201
VENTURA, CALIFORNIA 93003
(805) 644-1049

WILLIAM J. GHORMLEY RCE 17053 EXP: 6/30/89

6/13/89
DATE

CAUTION: EXISTING A.T.&T. 12" IRON DUCT PER A.T.&T. DRAWING W-33968, SHT. 4 OF 7 TWO DAYS BEFORE DIGGING, CALL 1-800-424-5555

GRAPHIC SCALE
HORIZ 1"=40'
VERT 1"=4'

CONST. NOTES:
1. CONST. DOUBLE R.C. BOX CULVERT (SIZE AS SHOWN HEREON) PER DETAIL B ON SHEET NO. 45.
2. CONST TRANSITION STRUCTURE NO. 4 PER CITY STDS PLATE 534.
3. CONST. JUNCTION STRUCTURE NO. 4 PER CITY STDS PLATE 524
4. CONST. MANHOLE No. 3 PER CITY STDS PLATES 515, 516, 517, 519.

CONST. NOTES (CONTINUED)
5. CONST. TEMP INLET TYPE 1 PER DETAIL C ON SHEET NO. 45
6. REMOVE AND DISPOSE OF EXIST. WALL, HEADWALL AND SLAB.
7. SPLICE TO EXIST. REBAR OR DRILL & SET #5 DOWELS @18" oc IN EPOXY GROUT.
8. INSTALL 1/2" EXP. JOINT FILLER PER VCFCD REQUIREMENTS
9. RECONST. 6" CMU WALL PER CITY BUILDING DIV. STD. B505. (5' HIGH)
10. INSTALL RCP IN 1:9 LF BEDDING (DIAM. AND D-LOAD AS SHOWN)
11. CONST. CURB OPENING CATCH BASIN PER CITY STDS PLATE 501 (WIDTH AS SHOWN) WITH LOCAL DEPRESSION CASE C PER CITY STDS PLATE 509

PARCEL "A"
PARCEL MAP NO. 3796
37 PM 54

ALL EXIST. FARM SUBDRAINS SHALL BE EXTENDED AND CONNECTED WITH FLAPGATE TO PROPOSED R.C. BOX

PUBLIC EAST SD POC = 20 CFS

TRACT 5136 POC
BASIN NO 2
51.4 CFS

TRACT 5136 POC LINE A = 71.8 CFS

TRACT 5136 POC
BASIN NO 1
6.4 CFS

469 O.R. 459
RESTORE PROPERTY TO PRE-CONST. CONDITIONS STA. 224+50 TO STA. 228+50 AS DIRECTED BY THE ENGINEER.

HEADWALL DETAIL

SECTION 'A - A'

SECTION 'B - B'

COLONIA ROAD SECTIONS
NOT TO SCALE

BENCHMARK:
7-80
AT THE INTERSECTION OF RICE RD. AND U.S. HWY 101, FROM THE CENTER OF SOUTHBOUND LANES OF U.S. HWY 101, SOUTH ALONG THE CENTERLINE OF RICE RD., 70 LFT. FROM CENTERLINE OF RICE RD., WEST 105 FT. AT ANGLE PT. IN RIGHT OF WAY LINE OF RICE RD.
A BRASS CAPPED MONUMENT SET IN CONCRETE, FLUSH, WITH A STEEL GUARD POST 2 FOOT WEST.
ELEV. = 71.036' NGV. DATUM 1929. 1970 ADJUST.

PLANS PREPARED BY
JACK WAGNER COMPANY
615 VIA DEL CERRO
CAMARILLO, CA 93010
(805) 484-7532

DATE 5/11/89 RCE 11288

TRACT 1363-3
62.20 A'S-BUILT'
ENG:
RCE 17053 DATE 12-7-90

ADDENDUM NO. 1

APPROVED BY THE VENTURA COUNTY FLOOD CONTROL DISTRICT PERMIT NO. WP88025
BY: W. Ghormley DATE 5/31/89
STM 223+00.93 TO STM 236+00.00

REVISIONS			
MARK	DATE	DESCRIPTION	BY
1	May 89	ROD INLET CONNECTOR & PROFILES	

CITY OF OXNARD, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
NORTHEAST INDUSTRIAL IMPROVEMENT DIST. No 84-3 CONTRACT No. 2
TRACT No. 4183 AND TRACT No. 4478
STORM DRAIN PLAN AND PROFILE

APPROVED BY: Gordon F. Nielsen 5/31/89
DIR. OF PUBLIC WORKS/ASST. DIR. RCE 20598 DATE
APPROVED BY: [illegible] 5/31/89
CITY ENGINEER RCE 17053 DATE
APPROVED/RECOMMENDED BY: [illegible] 5/31/89
[illegible] DATE
[illegible] 5/31/89
[illegible] RCE 20443 EXP. 9-30-89 DATE

SCALE HORIZ 1"=40'
VERT 1"=4'
DRAWN BY
CHECKED BY
SHEET NO 36 OF 69
DRAWING NUMBER 88-50A

88-50A
35/69

OFFICE COPY

DRAINAGE STUDY
FOR
TRACT 4021 AND TRACT 4373
OXNARD, CALIFORNIA

JULY 14, 1989



Hydrology for East RCB System

Prepared by:
William J. Ghormley Consulting Civil Engineers, Inc.
4567 Telephone Road , Suite 201
Ventura, California 93003
805-644-1049

W.O. 307-1.3

WILLIAM J. GHORMLEY
CONSULTING CIVIL ENGINEERS, INC.
4567 Telephone Road Suite 201
VENTURA, CA 93003
(805) 644-1049

JOB _____

SHEET NO. _____ OF _____

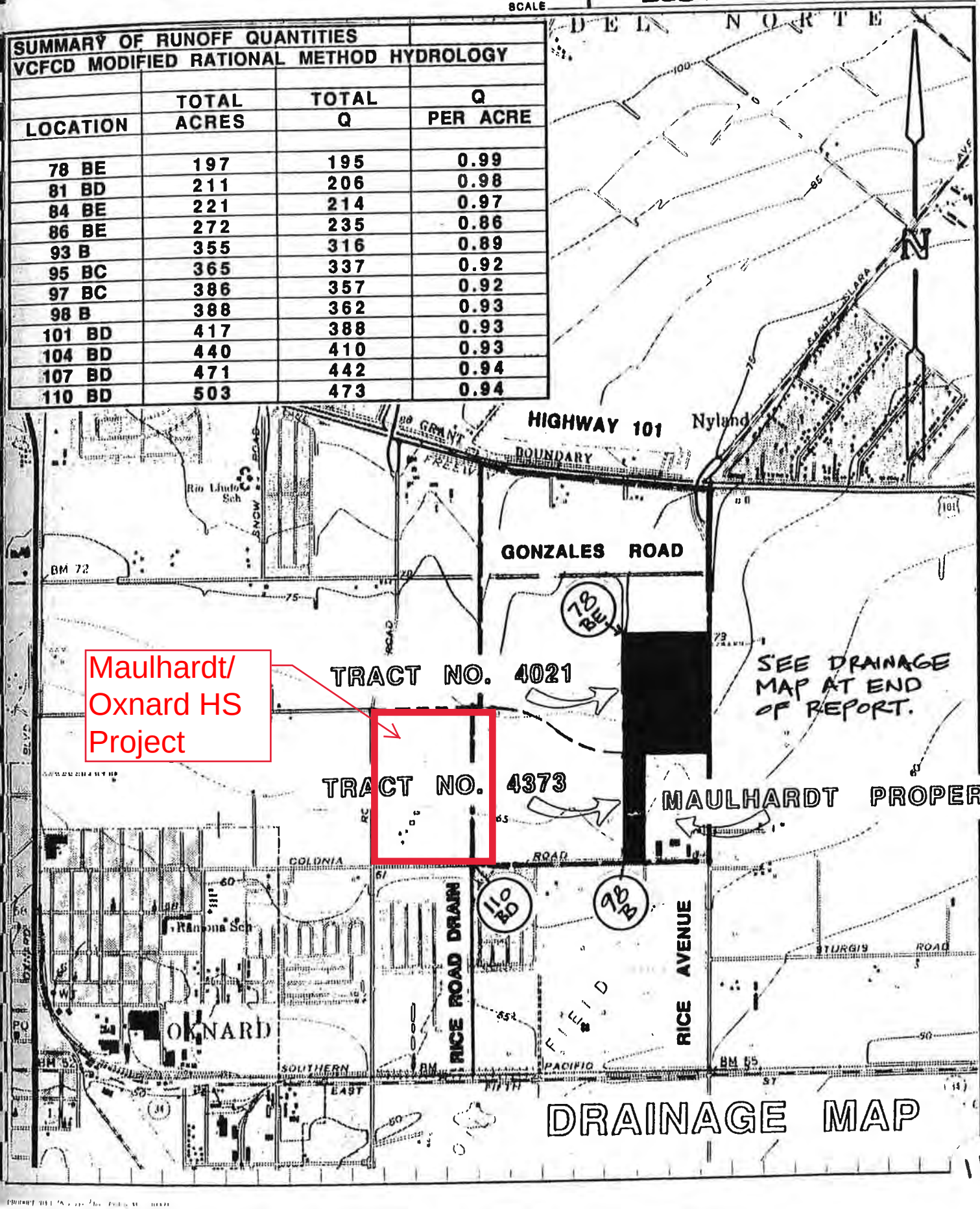
CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE 1" = 2000'

SUMMARY OF RUNOFF QUANTITIES
VCFCD MODIFIED RATIONAL METHOD HYDROLOGY

LOCATION	TOTAL ACRES	TOTAL Q	Q PER ACRE
78 BE	197	195	0.99
81 BD	211	206	0.98
84 BE	221	214	0.97
86 BE	272	235	0.86
93 B	355	316	0.89
95 BC	365	337	0.92
97 BC	386	357	0.92
98 B	388	362	0.93
101 BD	417	388	0.93
104 BD	440	410	0.93
107 BD	471	442	0.94
110 BD	503	473	0.94



WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN — MAUL8A.DAT
EAST EXTENSION TR. 4021-1 & TR. 4373. 10/12/88
MAIN LINE ANALYSIS.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
20704.00	46.39	5.40	51.79	882.0	5.10	.40	52.19	.00	2.87		6.50	32.00	.00	0	.00
77.70	.00305					.00033	.03			2.57			.00		
20781.70	46.63	5.15	51.78	882.0	5.35	.45	52.22	.00	2.87		6.50	32.00	.00	0	.00
50.30	.00305					.00038	.02			2.57			.00		
20832.00	46.78	4.98	51.76	882.0	5.53	.48	52.24	.00	2.87		6.50	32.00	.00	0	.00
WALL EXIT													.00		
20832.00	46.78	4.99	51.76	882.0	6.32	.62	52.39	.00	3.03		4.75	30.17	.00	1	.67
45.00	-.00156					.00141	.06			.00			.00		
20877.00	46.71	5.12	51.83	882.0	6.32	.62	52.45	.00	3.03		4.75	30.17	.00	1	.67
JUNCT STR	-.00500					.00137	.00						.00		
20879.00	46.70	5.19	51.89	862.0	6.17	.59	52.48	.00	2.98		4.75	30.17	.00	1	.67
13.00	-.00077					.00134	.02			.00			.00		
20892.00	46.69	5.21	51.90	862.0	6.17	.59	52.50	.00	2.98		4.75	30.17	.00	1	.67
WALL ENTRANCE													.00		
20892.00	46.69	5.57	52.26	862.0	5.16	.41	52.67	.00	2.95		6.50	30.00	.00	0	.00
103.63	.00244					.00034	.04			2.85			.00		
20995.63	46.94	5.31	52.25	862.0	5.41	.45	52.71	.00	2.95		6.50	30.00	.00	0	.00
98.34	.00244					.00039	.04			2.85			.00		
21093.96	47.18	5.06	52.25	862.0	5.67	.50	52.75	.00	2.95		6.50	30.00	.00	0	.00
93.23	.00244					.00045	.04			2.85			.00		
21187.19	47.41	4.83	52.24	862.0	5.95	.55	52.79	.00	2.95		6.50	30.00	.00	0	.00
88.28	.00244					.00052	.05			2.85			.00		

WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

MAUL8A.DAT
10/12/88

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH				ZR		
21275.47	47.63	4.60	52.23	862.0	6.24	.61	52.84	.00	2.95		6.50	30.00	.00	0	.00
83.47	.00244					.00060	.05			2.85			.00		
21358.94	47.83	4.39	52.22	862.0	6.55	.67	52.89	.00	2.95		6.50	30.00	.00	0	.00
41.05	.00244					.00067	.03			2.85			.00		
21400.00	47.93	4.28	52.21	862.0	6.71	.70	52.91	.00	2.95		6.50	30.00	.00	0	.00
.00	.00244					.00069	.00			2.85			.00		
21400.00	47.93	4.28	52.21	862.0	6.71	.70	52.91	.00	2.95		6.50	30.00	.00	0	.00
75.20	.00247					.00075	.06			2.84			.00		
21475.20	48.12	4.08	52.20	862.0	7.04	.77	52.97	.00	2.95		6.50	30.00	.00	0	.00
70.52	.00247					.00086	.06			2.84			.00		
21545.71	48.29	3.89	52.18	862.0	7.38	.85	53.03	.00	2.95		6.50	30.00	.00	0	.00
65.76	.00247					.00100	.07			2.84			.00		
21611.47	48.45	3.71	52.16	862.0	7.74	.93	53.10	.00	2.95		6.50	30.00	.00	0	.00
60.76	.00247					.00116	.07			2.84			.00		
21672.23	48.60	3.54	52.14	862.0	8.12	1.02	53.17	.00	2.95		6.50	30.00	.00	0	.00
55.22	.00247					.00134	.07			2.84			.00		
21727.45	48.74	3.38	52.11	862.0	8.51	1.13	53.24	.00	2.95		6.50	30.00	.00	0	.00
48.47	.00247					.00155	.08			2.84			.00		
21775.92	48.86	3.22	52.08	862.0	8.93	1.24	53.31	.00	2.95		6.50	30.00	.00	0	.00
38.59	.00247					.00180	.07			2.84			.00		
21814.51	48.95	3.07	52.02	862.0	9.36	1.36	53.38	.00	2.95		6.50	30.00	.00	0	.00
6.71	.00247					.00196	.01			2.84			.00		

WATER SURFACE PROFILE LISTING
MAUL8A.DAT
10/12/88

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	NORM DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
						SF AVE	HF						ZR		
L/ELEM	SO														
21821.22	48.97	3.04	52.01	862.0	9.45	1.39	53.40	.00	2.95		6.50	30.00	.00	0	.00
													.00		
HYDRAULIC JUMP															
21821.22	48.97	2.86	51.83	862.0	10.06	1.57	53.40	.00	2.95		6.50	30.00	.00	0	.00
										2.84			.00		
32.78	.00247					.00237	.08								
21854.00	49.05	2.89	51.94	862.0	9.95	1.54	53.48	.00	2.95		6.50	30.00	.00	0	.00
													.00		
WALL EXIT															
21854.00	49.05	2.98	52.03	862.0	9.80	1.49	53.52	.00	2.98		4.50	30.17	.00	1	.67
										.00			.00		
2.80	-.00119					.00251	.01								
21856.80	49.05	3.13	52.18	862.0	9.33	1.35	53.53	.00	2.98		4.50	30.17	.00	1	.67
										.00			.00		
9.12	-.00119					.00218	.02								
21865.92	49.04	3.29	52.32	862.0	8.89	1.23	53.55	.00	2.98		4.50	30.17	.00	1	.67
										.00			.00		
16.32	-.00119					.00189	.03								
21882.24	49.02	3.45	52.47	862.0	8.46	1.11	53.58	.00	2.98		4.50	30.17	.00	1	.67
										.00			.00		
13.76	-.00119					.00168	.02								
21896.00	49.00	3.56	52.56	862.0	8.22	1.05	53.61	.00	2.98		4.50	30.17	.00	1	.67
													.00		
JUNCT STR	.00500					.00148	.00								
21898.00	49.01	3.73	52.74	843.0	7.66	.91	53.65	.00	2.94		4.50	30.17	.00	1	.67
										1.69			.00		
6.36	.01438					.00144	.01								
21904.36	49.10	3.56	52.66	843.0	8.04	1.00	53.66	.00	2.94		4.50	30.17	.00	1	.67
										1.69			.00		
5.11	.01438					.00165	.01								
21909.47	49.17	3.39	52.56	843.0	8.43	1.10	53.67	.00	2.94		4.50	30.17	.00	1	.67
										1.69			.00		
3.79	.01438					.00190	.01								

65

WATER SURFACE PROFILE LISTING
MAUL8A.DAT
10/12/88

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
						SF AVE	HF			NORM DEPTH			ZR		
L/ELEM	SO														
21913.27	49.23	3.23	52.46	843.0	8.84	1.21	53.68	.00	2.94		4.50	30.17	.00	1	.67
.73	.01438					.00207	.00			1.69			.00		
21914.00	49.24	3.19	52.43	843.0	8.95	1.24	53.68	.00	2.94		4.50	30.17	.00	1	.67
WALL ENTRANCE													.00		
21914.00	49.24	3.44	52.68	843.0	8.17	1.04	53.72	.00	2.91		7.50	30.00	.00	0	.00
48.71	.00255					.00140	.07			2.76			.00		
21962.71	49.36	3.28	52.64	843.0	8.57	1.14	53.78	.00	2.91		7.50	30.00	.00	0	.00
41.20	.00255					.00162	.07			2.76			.00		
22003.91	49.47	3.13	52.59	843.0	8.99	1.26	53.85	.00	2.91		7.50	30.00	.00	0	.00
18.12	.00255					.00181	.03			2.76			.00		
22022.03	49.52	3.05	52.57	843.0	9.21	1.32	53.89	.00	2.91		7.50	30.00	.00	0	.00
HYDRAULIC JUMP													.00		
22022.03	49.52	2.76	52.28	843.0	10.17	1.61	53.89	.00	2.91		7.50	30.00	.00	0	.00
165.74	.00255					.00256	.42			2.76			.00		
22187.77	49.94	2.76	52.70	843.0	10.17	1.61	54.31	.00	2.91		7.50	30.00	.00	0	.00
146.38	.00255					.00255	.37			2.76			.00		
22334.16	50.31	2.77	53.08	843.0	10.15	1.60	54.68	.00	2.91		7.50	30.00	.00	0	.00
53.84	.00255					.00236	.13			2.76			.00		
22388.00	50.45	2.91	53.36	843.0	9.67	1.45	54.81	.00	2.91		7.50	30.00	.00	0	.00

INPUT FILE LISTING

```
T1 RICE ROAD DRAIN                                        MAUL8A.DAT
T2 EAST EXTENSION  TR. 4021-1 & TR. 4373.  10/12/88
T3 MAIN LINE ANALYSIS.
SO  20704.00   46.39  1                                    51.79
R   20832.00   46.78  1     0.013
WX                    2
R   20877.00   46.71  2     0.013
JX  20879.00   46.70  2    20.013          20.          49.00       90.0
R   20892.00   46.69  2     0.013
WE                    3     0.50
R   21400.00   47.93  3     0.013
R   21854.00   49.05  3     0.013
WX                    4
R   21896.00   49.00  4     0.013
JX  21898.00   49.01  4    20.013          19.          51.22       90.0
R   21914.00   49.24  4     0.013
WE                    5     0.50
R   22388.00   50.45  5     0.013
SH                    5
```

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.00	6.50	32.00			.00										
CD	2	3	1	.67	4.75	30.17	.00	.00	.00										
CD	3	2	0	.00	6.50	30.00			.00										
CD	4	3	1	.67	4.50	30.17	.00	.00	.00										
CD	5	2	0	.00	7.50	30.00			.00										
CD	6	3	1	.50	4.00	16.50	.00	.00	.00										
CD	7	3	1	.50	4.50	15.50	.00	.00	.00										
CD	8	3	1	.50	4.50	14.50	.00	.00	.00										
CD	9	3	1	.50	4.50	12.50	.00	.00	.00										
CD	10	3	0	.00	4.00	10.00	.00	.00	.00										
CD	11	3	0	.00	4.00	8.00	.00	.00	.00										
CD	14	4			5.00														
CD	15	4			4.50														
CD	16	4			4.00														
CD	17	4			3.50														
CD	18	4			3.00														
CD	19	4			2.50														
CD	20	4			2.00														
CD	21	4			1.50														

ERROR MESSAGE NUMBER 7 IN SEQUENCE CHECKING THRU CHANNEL DEFINITION DATA
INVALID CARD CODE ENCOUNTERED WHILE PROCESSING CD AND PTS CARDS - CODE =

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

RICE ROAD DRAIN MAUL8A.DAT

HEADING LINE NO 2 IS -

EAST EXTENSION TR. 4021-1 & TR. 4373. 10/12/88

HEADING LINE NO 3 IS -

MAIN LINE ANALYSIS.

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

	STATION	INVERT	SECT	W S ELEV
U/S DATA	20704.00	46.39	1	51.79

ELEMENT NO 2 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	20832.00	46.78	1	.013	.00	.00	.00	0

ELEMENT NO 3 IS A WALL EXIT

	STATION	INVERT	SECT
U/S DATA	20832.00	46.78	2

ELEMENT NO 4 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	20877.00	46.71	2	.013	.00	.00	.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 5 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	20879.00	46.70	2	0	20	.013	.0	20.0	.00	49.00	.00	90.00

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	20892.00	46.69	2	.013	.00	.00	.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A WALL ENTRANCE

	STATION	INVERT	SECT	FP
U/S DATA	20892.00	46.69	3	.500

ELEMENT NO 8 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	21400.00	47.93	3	.013	.00	.00	.00	0

ELEMENT NO 9 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	21854.00	49.05	3	.013	.00	.00	.00	0

ELEMENT NO 10 IS A WALL EXIT

	STATION	INVERT	SECT
U/S DATA	21854.00	49.05	4

ELEMENT NO 11 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	21896.00	49.00	4	.013	.00	.00	.00	0

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A JUNCTION		*	*	*	*	*		*		*		*		
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4	
		21898.00	49.01	4	0	20	.013	.0	19.0	.00	51.22	.00	90.00	
ELEMENT NO 13 IS A REACH		*	*	*										
	U/S DATA	STATION	INVERT	SECT			N					RADIUS	ANGLE	ANG PT	MAN H
		21914.00	49.24	4			.013					.00	.00	.00	0
ELEMENT NO 14 IS A WALL ENTRANCE				*										
	U/S DATA	STATION	INVERT	SECT			FP							
		21914.00	49.24	5			.500							
ELEMENT NO 15 IS A REACH		*	*	*										
	U/S DATA	STATION	INVERT	SECT			N					RADIUS	ANGLE	ANG PT	MAN H
		22388.00	50.45	5			.013					.00	.00	.00	0
ELEMENT NO 16 IS A SYSTEM HEADWORKS				*				*						
	U/S DATA	STATION	INVERT	SECT						W S ELEV				
		22388.00	50.45	5						.00				

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN — MAULO.DAT
EAST EXTENSION TR. 4021-1 & TR. 4373. 12/10/88
MAIN LINE ANALYSIS.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVEPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
22394.63	50.45	3.07	53.52	473.0	9.94	1.54	55.06	.00	3.07		4.00	16.00	.00	1	.50
4.70	.00129					.00346	.02			4.00			.00		
22399.33	50.46	3.22	53.68	473.0	9.48	1.40	55.07	.00	3.07		4.00	16.00	.00	1	.50
17.24	.00129					.00304	.05			4.00			.00		
22416.58	50.48	3.38	53.86	473.0	9.04	1.27	55.12	.00	3.07		4.00	16.00	.00	1	.50
35.71	.00129					.00267	.10			4.00			.00		
22452.29	50.52	3.54	54.07	473.0	8.62	1.15	55.22	.00	3.07		4.00	16.00	.00	1	.50
63.99	.00129					.00235	.15			4.00			.00		
22516.28	50.61	3.71	54.32	473.0	8.21	1.05	55.37	.00	3.07		4.00	16.00	.00	1	.50
10.30	.00129					.00218	.02			4.00			.00		
22526.58	50.62	3.74	54.36	473.0	8.17	1.04	55.39	.00	3.07		4.00	16.00	.00	1	.50
73.42	.00150					.00210	.15			4.00			.00		
22600.00	50.73	3.83	54.56	473.0	7.97	.99	55.55	.00	3.07		4.00	16.00	.00	1	.50
JUNCT STR	.00133	(110 BD)				.00194	.03						.00		
22615.00	50.75	4.02	54.77	442.0	7.58	.89	55.67	.00	3.07		4.50	15.00	.00	1	.50
485.00	.00161					.00178	.86			4.25			.00		
23100.00	51.53	4.17	55.70	442.0	7.32	.83	56.53	.00	3.07		4.50	15.00	.00	1	.50
JUNCT STR	.00133	(107 BD)				.00147	.02						.00		
23115.00	51.55	4.44	55.99	410.0	6.37	.63	56.62	.00	2.92		4.50	15.00	.00	1	.50
210.00	.00167					.00128	.27			3.96			.00		
23325.00	51.90	4.33	56.23	410.0	6.54	.66	56.89	.00	2.92		4.50	15.00	.00	1	.50
130.00	.00161					.00134	.17			4.01			.00		

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WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN — MAULO.DAT
EAST EXTENSION TR. 4021-1 & TR. 4373. 12/10/88
MAIN LINE ANALYSIS.

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH				ZR		
23455.00	52.11	4.27	56.38	410.0	6.62	.68	57.06	.00	2.92		4.50	15.00	.00	1	.50
45.00	.00156					.00137	.06			4.07			.00		
23500.00	52.18	4.26	56.44	410.0	6.63	.68	57.13	.00	2.92		4.50	15.00	.00	1	.50
JUNCT STR	.00150					.00147	.03						.00		
23520.00	52.21	4.27	56.48	388.0	6.87	.73	57.21	.00	2.99		4.50	13.75	.00	1	.50
80.00	.00163					.00157	.13			4.21			.00		
23600.00	52.34	4.26	56.60	388.0	6.87	.73	57.33	.00	2.99		4.50	13.75	.00	1	.50
110.00	.00155					.00157	.17			4.29			.00		
23710.00	52.51	4.26	56.77	388.0	6.87	.73	57.51	.00	2.99		4.50	13.75	.00	1	.50
290.00	.00162					.00158	.46			4.22			.00		
24000.00	52.98	4.25	57.23	388.0	6.89	.74	57.97	.00	2.99		4.50	13.75	.00	1	.50
JUNCT STR	.00133					.00155	.02						.00		
24015.00	53.00	4.38	57.38	362.0	6.61	.68	58.06	.00	2.96		4.50	13.00	.00	1	.50
585.00	.00161					.00153	.90			4.26			.00		
24600.00	53.94	4.31	58.25	362.0	6.71	.70	58.96	.00	2.96		4.50	13.00	.00	1	.50
100.00	.00160					.00156	.16			4.27			.00		
24700.00	54.10	4.31	58.41	362.0	6.72	.70	59.11	.00	2.96		4.50	13.00	.00	1	.50
128.00	.00156					.00156	.20			4.31			.00		
24828.00	54.30	4.31	58.61	362.0	6.72	.70	59.31	.00	2.96		4.50	13.00	.00	1	.50
21.00	.00190					.00157	.03			3.99			.00		
24849.00	54.34	4.30	58.64	362.0	6.73	.70	59.35	.00	2.96		4.50	13.00	.00	1	.50
JUNCT STR	.00500					.00156	.00						.00		

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101 80

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WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

MAULO.DAT
12/10/88

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH				ZR		
24851.00	54.35	4.31	58.66	360.0	6.68	.69	59.36	.00	2.95		4.50	13.00	.00	1	.50
46.00	.00130					.00154	.07			4.50			.00		
24897.00	54.41	4.33	58.74	360.0	6.65	.69	59.43	.00	2.95		4.50	13.00	.00	1	.50
JUNCT STR	.00377					.00151	.00						.00		
24899.65	54.42	4.35	58.77	357.0	6.56	.67	59.44	.00	2.94		4.50	13.00	.00	1	.50
264.45	.00148					.00148	.39			4.36			.00		
25164.10	54.81	4.35	59.16	357.0	6.56	.67	59.83	.00	2.94		4.50	13.00	.00	1	.50
JUNCT STR	.00200					.00146	.02						.00		
25179.10	54.84	4.41	59.25	337.0	6.37	.63	59.88	.00	2.90		4.50	12.50	.00	1	.50
29.90	.00134					.00143	.04			4.50			.00		
25209.00	54.88	4.41	59.29	337.0	6.36	.63	59.92	.00	2.90		4.50	12.50	.00	1	.50
JUNCT STR	.00500					.00139	.00						.00		
25211.00	54.89	4.46	59.35	331.0	6.19	.59	59.94	.00	2.87		4.50	12.50	.00	1	.50
288.00	.00149					.00136	.39			4.28			.00		
25499.00	55.32	4.41	59.73	331.0	6.26	.61	60.34	.00	2.87		4.50	12.50	.00	1	.50
JUNCT STR	.00500					.00135	.00						.00		
25501.00	55.33	4.44	59.77	326.0	6.12	.58	60.35	.00	2.84		4.50	12.50	.00	1	.50
298.00	.00148					.00134	.40			4.25			.00		
25799.00	55.77	4.39	60.16	326.0	6.19	.60	60.75	.00	2.84		4.50	12.50	.00	1	.50
JUNCT STR	.00500					.00131	.00						.00		
25801.00	55.78	4.44	60.22	318.0	5.97	.55	60.77	.00	2.80		4.50	12.50	.00	1	.50
99.00	.00141					.00126	.12			4.24			.00		

WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

MAULO.DAT
12/10/88

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
25900.00	55.92	4.42	60.34	318.0	6.00	.56	60.90	.00	2.80		4.50	12.50	.00	1	.50
99.00	.00152					.00128	.13			4.12			.00		
25999.00	56.07	4.39	60.46	318.0	6.04	.57	61.02	.00	2.80		4.50	12.50	.00	1	.50
JUNCT STR	.00500					.00128	.00						.00		
26001.00	56.08	4.40	60.48	316.0	5.99	.56	61.03	.00	2.78		4.50	12.50	.00	1	.50
540.90	.00148					.00132	.71			4.14			.00		
26541.90	56.88	4.28	61.16	316.0	6.16	.59	61.75	.00	2.78		4.50	12.50	.00	1	.50
JUNCT STR	.00150					.00176	.04						.00		
26561.90	56.91	4.28	61.19	235.0	6.57	.67	61.86	.00	2.77		4.00	9.00	.00	0	.00
357.10	.00148					.00216	.77			3.70			.00		
26919.00	57.44	4.52	61.96	235.0	6.57	.67	62.64	.00	2.77		4.00	9.00	.00	0	.00
JUNCT STR	.00500					.00198	.00						.00		
26921.00	57.45	4.61	62.06	214.0	5.99	.56	62.62	.00	2.60		4.00	9.00	.00	0	.00
79.00	.00152					.00179	.14			3.42			.00		
27000.00	57.57	4.63	62.20	214.0	5.99	.56	62.76	.00	2.60		4.00	9.00	.00	0	.00
200.00	.00150					.00179	.36			3.44			.00		
27200.00	57.87	4.69	62.56	214.0	5.99	.56	63.12	.00	2.60		4.00	9.00	.00	0	.00
100.00	.00140					.00179	.18			3.53			.00		
27300.00	58.01	4.73	62.74	214.0	5.99	.56	63.30	.00	2.60		4.00	9.00	.00	0	.00
JUNCT STR	.00133					.00201	.03						.00		
27315.00	58.03	4.66	62.69	206.0	6.49	.65	63.35	.00	2.74		4.00	8.00	.00	0	.00
556.45	.00153					.00222	1.23			3.72			.00		

WATER SURFACE PROFILE LISTING

RICE ROAD DRAIN
EAST EXTENSION TR. 4021-1 & TR. 4373.
MAIN LINE ANALYSIS.

MAULO.DAT
12/10/88

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
						SF AVE	HF			NORM DEPTH			ZR		
L/ELEM	SO														
27871.45	58.88	5.05	63.93	206.0	6.49	.65	64.58	.00	2.74		4.00	8.00	.00	0	.00
JUNCT STR	.00133	E				.00210	.03						.00		
27886.45	58.90	5.17	64.07	195.0	6.14	.59	64.66	.00	2.64		4.00	8.00	.00	0	.00
516.91	.00149					.00199	1.03			3.61			.00		
28403.36	59.67	5.43	65.10	195.0	6.14	.59	65.68	.00	2.64		4.00	8.00	.00	0	.00

Bc

INPUT FILE LISTING

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T1 RICE ROAD DRAIN                                          MAULO.DAT
T2 EAST EXTENSION  TR. 4021-1 & TR. 4373.                   12/10/88
T3 MAIN LINE ANALYSIS.
SO   22394.63   50.45 25                                          53.36
R    22526.58   50.62 25       0.013
R    22600.00   50.73 25       0.013
JX   22615.00   50.75 31 17    0.013     31.                     51.26          45.
R    23100.00   51.53 31       0.013
JX   23115.00   51.55 31 17    0.013     32.                     52.07          45.
R    23325.00   51.90 31       0.013
R    23455.00   52.11 31       0.013
R    23500.00   52.18 31       0.013
JX   23520.00   52.21 12 18    0.013     22.                     52.72          45.
R    23600.00   52.34 12       0.013
R    23710.00   52.51 12       0.013
R    24000.00   52.98 12       0.013
JX   24015.00   53.00  9 17    0.013     26.                     53.50          45.
R    24600.00   53.94  9       0.013
R    24700.00   54.10  9       0.013
R    24828.00   54.30  9       0.013
R    24849.00   54.34  9       0.013
JX   24851.00   54.35  9      20.013               2.                 55.60          30.
R    24897.00   54.41  9       0.013
JX   24899.65   54.42  9 21   21.013      1.       2.        55.44    55.44 60.     45.
R    25164.10   54.81  9       0.013
JX   25179.10   54.84 28      29.013               20.                54.86          30.
R    25209.00   54.88 28       0.013
JX   25211.00   54.89 28 21    21.013      2.       4.        55.89    55.89 60.     60.
R    25499.00   55.32 28       0.013
JX   25501.00   55.33 28      21.013               5.                 56.31          60.
R    25799.00   55.77 28       0.013
JX   25801.00   55.78 28      21.013               8.                 56.76          60.
R    25900.00   55.92 28       0.013
R    25999.00   56.07 28       0.013
JX   26001.00   56.08 28 21    0.013      2.                      58.50          60.
R    26541.90   56.88 28       0.013
JX   26561.90   56.91 10 16   18.013     76.       5.        57.00    57.00 30.     30.
R    26919.00   57.44 10       0.013
JX   26921.00   57.45 10      30.013               21.                58.00          30.
R    27000.00   57.57 10       0.013
R    27200.00   57.87 10       0.013
R    27300.00   58.01 10       0.013
JX   27315.00   58.03 11 21    0.013      8.                      58.50          45.
R    27871.45   58.88 11       0.013
JX   27886.45   58.90 11 20   18.013     10.       1.        59.20    59.20 30.     30.
R    28403.36   59.67 11       0.013
 SH              11
```

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PAR01.5808
May 23, 2019

Jim Steele
Tetra Tech, Inc.
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111

Subject: Water Demand Projections
Maulhardt Property – Northeast Corner of Rose Avenue and Camino del Sol
Oxnard, CA

Dear Mr. Steele,

The approximately 100 acre property at the northeast corner of Rose Avenue and Camino del Sol, commonly called the Maulhardt property, is the proposed site of a new high school, a residential development, and a smaller commercial development. This letter is to provide water projection calculations for the proposed development.

The proposed project consists of 900-1100 units of a mixture of single family, multi family, and low income housing; a two acre commercial component; and a 49 acre high school for Oxnard Union High School District (OUHSD). Projected water demands for this report are based on the City of Oxnard Water Master Plan and actual water usage for two other high schools in the OUHSD.

Land Use		Demand Factor	Projected Water Demand (Acre-Feet/Year
Residential	900-1100 DU	0.37 AFY/DU*	333-407 AFY
Commercial	2.0 Acres	3.4 AFY/AC*	6.8 AFY
Park	11.9 Acres	0.1 AFY/AC*	1.2 AFY
High School	49.4 Acres		67.0 AFY**
Total Demand Range			**408-482 AFY**

References
* City of Oxnard Water Master Plan
** Average of CIHS and OHS Water Bills (including irrigation)

The property was annexed to the City of Oxnard and Calleguas Municipal Water District in 2014. The City's 2015 Urban Water Master Plan includes this project, but does not specify specific projected water usage. So it is unknown how the demand calculations noted above relate to the City's expected water usage for the site. However, it is known that with the annexation, 161 acre-feet of ground water was allocated to the City of Oxnard.

The above info is provided for preliminary use. Further coordination with the City of Oxnard and further definition of the specific development, particularly as it relates to the residential portion, will be required to more accurately determine the water demands for the project.

Sincerely,
Jensen Design & Survey, Inc.

Susanne M. Cooper, P.E.
Engineering Manager

K TRAFFIC IMPACT ANALYSIS

OUHSD High School No. 8
Traffic and Circulation Study

City of Oxnard, CA

July 21, 2019

W.O. 2064174200

Prepared By:

Stantec

111 E. Victoria Street
Santa Barbara, CA 93101
Phone: (805) 963-9532

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INTRODUCTION

Stantec has prepared the following traffic and circulation study for the Oxnard Union High School District (OUHSD) High School no. 8. The traffic and circulation study provides an assessment of the existing and future traffic conditions within the study area, determines the trip generation and trip distribution for the proposed development, evaluates the potential traffic impacts to the vicinity roadways and intersections, and provides feasible mitigations where applicable. A discussion of the site access and circulation plan is also provided.

PROJECT DESCRIPTION

The OUHSD proposes a new senior high school on the Maulhardt property located along Camino Del Sol in the East Village Specific Plan of the City of Oxnard. The maximum enrollment at buildout would be 2,500 students.

Proposed improvements include the widening of Camino Del Sol and Rose Avenue to General Plan arterial standards, and the extension of Jacinto Drive from its existing terminus at the eastern site boundary to the Rose Avenue/Camino De La Luna intersection. The Rose Avenue/Camino Del La Luna intersection and the Camino Del Sol/Gibraltar Street intersection will be signalized. Exhibit 1 shows the location of the proposed high school site in the eastern portion of City of Oxnard and Exhibit 2 shows the conceptual site plan.

Access is proposed via three new driveways on the north side of Camino Del Sol and three driveways on the south side of the new segment of Jacinto Drive. The driveway connection to the Camino Del Sol/Gibraltar Street intersection will be full access. The remaining two driveways on Camino Del Sol, located west and east of Gibraltar Road, will be restricted to right-turns only. The three driveways on Jacinto Drive will be full access.

STUDY METHODOLOGY

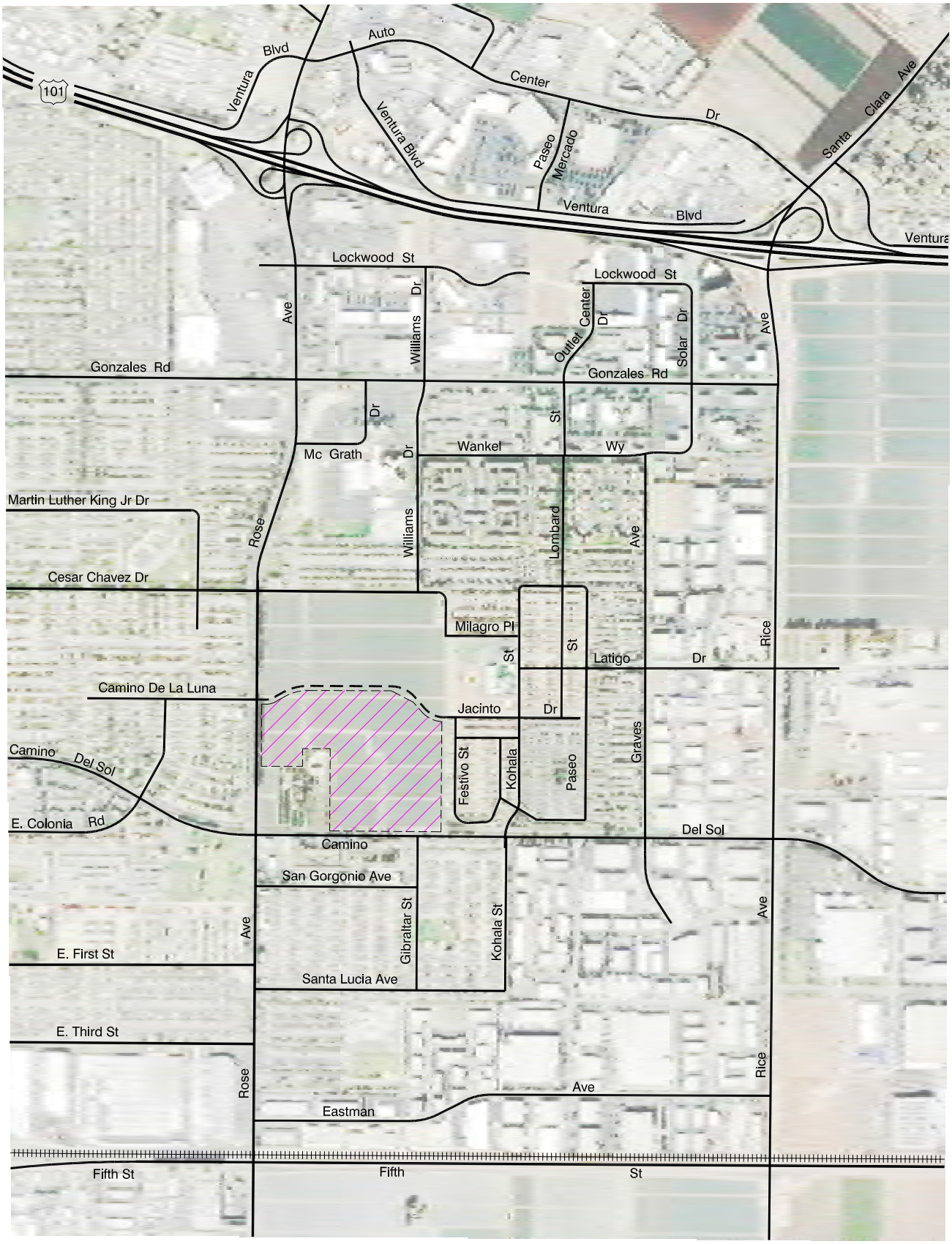
Traffic Analysis Scenarios

Pursuant to CEQA and City traffic impact study requirements, The traffic analysis includes the following traffic scenarios:

- Existing Conditions
- Existing plus Project Conditions
- Cumulative (Existing plus approved and pending projects) Conditions
- Cumulative plus Project Conditions
- Buildout Conditions
- Buildout plus Project Conditions

Level of Service Criteria

The traffic analysis focuses on key intersections within the study area during the AM and PM commute periods, when peak traffic volumes typically occur. A level of service (LOS) ranking scale is used to identify the operating condition at intersections. This scale compares traffic volumes to intersection capacity and assigns a letter value to this relationship.



LEGEND

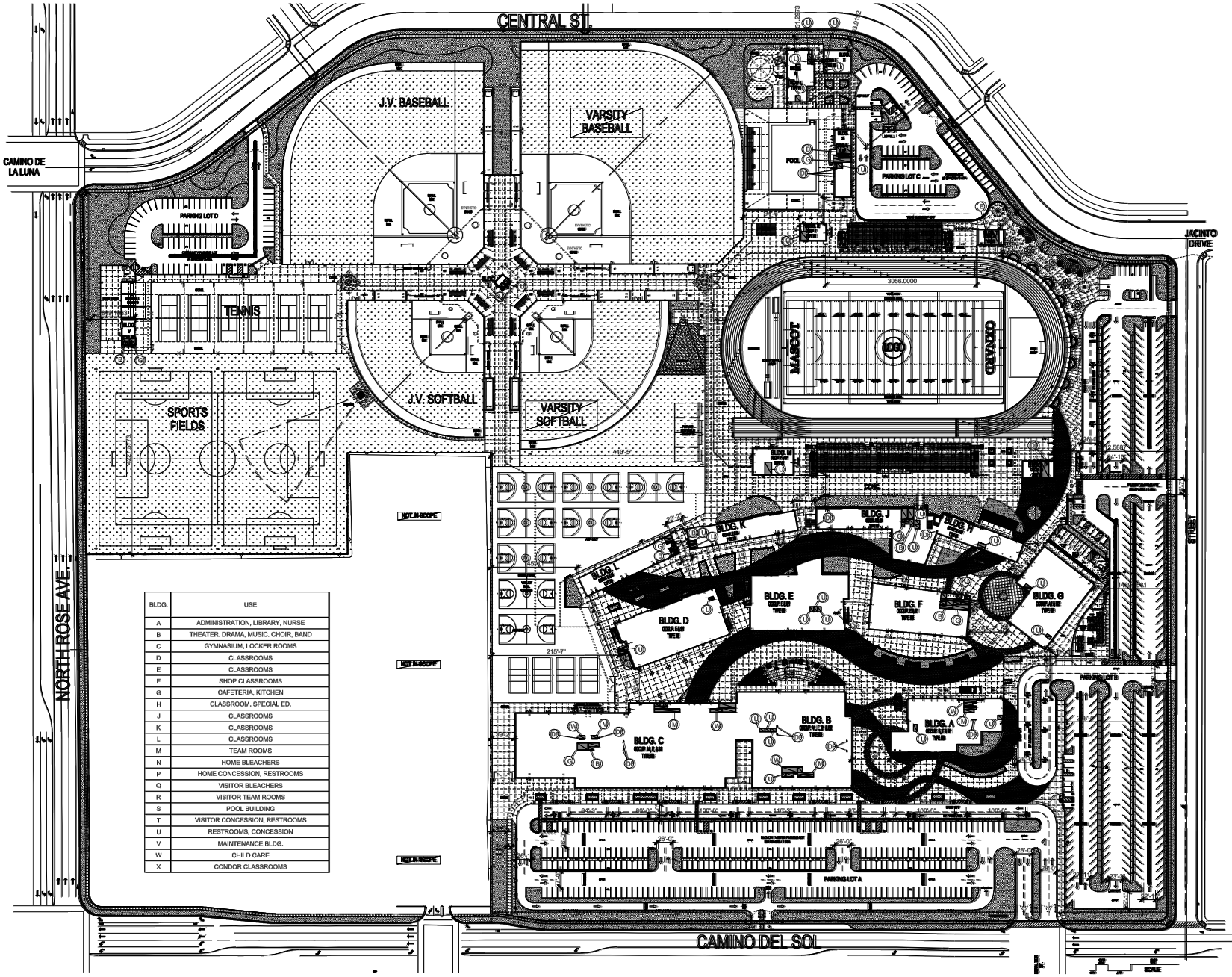
- Project Site

EXHIBIT 1

EXISTING STREET NETWORK/ PROJECT SITE LOCATION

Stantec

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BLDG.	USE
A	ADMINISTRATION, LIBRARY, NURSE
B	THEATER. DRAMA, MUSIC. CHOIR, BAND
C	GYMNASIUM, LOCKER ROOMS
D	CLASSROOMS
E	CLASSROOMS
F	SHOP CLASSROOMS
G	CAFETERIA, KITCHEN
H	CLASSROOM, SPECIAL ED.
J	CLASSROOMS
K	CLASSROOMS
L	CLASSROOMS
M	TEAM ROOMS
N	HOME BLEACHERS
P	HOME CONCESSION, RESTROOMS
Q	VISITOR BLEACHERS
R	VISITOR TEAM ROOMS
S	POOL BUILDING
T	VISITOR CONCESSION, RESTROOMS
U	RESTROOMS, CONCESSION
V	MAINTENANCE BLDG.
W	CHILD CARE
X	CONDOR CLASSROOMS

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111 East Victoria Street, Santa Barbara, CA 93101
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EXHIBIT 2

PROJECT SITE PLAN

The letter scale ranges from A to F with LOS A representing free flow conditions and LOS F representing congested conditions. The level of service criteria are summarized in Table 1.

Table1
Intersection Level of Service Criteria

LOS	Signalized Intersections (V/C Ratio)	Signalized Intersections (Sec. of Delay)	Unsignalized Intersections (Sec. of Delay)	Definition
A	< 0.60	≤ 10	≤ 10	Conditions of free unobstructed flow, no delays and all signal phases sufficient in duration to clear all approaching vehicles.
B	0.61 – 0.70	> 10 and ≤ 20	> 10 and ≤ 15	Conditions of stable flow, very little delay, a few phases are unable to handle all approaching vehicles.
C	0.71- 0.80	> 20 and ≤ 35	> 15 and ≤ 25	Conditions of stable flow, delays are low to moderate, full use of peak direction signal phases is experienced.
D	0.81 – 0.90	> 35 and ≤ 55	> 25 and ≤ 35	Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.
E	0.91 – 1.00	> 55 and ≤ 80	> 35 and ≤ 50	Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.
F	> 1.00	> 80	> 50	Conditions of forced flow, travel speeds are low and volumes are well above capacity. This condition is often caused when vehicles released by an upstream signal are unable to proceed because of back-ups from a downstream signal

Source: Highway Capacity Manual, 6th Edition.

The City of Oxnard considers LOS C or better acceptable for intersection operations, with LOS D acceptable at the following intersections only:

- Oxnard Boulevard with Gonzales Road;
- Oxnard Boulevard with Vineyard Avenue;
- Rose Avenue with Gonzales Road;
- Wooley Road with Oxnard Blvd/Saviers Rd (Five Points) and;
- Wooley Road with C Street.

Caltrans has established the cusp of the LOS C/D range as the target level of service standard for State Highway facilities.

Level of Service Calculation Methodology

City of Oxnard. Pursuant to Oxnard Traffic Study Guidelines, the Intersection Capacity Utilization Methodology (ICU) was used to determine levels of service for signalized intersections, and the results are shown as a volume-to-capacity (V/C) ratio. Level of service for the unsignalized intersections in the study area were calculated using the methodologies outlined in the Highway Capacity Manual (HCM)[1].

[1] Highway Capacity Manual, 6th Edition: A Guide for Multi-Modal Mobility Analysis, Transportation Research Board, 2016.

Levels of service for unsignalized intersections were determined using *HCS software*[2], and the results are presented as seconds of delay.

Caltrans. Levels of service for State intersections were analyzed based on the HCM methodologies. Intersection levels of service were calculated using Synchro[3] software, which implements the HCM methodology to determine intersection levels of service, control delays and queue lengths for each approach.

EXISTING CONDITIONS

Roadway Network

The roadway system in the study area is comprised of a network of freeways, arterials and collectors. The study area roadway network is shown in Exhibit 3 and a brief description of the major components is provided below.

U.S. Highway 101 (U.S. 101) extends along the Pacific Coast between Los Angeles and San Francisco. Within the City of Oxnard, the six to eight-lane freeway is the principal route between Oxnard and the cities of Ventura and Santa Barbara to the north, and the cities of Camarillo, Thousand Oaks and Los Angeles to the south. Regional access from U.S. 101 to the project site is provided via the interchanges with Rose Avenue and Rice Avenue.

Rose Avenue is a north-south primary arterial that extends from Pleasant Valley Road to Los Angeles Avenue located north of Oxnard. The roadway generally contains six travel lanes with a raised median and signals at all full access intersections. The segment between Camino Del Sol and Cesar Chavez Drive contains four travel lanes and a painted median, and will be widened as part of redevelopment of the Maulhardt property. It provides regional access to the project site via its intersections with Camino De La Luna and Camino Del Sol.

Rice Avenue is a north-south arterial that provides regional access to the project site from the east. In addition, it serves the Nyeland Acres Community, the Northeast Industrial Area and the southeast residential areas. The segment between the U.S. 101 interchange and the Oxnard Boulevard interchange has been include in the Highway System (SR 1), however signals are operated by the City. South of Gonzales Road, the roadway contains three southbound, a raised median and two northbound lanes. The roadway will be widened as part of redevelopment of the Sakioka Farms Specific Plan. All major intersections are signalized.

Camino Del Sol is an east-west secondary arterial that extends from Victoria Boulevard to Del Norte Boulevard. The posted speed limit on Camino Del Sol is 40 miles per hour through most of its stretch and on-street parking is permitted in certain areas. Camino Del Sol contains four lanes with a divided median from North Garfield Avenue to Rose Avenue, and from Gibraltar Street to Rice Avenue. The segment between Rose Avenue to Gibraltar Street contains four lanes and a painted median. This segment will be widened as part of project frontage improvements.

[2] Highway Capacity Software 7, McTrans, 2016.
[3] Synchro plus SimTraffic 10, Trafficware Ltd., 2018.

Gonzales Road is a main east-west primary arterial that serves the central and north-central portions of the City of Oxnard. This roadway extends from Harbor Boulevard to Rice Avenue, and contains six lanes and a raised median in the study area.

Fifth Street is the principal east-west street serving the Central Business District of the City and the mid-City region on both the east and west sides of Oxnard. It is currently designated State Route 34 east of Oxnard Boulevard. Fifth Street functions as a secondary arterial except for the segments from Victoria Avenue to H Street and Oxnard Boulevard to Rose Avenue, which function as primary arterials.

Alternative Transportation

Public Transit. The City of Oxnard is served by rail service and fixed route buses including Gold Coast Transit and VISTA, or general public Dial a Ride (DAR) services. The major transit centers include the Oxnard Transit Center (OTC) that provides transfers between Gold Coast Transit, Metrolink, Amtrak, and VISTA along with the C Street Transfer Center at the Centerpoint Mall in Oxnard.

Metrolink Ventura County Line provides rail service to Camarillo and Simi Valley into the City of Los Angeles to the L.A. Union Station with approximately 45-minute headways during commute periods.

Gold Coast Transit Routes 4 and 17 provide service to the project area with stops along Rose Avenue. Route 2 provides local service from the OTC via Colonia Road to Gibraltar Street and return via First Street. Transfers to Routes 15, 19, 20 and 22 are provided at the St. John's Regional Medical Center located at Rose Avenue and Gonzales Road.

Vista routes provide regional transit connection with service from Oxnard to Ventura, Santa Barbara and UCSB to the north, and service along SR 34, SR 126 and U.S. 101 to all cities in Ventura County, and the San Fernando Valley.

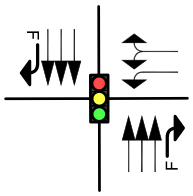
Bicycle Network. Class II bicycle lanes are provided on Rose Avenue north of Camino Del Sol and, Camino Del Sol from Garfield Avenue to Del Norte Boulevard, and on Gonzales Road from Victoria Avenue to Rice Avenue. The City's *Bicycle & Pedestrian Master Plan*[4] proposed bicycle facilities includes new Class II bicycle lanes on Rose Avenue south of Camino De Sol and a bicycle boulevard on Cesar Chavez Drive from Juanita Avenue to Rice Avenue.

Existing Intersection Operations

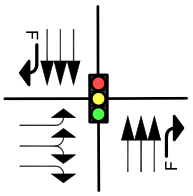
A total of 21 intersections were selected for analysis in consultation with City of Oxnard Traffic Engineering and Planning staff. Existing intersection turning volumes for the AM and PM peak commute periods (7am to 9am and 4pm to 6pm) were derived from counts collected in November 2018 and January 2019. Intersection turning counts are included in the Technical Appendix for reference. The existing lane geometry and control for the intersections within the study area are shown in Exhibit 3 and the AM and PM peak hour volumes are illustrated in Exhibit 4.

[4] Final City of Oxnard Bicycle & Pedestrian Facilities Master Plan, City of Oxnard, February 2011.

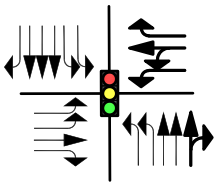
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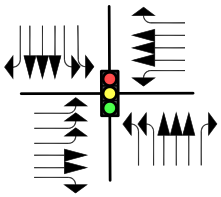
2. Rose & US 101 SB



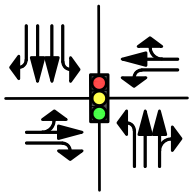
3. Rose & Lockwood



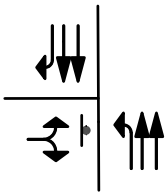
4. Rose & Gonzales



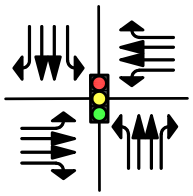
5. Rose & Cesar Chavez



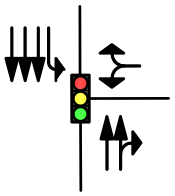
6. Rose & Camino de la Luna



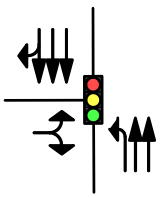
7. Rose & Camino del Sol



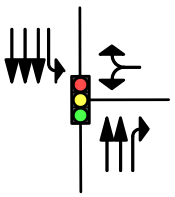
8. Rose & San Gorgonio

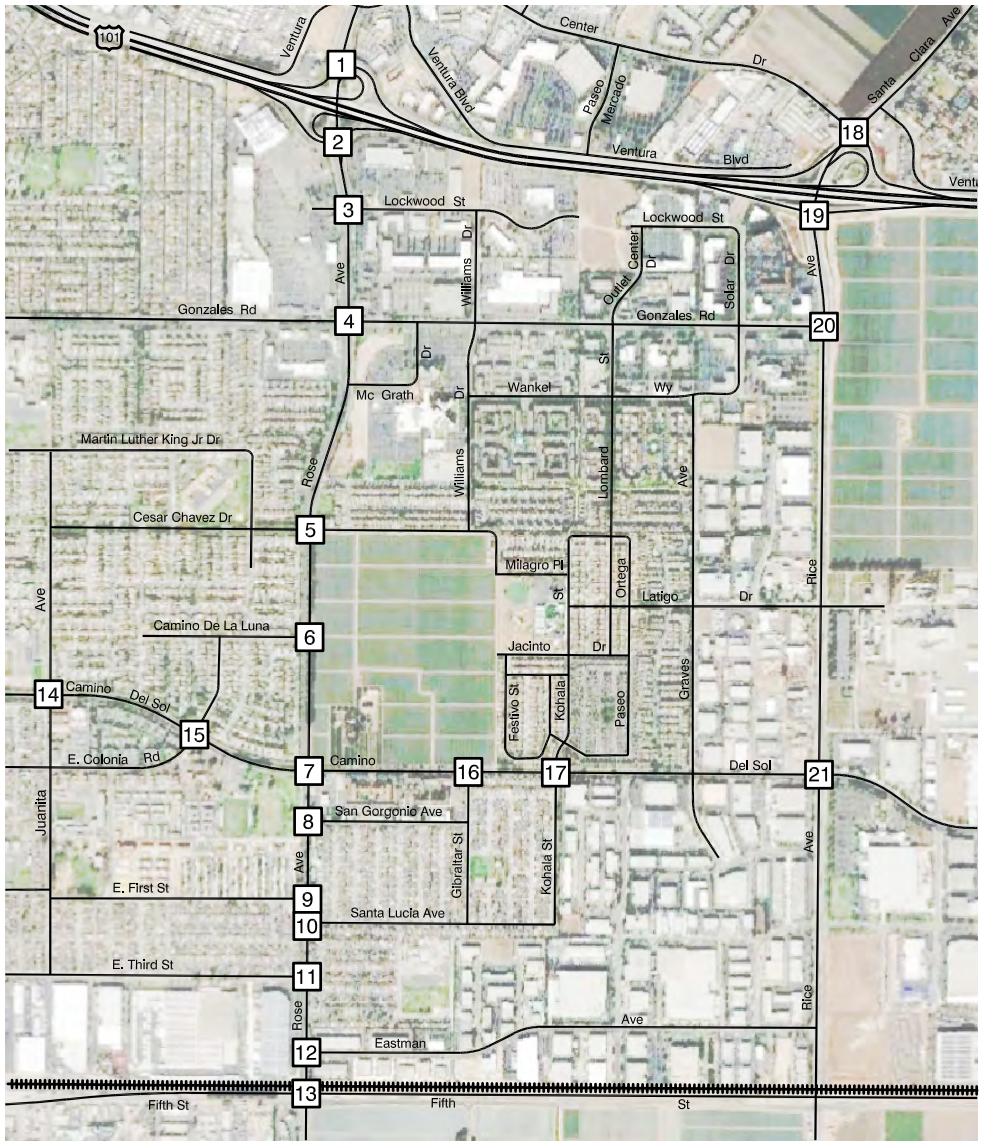


9. Rose & First

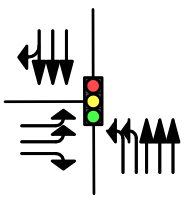


10. Rose & Santa Lucia

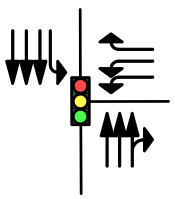




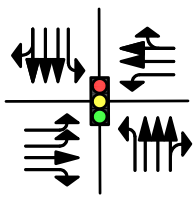
11. Rose & Third



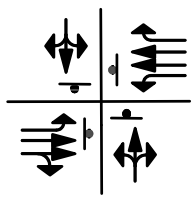
12. Rose & Eastman



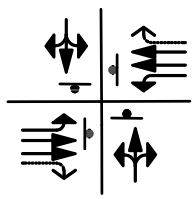
13. Rose & Fifth



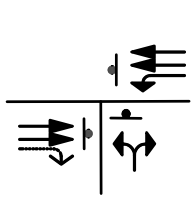
14. Camino del Sol & Juanita



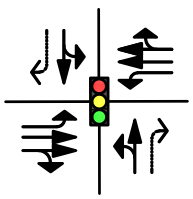
15. Camino del Sol & Colonia



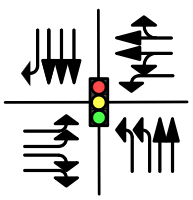
16. Camino del Sol & Gibraltar



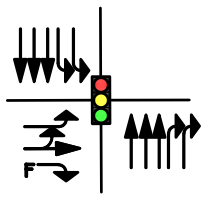
17. Camino del Sol & Kohala



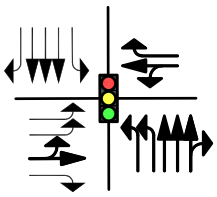
18. Santa Clara & US 101 NB



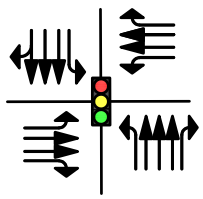
19. Rice & US 101 SB



20. Rice & Gonzales



21. Rice & Camino del Sol





N.T.S.

LEGEND



- Traffic Signal



- Stop Sign
- De-facto Right-Turn Lane
- Free Right-Turn Lane

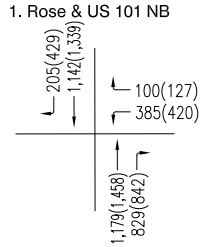
Stantec

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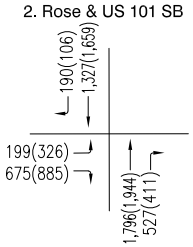
EXHIBIT 3

EXISTING CONDITIONS INTERSECTION GEOMETRIES

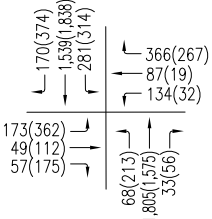
1. Rose & US 101 NB



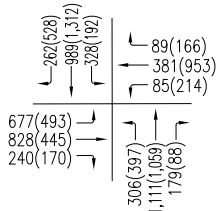
2. Rose & US 101 SB



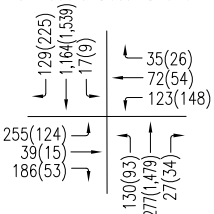
3. Rose & Lockwood



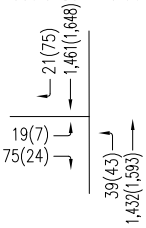
4. Rose & Gonzales



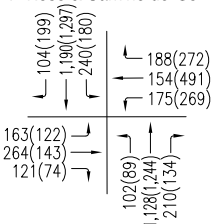
5. Rose & Cesar Chavez



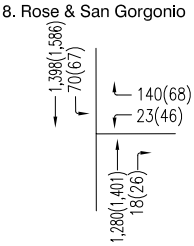
6. Rose & Camino de la Luna



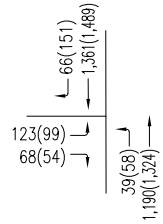
7. Rose & Camino del Sol



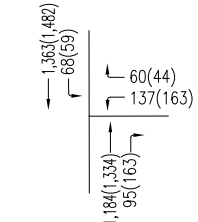
8. Rose & San Gorgonio



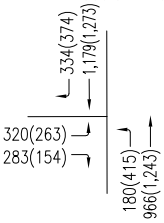
9. Rose & First



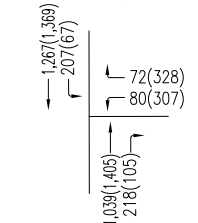
10. Rose & Santa Lucia



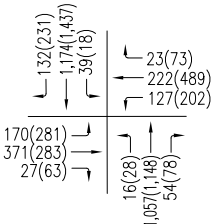
11. Rose & Third



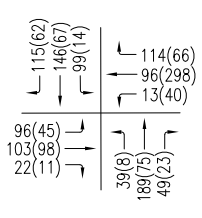
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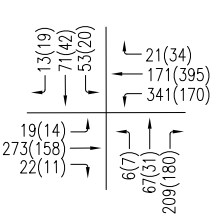
13. Rose & Fifth



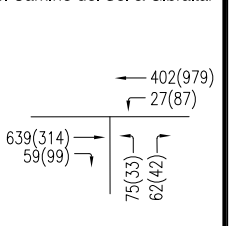
14. Camino del Sol & Juanita



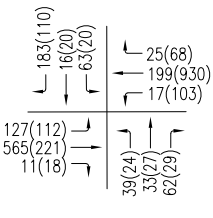
15. Camino del Sol & Colonia



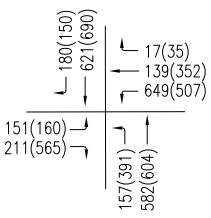
16. Camino del Sol & Gibraltar



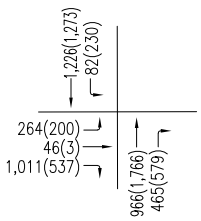
17. Camino del Sol & Kohala



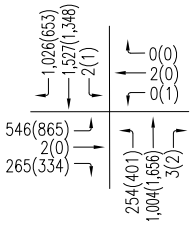
18. Santa Clara & US 101 NB



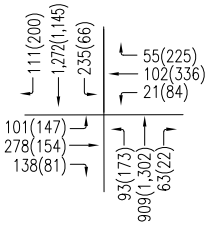
19. Rice & US 101 SB

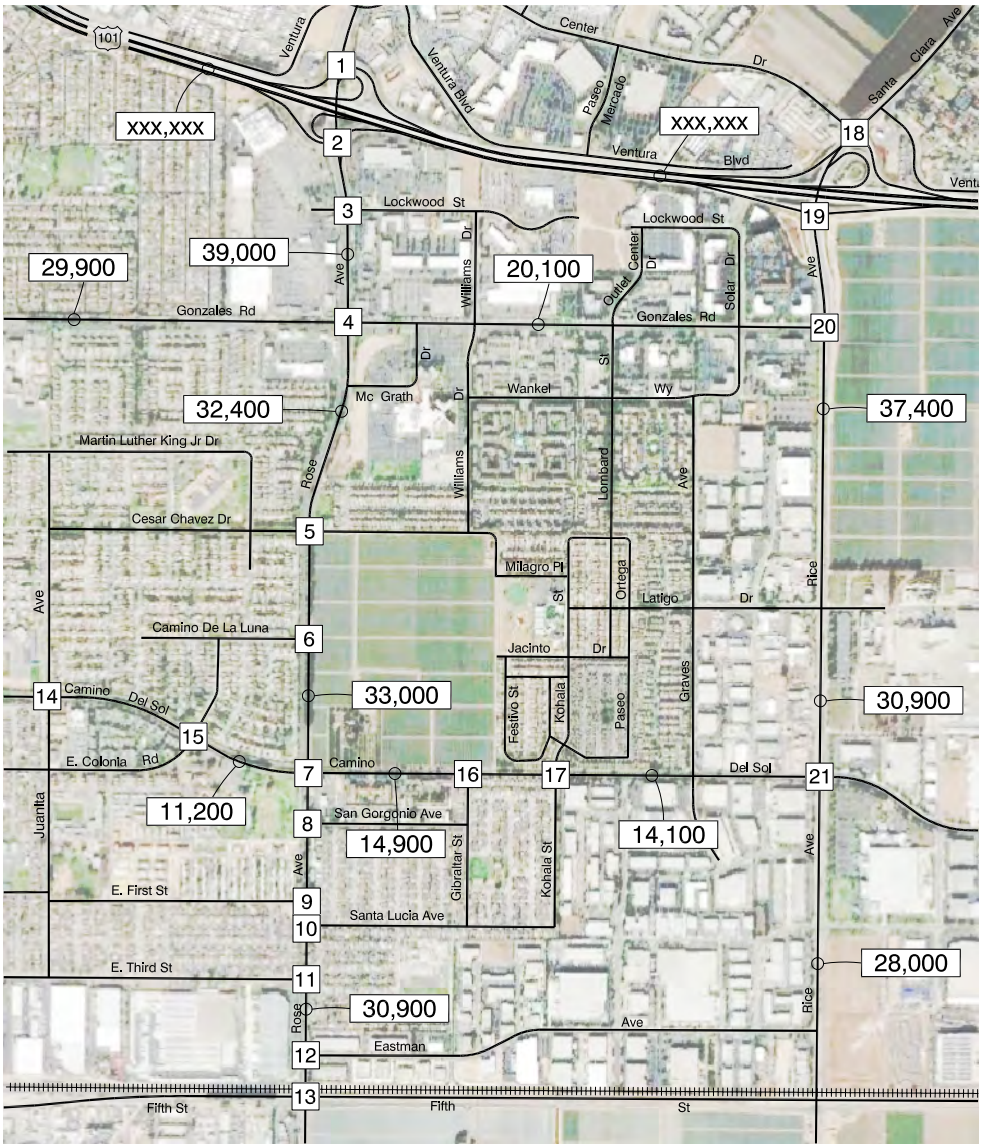


20. Rice & Gonzales



21. Rice & Camino del Sol





N.T.S.

LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 4
EXISTING TRAFFIC VOLUMES

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Levels of service were calculated for the study-area intersections based on the level of service methodology outlined previously. The technical calculation worksheets are included in the Technical Appendix, and the existing intersection levels of service are summarized in Table 2.

Table 2
Existing Intersection Peak Hour Levels of Service

Intersection	Control	AM Peak Hour ICU V/C Ratio	AM Peak Hour HCM Delay	PM Peak Hour ICU V/C Ratio	PM Peak Hour HCM Delay
1. Rose Ave/U.S. 101 NB Ramps (CT)	Signal	-	8.7/LOS A	-	9.6/LOS A
2. Rose Ave/U.S. 101 SB Ramps (CT)	Signal	-	12.1/LOS B	-	15.8/LOS B
3. Rose Ave/Lockwood St	Signal	0.68/LOS B	-	0.65/LOS B	-
4. Rose Ave/Gonzales Rd	Signal	0.65/LOS B	-	0.71/LOS C	-
5. Rose Ave/Cesar Chavez Drive	Signal	0.72/LOS C		0.72/LOS C	-
6. Rose Ave/Camino De La Luna	TWSC	-	**26.8/LOS D**	-	**25.3/LOS D**
7. Rose Ave/Camino Del Sol	Signal	0.69/LOS B	-	0.73/LOS C	-
8. Rose Ave/San Gorgonio Ave	Signal	0.56/LOS A	-	0.57/LOS A	-
9. Rose Ave/First St	Signal	0.49/LOS A	-	0.51/LOS A	-
10. Rose Ave/Santa Lucia Ave	Signal	0.54/LOS A	-	0.60/LOS A	-
11. Rose Ave/Third St	Signal	0.49/LOS A	-	0.57/LOS A	-
12. Rose Ave/Eastman Ave	Signal	0.44/LOS A	-	0.57/LOS A	-
13. Rose Ave/Fifth St	Signal	0.63/LOS B	-	0.71/LOS C	-
14. Camino Del Sol/Juanita Ave	AWSC	-	15.5/LOS C	-	9.9/LOS A
15. Camino Del Sol/Colonia Rd	AWSC	-	16.9/LOS C	-	11.4/LOS B
16. Camino Del Sol/Gibraltar St	TWSC	-	12.5/LOS B	-	17.2/LOS C
17. Camino Del Sol/Kohala St	Signal	0.47/LOS A	-	0.54/LOS A	-
18. Rice Ave/U.S. 101 NB Ramps (CT)	Signa	-	16.7/LOS B	-	20.9/LOS C
19. Rice Ave/U.S. 101 SB Ramps (CT)	Signal	-	7.6/LOS A	-	9.6/LOS A
20. Rice Ave/Gonzales Rd	Signal	0.72/LOS C	-	0.60/LOS A	-
21. Rice Ave/Camino Del Sol	Signal	0.49/LOS A	-	0.59/LOS A	-

TWSC: two-way stop control. AWSC: all-way stop control.
All intersections controlled by City of Oxnard except:
(CT): Caltrans controlled intersection.
Caltrans intersections and unsignalized intersections analyzed using the HCM methodology. LOS determined by vehicle delay in seconds.

As shown, the majority of intersections currently operate at LOS C or better during both peak hours, which is considered acceptable based on City and Caltrans standards. The Rose Ave/Camino De La Luna intersection, which is unsignalized, operates below the City's LOS C standard.

PROJECT SPECIFIC CONDITIONS

Traffic Impact Thresholds

City of Oxnard. The City has adopted level of service C as the threshold of significance for intersections during environmental review.

The City of Oxnard's criteria for evaluating project impacts at intersections is based upon the change in volume-to-capacity ratio attributable to the project. The City of Oxnard has adopted the following guidelines to prepare a traffic study and determine a project's effects on intersections (per City Resolution No. 10,453);

Traffic studies shall include a list of intersections where the project will worsen the Intersection Capacity Utilization (ICU) numeric value of Level of Service (LOS) by V/C 0.02 or more. This ICU list shall include intersections projected to be at LOS C with background traffic (existing plus approved plus pending projects) and LOS D, E, or F with background traffic plus project generated traffic.

At intersections where the project increases the ICU by .02 to .039, a list shall be prepared that identifies the improvements necessary to mitigate the identified project impact. City staff will then determine the amount of participation from the project for the necessary improvements. The developer shall mitigate the project's impacts to the circulation system by:

(A) Construction of all master-planned facilities within the project area, consisting of half the master planned roadways abutting the project area, plus one lane. "Roadways" include related improvements, such as sidewalks, curbs, gutters, and drainage facilities. "Project Area" means the area shown on the approved plans.
(B) Construction of all improvements necessary to mitigate impacts to intersections that the ICU list shows will be worsened by .02 or more (subject to mitigation fee limit).

The City of Oxnard Public Works Division collects traffic impact fees based on project generated traffic that would impact roadways within the City's jurisdiction. Standard conditions of permit issuance initiate collection of these fees for all projects within the City of Oxnard, regardless of whether the project is a private or a public project.

Caltrans. Caltrans has established the cusp of the LOS C/D range as the target level of service standard for State Highway intersections. If an existing State Highway facility is operating at less than the target LOS, the existing Measure of Effectiveness (MOE) should be maintained.

Project Trip Generation

The OUHSD proposes a new senior high school with a maximum enrollment at buildout of 2,500 students. Trip generation estimates for the proposed high school were developed based on the rates presented in the Institute of Transportation Engineers *Trip Generation Manual*[5] for *Land Use #530 – High School*. Table 3 summarizes the trip generation estimates for the project.

[5] Trip Generation Manual, Institute of Transportation Engineers, 10th Edition, 2017.

Table 3
Project Trip Generation

Land Use	Size	ADT		A.M. PHT		P.M. PHT	
		Rate	Trips	Rate	Trips	Rate	Trips
High School	2,500 students	2.03	5,075	0.52	1,300 (871/429)	0.14	350 (168/182)

ADT = average daily trips.
PHT = peak hour trips.
(X/X) = inbound trips/outbound trips.

Table 3 indicates that the project is expected to generate 5,075 ADT, with 1,300 trips occurring during the AM peak hour and 350 trips occurring during the PM peak hour. It should be noted that the trip generation estimate is considered conservative. A significant portion of students that will attend the new high school currently attend other schools, and trips generated by these existing students will not be new to the study area, but be trips diverted from its original route to the new school.

Project Trip Distribution

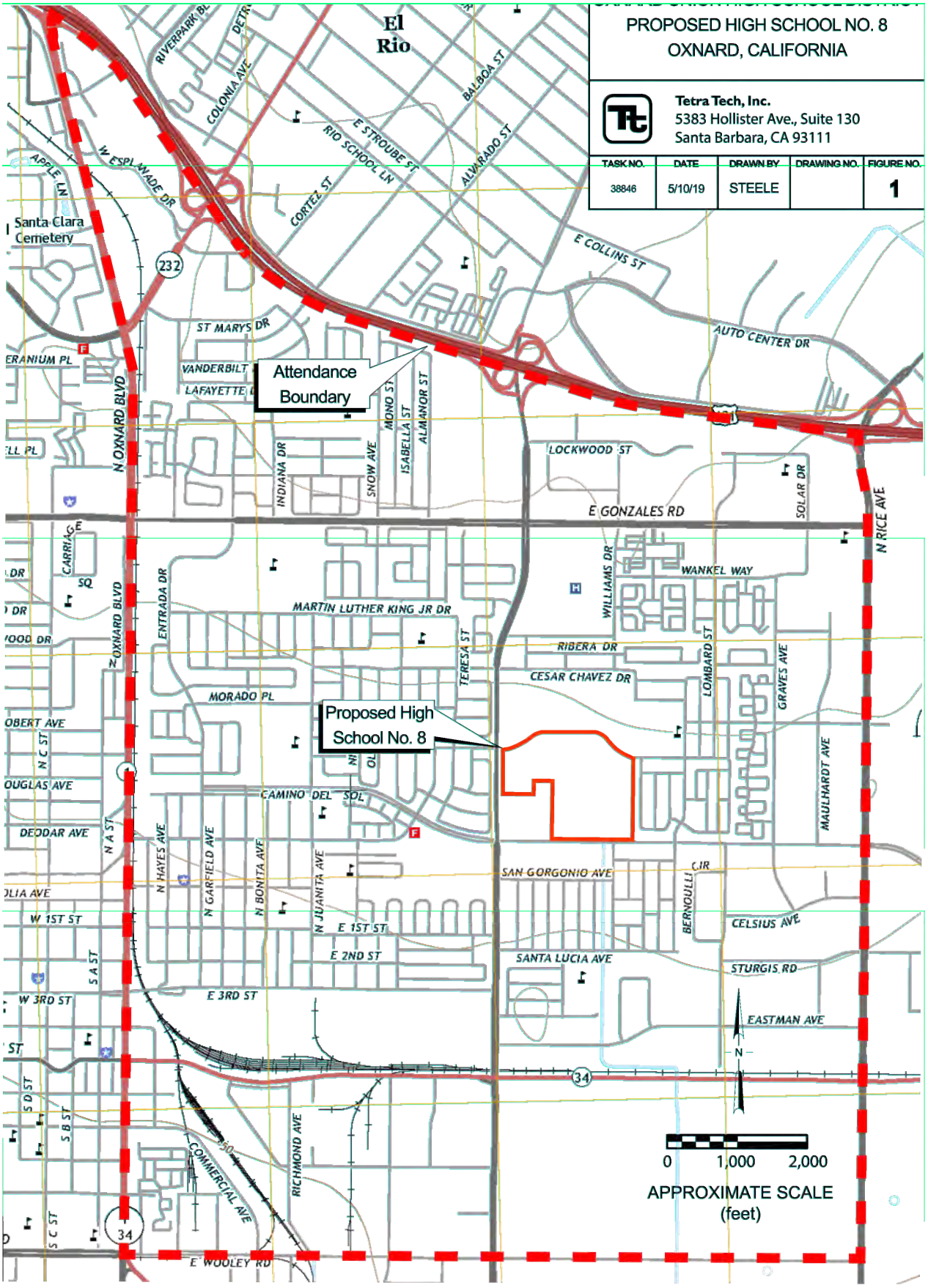
Project trips were distributed and assigned to the local street network based on high school attendance boundary limits provided by the District and the distribution of residential areas within this boundary, and existing travel patterns in the study-area. The high school attendance boundary is shown in Exhibit 5, and the distribution percentages and project-added traffic volumes are shown in Exhibits 6 and 7, respectively. Exhibit 8 illustrates the school driveway volumes.

Project Frontage Improvements

Consistent with the 2030 General Plan, Rose Avenue will be built out to Primary Arterial standards, with the project improvement limits extending from Camino De La Luna to Camino Del Sol. Roadway widening easterly will provide three northbound and southbound travel lanes and a raised median, and add a sidewalk to the east side. Additional intersection capacity will be provided at Camino De La Luna and Camino Del Sol, and the intersection with Camino De La Luna will be signalized.

Camino Del Sol will be widened to a add westbound travel lanes on the north side, and eastbound left-turn lane at Gibraltar Street, and a raised median. Additional intersection capacity will be provided at Camino Del Sol and Gibraltar Street, and the intersection with Gibraltar Street will be signalized.

Jacinto Drive, located directly north of the project site, will be extended westerly from its existing terminus at Festivo Street to Rose Avenue as the new east leg of the Rose Avenue/Camino De La Luna intersection. The roadway will be designed to collector standards (80' ROW) with one lane in each direction, a raised media, on-street parking and a sidewalk on the south side.

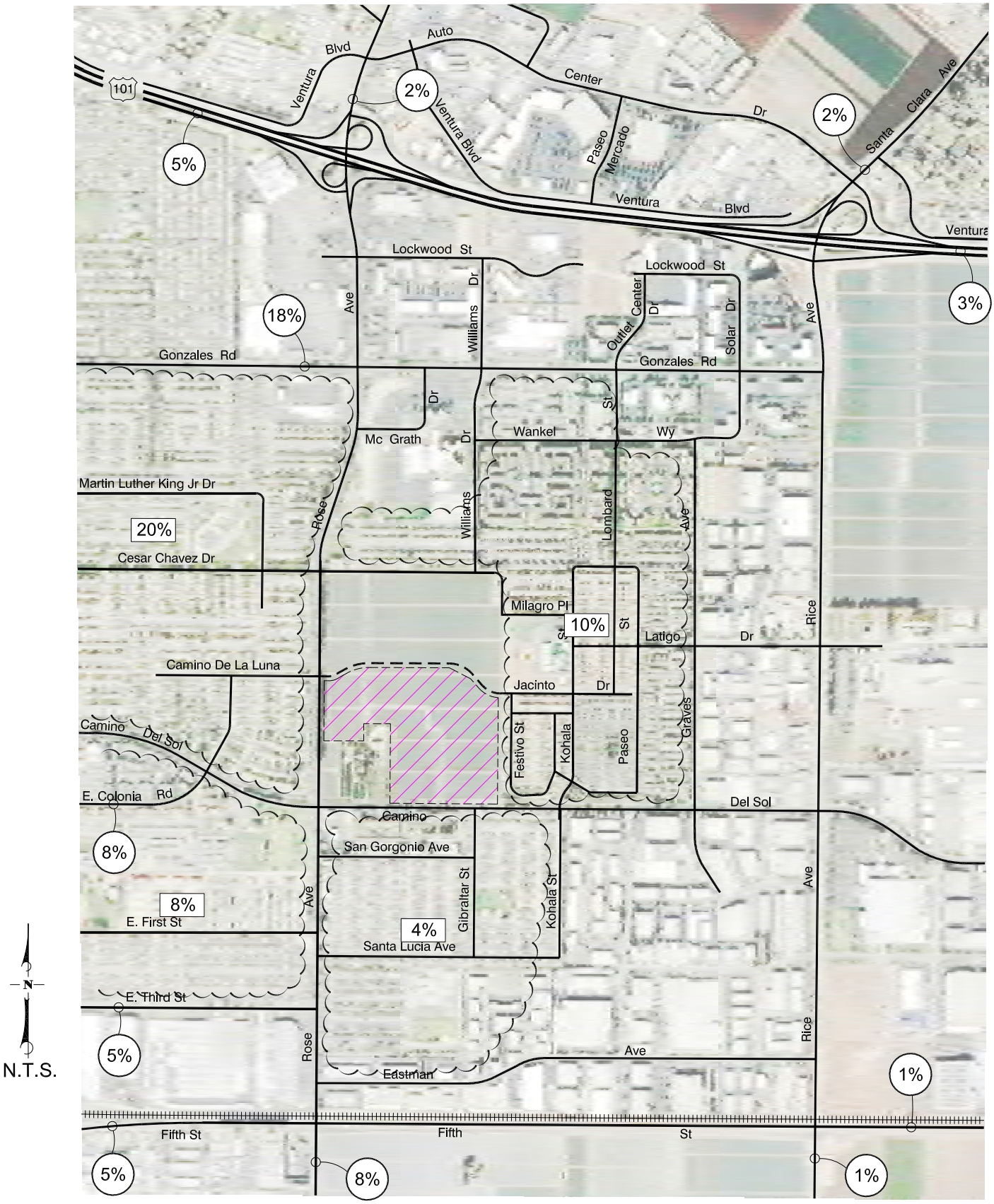


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EXHIBIT 5

HIGH SCHOOL ATTENDANCE BOUNDARY



LEGEND

10% - Trip Distribution Percentage

- Project Site

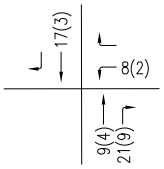
EXHIBIT 6

PROJECT TRIP DISTRIBUTION

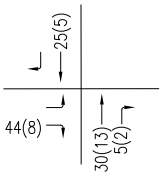
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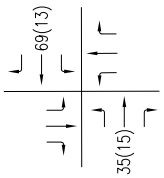
1. Rose & US 101 NB



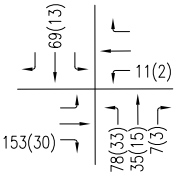
2. Rose & US 101 SB



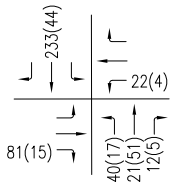
3. Rose & Lockwood



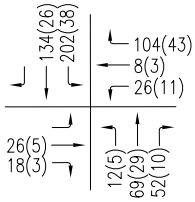
4. Rose & Gonzales



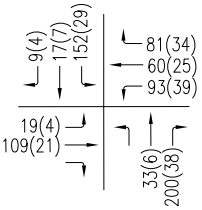
5. Rose & Cesar Chavez



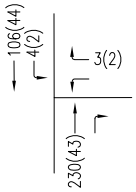
6. Rose & Camino de la Luna



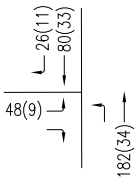
7. Rose & Camino del Sol



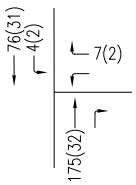
8. Rose & San Gorgonio

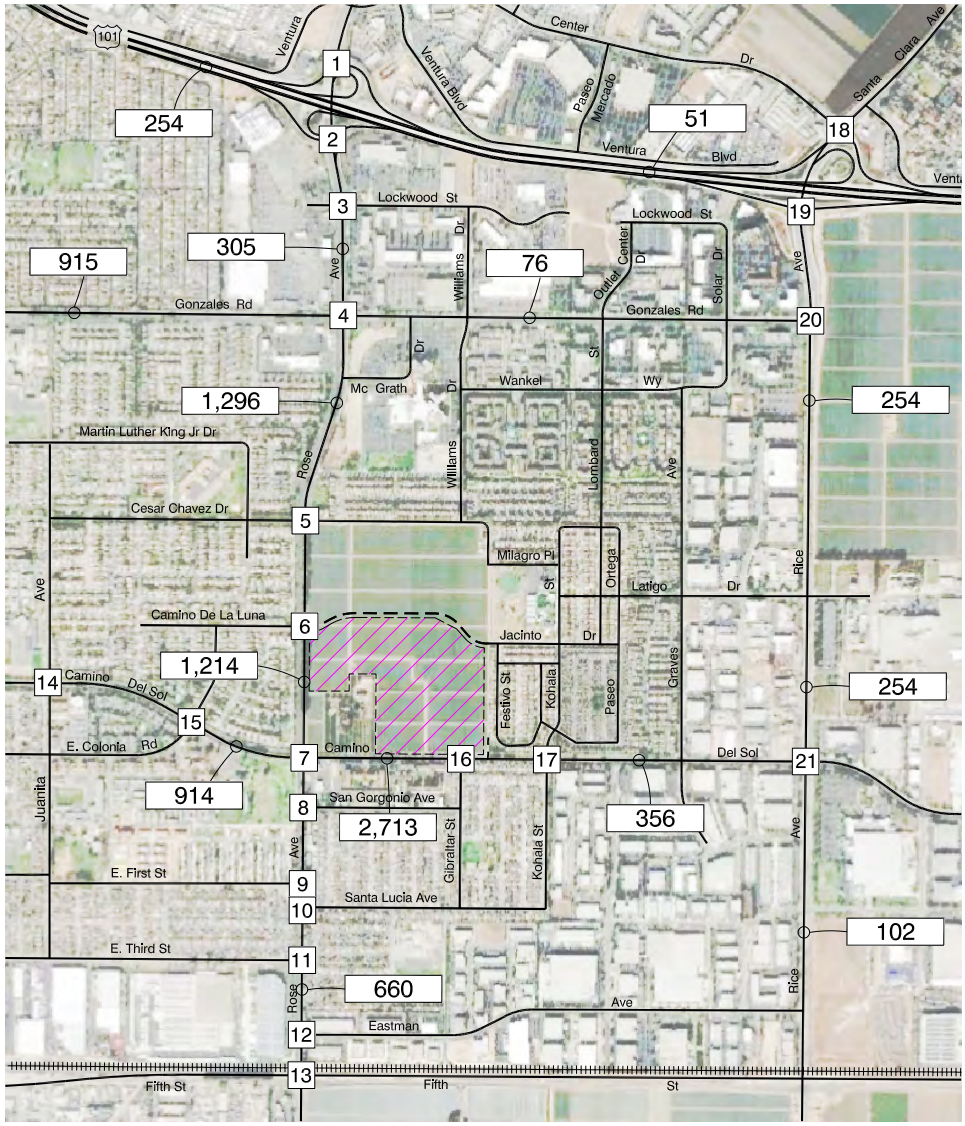


9. Rose & First

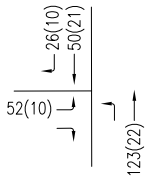


10. Rose & Santa Lucia

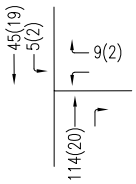




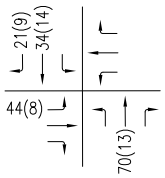
11. Rose & Third



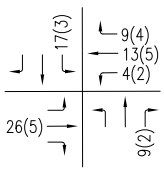
12. Rose & Eastman



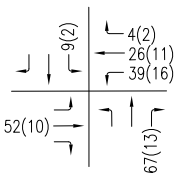
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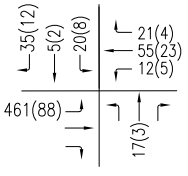
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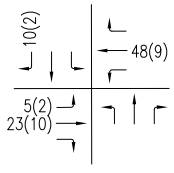
15. Camino del Sol & Colonia



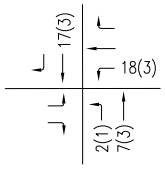
16. Camino del Sol & Gibraltar



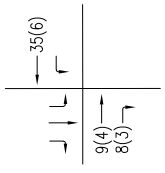
17. Camino del Sol & Kohala



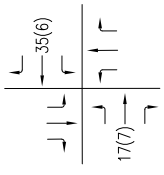
18. Santa Clara & US 101 NB



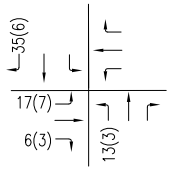
19. Rice & US 101 SB

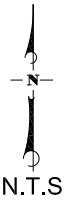


20. Rice & Gonzales



21. Rice & Camino del Sol





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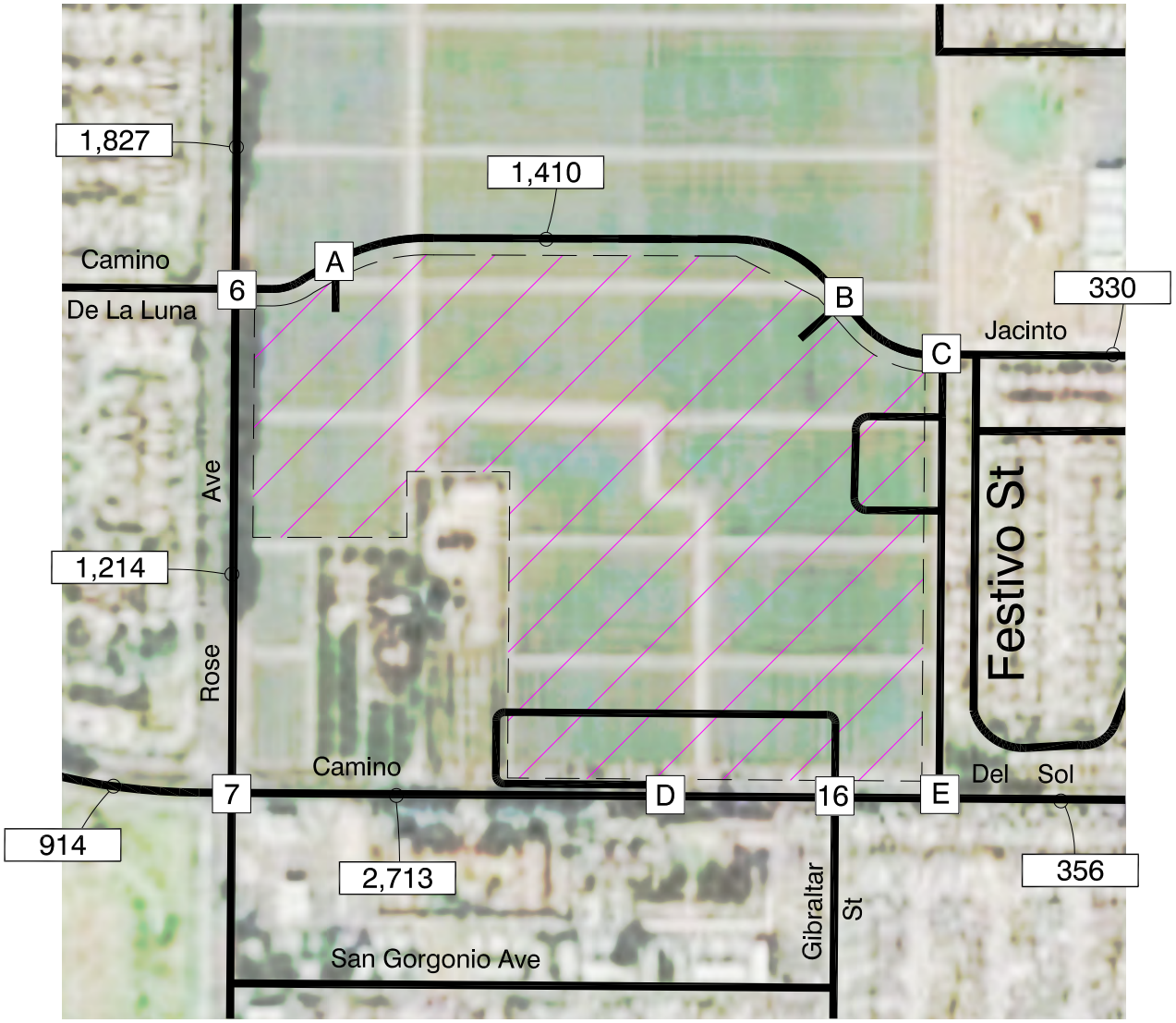
LEGEND

XX(XX) - AM(PM) Peak Hour Volume

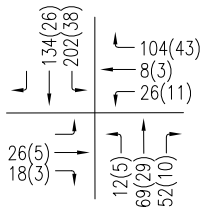
- Traffic Movement

XX - Average Weekday Daily Traffic

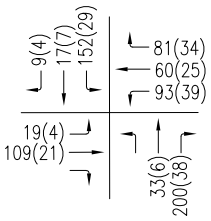
EXHIBIT 7
PROJECT TRAFFIC VOLUMES



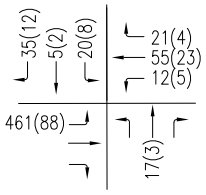
6. Rose & Camino de la Luna

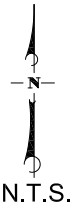


7. Rose & Camino del Sol

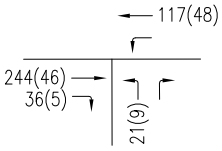


16. Camino del Sol & Gibraltar

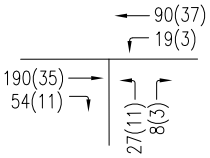




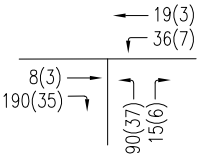
A. Jacinto & Lot D



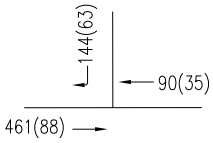
B. Jacinto & Lot C



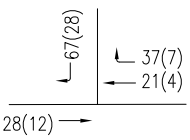
C. Jacinto & High School Dwy



D. Camino Del Sol & High School Exit



E. Camino Del Sol & High School Dwy



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LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 8
PROJECT ACCESS TRAFFIC VOLUMES

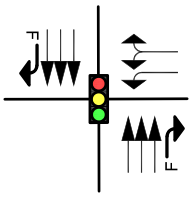
Existing plus Project Intersection Operations

Project generated traffic was added to the existing peak hour traffic volumes and levels of service were recalculated for existing plus project conditions assuming the proposed frontage improvements discussed previously. The improvements would result in increased capacity at the intersections of Rose Avenue with Camino De La Luna and Camino Del Sol and at the Camino Del Sol/Gibraltar Street intersection, by adding turning lanes and through lanes at intersection approaches. The intersection geometries under project-specific conditions are shown in Exhibit 9 and the existing plus project traffic volumes are illustrated in Exhibit 10. Table 4 summarizes the level of service calculations for project-specific conditions.

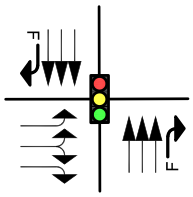
As shown in Table 4, the most intersections will continue to operate at LOS C or better during both peak hours. The Rose Ave/Camino De La Luna intersection, which would be widened and signalized, would experience improved operations. Similarly, operations at the Rose Ave/Camino Del Sol intersection would also improve as a result of additional capacity under project-specific conditions. The Camino Del Sol/Gibraltar Street intersection, which would provide main access to the high school, is expected to operate acceptably based on the City's ICU calculation method. A site access analysis that evaluates delays and queue lengths during the AM peak hour is provided in the Site Access and Circulation section of this report.

The project would degrade the level of service at the Rose Ave/Cesar Chavez Drive intersection and the Camino Del Sol/Colonia Road intersection from LOS C to LOS D during the AM peak Hour, thereby generating a project-specific impact at these locations. Improvement measures that would mitigate these impacts are outlined in the Mitigations section of this report.

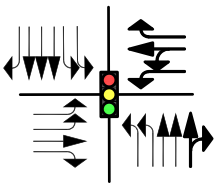
1. Rose & US 101 NB



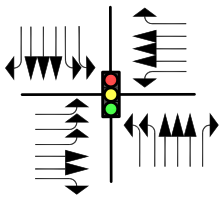
2. Rose & US 101 SB



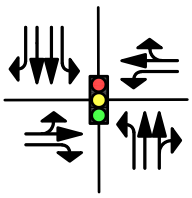
3. Rose & Lockwood



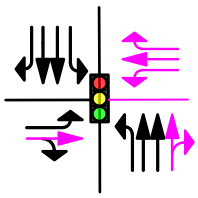
4. Rose & Gonzales



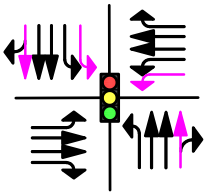
5. Rose & Cesar Chavez



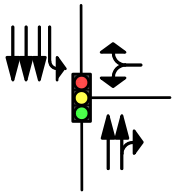
6. Rose & Camino de la Luna



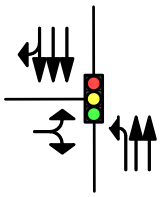
7. Rose & Camino del Sol



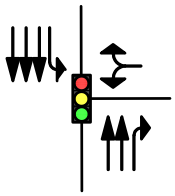
8. Rose & San Gorgonio

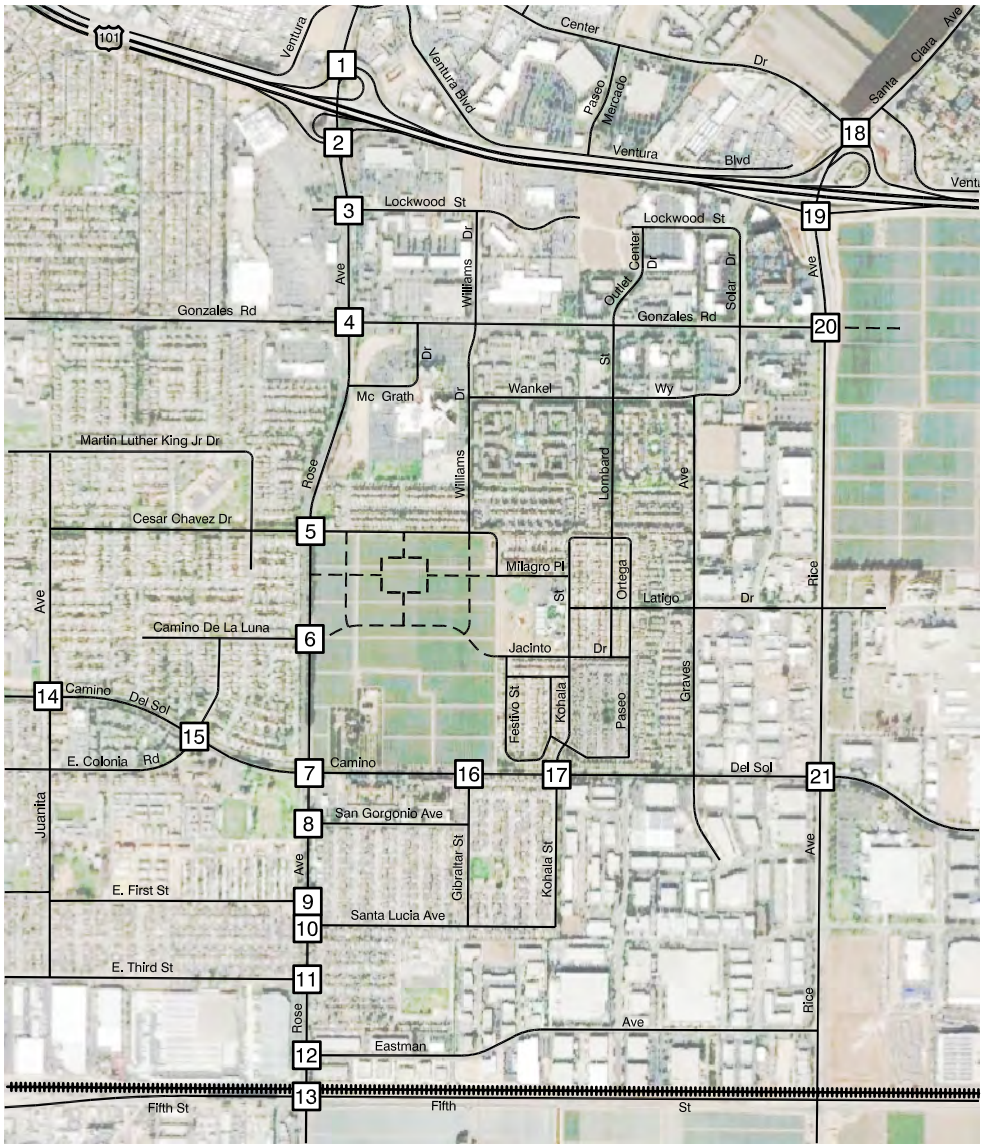


9. Rose & First

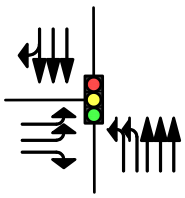


10. Rose & Santa Lucia

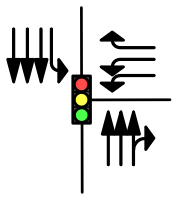




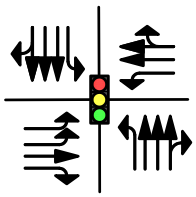
11. Rose & Third



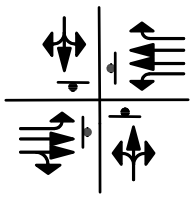
12. Rose & Eastman



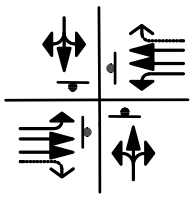
13. Rose & Fifth



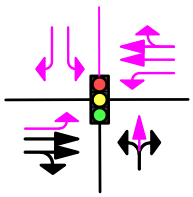
14. Camino del Sol & Juanita



15. Camino del Sol & Colonia

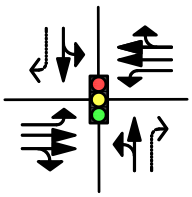


16. Camino del Sol & Gibraltar

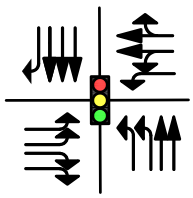


* H.S. No 8 Improvements

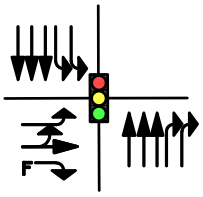
17. Camino del Sol & Kohala



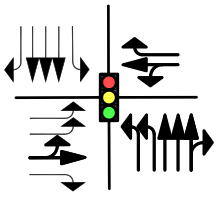
18. Santa Clara & US 101 NB



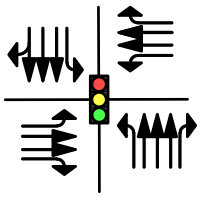
19. Rice & US 101 SB



20. Rice & Gonzales



21. Rice & Camino del Sol





N.T.S.

LEGEND

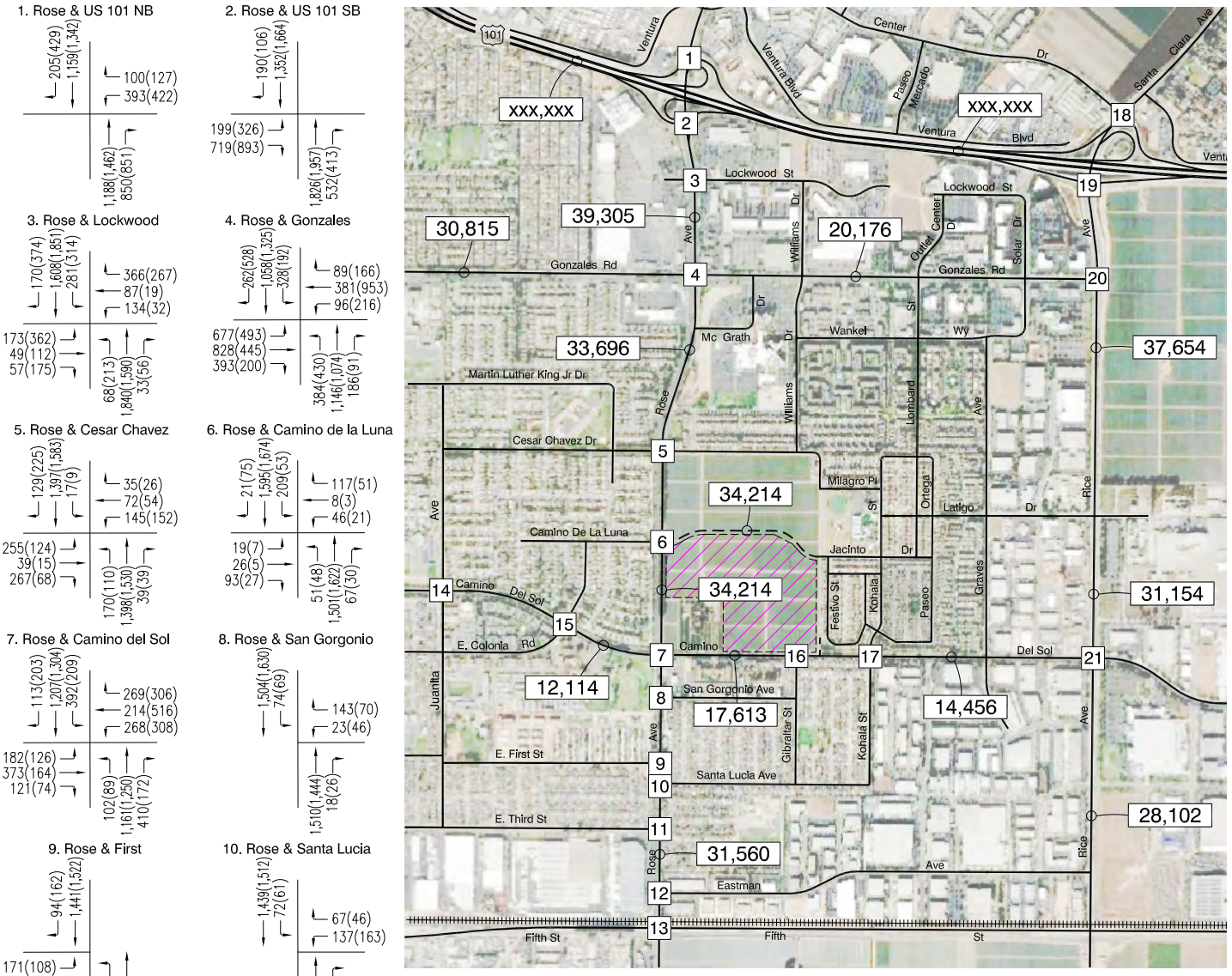
- Traffic Signal
- Stop Sign
- De-facto Right-Turn Lane
- Free Right-Turn Lane
- Revised Lane Geometry

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EXHIBIT 9

EXISTING + PROJECT CONDITIONS INTERSECTION GEOMETRIES



LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 10
EXISTING + PROJECT TRAFFIC VOLUMES

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Table 4
Existing plus Project Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Existing ICU - HCM/LOS	Existing + Project ICU – HCM/LOS	Existing ICU - HCM/LOS	Existing + Project ICU – HCM/LOS
1. Rose Ave/U.S. 101 NB Ramps (CT)	8.7/LOS A	8.8/LOS A	9.6/LOS A	9.6/LOS A
2. Rose Ave/U.S. 101 SB Ramps (CT)	12.1/LOS B	12.9/LOS B	15.8/LOS B	16.1/LOS B
3. Rose Ave/Lockwood St	0.68/LOS B	0.69/LOS B	0.65/LOS B	0.66/LOS B
4. Rose Ave/Gonzales Rd	0.65/LOS B	0.67/LOS B	0.71/LOS C	0.73/LOS C
5. Rose Ave/Cesar Chavez Drive	0.72/LOS C	**0.82/LOS D**	0.72/LOS C	0.75/LOS C
6. Rose Ave/Camino De La Luna [1 2]	**26.8/LOS D**	0.67/LOS B	**25.3/LOS D**	0.69/LOS B
7. Rose Ave/Camino Del Sol [1]	0.69/LOS B	0.68/LOS B	0.73/LOS C	0.61/LOS B
8. Rose Ave/San Gorgonio Ave	0.56/LOS A	0.63/LOS B	0.57/LOS A	0.58/LOS A
9. Rose Ave/First St	0.49/LOS A	0.58/LOS A	0.51/LOS A	0.52/LOS A
10. Rose Ave/Santa Lucia Ave	0.54/LOS A	0.60/LOS A	0.60/LOS A	0.61/LOS B
11. Rose Ave/Third St	0.49/LOS A	0.52/LOS A	0.57/LOS A	0.58/LOS A
12. Rose Ave/Eastman Ave	0.44/LOS A	0.47/LOS A	0.57/LOS A	0.58/LOS A
13. Rose Ave/Fifth St	0.63/LOS B	0.64/LOS B	0.71/LOS C	0.71/LOS C
14. Camino Del Sol/Juanita Ave	15.5/LOS C	17.5/LOS C	9.9/LOS A	10.1/LOS B
15. Camino Del Sol/Colonia Rd	16.9/LOS C	**25.3/LOS D**	11.4/LOS B	11.8/LOS B
16. Camino Del Sol/Gibraltar St [1 2]	12.5/LOS B	0.61/LOS B	17.2/LOS C	0.51/LOS A
17. Camino Del Sol/Kohala St	0.47/LOS A	0.49/LOS A	0.54/LOS A	0.55/LOS A
18. Rice Ave/U.S. 101 NB Ramps (CT)	16.7/LOS B	16.7/LOS B	20.9/LOS C	20.9/LOS C
19. Rice Ave/U.S. 101 SB Ramps (CT)	7.6/LOS A	7.6/LOS A	9.6/LOS A	9.6/LOS A
20. Rice Ave/Gonzales Rd	0.72/LOS C	0.72/LOS C	0.60/LOS A	0.60/LOS A
21. Rice Ave/Camino Del Sol	0.49/LOS A	0.51/LOS A	0.59/LOS A	0.60/LOS A

[1] Intersection widening and geometry improvements under project-specific conditions.
[2] Intersection signalized under project-specific conditions.

CUMULATIVE CONDITIONS

The City of Oxnard requires that the study-area intersections are analyzed assuming cumulative traffic conditions, which include traffic that could be generated by other developments in the study area that are expected to be constructed in the near future. The following section discusses the cumulative (existing conditions plus approved and pending projects) conditions.

Street Network Improvements

Review of roadway or intersection improvements associated with approved projects included in the cumulative analysis and the City's Five-Year Capital Improvement Plan[6] indicates that the following improvements are expected to be constructed under cumulative conditions (without the proposed high school):

Rose Avenue from Cesar Chavez Drive to Camino Del Sol. The residential/commercial development proposed on the northern and southwest portions of the Maulhardt property (Urban Village) will widen Rose Avenue to Primary Arterial standards, resulting in three northbound and southbound travel lanes and a raised median, and add a sidewalk to the east side. Additional intersection capacity will be provided at Cesar Chavez Drive, Camino De La Luna and Camino Del Sol.

Cesar Chavez Drive from Rose Avenue to Gibraltar Street. The residential/commercial development proposed on the northern portion of the Maulhardt property (Urban Village) will widen Cesar Chavez Drive along its frontage to residential street standards.

San Gorgonio & First Street Realignment: This CIP project will construct an extension of San Gorgonio Avenue and a new connection at Rose Avenue at a four-leg intersection. The signal at First Street will be removed and the intersection will be restricted to right-turn in-and-out only movements.

Rice Avenue/Fifth Street Grade Separation. This project will construct a six-lane overcrossing on Rice Avenue over Fifth Street/SR 34 and ramp connections to Fifth Street/SR 34.

Exhibit 11 shows the intersection geometries under cumulative conditions. No changes were applied to San Gorgonio Avenue as realignment information was not available.

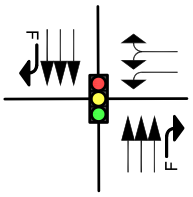
Cumulative Traffic Volumes

Cumulative traffic volumes were developed using a list of approved and pending development projects in the City of Oxnard provided by City staff[7]. In addition, traffic generated by the adjacent residential/commercial development (Urban Village) was included in the cumulative forecasts. A map showing the pending projects within the study area is included in the Technical Appendix.

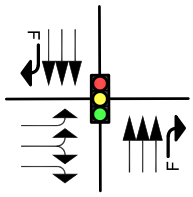
Trip generation estimates were developed for the pending projects based on rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation* for the respective land uses. A trip generation worksheet is also included in the Technical Appendix. The cumulative projects traffic volumes were distributed onto the study-area street network based on each individual project's location, existing traffic patterns, and a general knowledge of the residential and commercial lay-out of the Oxnard area. The cumulative projects AM and PM peak turning volumes were assigned to the study area intersections and added to the existing peak hour volumes. The resulting cumulative peak hour volumes are shown in Exhibit 12 and the cumulative plus project peak hour volumes are illustrated in Exhibit 13.

[6] City of Oxnard Capital Improvement Program (CIP) Fiscal Years 2019-24, City of Oxnard, March 2019.
[7] Planning Division Quarterly Project List, City of Oxnard, April 2019.

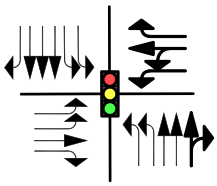
1. Rose & US 101 NB



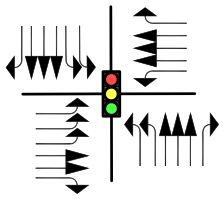
2. Rose & US 101 SB



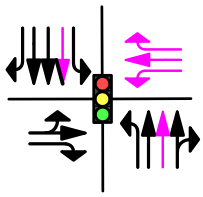
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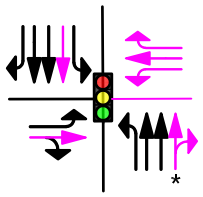
4. Rose & Gonzales



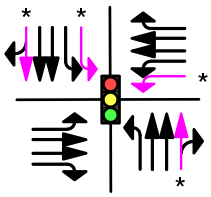
5. Rose & Cesar Chavez



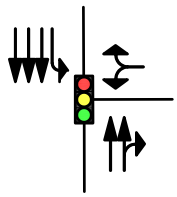
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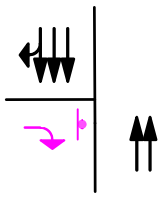
7. Rose & Camino del Sol



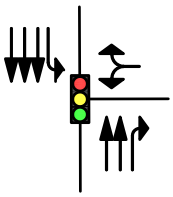
8. Rose & San Gorgonio

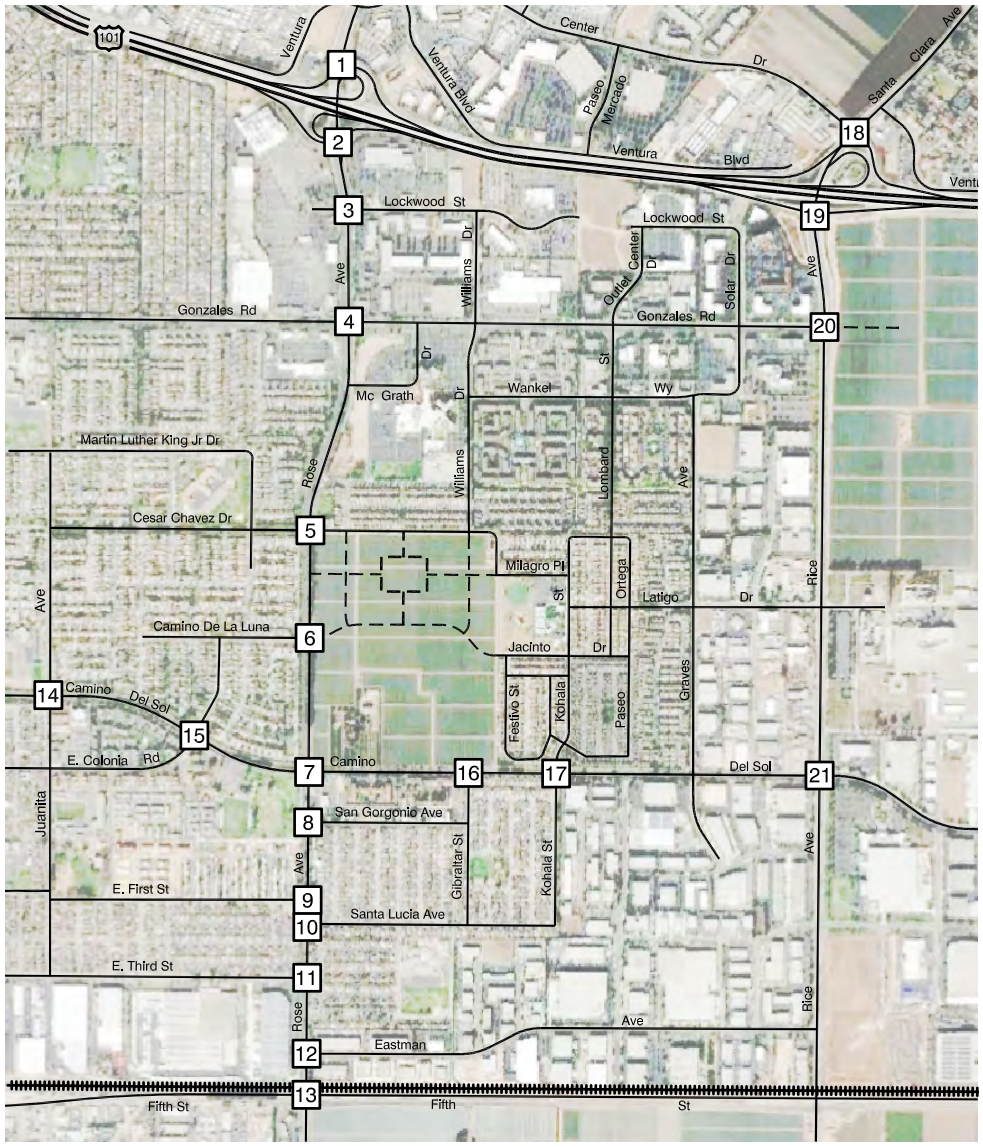


9. Rose & First

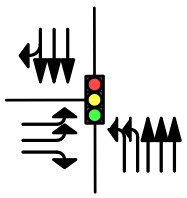


10. Rose & Santa Lucia

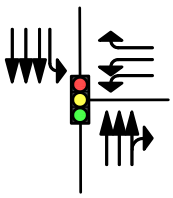




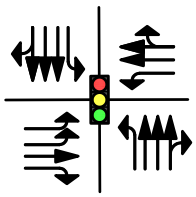
11. Rose & Third



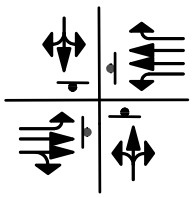
12. Rose & Eastman



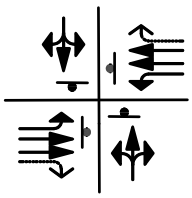
13. Rose & Fifth



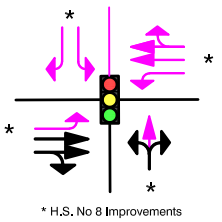
14. Camino del Sol & Juanita



15. Camino del Sol & Colonia

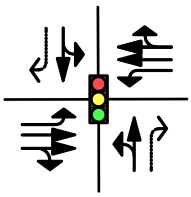


16. Camino del Sol & Gibraltar

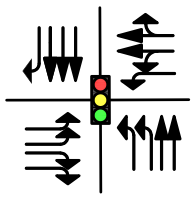


* H.S. No 8 Improvements

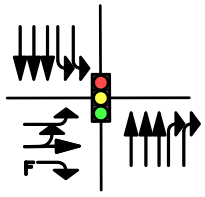
17. Camino del Sol & Kohala



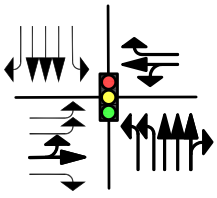
18. Santa Clara & US 101 NB



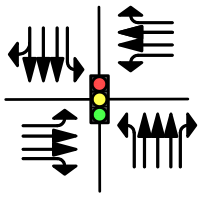
19. Rice & US 101 SB

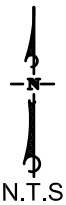


20. Rice & Gonzales



21. Rice & Camino del Sol





N.T.S.

LEGEND

- Traffic Signal
- Stop Sign
- De-facto Right-Turn Lane
- Free Right-Turn Lane
- Revised Lane Geometry
- H.S. No 8 Improvements

EXHIBIT 11
CUMULATIVE CONDITIONS INTERSECTION GEOMETRIES

Stantec

111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

1. Rose & US 101 NB

205(429) → 1,146(1,374) →
← 100(127)
← 438(584)
1,213(1,486) ↑ 964(951) ↑

2. Rose & US 101 SB

190(106) → 1,404(1,798) →
199(326) ← 751(1,022) ←
1,900(2,082) ↑ 625(495) ↑

3. Rose & Lockwood

200(404) → 1,663(2,084) → 281(314) →
← 366(267)
← 89(22)
← 134(32)
192(390) ← 50(114) ← 86(203) ←
98(243) ↑ 2,040(1,749) ↑ 33(56) ↑

4. Rose & Gonzales

272(538) → 1,121(1,571) → 338(197) →
← 95(175)
← 382(964)
← 95(241)
687(503) ← 839(447) ← 257(215) ←
348(425) ↑ 1,353(1,264) ↑ 205(105) ↑

5. Rose & Cesar Chavez

130(226) → 1,267(1,688) → 81(190) →
← 117(81)
← 72(54)
← 155(163)
256(125) ← 39(15) ← 186(53) ←
130(93) ↑ 1,504(1,675) ↑ 27(34) ↑

6. Rose & Camino de la Luna

22(76) → 1,561(1,739) → 31(86) →
← 58(38)
← 0(0)
← 111(55)
20(8) ← 0(0) ← 75(24) ←
39(43) ↑ 1,520(1,728) ↑ 35(76) ↑

7. Rose & Camino del Sol

138(222) → 1,331(1,376) → 251(214) →
← 189(273)
← 162(500)
← 191(279)
178(163) ← 265(147) ← 123(75) ←
103(91) ↑ 1,188(1,378) ↑ 213(143) ↑

8. Rose & San Gorgonio

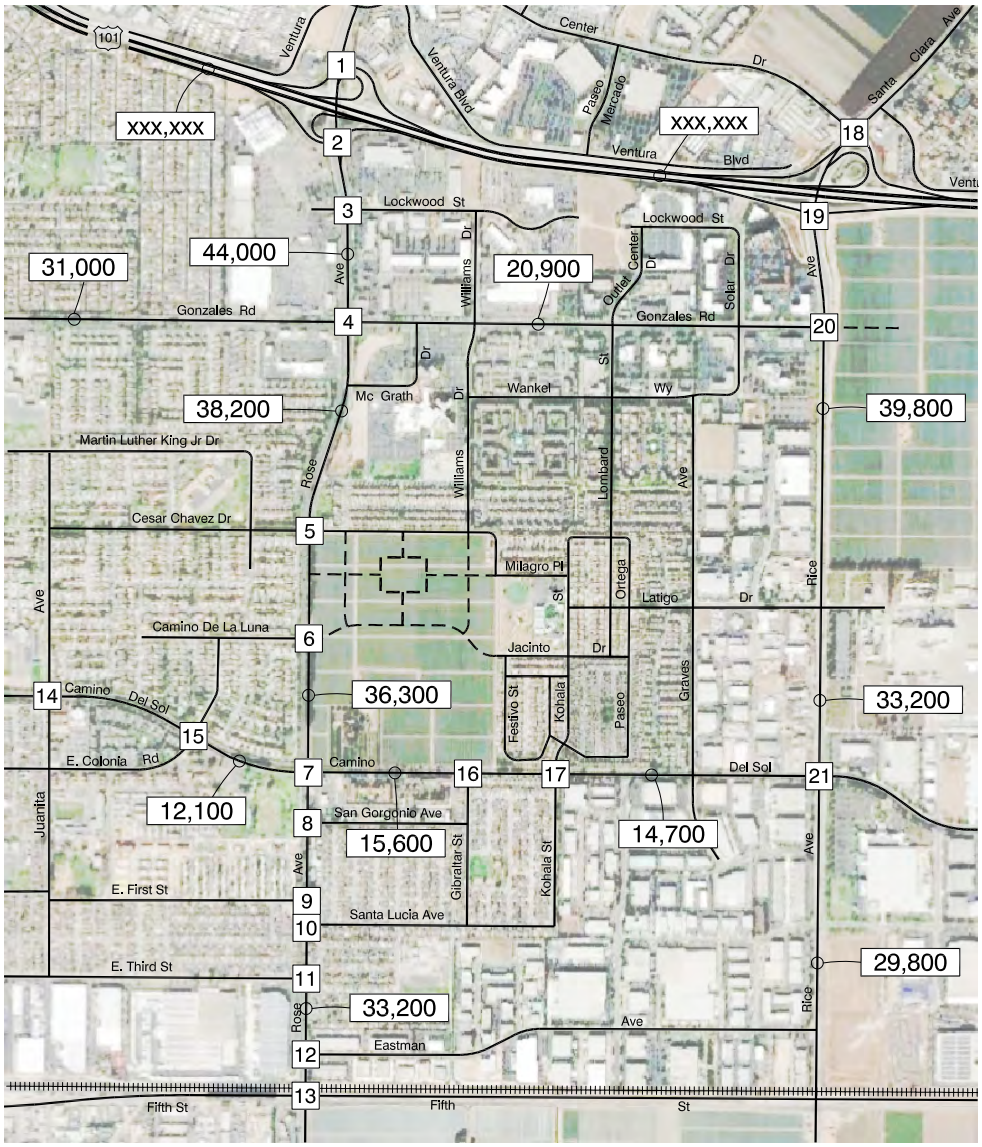
1,527(1,672) → 72(69) →
← 142(70)
← 23(47)
1,342(1,544) ↑ 18(27) ↑

9. Rose & First

68(155) → 1,488(1,572) →
195(158) ←
1,249(1,465) ↑

10. Rose & Santa Lucia

1,490(1,566) → 69(60) →
← 61(45)
← 137(163)
1,243(1,476) ↑ 95(163) ↑



11. Rose & Third

335(376) → 1,305(1,355) →
321(265) ← 285(155) ←
181(417) ↑ 1,022(1,384) ↑

12. Rose & Eastman

1,394(1,451) → 208(68) →
← 73(329)
← 80(307)
1,095(1,547) ↑ 218(105) ↑

13. Rose & Fifth

168(260) → 1,249(1,485) → 49(27) →
← 29(90)
← 222(489)
← 128(203)
186(320) ← 371(283) ← 34(67) ←
23(46) ↑ 1,091(1,244) ↑ 55(80) ↑

14. Camino del Sol & Juanita

115(62) → 146(67) → 100(16) →
← 116(67)
← 106(305)
← 13(40)
96(45) ← 106(109) ← 22(11) ←
39(8) ↑ 189(75) ↑ 49(23) ↑

15. Camino del Sol & Colonia

13(19) → 71(42) → 53(20) →
← 21(34)
← 183(403)
← 371(190)
19(14) ← 277(171) ← 22(11) ←
6(7) ↑ 67(31) ↑ 220(211) ↑

16. Camino del Sol & Gibraltar

← 414(1,015)
← 27(87)
673(337) ← 59(99) ←
75(33) ↑ 62(42) ↑

17. Camino del Sol & Kohala

183(110) → 16(20) → 63(20) →
← 25(68)
← 211(966)
← 17(103)
127(112) ← 599(244) ← 11(18) ←
39(24) ↑ 33(27) ↑ 62(29) ↑

18. Santa Clara & US 101 NB

180(150) → 663(728) →
← 17(35)
← 139(352)
← 802(600)
151(160) ← 211(565) ←
157(391) ↑ 614(655) ↑

19. Rice & US 101 SB

1,422(1,404) → 82(230) →
264(200) ← 46(3) ← 1,123(592) ←
1,028(1,919) ↑ 529(742) ↑

20. Rice & Gonzales

1,078(692) → 1,577(1,386) → 208(83) →
← 62(209)
← 17(55)
← 26(92)
571(918) ← 54(20) ← 269(349) ←
264(405) ↑ 1,039(1,705) ↑ 89(35) ↑

21. Rice & Camino del Sol

122(238) → 1,319(1,267) → 259(70) →
← 59(246)
← 104(346)
← 25(96)
137(166) ← 289(156) ← 152(90) ←
97(187) ↑ 1,008(1,346) ↑ 74(26) ↑

N

N.T.S.

LEGEND

XX(XX) - AM(PM) Peak Hour Volume

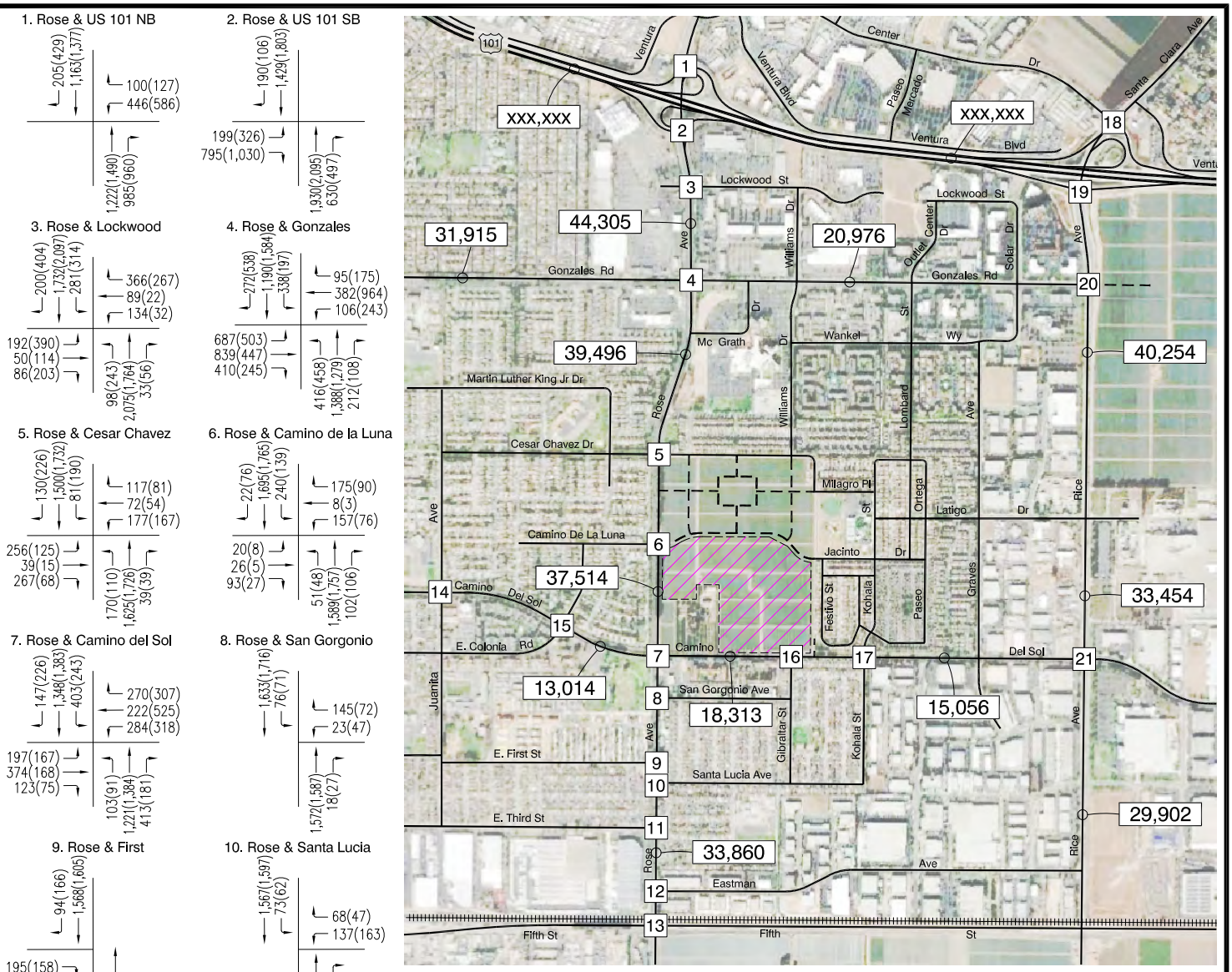
- Traffic Movement

XX - Average Weekday Daily Traffic

Stantec

111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 12
CUMULATIVE TRAFFIC VOLUMES



Stantec

111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 13

CUMULATIVE + PROJECT TRAFFIC VOLUMES

Cumulative plus Project Intersection Operations

Intersection levels of service were recalculated assuming cumulative and cumulative plus project traffic conditions. The level of service calculations are summarized in Table 5.

Table 5
Cumulative plus Project Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Cumulative ICU - HCM/LOS	Cumulative + Project ICU – HCM/LOS	Cumulative ICU - HCM/LOS	Cumulative + Project ICU – HCM/LOS
1. Rose Ave/U.S. 101 NB Ramps (CT)	8.6/LOS A	8.7/LOS A	10.7/LOS B	10.7/LOS B
2. Rose Ave/U.S. 101 SB Ramps (CT)	13.6/LOS B	14.6/LOS B	20.1/LOS C	20.5/LOS C
3. Rose Ave/Lockwood St	0.73/LOS C	0.74/LOS C	0.71/LOS C	0.72/LOS C
4. Rose Ave/Gonzales Rd	0.73/LOS C	0.75/LOS C	0.78/LOS C	0.79/LOS C
5. Rose Ave/Cesar Chavez Drive [1]	0.65/LOS B	0.71/LOS B	0.67/LOS B	0.68/LOS B
6. Rose Ave/Camino De La Luna [1 2]	0.53/LOS A	0.67/LOS B	0.71/LOS C	0.72/LOS C
7. Rose Ave/Camino Del Sol [1]	0.54/LOS A	0.70/LOS C	0.65/LOS B	0.66/LOS B
8. Rose Ave/San Gorgonio Ave	0.58/LOS A	0.66/LOS B	0.61/LOS B	0.62/LOS B
9. Rose Ave/First St	Intersection reconstructed to restrict movements to right-turns only			
10. Rose Ave/Santa Lucia Ave	0.56/LOS A	0.62/LOS B	0.64/LOS B	0.65/LOS B
11. Rose Ave/Third St	0.51/LOS A	0.55/LOS A	0.59/LOS A	0.61/LOS B
12. Rose Ave/Eastman Ave	0.47/LOS A	0.50/LOS A	0.58/LOS A	0.58/LOS A
13. Rose Ave/Fifth St	0.66/LOS B	0.67/LOS B	0.72/LOS C	0.73/LOS C
14. Camino Del Sol/Juanita Ave	15.8/LOS C	17.9/LOS C	10.1/LOS B	10.2/LOS B
15. Camino Del Sol/Colonia Rd	19.4/LOS C	**33.7/LOS E**	12.0/LOS B	12.5/LOS B
16. Camino Del Sol/Gibraltar St [3]	13.0/LOS B	0.61/LOS B	18.8/LOS C	0.53/LOS A
17. Camino Del Sol/Kohala St	0.48/LOS A	0.49/LOS A	0.55/LOS A	0.57/LOS A
18. Rice Ave/U.S. 101 NB Ramps (CT)	16.7/LOS B	17.2/LOS B	20.8/LOS C	20.8/LOS C
19. Rice Ave/U.S. 101 SB Ramps (CT)	7.5/LOS A	7.5/LOS A	9.7/LOS A	10.7/LOS A
20. Rice Ave/Gonzales Rd	0.75/LOS C	0.75/LOS C	0.60/LOS A	0.60/LOS A
21. Rice Ave/Camino Del Sol	0.53/LOS A	0.55/LOS A	0.64/LOS B	0.65/LOS B

[1] Intersection widening and geometry improvements under cumulative conditions.
[2] Intersection signalized under cumulative conditions.
[3] Intersection signalized under cumulative + project conditions.

Table 5 indicates that the project would generate a cumulative impact based on City of Oxnard impact thresholds at the Camino Del Sol/Colonia Road intersection, which is forecast to operate in the LOS E range with cumulative plus project traffic. Cumulative mitigation measures are discussed in the Mitigation section of this report.

BUILDOUT CONDITIONS

Buildout Traffic Volumes

Traffic volumes for City of Oxnard General Plan buildout conditions are derived from the City of Oxnard Traffic Model (OTM) Year 2030 volumes, which were provided by City staff. The Buildout plus Project volumes generated by the Model include traffic generated by the proposed High School No. 8 and the adjacent residential/commercial development (Urban Village). Buildout without Project volumes were developed by removing project traffic from the forecasts, and adding traffic generated by the site's development as included in the *East Village Phase III Annexation*[8]. It is noted that the OTM generated volumes for 11 intersections. Stantec developed buildout volumes for the remaining 10 intersections by extrapolating buildout additions through the study area corridors. The school site is included in the *East Village Phase III Annexation* as 36.5 acres with a density of 4.5 dwelling units per acre, resulting in a total of 164 single family dwellings. The project trip generation adjustments under buildout plus project conditions are shown in Table 6.

Table 6
Project Trip Generation – Buildout Conditions

Land Use	Size	ADT Trips	AM PHT Trips	PM PHT Trips
East Village Single Family Dwelling	164 DU	1,548	121 (30/91)	162 (102/60)
Proposed Project High School	2,500 students	5,075	1,300 (871/429)	350 (168/182)
Net Difference		**3,527**	**1,179 (841/338)**	**188 (66/122)**

ADT = average daily trips. PHT = peak hour trips. (X/X) = inbound trips/outbound trips.

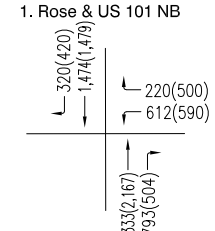
The 2030 Oxnard Traffic Model peak hour traffic volumes without and with the OUHSD High School No. 8 are shown in Exhibits 14 and 15, respectively.

Street Network Improvements

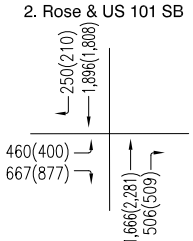
The City's buildout network in the traffic model includes the extension of Camino Del Sol to Oxnard Boulevard, which will divert traffic from Colonia Road to Camino Del Sol. Further, the *City of Oxnard 2030 General Plan Circulation Diagram* indicates that Camino Del Sol between Rose Avenue and Del Norte Boulevard is programmed to become a Primary Arterial (six lanes). The Rose Avenue/Fifth Street intersection will be reconfigured to a an Arterial Interchange and the Rice Avenue/Camino Del Sol intersection will be reconfigured to a Freeway Interchange. Given that improvement plans or construction timing information are not available, the buildout analysis does not assume these network changes.

[8] East Village Phase III Annexation, Final Environmental Impact Report, EcoTierra/City of Oxnard, August 2012.

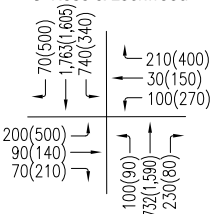
1. Rose & US 101 NB



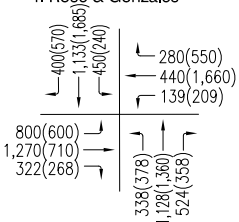
2. Rose & US 101 SB



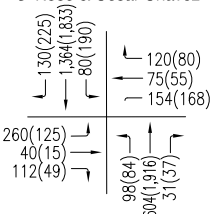
3. Rose & Lockwood



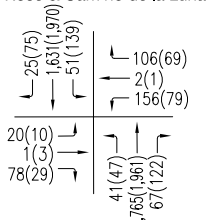
4. Rose & Gonzales



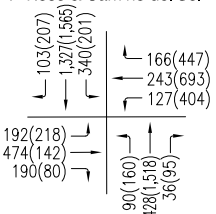
5. Rose & Cesar Chavez



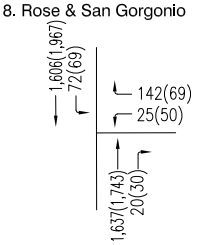
6. Rose & Camino de la Luna



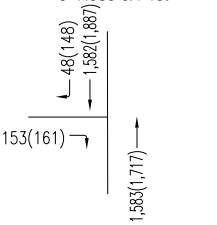
7. Rose & Camino del Sol



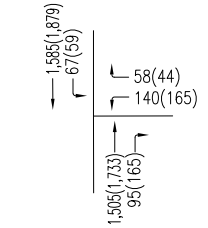
8. Rose & San Gorgonio

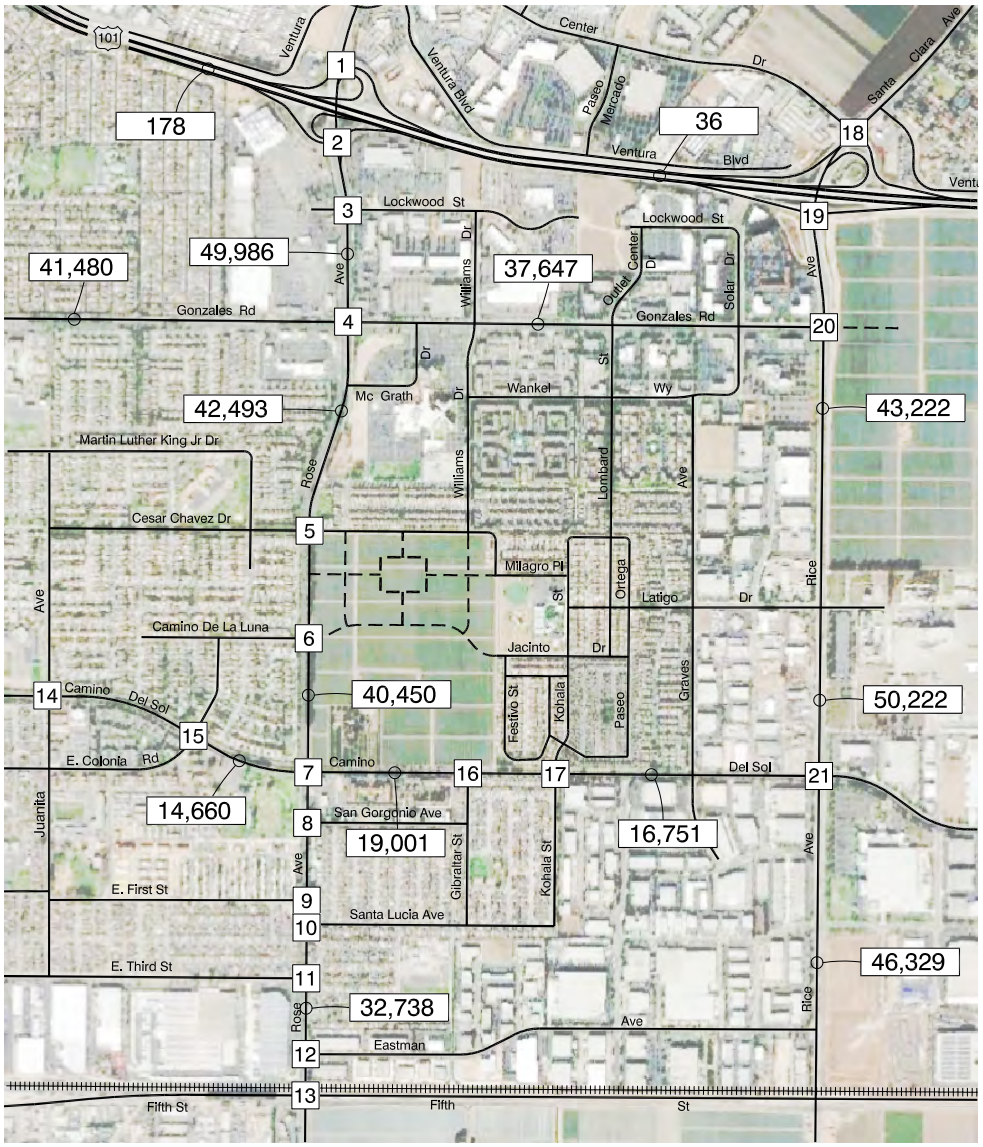


9. Rose & First

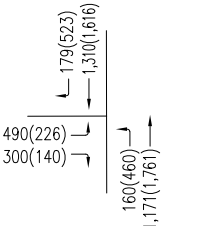


10. Rose & Santa Lucia

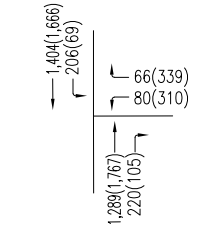




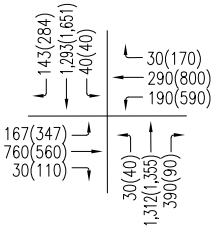
11. Rose & Third



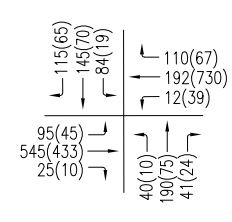
12. Rose & Eastman



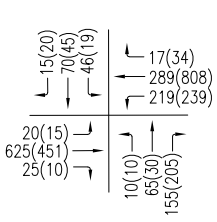
13. Rose & Fifth



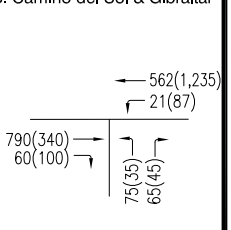
14. Camino del Sol & Juanita



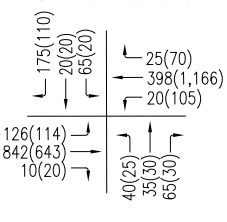
15. Camino del Sol & Colonia



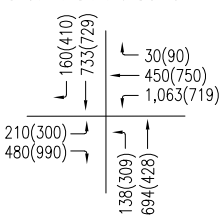
16. Camino del Sol & Gibraltar



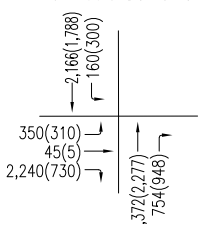
17. Camino del Sol & Kohala



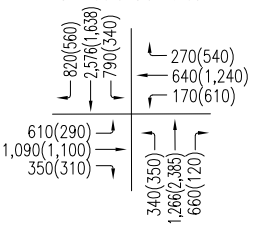
18. Santa Clara & US 101 NB



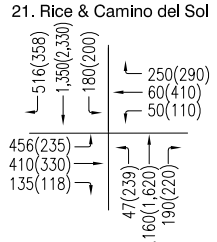
19. Rice & US 101 SB

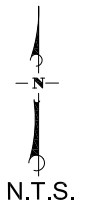


20. Rice & Gonzales



21. Rice & Camino del Sol





LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

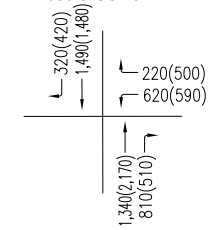
XX - Average Weekday Daily Traffic

Stantec

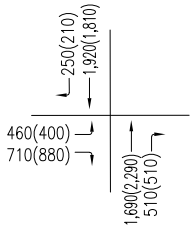
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 14
BUILDOUT TRAFFIC VOLUMES

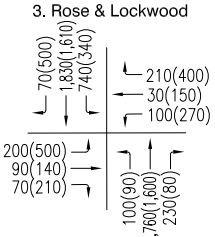
1. Rose & US 101 NB



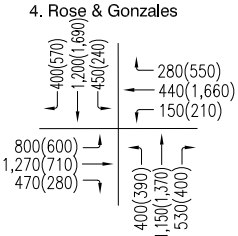
2. Rose & US 101 SB



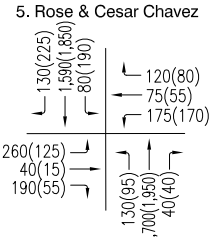
3. Rose & Lockwood



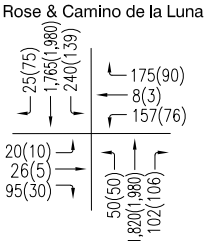
4. Rose & Gonzales



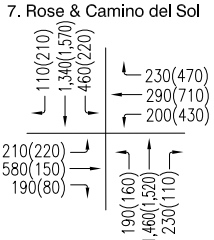
5. Rose & Cesar Chavez



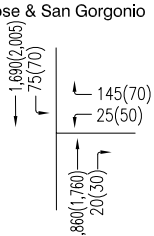
6. Rose & Camino de la Luna



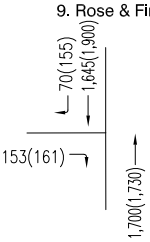
7. Rose & Camino del Sol



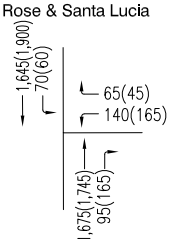
8. Rose & San Gorgonio

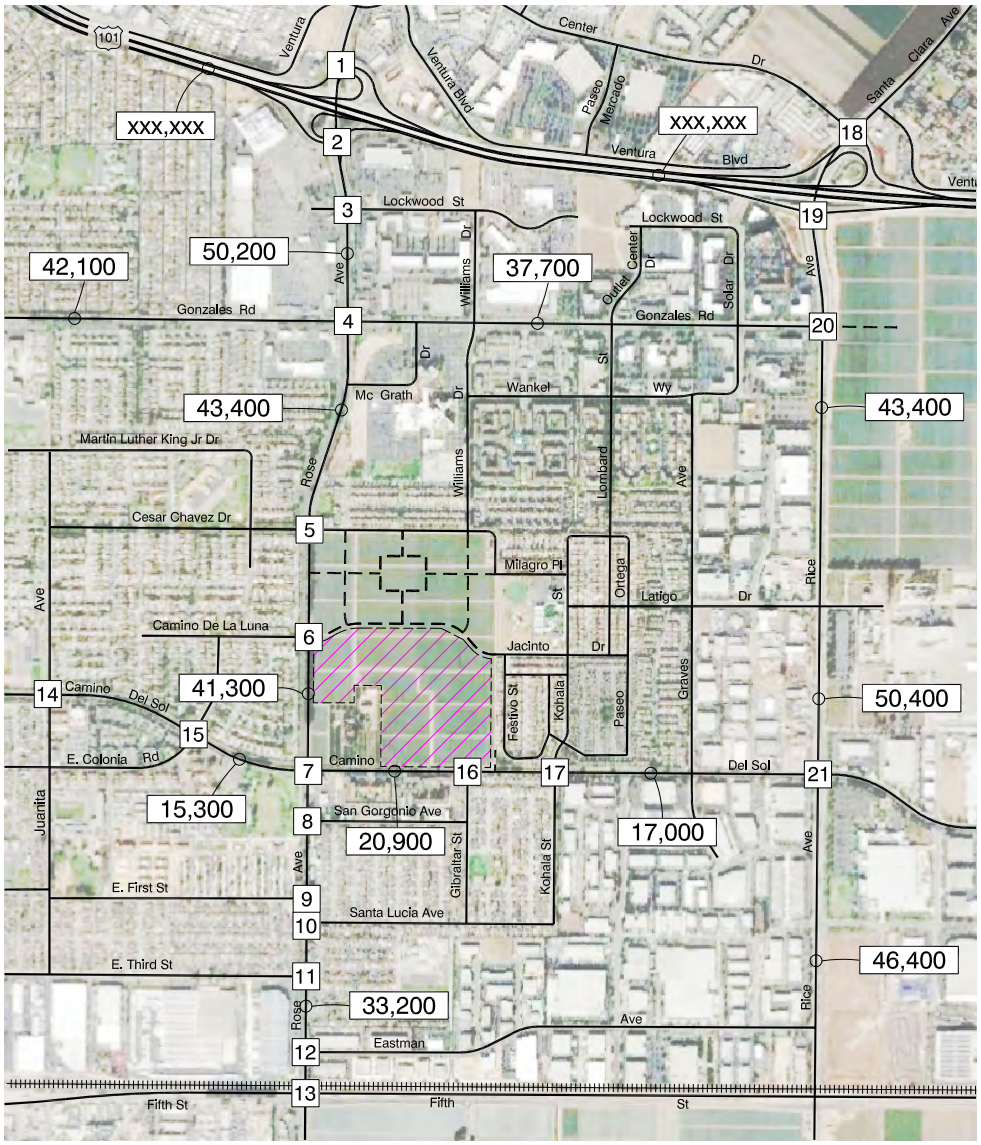


9. Rose & First

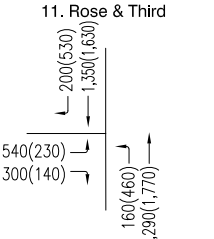


10. Rose & Santa Lucia

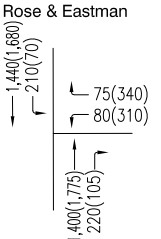




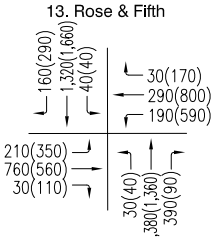
11. Rose & Third



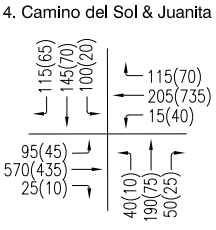
12. Rose & Eastman



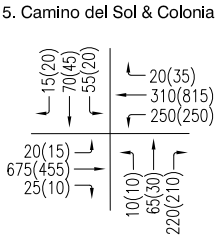
13. Rose & Fifth



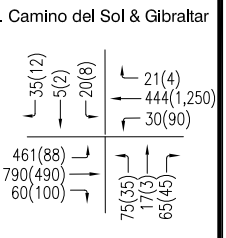
14. Camino del Sol & Juanita



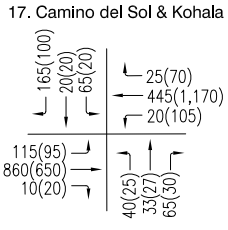
15. Camino del Sol & Colonia



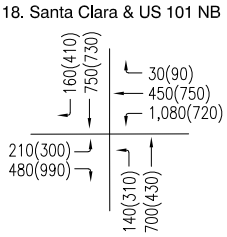
16. Camino del Sol & Gibraltar



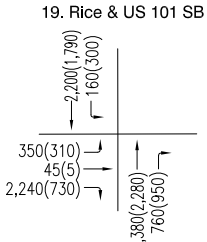
17. Camino del Sol & Kohala



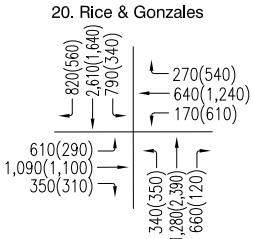
18. Santa Clara & US 101 NB



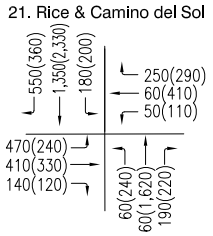
19. Rice & US 101 SB

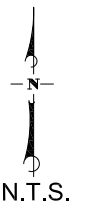


20. Rice & Gonzales



21. Rice & Camino del Sol





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LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 15

BUILDOUT + PROJECT TRAFFIC VOLUMES

Buildout plus Project Intersection Operations

Intersection levels of service were recalculated assuming buildout and buildout plus project conditions. Table 6 summarizes the buildout and buildout plus project level of service calculations.

Table 7
Buildout plus Project Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Buildout ICU - HCM/LOS	Buildout + Project ICU – HCM/LOS	Buildout ICU - HCM/LOS	Buildout + Project ICU – HCM/LOS
1. Rose Ave/U.S. 101 NB Ramps (CT)	13.9/LOS B	14.1/LOS B	25.7/LOS C	25.7/LOS C
2. Rose Ave/U.S. 101 SB Ramps (CT)	13.4/LOS B	15.4/LOS B	21.3/LOS C	21.4/LOS C
3. Rose Ave/Lockwood St	**0.82/LOS D**	**0.82/LOS D**	0.75/LOS C	0.75/LOS C
4. Rose Ave/Gonzales Rd	**0.89/LOS D**	**0.89/LOS D**	**0.96/LOS E**	**0.97/LOS E**
5. Rose Ave/Cesar Chavez Drive [1]	0.68/LOS B	0.71/LOS B	0.73/LOS C	0.74/LOS C
6. Rose Ave/Camino De La Luna [1 2]	0.57/LOS A	0.72/LOS C	0.79/LOS C	0.79/LOS C
7. Rose Ave/Camino Del Sol [1]	0.63/LOS B	0.76/LOS C	**0.83/LOS D**	**0.83/LOS D**
8. Rose Ave/San Gorgonio Ave	0.67/LOS B	0.75/LOS C	0.67/LOS B	0.69/LOS B
9. Rose Ave/First St	Intersection reconstructed to restrict movements to right-turns only			
10. Rose Ave/Santa Lucia Ave	0.64/LOS B	0.70/LOS B	0.64/LOS B	0.65/LOS B
11. Rose Ave/Third St	0.54/LOS A	0.57/LOS A	0.68/LOS B	0.68/LOS B
12. Rose Ave/Eastman Ave	0.49/LOS A	0.52/LOS A	0.65/LOS B	0.65/LOS B
13. Rose Ave/Fifth St	**1.00/LOS F**	**1.02/LOS F**	**1.17/LOS F**	**1.18/LOS F**
14. Camino Del Sol/Juanita Ave	**26.2/LOS D**	**31.9/LOS D**	19.5/LOS C	20.0/LOS C
15. Camino Del Sol/Colonia Rd	18.0/LOS C	24.6/LOS C	**25.7/LOS D**	**27.2/LOS D**
16. Camino Del Sol/Gibraltar St [3]	16.3/LOS C	0.62/LOS B	**42.8/LOS E**	0.59/LOS A
17. Camino Del Sol/Kohala St	0.56/LOS A	0.56/LOS A	0.62/LOS B	0.63/LOS B
18. Rice Ave/U.S. 101 NB Ramps (CT)	20.4/LOS C	20.4/LOSC	**38.4/LOS D**	**38.4/LOS D**
19. Rice Ave/U.S. 101 SB Ramps (CT)	13.4/LOS B	13.4/LOS B	16.2/LOS B	16.2/LOS B
20. Rice Ave/Gonzales Rd	**0.97/LOS E**	**0.97/LOS E**	**1.11/LOS F**	**1.11/LOS F**
21. Rice Ave/Camino Del Sol	**0.92/LOS E**	**0.93/LOS E**	**0.99/LOS E**	**0.99/LOS E**

[1] Intersection widening and geometry improvements under buildout conditions.
[2] Intersection signalized under buildout conditions.
[3] Intersection signalized under buildout + project conditions.

As shown, nine intersections are forecast to operate below the City's and Caltrans LOS C standard under buildout plus project conditions. The project would generate a buildout impact

at the intersections of Camino Del Sol with Juanita Avenue and Colonia Road, which are assumed to be all-way stop controlled. The project would not exceed the City's impact threshold of V/C 0.02 at the remaining intersections that would operate below LOS C.

It is noted that the buildout analysis does not incorporate the 2030 General Plan Circulation Element improvements discussed previously. Camino Del Sol between Rose Avenue and Del Norte Boulevard is programmed to become a Primary Arterial (six lanes). The Rose Avenue/Fifth Street intersection will be reconfigured to an Arterial Interchange and the Rice Avenue/Camino Del Sol intersection will be reconfigured to a Freeway Interchange. Given that Rice Avenue will be configured to freeway standards between the U.S. 101 and Wooley Road, the Rice Avenue/Gonzales Road intersection would also need to be reconfigured to a Freeway Interchange.

PROJECT SITE ACCESS, CIRCULATION AND PARKING

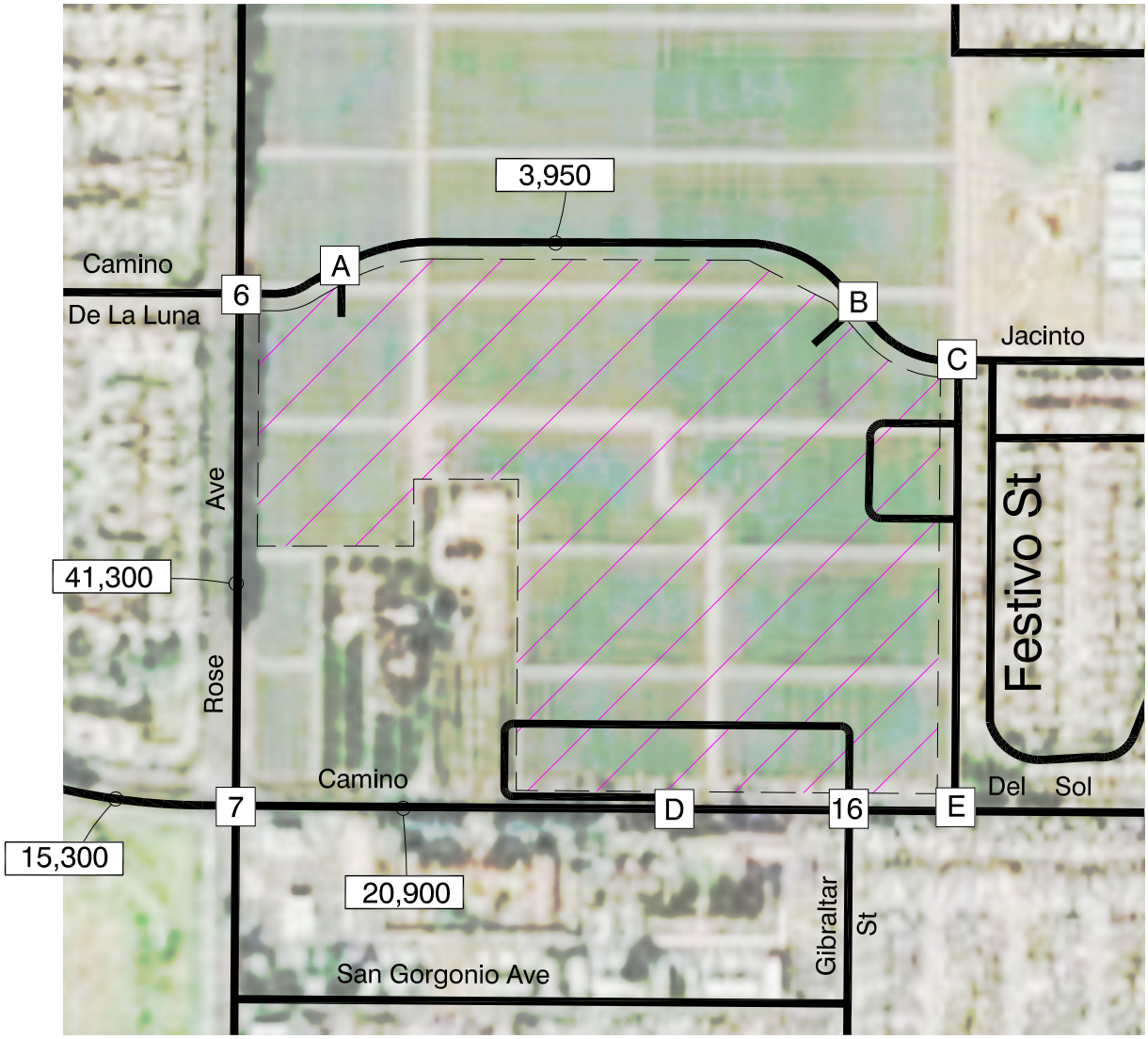
Site Access

Vehicular Access. The site plan illustrated in Exhibit 2 shows that access is proposed via three new driveways on the north side of Camino Del Sol and three driveways on the south side of the extended segment of Jacinto Drive. Exhibit 16 shows the buildout plus project access traffic volumes,

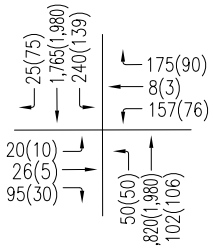
The driveway connection to the Camino Del Sol/Gibraltar Street intersection will be signalized and will provide full access to the school main drop-off and pick-up loop and parking areas. An analysis was completed using Synchro software for the AM commute period, during which the majority of school traffic will be generated during a peak 5-minute period. The analysis, which was completed using cumulative and buildout turning volumes, indicates that the eastbound left-turn lane should be extended to the maximum length available to accommodate the eastbound left-turn movement into the school main driveway (461 AM PHT), The peak queue is shown as 880' during the 25-minute AM peak period. Given that the spacing between Gibraltar Street and the Camino Del Sol Senior Apartments driveway to the west is approximately 950', back to back left-turn lanes could be provided to adequately accommodate left-turns into the senior center and the high school.

It is noted that the 2030 General Plan Circulation Element includes Camino Del Sol between Rose Avenue and Del Norte Boulevard as a Primary Arterial (six lanes), and capacity and intersection signal timing may therefore change under buildout conditions.

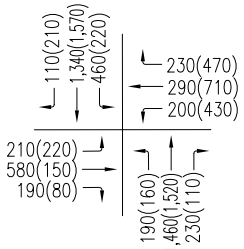
The driveway on Camino Del Sol located west of Gibraltar Street will be restricted to right-turns only. The driveway on Camino Del Sol proposed east of Gibraltar Road will be restricted to right-turns only. These driveways are expected to operate acceptably based on the turn restrictions.



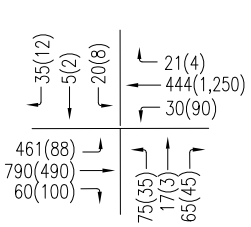
6. Rose & Camino de la Luna

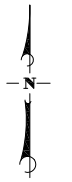


7. Rose & Camino del Sol

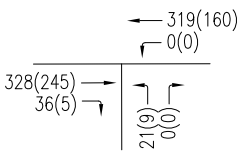


16. Camino del Sol & Gibraltar

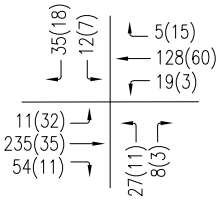




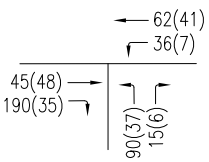
A. Jacinto & Lot D



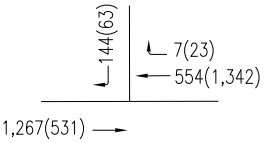
B. Jacinto & Lot C



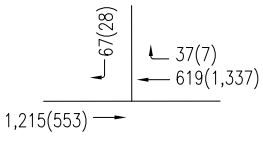
C. Jacinto & High School Dwy



D. Camino Del Sol & High School Exit



E. Camino Del Sol & High School Dwy



LEGEND

XX(XX) - AM(PM) Peak Hour Volume

- Traffic Movement

XX - Average Weekday Daily Traffic

EXHIBIT 16
BUILDOUT + PROJECT
PROJECT ACCESS
TRAFFIC VOLUMES

Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

Two driveways on Jacinto Drive will provide access to parking areas for the athletic facilities. The driveway proposed along the eastern boundary of the site will provide access to a secondary drop-off/pick-up loop and school parking areas. Based on the forecast traffic volumes on Jacinto Drive and the turning volumes at the school driveways, it is expected that these driveways will operate acceptably.

Bicycle Access. Class II bicycle lanes are provided on Rose Avenue north of Camino Del Sol and, Camino Del Sol from Garfield Avenue to Del Norte Boulevard, and on Gonzales Road from Victoria Avenue to Rice Avenue. Buildout of Rose Avenue and Camino Del Sol along the project's frontage will include provision of Class II bicycle lanes, and a bicycle path along the north side of the new segment of Jacinto Drive along the project's northern boundary. These new bicycle facilities should be designed to connect to the surrounding bicycle network. Consideration should be given to install buffered bicycle lanes where feasible to provide increased separation between vehicle and bike lanes.

As discussed previously, the City's *Bicycle & Pedestrian Master Plan* proposed bicycle facilities includes new Class II bicycle lanes on Rose Avenue south of Camino De Sol and a bicycle boulevard on Cesar Chavez Drive from Juanita Avenue to Rice Avenue. These bicycle facility additions will further enhance the study area bicycle network.

Pedestrian Access. Pedestrian access to the high school is provided via existing and future sidewalks along Rose Avenue, Camino Del Sol and Jacinto Drive. Project improvements will include new sidewalks along its frontage and new crosswalks at the Rose Avenue/Camino De La Luna intersection and Camino Del Sol/Gibraltar Street intersection, which will be signalized. The existing crosswalks at the Rose Avenue/Camino Del Sol intersection will be modified to school crosswalk markings.

To provide a pedestrian connection between the high school and the Urban Village, crosswalks are proposed at the three Urban Village roadway intersections with Jacinto Drive. Because these intersection will be unsignalized, the appropriate school crosswalk markings and signage should be installed.

Pedestrian connections will be provided between the frontage sidewalks and the school's internal sidewalk and walkway circulation system. Pedestrian connections should be provided at or nearby each school driveway intersection with Camino Del Sol and Jacinto Drive, in order to ensure a clear and direct pathway into the site.

Existing Gold Coast Transit (GCT) bus stops are located on Rose Avenue at Socorro Way in both directions and south of Camino Del Sol in both directions (northbound bus stop is located in the right-turn lane). A new bus stop will be constructed on Rose Avenue north of Camino Del Sol in the northbound direction. This new bus stop would replace the existing bus stop located south of Camino Del Sol. The school district and developer of the Urban Village should coordinate construction of other locations, such as bus stops at Camino De La Luna, with Gold Coast Transit.

Circulation

The on-site circulation system is comprised of four driveways which provide access to three drop-off/pick-up loops and the parking areas. The driveway on Camino Del Sol proposed opposite

Gibraltar Street provides access to the main drop-off and pick-up loop. The ingress driveway and loop contain two lanes with approximately 850 feet of curb length for student drop-off and pick-up. The inside lane will be used as curb drop-off/pick-up and the outside lane will be used to progress traffic. The length of the main loop, in combination with the secondary drop-off/pick-up loops along the school's east side, are expected to provide sufficient vehicle queue storage to accommodate the expected peak traffic movements. Egress from the main loop is provided via the driveway on Camino Del Sol proposed opposite Gibraltar Street or the driveway proposed opposite the Camino Del Sol Senior Apartments driveway. This driveway will initially will be restricted to right-turn egress only.

Bicycle lanes should be provided along the main driveway and an on-site bicycle circulation plan should be developed to indicate the travel paths to the bike parking areas. Bike racks should be provided at designated locations near the school buildings.

Parking

The site plan indicates that the proposed parking supply consists of 700 regular spaces and 22 accessible spaces, for a total of 722 spaces. The parking area between Camino Del Sol and the main drop-off/pick-up loop contains 290 spaces and is designated for staff and visitors. The student parking area is located along the site's eastern boundary and contains 294 spaces. A separate parking lot with 61 spaces is located between the stadium and Jacinto Drive, and a community parking lot, located east of Rose Avenue and south of Jacinto Drive provides 77 spaces. The City of Oxnard parking requirement for high schools is five spaces per class room, plus one space for each five seats utilized for auditorium purposes. Based on this requirement, a total of 465 spaces are required for 93 teaching spaces, with 257 spaces remaining for the auditorium.

VEHICLE MILES TRAVELED (VMT)

State Senate Bill 743 (2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (*Id.*, subd. (b)(1); see generally, adopted CEQA Guidelines, §15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, Office of Planning and Research (OPR) has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts.

A project would have a significant effect on the environment if it would cause substantial additional VMT. The OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) recommends screening criteria to identify types, characteristics, or locations of projects that would not result in significant impacts to VMT. If a project meets screening criteria, then it is presumed that VMT impacts would be less than significant for the project and a detailed VMT analysis is not required.

Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends quantified thresholds for these land uses for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types. in general, the recommended "Threshold of Significance" is if a proposed project exceeds a level of 15 percent below existing regional VMT for that type of project, a significant transportation impact may be generated. However, for other uses (i.e. retail projects), a net increase in total VMT may indicate a significant transportation impact.

VMT analysis

The VCTC is in the process of updating the County-wide traffic model (VCTM) so regional household and non-household VMT levels can be determined. The City of Oxnard has not yet started this process . At this time, no VMT data for residential, office, retail or other land uses is available, and no threshold of significance can be applied to school related VMT.

While the proposed school site is expected to add traffic within the study-area, the new school will also capture school related trips within the study-area (tour-based VMT), resulting in an overall reduction of school related trip lengths for parents and students. Therefore, potential impacts would be less than significant.

Induced Automobile Travel analysis

A project would have a significant effect on the environment if it would substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network. OPR's proposed transportation impact guidelines includes a list of transportation project types that would not likely lead to a substantial or measurable increase in VMT. If a project fits within the general types of projects (including combinations of types), then it is presumed that VMT impacts would be less than significant and a detailed VMT analysis is not required.

The proposed project is not a transportation project. While the project would improve or reconstruct existing facilities, no new capacity or network changes are anticipated, and impacts would be less than significant.

MITIGATION MEASURES

Project-Specific Mitigations

Rose Ave/Cesar Chavez Drive intersection. The project-specific analysis found that the project would generate a project-specific impact based on City of Oxnard impact thresholds at the Rose Ave/Cesar Chavez Drive intersection. The project would degrade the level of service from LOS C to LOS D during the AM peak Hour. The project-specific analysis includes the widening of Rose Avenue from Camino De La Luna to Camino Del Sol. Construction of the Urban Village development will widen Rose Avenue from Cesar Chavez Drive to Camino Del Luna, thereby adding a third NB and SB travel lane to the Rose Ave/Cesar Chavez Drive intersection. As shown in table 5, the intersection is forecast to operate in the LOS B range after widening is completed.

To mitigate the project-specific impact, the project would need to construct the intersection improvements at the Rose Ave/Cesar Chavez Drive intersection. The addition of a third NB and SB travel lane would result in LOS B during the AM peak hour (V/C 0.68).

Camino Del Sol/Colonia Road intersection. The intersection would operate at the cusp of LOS C/D under project-specific conditions. The intersection is controlled by an all-way stop. While existing plus project traffic volumes would satisfy *Warrant 3 – Peak Hour* contained in *Chapter 4C. Traffic Control Signal Needs Studies* of the CAMUTCD, the current CAMUTCD guidelines indicate that *Warrant 3 – Peak Hour* shall be applied "only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time."

It is recommended that the intersection be monitored through a yearly count program and signal warrant analysis as the school attendance increases, to determine if a traffic signal is warranted under future conditions.

Camino Del Sol/Gibraltar Street intersection. The site analysis indicated that the eastbound left-turn lane should be extended to the maximum length available to accommodate the eastbound left-turn movement into the school main driveway (461 AM PHT), The peak queue was shown as 880' during the 25-minute AM peak period. Given that the spacing between Gibraltar Street and the Camino Del Sol Senior Apartments driveway to the west is approximately 950', back to back left-turn lanes could be provided to adequately accommodate left-turns into the senior center and the high school.

Cumulative Mitigations

The cumulative analysis indicated that the project would generate a cumulative impact based on City of Oxnard impact at the Camino Del Sol/Colonia Road intersection.

Camino Del Sol/Colonia Road intersection. The intersection would operate at LOS E under cumulative conditions. As discussed in the Project-Specific Mitigation section, the intersection is controlled by an all-way stop. While cumulative plus project traffic volumes would satisfy *Warrant 3 – Peak Hour* contained in *Chapter 4C. Traffic Control Signal Needs Studies* of the CAMUTCD, the current CAMUTCD guidelines indicate that *Warrant 3 – Peak Hour* shall be applied "only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time."

It is recommended that the intersection be monitored through a yearly count program and signal warrant analysis as the school attendance increases, to determine if a traffic signal or is warranted under future conditions. The project's proportionate share to the cumulative traffic is 77%.

Buildout Mitigations

The cumulative analysis indicated that the project would generate a buildout impact based on City of Oxnard impact thresholds at the intersections of Camino Del Sol with Juanita Avenue and Colonia Road, which are all-way stop controlled. The project would not exceed the City's impact threshold of V/C 0.02 at the remaining intersections that would operate below LOS C.

Similarly to the project-specific and cumulative plus project impact discussion, the currently stop controlled intersections could be signalized when conditions warrant. The programmed extension of Camino Del Sol to Oxnard Boulevard will result in traffic pattern changes, and intersection improvements as part of Camino Del Sol redesign should be evaluated through an ICE process to determine the appropriate improvements.

■ ■ ■

TECHNICAL APPENDIX

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Appendix 4 – City of Oxnard 2030 General Plan Circulation Diagram

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Appendix 1
AM and PM Peak Hour Intersection Counts

Prepared by National Data & Surveying Services

Rose Ave & US 101 NB Off-Ramp

Peak Hour Turning Movement Count

ID: 19-05050-001
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Rose Ave — SOUTHBOUND

AM	205	1142	0	0	1279	AM
NOON	0	0	0	0	0	NOON
PM	429	1339	0	0	1585	PM

US 101 NB Off-Ramp — EASTBOUND

AM	NOON	PM		
205	0	429	⇦	
0	0	0	↶	0
0	0	0	↱	0
0	0	0	→	0
0	0	0	↴	0
AM	NOON	PM		

US 101 NB Off-Ramp — WESTBOUND

PM	NOON	AM		
127	0	100	↰	0.5
0	0	0	←	0
420	0	385	↰	1.5
0	0	0	↶	0
842	0	829	⇨	
PM	NOON	AM		

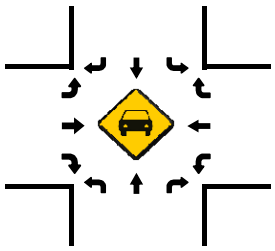
	1	3	0	0
	0	0	3	1

CONTROL			
Signalized			
TEV	3840	0	4615
	AM	NOON	PM
PHF	0.88		0.98

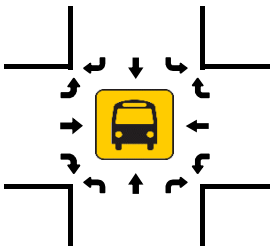
Rose Ave — NORTHBOUND

PM	1759	0	0	1458	842	PM
NOON	0	0	0	0	0	NOON
AM	1527	0	0	1179	829	AM

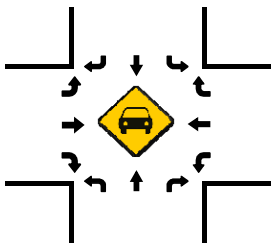
Total Vehicles (AM)



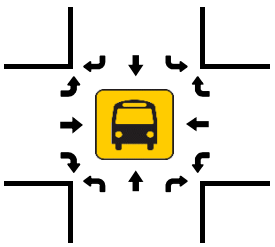
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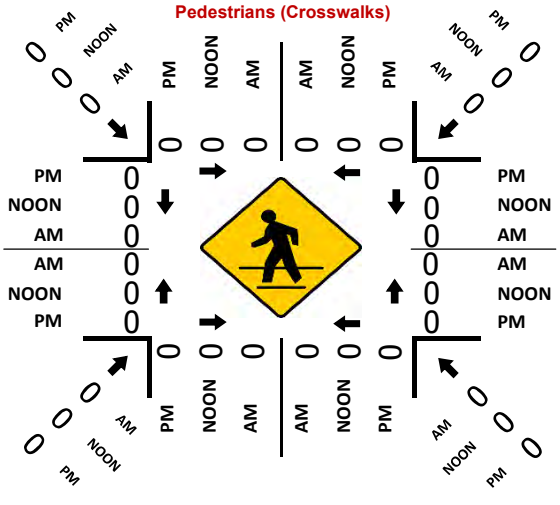
Total Vehicles (NOON)



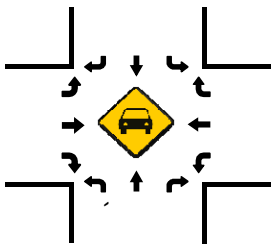
Total Vehicles (NOON)



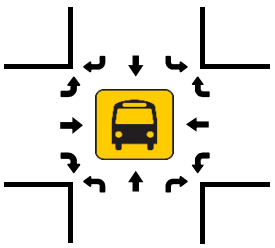
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & US 101 SB Off-Ramp

Peak Hour Turning Movement Count

ID: 19-05050-002
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Rose Ave — SOUTHBOUND

AM	190	1327	0	0	1995	AM
NOON	0	0	0	0	0	NOON
PM	106	1659	0	0	2270	PM

US 101 SB Off-Ramp — EASTBOUND

AM	NOON	PM		
190	0	106	⇦	
0	0	0	↰	0
199	0	326	↱	1.5
0	0	0	→	0
675	0	885	↱	1.5
AM	NOON	PM		

US 101 SB Off-Ramp — WESTBOUND

PM	NOON	AM		
0	0	0	↰	0
0	0	0	←	0
0	0	0	↰	0
0	0	0	↰	0
411	0	527	⇨	
PM	NOON	AM		

	1	3	0	0	
	0	0	3	1	

CONTROL

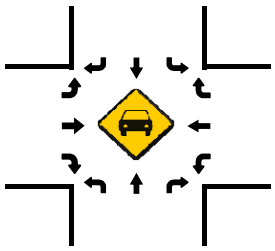
Signalized

TEV	4714 AM	0 NOON	5331 PM
PHF	0.93		0.98

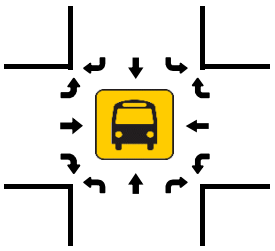
Rose Ave — NORTHBOUND

PM	2544	0	0	1944	411	PM
NOON	0	0	0	0	0	NOON
AM	2002	0	0	1796	527	AM

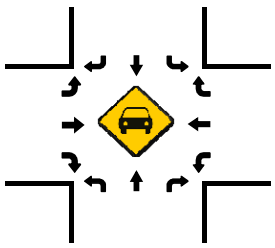
Total Vehicles (AM)



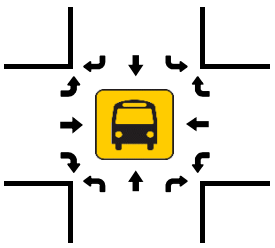
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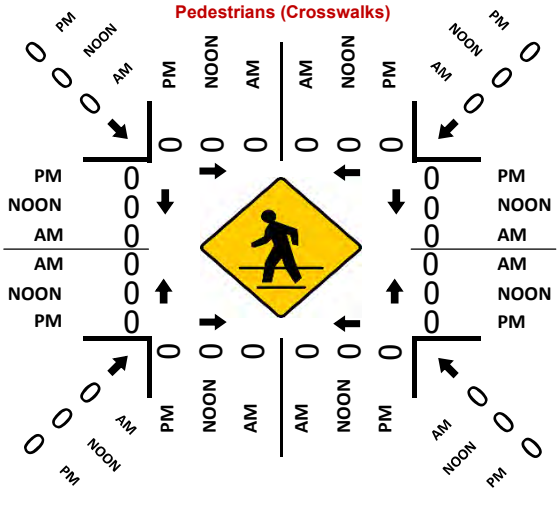
Total Vehicles (NOON)



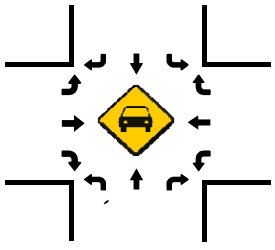
Total Vehicles (NOON)



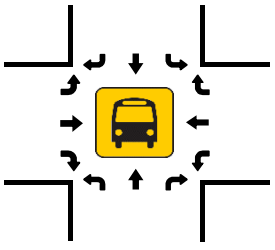
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & Lockwood St

Peak Hour Turning Movement Count

ID: 19-05050-003
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	170	1539	281	0	2245	AM
NOON	0	0	0	0	0	NOON
PM	374	1838	314	0	2303	PM
	1	3	2	0		

EASTBOUND — Lockwood St

AM	NOON	PM	
247	0	637	
0	0	0	0
173	0	362	2
49	0	112	1
57	0	175	1
AM	NOON	PM	

WESTBOUND — Lockwood St

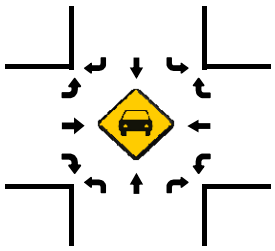
PM	NOON	AM	
366	0	267	1
87	0	19	0.5
134	0	32	1.5
0	0	0	0
482	0	363	
PM	NOON	AM	

NORTHBOUND — Rose Ave

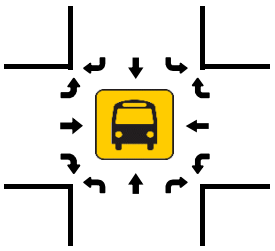
PM	2184	37	176	1575	56	PM
NOON	0	0	0	0	0	NOON
AM	1638	10	58	1805	33	AM
		0	2	3	0	

CONTROL			
Signalized			
TEV	4493	0	5606
	AM	NOON	PM
PHF	0.90		0.98

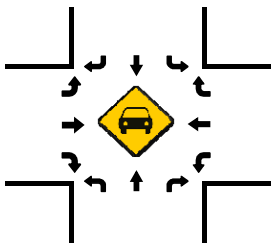
Total Vehicles (AM)



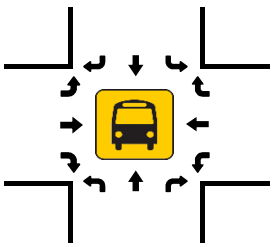
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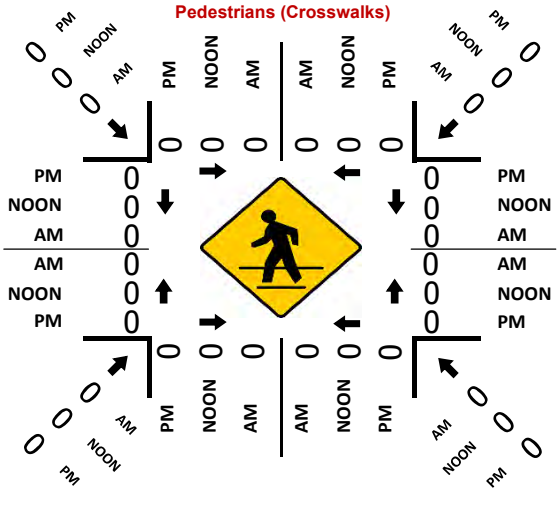
Total Vehicles (NOON)



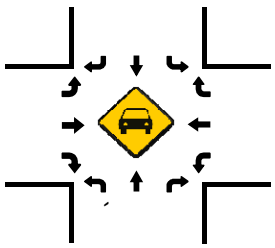
Total Vehicles (NOON)



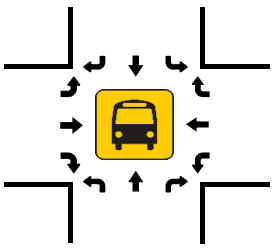
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & Gonzales Rd

Peak Hour Turning Movement Count

ID: 18-05762-001
City: Oxnard

Day: Wednesday
Date: 11/28/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND (Rose Ave)

	1	3	2	0	
AM	262	989	328	0	1876
NOON	0	0	0	0	0
PM	528	1312	192	0	1716

EASTBOUND (Gonzales Rd)

	AM	NOON	PM
0	1	0	2
3	676	0	491
2	828	0	445
1	240	0	170
	931	0	1808

WESTBOUND (Gonzales Rd)

	PM	NOON	AM
1	166	0	89
3	953	0	381
1	212	0	82
0	2	0	3
	727	0	1356

NORTHBOUND (Rose Ave)

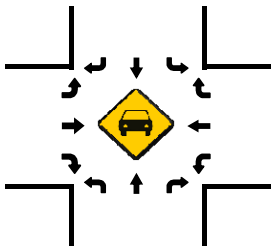
	0	2	3	1	
PM	1766	72	325	1059	88
NOON	0	0	0	0	0
AM	1330	19	287	1111	197

CONTROL

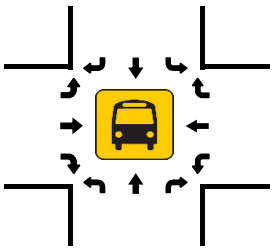
Siganlized

TEV	5493 AM	0 NOON	6017 PM
PHF	0.91		0.98

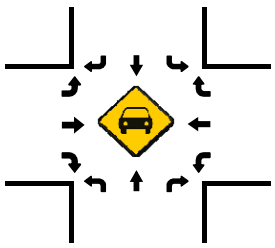
Total Vehicles (AM)



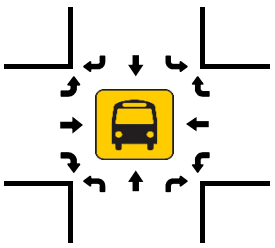
Total Vehicles (AM)



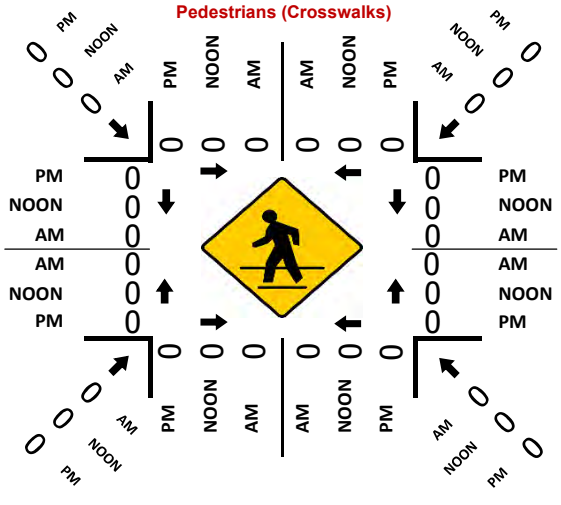
Total Vehicles (NOON)



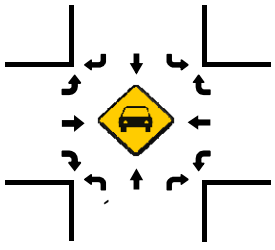
Total Vehicles (NOON)



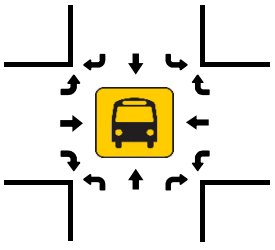
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & Cesar Chavez Dr

Peak Hour Turning Movement Count

ID: 19-05050-005
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	129	1164	17	0	1567	AM
NOON	0	0	0	0	0	NOON
PM	225	1539	9	0	1629	PM
	1	2	1	0		

EASTBOUND — Cesar Chavez Dr

AM	NOON	PM	
331	0	372	
0	0	0	0
255	0	124	0.5
39	0	15	0.5
186	0	53	1

WESTBOUND — Cesar Chavez Dr

PM	NOON	AM	
26	0	35	1
54	0	72	1
148	0	123	1
0	0	0	0
58	0	83	

NORTHBOUND — Rose Ave

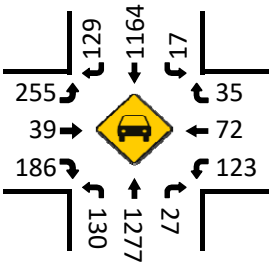
PM	1740	0	93	1479	34	PM
NOON	0	0	0	0	0	NOON
AM	1473	0	130	1277	27	AM
		0	1	2	1	

CONTROL

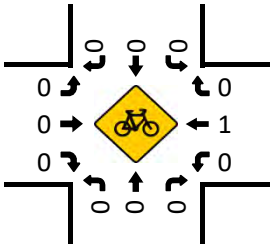
Signalized

TEV	3454 AM	0 NOON	3799 PM
PHF	0.89		0.97

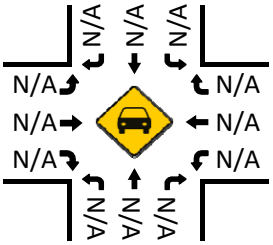
Total Vehicles (AM)



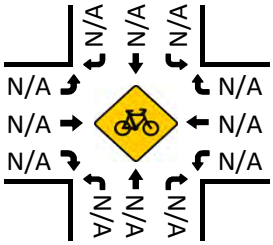
Bikes (AM)



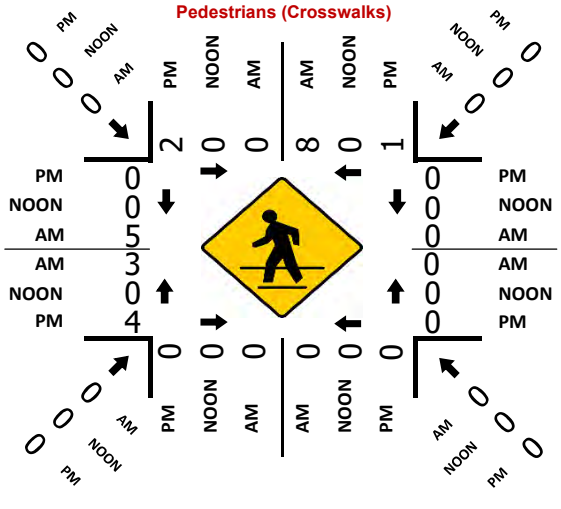
Total Vehicles (Noon)



Bikes (NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
0
0
2
0
0
8
0
1
0
0
0
0
0

Prepared by National Data & Surveying Services

Rose Ave & Camino De La Luna

Peak Hour Turning Movement Count

ID: 19-05050-006
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	21	1461	0	0	1451	AM
NOON	0	0	0	0	0	NOON
PM	75	1648	0	0	1600	PM

EASTBOUND — Camino De La Luna

AM	NOON	PM	
60	0	116	⇦
0	0	0	↶ 0
19	0	7	↱ 0
0	0	0	→ 1
75	0	24	↴ 0
AM	NOON	PM	

WESTBOUND — Camino De La Luna

PM	NOON	AM	
0	0	0	↰ 0
0	0	0	← 0
0	0	0	↰ 0
0	0	0	↰ 0
0	0	0	⇨
PM	NOON	AM	

NORTHBOUND — Rose Ave

PM	1674	2	41	1593	0	PM
NOON	0	0	0	0	0	NOON
AM	1536	0	39	1432	0	AM

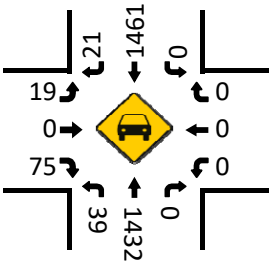
1	2	0	0
			⇧
0	1	2	0

CONTROL

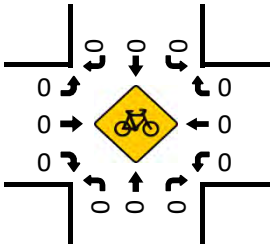
1-Way Stop (EB)

		AM	NOON	PM
TEV	3047	0	3390	
PHF	0.88		0.98	

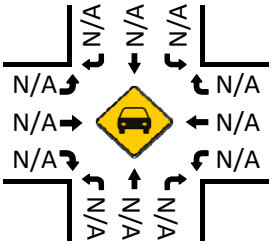
Total Vehicles (AM)



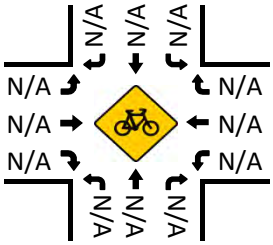
Bikes (AM)



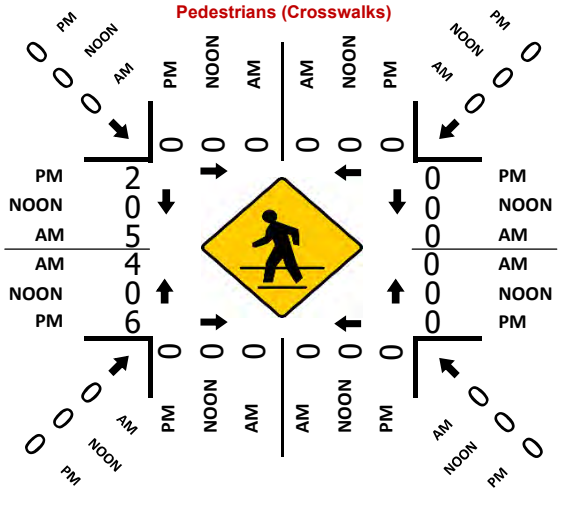
Total Vehicles (Noon)



Bikes (NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
2
0
5
4
0
6
0
0
0
0
0
0
0
0
0
0
0

Prepared by National Data & Surveying Services

Rose Ave & Camino Del Sol

Peak Hour Turning Movement Count

ID: 19-05050-007
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	104	1190	240	0	1479	AM
NOON	0	0	0	0	0	NOON
PM	199	1297	180	0	1638	PM

EASTBOUND — Camino Del Sol

AM	NOON	PM	
356	0	775	
0	0	0	0
163	0	122	1
264	0	143	2
121	0	74	1
AM	NOON	PM	

WESTBOUND — Camino Del Sol

PM	NOON	AM	
272	0	188	1
491	0	154	2
269	0	175	1
0	0	0	0
457	0	714	
PM	NOON	AM	

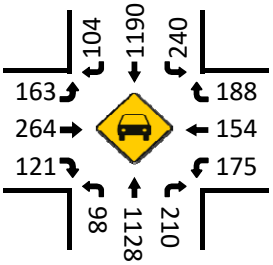
NORTHBOUND — Rose Ave

PM	1644	4	85	1244	134	PM
NOON	0	0	0	0	0	NOON
AM	1490	4	98	1128	210	AM

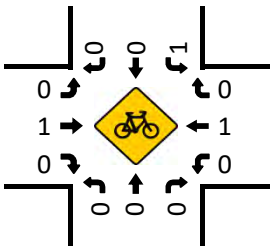
CONTROL: Signalized

TEV	4039 AM	0 NOON	4514 PM
PHF	0.85		0.99

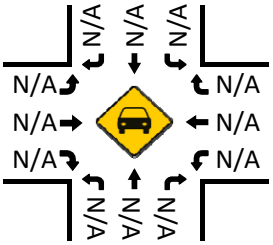
Total Vehicles (AM)



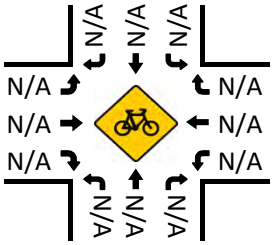
Bikes (AM)



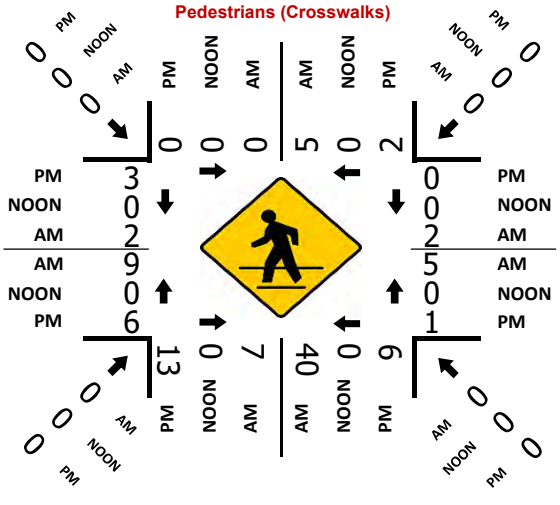
Total Vehicles (Noon)



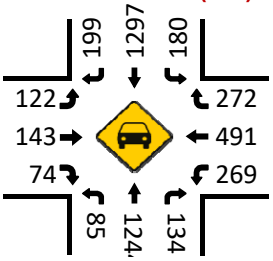
Bikes (NOON)



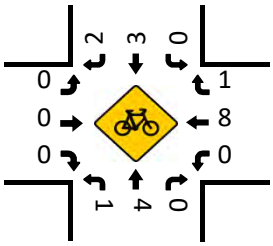
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Rose Ave & San Gorgonio Ave

Peak Hour Turning Movement Count

ID: 19-05050-008
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	0	1398	68	2	1422	AM
NOON	0	0	0	0	0	NOON
PM	0	1586	65	2	1471	PM

EASTBOUND — San Gorgonio Ave

AM	NOON	PM		
0	0	0		
0	0	0		0
0	0	0		0
0	0	0		0
0	0	0		0
AM	NOON	PM		

WESTBOUND — San Gorgonio Ave

PM	NOON	AM	
68	0	140	0
0	0	0	1
46	0	23	0
0	0	0	0
91	0	86	
PM	NOON	AM	

NORTHBOUND — Rose Ave

PM	1632	0	0	1401	26	PM
NOON	0	0	0	0	0	NOON
AM	1421	0	0	1280	18	AM

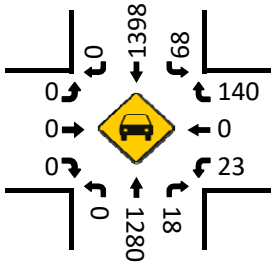
	0	3	1	0
	0	0	2	0

CONTROL

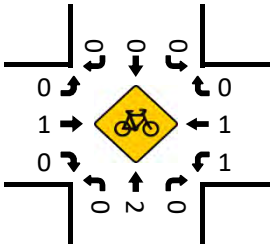
Signalized

TEV	2929 AM	0 NOON	3194 PM
PHF	0.84		0.93

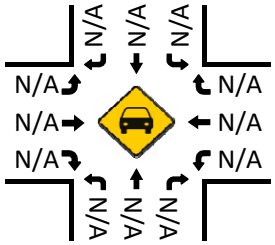
Total Vehicles (AM)



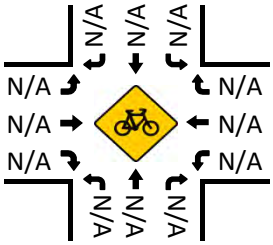
Bikes (AM)



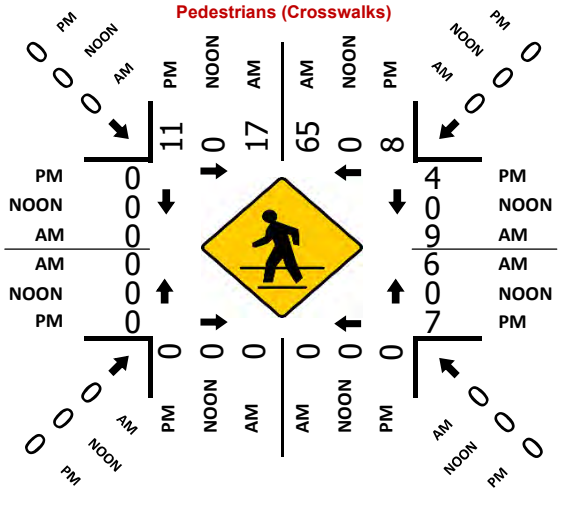
Total Vehicles (Noon)



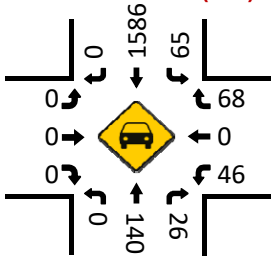
Bikes (NOON)



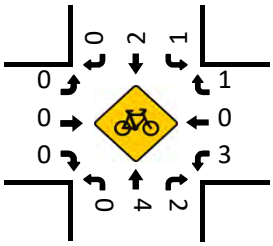
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Rose Ave & 1st St

Peak Hour Turning Movement Count

ID: 19-05050-009
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

SOUTHBOUND — Rose Ave

AM	66	1361	0	0	1313	AM
NOON	0	0	0	0	0	NOON
PM	151	1489	0	0	1423	PM
	0	3	0	0		

EASTBOUND — 1st St

AM	NOON	PM	
104	0	209	
0	0	0	0
123	0	99	0
0	0	0	1
68	0	54	0

WESTBOUND — 1st St

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	0	0	0

CONTROL

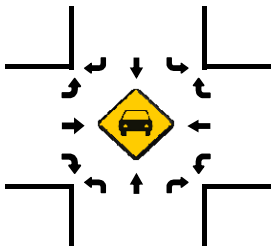
Signalized

TEV	2847 AM	0 NOON	3175 PM
PHF	0.83		0.96

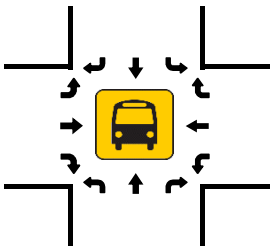
NORTHBOUND — Rose Ave

PM	1543	0	58	1324	0	PM
NOON	0	0	0	0	0	NOON
AM	1430	1	38	1190	0	AM
		0	1	2	0	

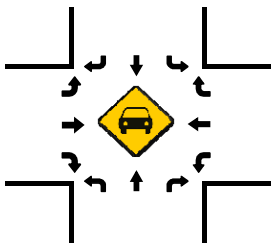
Total Vehicles (AM)



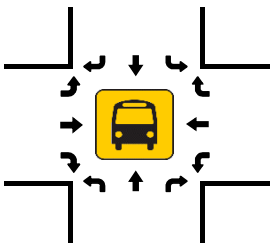
Total Vehicles (AM)



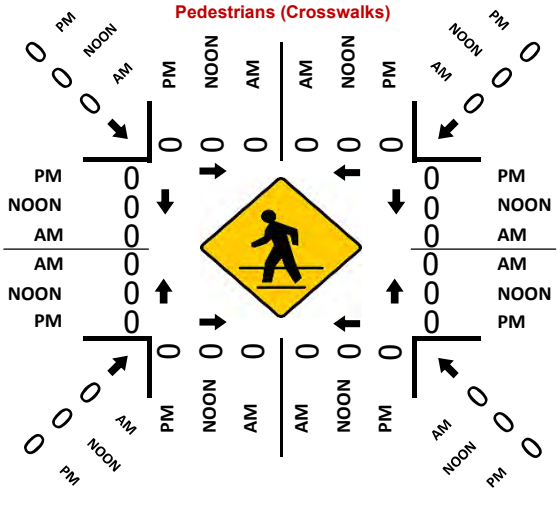
Total Vehicles (NOON)



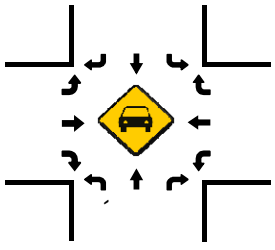
Total Vehicles (NOON)



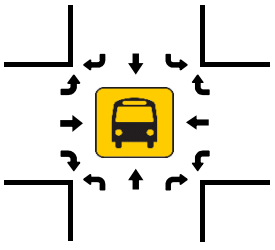
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & Santa Lucia Ave

Peak Hour Turning Movement Count

ID: 19-05050-010
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND (Rose Ave)

AM	0	1363	68	0	1244	AM
NOON	0	0	0	0	0	NOON
PM	0	1482	56	3	1381	PM

EASTBOUND (Santa Lucia Ave)

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (Santa Lucia Ave)

PM	NOON	AM	
44	0	60	0
0	0	0	1
163	0	137	0
0	0	0	0
219	0	163	
PM	NOON	AM	

NORTHBOUND (Rose Ave)

PM	1651	6	0	1334	163	PM
NOON	0	0	0	0	0	NOON
AM	1504	4	0	1184	95	AM

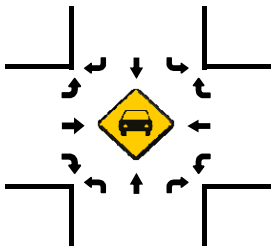
	0	3	1	0
	0	1	2	1

CONTROL

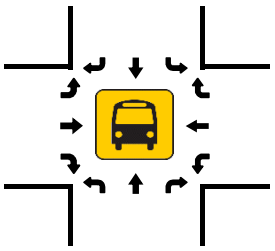
Signalized

TEV	2911	0	3251
	AM	NOON	PM
PHF	0.83		0.99

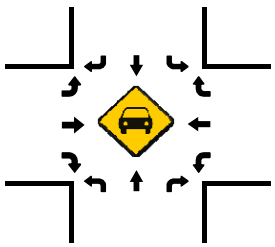
Total Vehicles (AM)



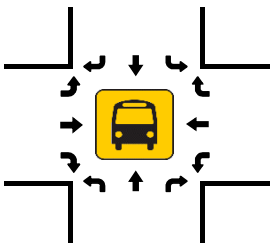
Total Vehicles (AM)



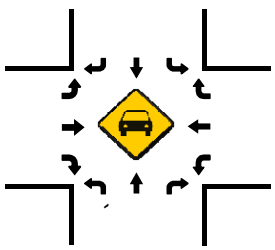
Total Vehicles (NOON)



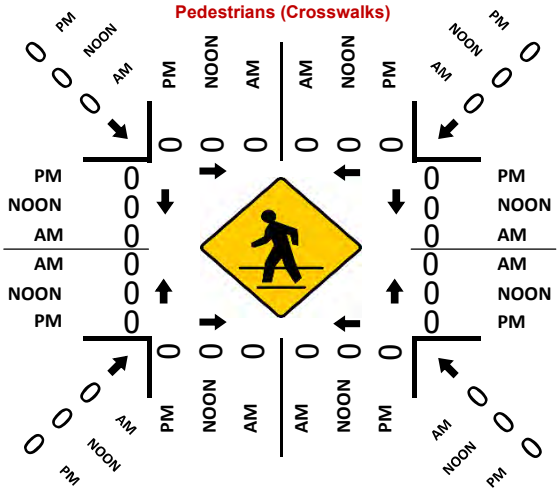
Total Vehicles (NOON)



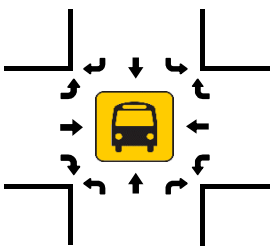
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & 3rd St

Peak Hour Turning Movement Count

ID: 19-05050-011
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Rose Ave — SOUTHBOUND

AM	334	1179	0	0	1286	AM
NOON	0	0	0	0	0	NOON
PM	374	1273	0	0	1506	PM

3rd St — EASTBOUND

AM	NOON	PM	
514	0	789	⇦
0	0	0	0
320	0	263	2
0	0	0	0
283	0	154	1
AM	NOON	PM	

CONTROL

Signalized

TEV	3262 AM	0 NOON	3722 PM
PHF	0.82		0.96

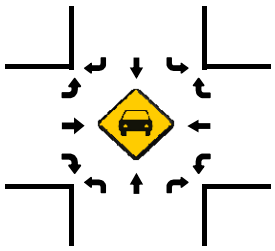
3rd St — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	⇨
PM	NOON	AM	

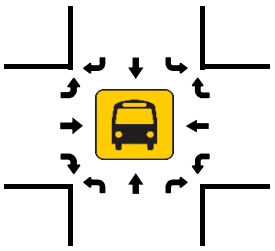
Rose Ave — NORTHBOUND

PM	1427	0	415	1243	0	PM
NOON	0	0	0	0	0	NOON
AM	1462	0	180	966	0	AM

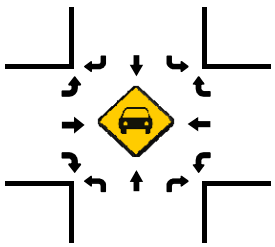
Total Vehicles (AM)



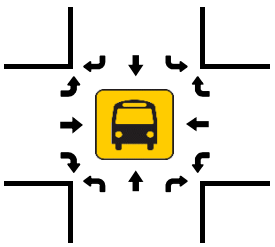
Total Vehicles (AM)



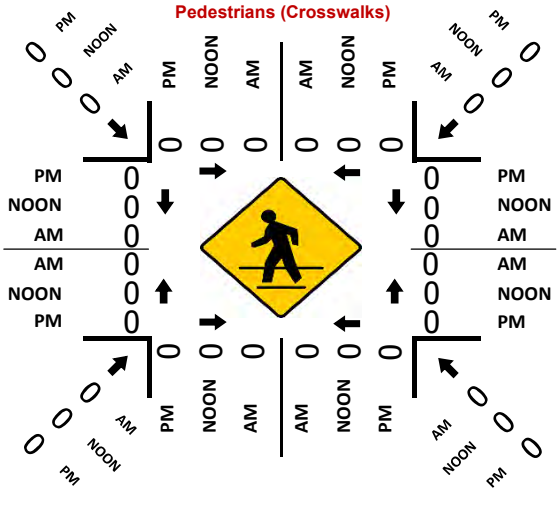
Total Vehicles (NOON)



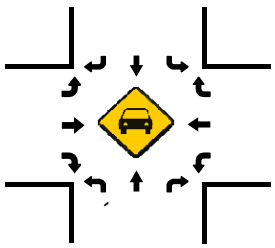
Total Vehicles (NOON)



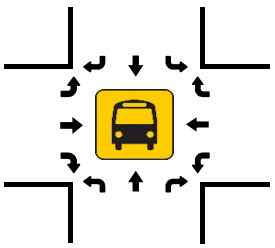
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & Eastman Ave

Peak Hour Turning Movement Count

ID: 19-05050-012
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Rose Ave)

AM	0	1267	173	34	1145	AM
NOON	0	0	0	0	0	NOON
PM	0	1369	53	14	1747	PM

EASTBOUND (Eastman Ave)

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (Eastman Ave)

PM	NOON	AM	
328	0	72	1
0	0	0	0
307	0	80	2
0	0	1	0
158	0	392	
PM	NOON	AM	

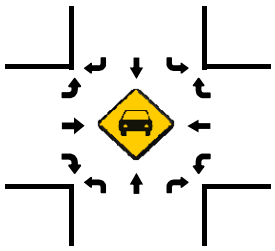
NORTHBOUND (Rose Ave)

PM	1676	0	0	1405	105	PM
NOON	0	0	0	0	0	NOON
AM	1347	0	0	1039	218	AM

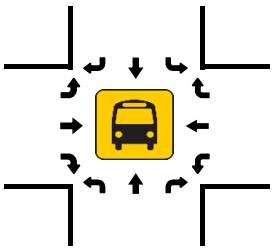
	1	3	1	0
	0	0	3	0

CONTROL			
Signalized			
TEV	2884	0	3581
	AM	NOON	PM
PHF	0.82		0.95

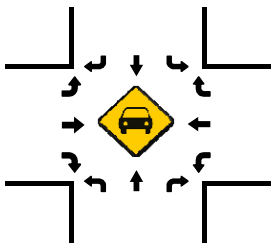
Total Vehicles (AM)



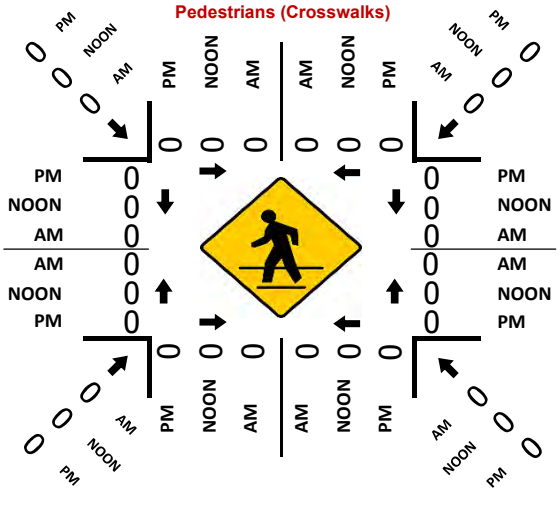
Total Vehicles (AM)



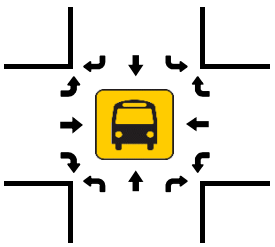
Total Vehicles (NOON)



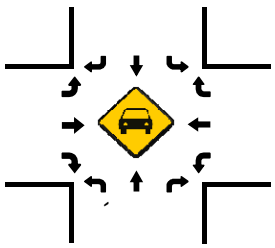
Pedestrians (Crosswalks)



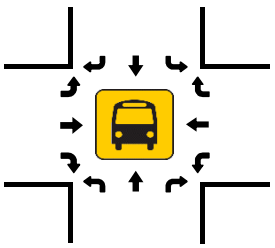
Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rose Ave & 5th St

Peak Hour Turning Movement Count

ID: 19-05050-013
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Rose Ave — SOUTHBOUND

AM	132	1174	39	0	1250	AM
NOON	0	0	0	0	0	NOON
PM	231	1437	18	0	1502	PM
	0	3	1	0		

5th St — EASTBOUND

AM	NOON	PM	
370	0	747	
0	0	0	0
170	0	281	2
371	0	283	1
27	0	63	1
AM	NOON	PM	

CONTROL

Signalized

TEV	3412 AM	0 NOON	4331 PM
PHF	0.84		0.98

5th St — WESTBOUND

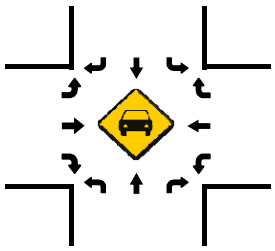
PM	NOON	AM	
73	0	23	0
489	0	222	2
202	0	127	1
0	0	0	0
379	0	464	
PM	NOON	AM	

0 1 3 0

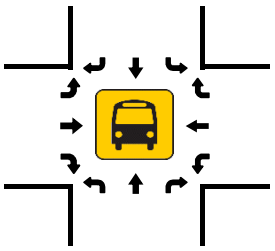
Rose Ave — NORTHBOUND

PM	1703	1	27	1148	78	PM
NOON	0	0	0	0	0	NOON
AM	1328	0	16	1057	54	AM

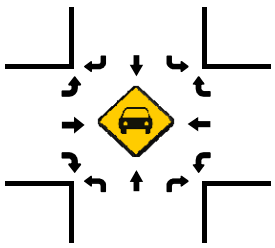
Total Vehicles (AM)



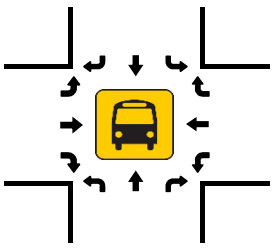
Total Vehicles (AM)



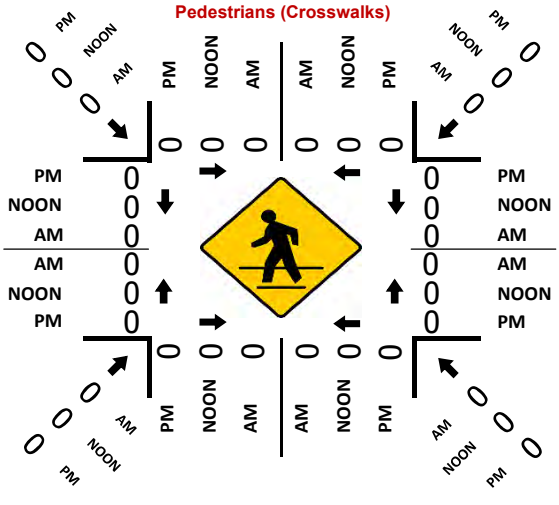
Total Vehicles (NOON)



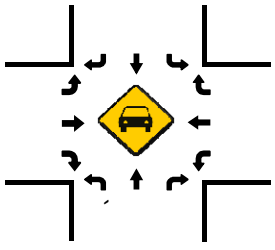
Total Vehicles (NOON)



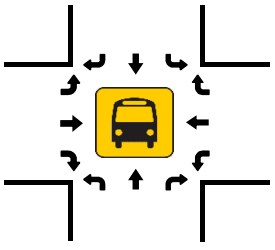
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

N Juanita Ave & Camino Del Sol

Peak Hour Turning Movement Count

ID: 19-05397-001
City: Oxnard

Day: Tuesday
Date: 06/11/2019

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

N Juanita Ave — SOUTHBOUND

	Left	Thru	Right	U-Turn	Total
AM	115	146	99	0	399
NOON	0	0	0	0	0
PM	62	67	14	0	186

Camino Del Sol — EASTBOUND

	Left	Thru	Right	U-Turn
AM	241	96	103	22
NOON	0	0	0	0
PM	367	45	98	11

CONTROL

4-Way Stop

		AM	NOON	PM
TEV	1072	0	807	
PHF		0.82		0.95

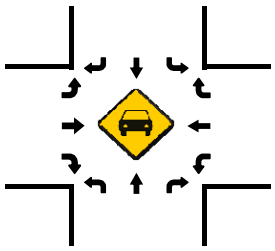
WESTBOUND — Camino Del Sol

	Left	Thru	Right	U-Turn
AM	66	298	38	2
NOON	0	0	0	0
PM	114	96	12	1

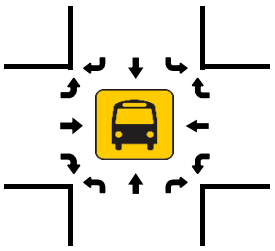
N Juanita Ave — NORTHBOUND

	Left	Thru	Right	U-Turn	Total
PM	117	1	7	75	23
NOON	0	0	0	0	0
AM	180	0	30	189	49

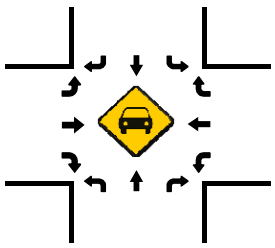
Total Vehicles (AM)



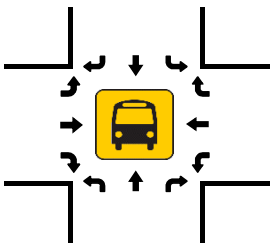
Total Vehicles (AM)



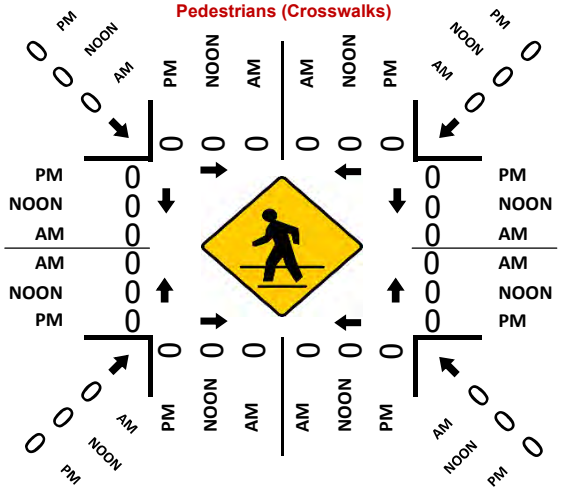
Total Vehicles (NOON)



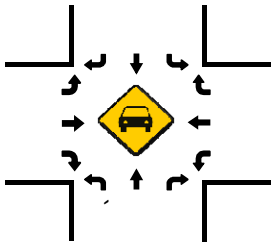
Total Vehicles (NOON)



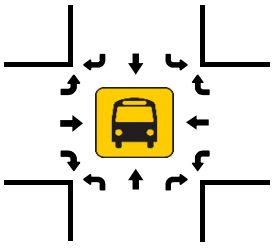
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Colonia Rd & Camino Del Sol

Peak Hour Turning Movement Count

ID: 19-05050-018
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Colonia Rd — SOUTHBOUND

	Left	Thru	Right	U-Turn	
AM	13	71	53	0	105 AM
NOON	0	0	0	0	0 NOON
PM	19	42	20	0	77 PM

Camino Del Sol — EASTBOUND

AM	NOON	PM	
192	0	423	
2	0	2	0
17	0	12	1
273	0	158	3
22	0	11	0

CONTROL

4-Way Stop

TEV	1095 AM	0 NOON	1252 PM
PHF	0.85		0.98

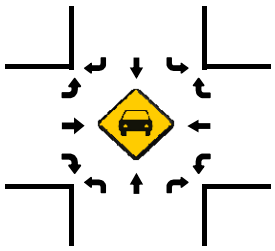
Camino Del Sol — WESTBOUND

PM	NOON	AM	
34	0	21	0
395	0	171	3
315	0	154	1
26	0	16	0
384	0	551	

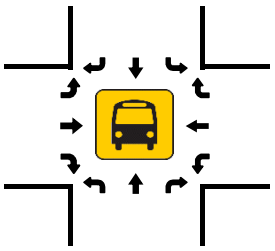
Colonia Rd — NORTHBOUND

	Left	Thru	Right	U-Turn	
PM	368	0	7	31	180 PM
NOON	0	0	0	0	0 NOON
AM	247	0	6	67	209 AM

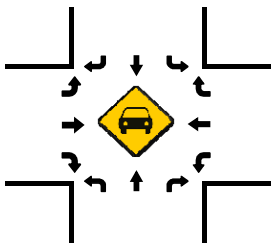
Total Vehicles (AM)



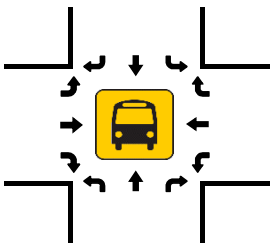
Total Vehicles (AM)



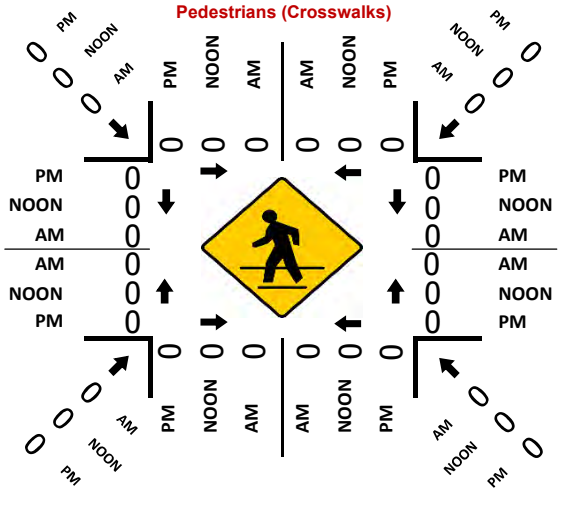
Total Vehicles (NOON)



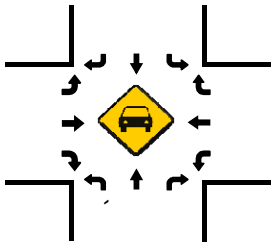
Total Vehicles (NOON)



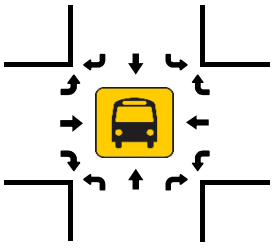
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Gibraltar St & Camino Del Sol

Peak Hour Turning Movement Count

ID: 19-05050-019
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Gibraltar St

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Camino Del Sol

AM	NOON	PM	
477	0	1011	⇦
0	0	0	↶ 0
0	0	0	↱ 0
639	0	314	→ 3
59	0	99	↴ 0

WESTBOUND — Camino Del Sol

PM	NOON	AM	
0	0	0	↰ 0
979	0	402	← 2
87	0	27	↰ 1
2	0	1	↰ 0
358	0	702	⇨

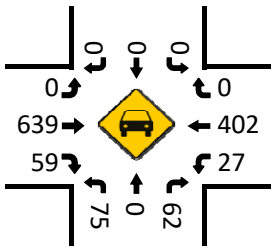
NORTHBOUND — Gibraltar St

PM	187	1	32	0	42	PM
NOON	0	0	0	0	0	NOON
AM	86	0	75	0	62	AM

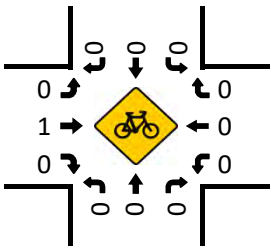
CONTROL: 1-Way Stop (SB)

TEV	1265 AM	0 NOON	1556 PM
PHF	0.85		0.97

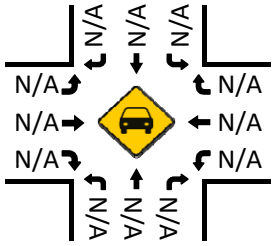
Total Vehicles (AM)



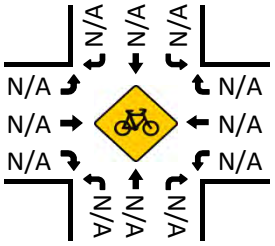
Bikes (AM)



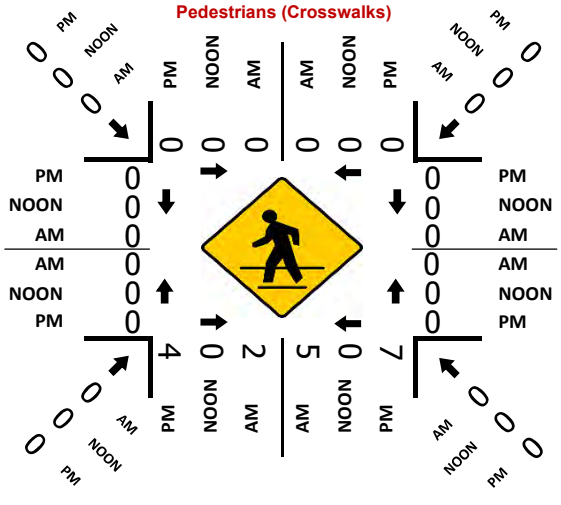
Total Vehicles (Noon)



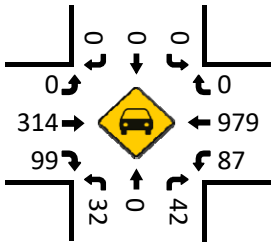
Bikes (NOON)



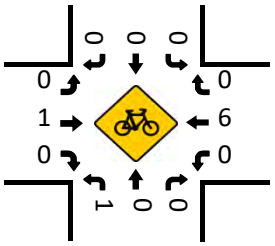
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Kohala St & Camino Del Sol

Peak Hour Turning Movement Count

ID: 19-05050-020
City: Oxnard

Day: Tuesday
Date: 01/29/2019

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND (Kohala St)

AM	183	16	63	0	179	AM
NOON	0	0	0	0	0	NOON
PM	110	20	20	0	199	PM

EASTBOUND (Camino Del Sol)

AM	NOON	PM	
427	0	1072	⇦
6	0	8	0
121	0	104	1
565	0	221	2
11	0	18	0

WESTBOUND (Camino Del Sol)

	PM	NOON	AM
0	68	0	25
2	930	0	199
1	103	0	16
0	0	0	1
⇨	270	0	691

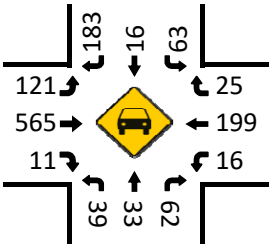
NORTHBOUND (Kohala St)

PM	141	0	24	27	29	PM
NOON	0	0	0	0	0	NOON
AM	43	0	39	33	62	AM

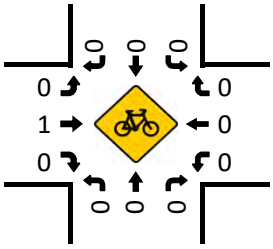
CONTROL: Signalized

TEV	1340 AM	0 NOON	1682 PM
PHF	0.83		0.98

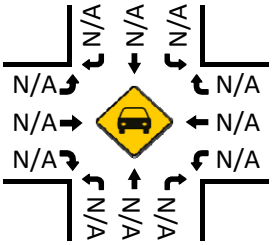
Total Vehicles (AM)



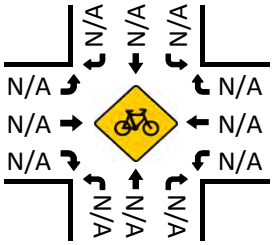
Bikes (AM)



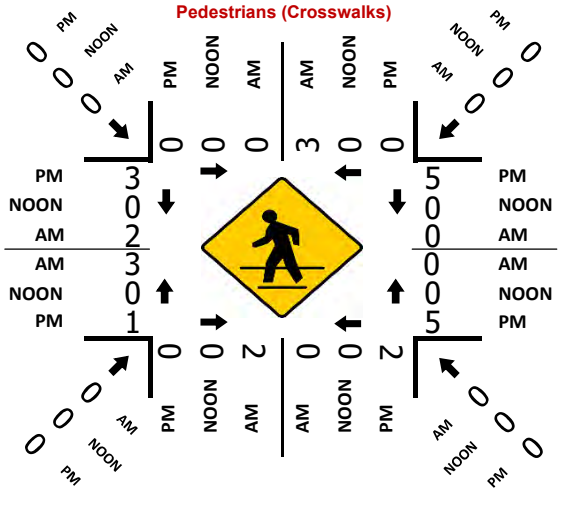
Total Vehicles (Noon)



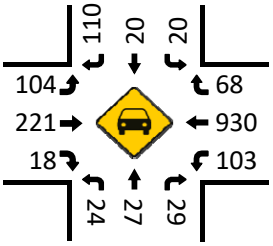
Bikes (NOON)



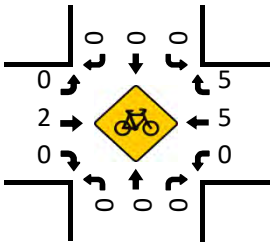
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Santa Clara Ave & Auto Center Dr

Peak Hour Turning Movement Count

ID: 18-05780-001
City: Oxnard

Day: Thursday
Date: 12/06/2018

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Santa Clara Ave — SOUTHBOUND

AM	180	621	0	0	740	AM
NOON	0	0	0	0	0	NOON
PM	150	690	0	0	782	PM
	1	3	0	0		

EASTBOUND — Auto Center Dr

AM	NOON	PM	
481	0	905	
10	0	17	0
141	0	143	2
0	0	0	0
211	0	565	2

WESTBOUND — Auto Center Dr

PM	NOON	AM	
35	0	17	0.5
352	0	139	1
507	0	649	1.5
0	0	0	0
0	0	0	

CONTROL

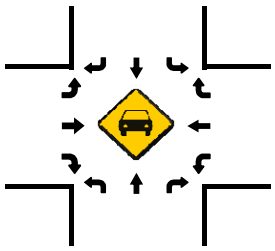
Signalized

TEV	2707 AM	0 NOON	3454 PM
PHF	0.94		0.94

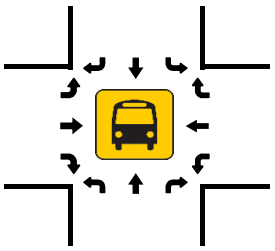
Santa Clara Ave — NORTHBOUND

	0	2	2	0		
PM	1767	5	386	604	0	PM
NOON	0	0	0	0	0	NOON
AM	1486	5	152	582	0	AM

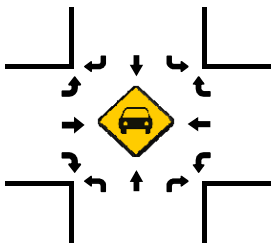
Total Vehicles (AM)



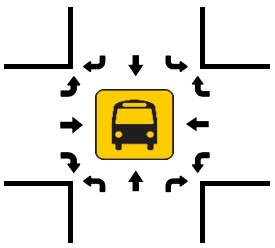
Total Vehicles (AM)



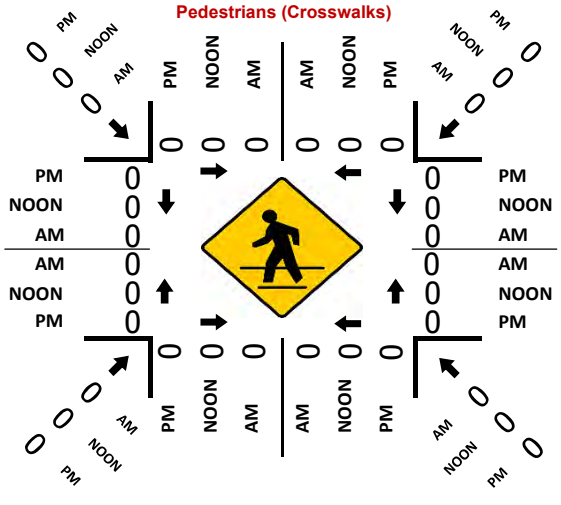
Total Vehicles (NOON)



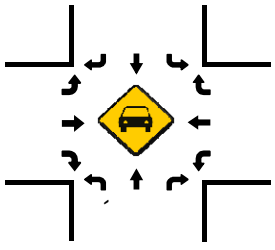
Total Vehicles (NOON)



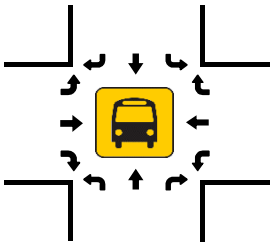
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

N Rice Ave & EB 101 Off/On Ramps

Peak Hour Turning Movement Count

ID: 18-05780-002
City: Oxnard

Day: Thursday
Date: 12/06/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

N Rice Ave — SOUTHBOUND

AM	0	1226	82	0	1212	AM
NOON	0	0	0	0	0	NOON
PM	0	1273	230	0	1966	PM

EB 101 Off/On Ramps — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
246	0	200	1.5
46	0	3	0.5
1011	0	537	1

WESTBOUND — EB 101 Off/On Ramps

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
812	0	593	

CONTROL

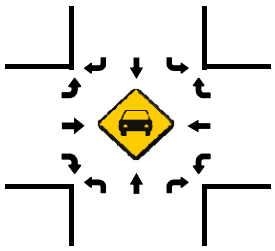
Signalized

TEV	4042	0	4588
	AM	NOON	PM
PHF	0.94		0.90

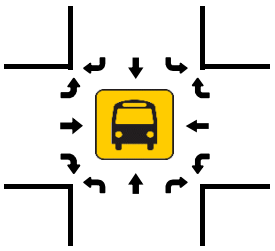
N Rice Ave — NORTHBOUND

PM	1810	0	0	1766	579	PM
NOON	0	0	0	0	0	NOON
AM	2237	0	0	966	465	AM

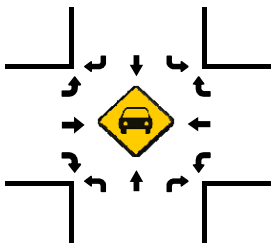
Total Vehicles (AM)



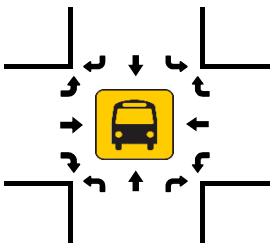
Total Vehicles (AM)



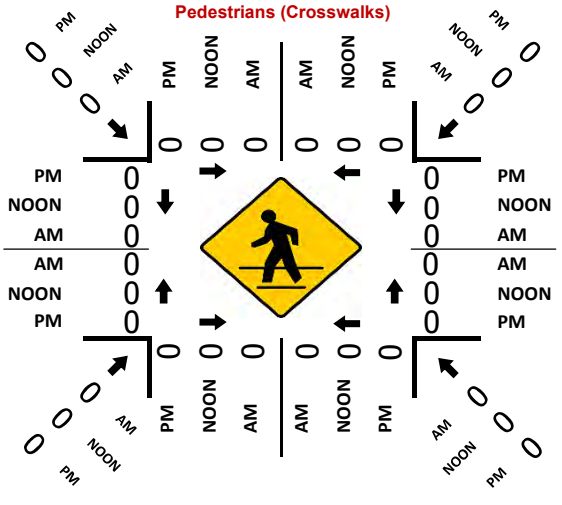
Total Vehicles (NOON)



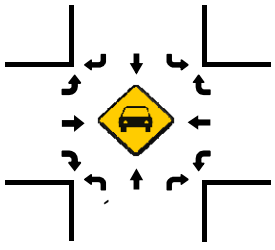
Total Vehicles (NOON)



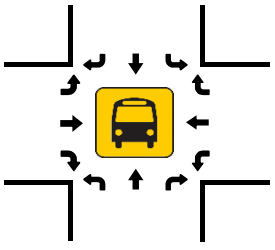
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Rice Ave & Gonzales Rd

Peak Hour Turning Movement Count

ID: 18-05762-003
City: Oxnard

Day: Wednesday
Date: 11/28/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Rice Ave — SOUTHBOUND

AM	1026	1527	1	1	1544	AM
NOON	0	0	0	0	0	NOON
PM	653	1348	0	1	2521	PM
	1	3	1	0		

Gonzales Rd — EASTBOUND

AM	NOON	PM		
1286	0	1055	⇦	
7	0	1	↶	0
539	0	864	↱	2.5
2	0	0	→	0.5
265	0	334	↷	1
AM	NOON	PM		

CONTROL

Siganlized

TEV	4630 AM	0 NOON	5262 PM
PHF	0.90		0.94

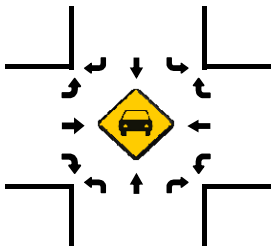
WESTBOUND — Gonzales Rd

PM	NOON	AM		
0	0	0	↶	0
2	0	0	←	1
0	0	1	↰	0
0	0	0	↩	0
2	0	6	⇨	
PM	NOON	AM		

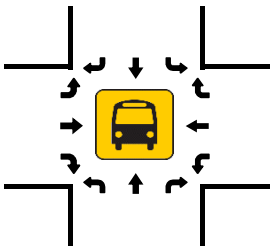
Rice Ave — NORTHBOUND

	0	2	3	0		
PM	1684	2	399	1656	2	PM
NOON	0	0	0	0	0	NOON
AM	1794	1	253	1004	3	AM

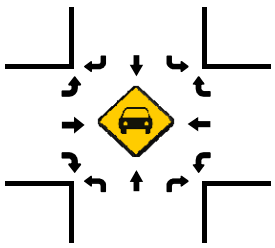
Total Vehicles (AM)



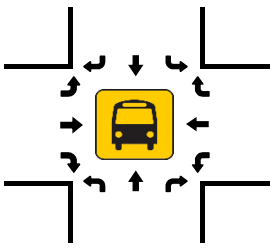
Total Vehicles (AM)



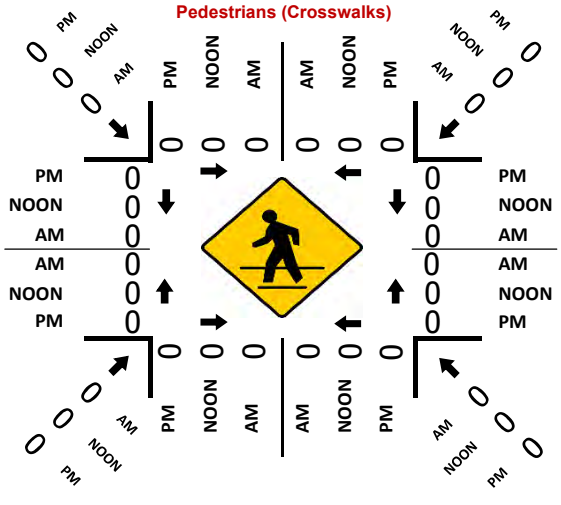
Total Vehicles (NOON)



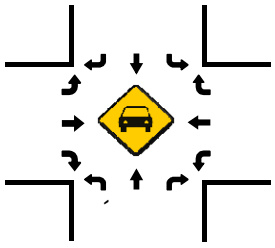
Total Vehicles (NOON)



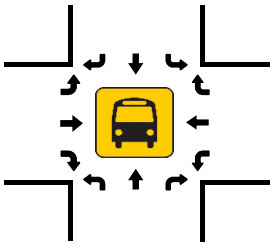
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

N Rice Ave & Camino Del Sol

Peak Hour Turning Movement Count

ID: 18-05780-004
City: Oxnard

Day: Thursday
Date: 12/06/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — N Rice Ave

AM	111	1272	235	3	1068	AM
NOON	0	0	0	0	0	NOON
PM	200	1145	66	0	1674	PM

EASTBOUND — Camino Del Sol

AM	NOON	PM	
304	0	708	
0	0	0	0
101	0	147	1
278	0	154	2
138	0	81	1

WESTBOUND — Camino Del Sol

PM	NOON	AM	
225	0	55	1
336	0	102	2
84	0	21	1
0	0	0	0
242	0	576	

NORTHBOUND — N Rice Ave

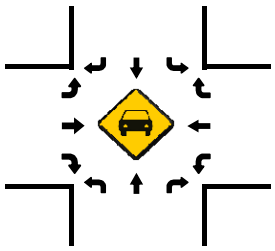
PM	1311	1	172	1302	22	PM
NOON	0	0	0	0	0	NOON
AM	1433	2	91	909	63	AM

	0	3	1	0
	0	1	3	1

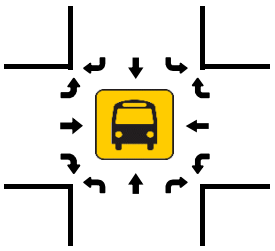
CONTROL: Signalized

TEV	3381 AM	0 NOON	3935 PM
PHF	0.89		0.98

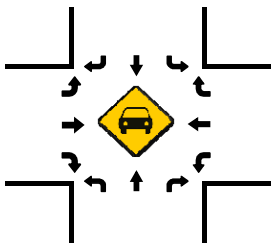
Total Vehicles (AM)



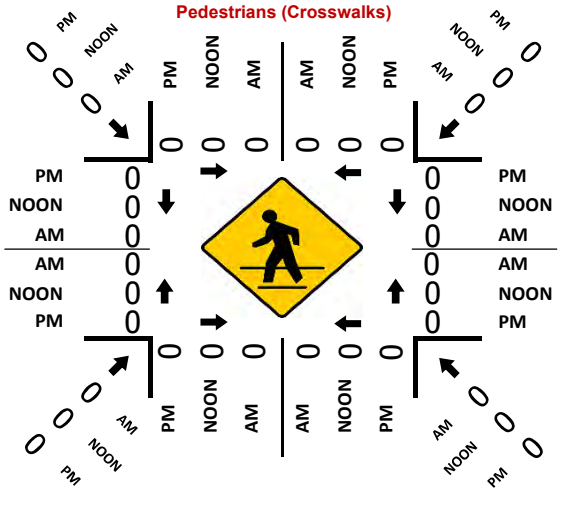
Total Vehicles (AM)



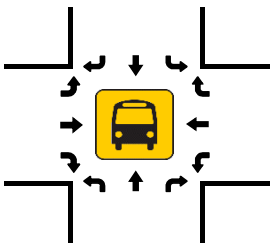
Total Vehicles (NOON)



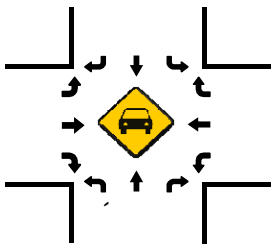
Pedestrians (Crosswalks)



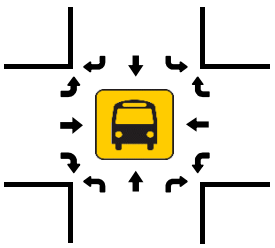
Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)



Appendix 2
Project Trip Generation Worksheet

Reference: **Maulhardt Site - Trip Generation Estimates**

Table 1
Project Trip Generation

Land Use	Size	ADT		AM PHT		PM PHT	
		Rate	Trips	Rate	Trips	Rate	Trips
High School	2,500 students	2.03	5,075	0.52	1,300 (871/429)	0.14	350 (168/182)

ADT = average daily trips.
PHT = peak hour trips.
(X/X) = inbound trips/outbound trips.

Table 1
Project Trip Generation – Buildout Conditions

Land Use	Size	ADT		AM PHT		PM PHT	
		Rate	Trips	Rate	Trips	Rate	Trips
East Village SP Single Family Dwelling	164 Units	9.44	1,548	0.74	121 (30/91)	0.99	162 (102/60)
High School	2,500 students	2.03	5,075	0.52	1,300 (871/429)	0.14	350 (168/182)
Net Difference			**3,527**		**1,179 (841/338)**		**188 (66/122)**

ADT = average daily trips.
PHT = peak hour trips.
(X/X) = inbound trips/outbound trips.

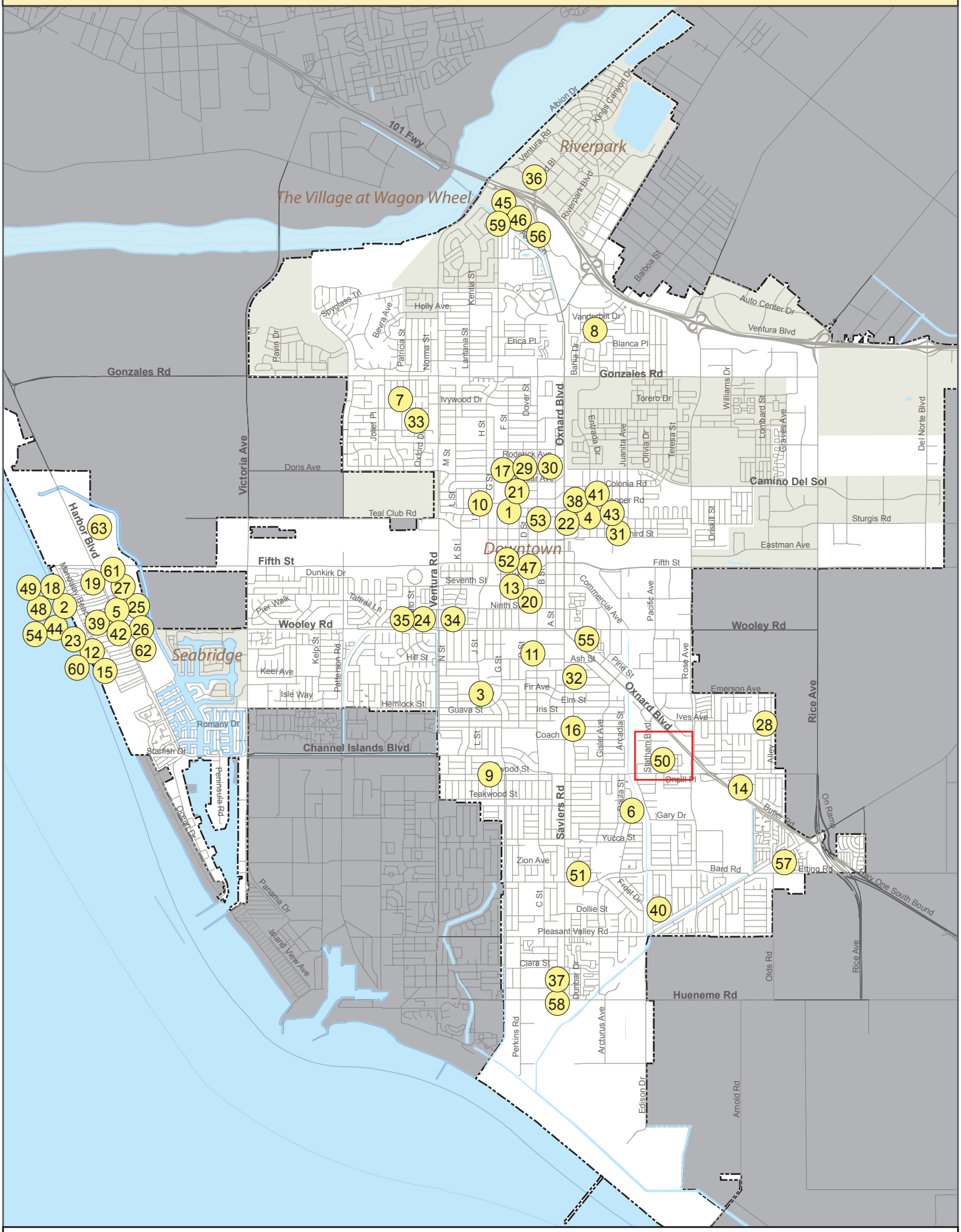
Appendix 3
Cumulative Projects List and Trip Generation Worksheet

OUHSD HS No. 8
CUMULATIVE PROJECTS TRIP GENERATION

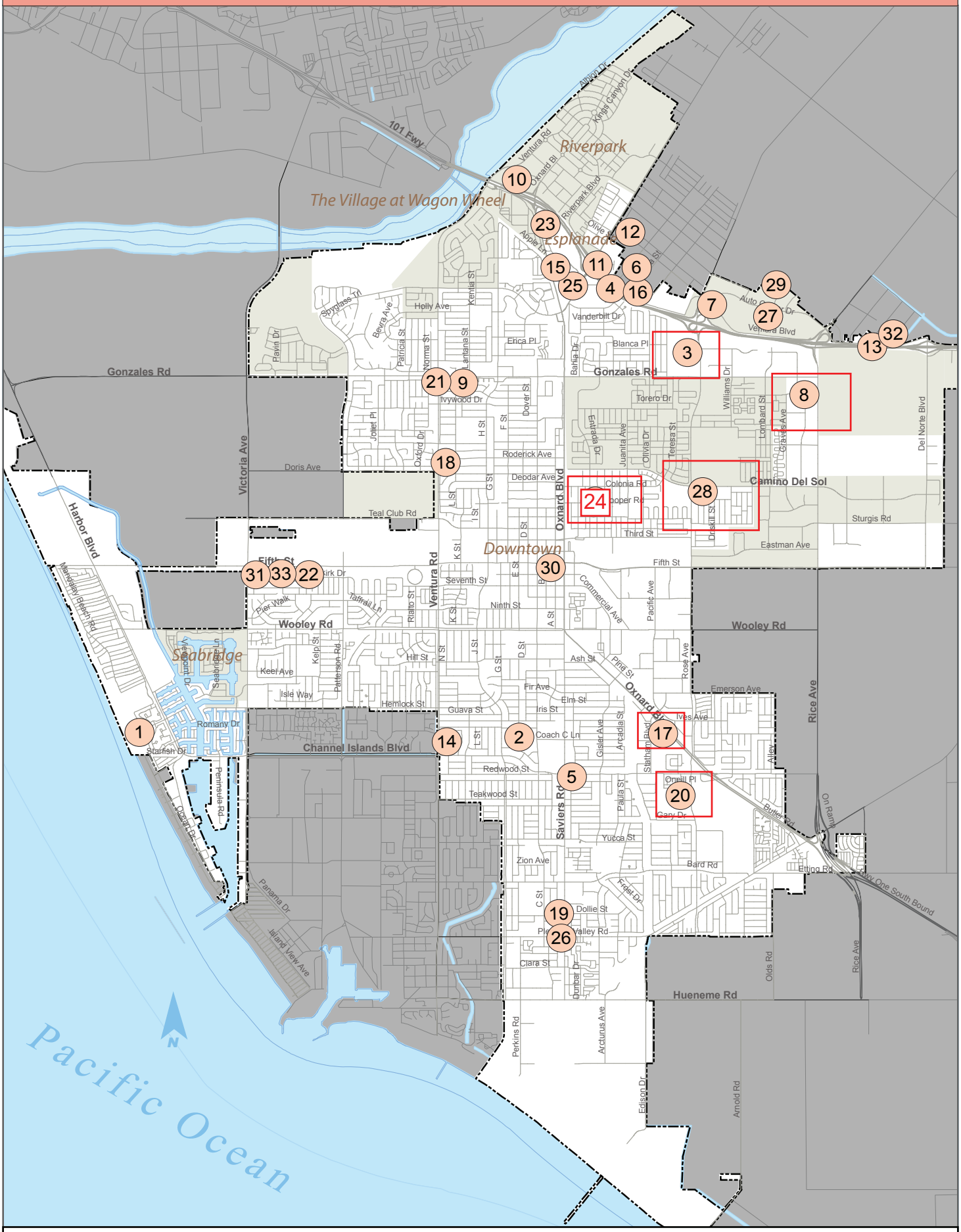
City ID	Land Use	Size		Pass-by Factor	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	A.M. In %	A.M. In Trips	A.M. Out %	A.M. Out Trips	P.M. Rate	P.M. Trips	P.M. In %	P.M. In Trips	P.M. Out %	P.M. Out Trips
Residential																		
50	Multi-Family	72	Units	1.00	7.32	527	0.46	33	23%	8	77%	25	0.56	40	63%	25	37%	15
	Subtotal					***527***		***33***		***8***		***25***		***40***		***25***		***15***
Commercial																		
3	Bank	3,795	S.F.	0.66	148.00	371	22.50	56	52%	29	48%	27	26.40	66	51%	34	49%	32
	Restaurant	3,925	S.F.	0.40	471.00	739	40.20	63	51%	32	49%	31	32.80	51	52%	27	48%	24
8	Office	52,608	S.F.	1.00	11.25	592	1.78	94	89%	84	11%	10	1.71	90	15%	14	85%	76
24	Mixed-Use	3,670	S.F.	0.66	40.00	97	2.00	5	60%	3	40%	2	4.00	10	50%	5	50%	5
28	Church	7,400	S.F.	1.00	7.00	52	0.33	2	60%	1	40%	1	0.50	4	45%	2	55%	2
	Subtotal					***1,851***		***220***		***149***		***71***		***221***		***82***		***139***
Industrial																		
3	Distr. Warehouse	67,092	S.F.	1.00	1.74	117	0.17	11	77%	8	23%	3	0.19	13	27%	4	73%	9
4	Distr. Warehouse	2,629,000	S.F.	1.00	1.74	4,574	0.17	447	77%	344	23%	103	0.19	500	27%	135	73%	365
5	Warehouse	4,714	S.F.	1.00	1.74	8	0.17	1	77%	1	23%	0	0.19	1	27%	0	73%	1
6	Industr/Warehouse	60,367	S.F.	1.00	5.00	302	0.70	42	88%	37	12%	5	0.63	38	13%	5	87%	33
7	Warehouse	24,518	S.F.	1.00	1.74	43	0.17	4	77%	3	23%	1	0.19	5	27%	1	73%	4
8	Warehouse	25,158	S.F.	1.00	1.74	44	0.17	4	77%	3	23%	1	0.19	5	27%	1	73%	4
	Subtotal					***5,088***		***509***		***396***		***113***		***562***		***146***		***416***
Specific Plan																		
East Village	Multi-Family	1,100	Units	1.00	7.32	8,052	0.46	506	23%	116	77%	390	0.56	616	63%	388	37%	228
	Commercial	15,000	S.F.	0.66	106.58	1,055	3.82	38	60%	23	40%	15	9.24	91	51%	46	49%	45
	Subtotal					***9,107***		***544***		***139***		***405***		***707***		***434***		***273***
Approved & Pending Projects Total:						**16,573**		**1,306**		**692**		**614**		**1,530**		**687**		**843**

Pending and Approved Projects derived from City Projects List, April 2019

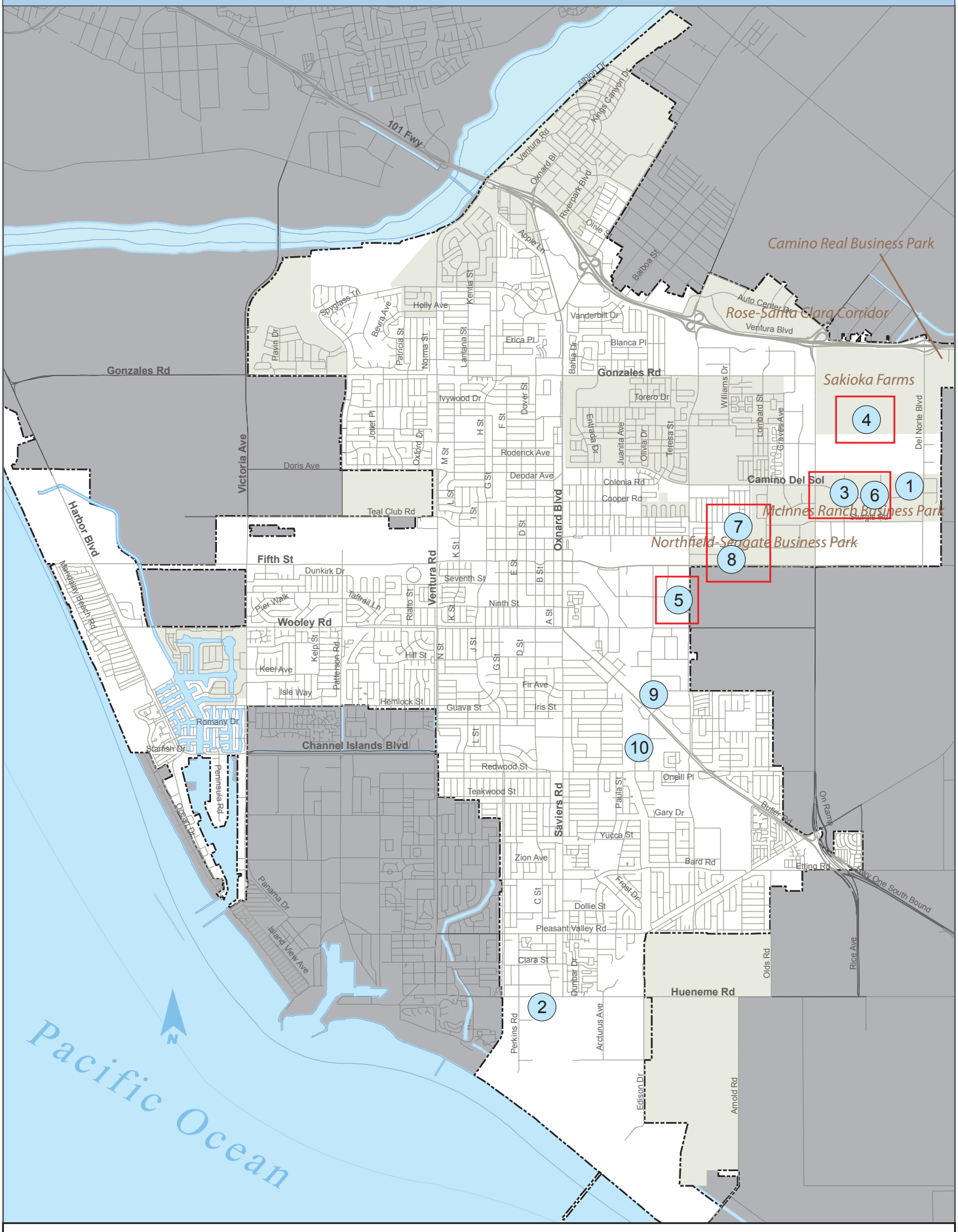
Residential Zone Projects April Quarter 2019


Riverpark
The Village at Wagon Wheel
Downtown
Seabridge
101 Fwy
Gonzales Rd
Victoria Ave
Harbor Blvd
Fifth St
Wooley Rd
Ventura Rd
Oxnard Blvd
Channel Islands Blvd
Saviers Rd
Rice Ave
Hueneme Rd
Camino Del Sol
Ventura Blvd
Auto Center Dr
Teal Club Rd
Doris Ave
Ivywood Dr
Colonia Rd
Sturgis Rd
Eastman Ave
Dunkirk Dr
Seventh St
Ninth St
Pier Walk
Taffrail Ln
Kelp St
Patterson Rd
Keel Ave
Isle Way
Hill St
Hemlock St
Guava St
Fir Ave
Elm St
Iris St
Ash St
Pima St
Emerson Ave
Ives Ave
Coach
Romany Dr
Starfish Dr
Peninsula Rd
Ocean Dr
Panama Dr
Island View Ave
Teakwood St
Gary Dr
Yucca St
Zion Ave
Bard Rd
Dollie St
Pleasant Valley Rd
Clara St
Etting Rd
Olds Rd
Perkins Rd
Arcturus Ave
Edison Dr
Arnold Rd
Holly Ave
Vanderbilt Dr
Blanca Pl
Erica Pl
Rodstick Ave
Torero Dr
Juanita Ave
Olivia Dr
Teresa St
Williams Dr
Lombard St
Graves Ave
Del Norte Blvd
Driskill St
Rose Ave
Pacific Ave
Commercial Ave
Gisler Ave
Arcadia St
Statham Blvd
Orpilla St
Aloe
Butler Rd
Fresno Dr
Dunbar Dr
Oxnard Blvd
Riverpark Blvd
Albion Dr
Kings Canyon Dr
Balboa St
Kenia St
Lantana St
Norma St
Patricia St
Bevra Ave
Spyglass Trl
Havlin Dr
Joliet Pl
Oxford Dr
Bahia Dr
Del Prado

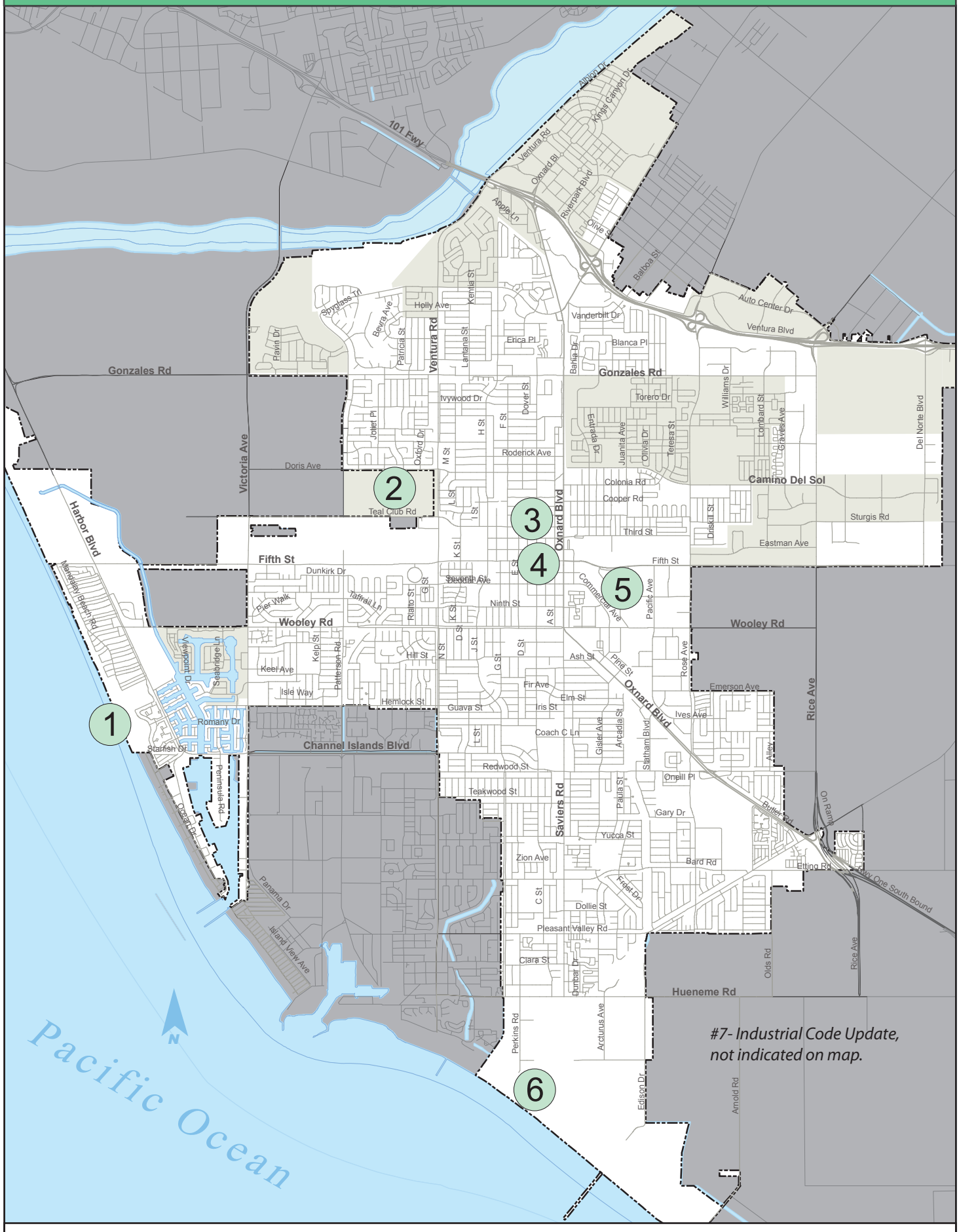
Commercial Zone Projects April Quarter 2019



Industrial Zone Projects April Quarter 2019



Community Plans April Quarter 2019



Appendix 4

City of Oxnard 2030 General Plan Circulation Diagram

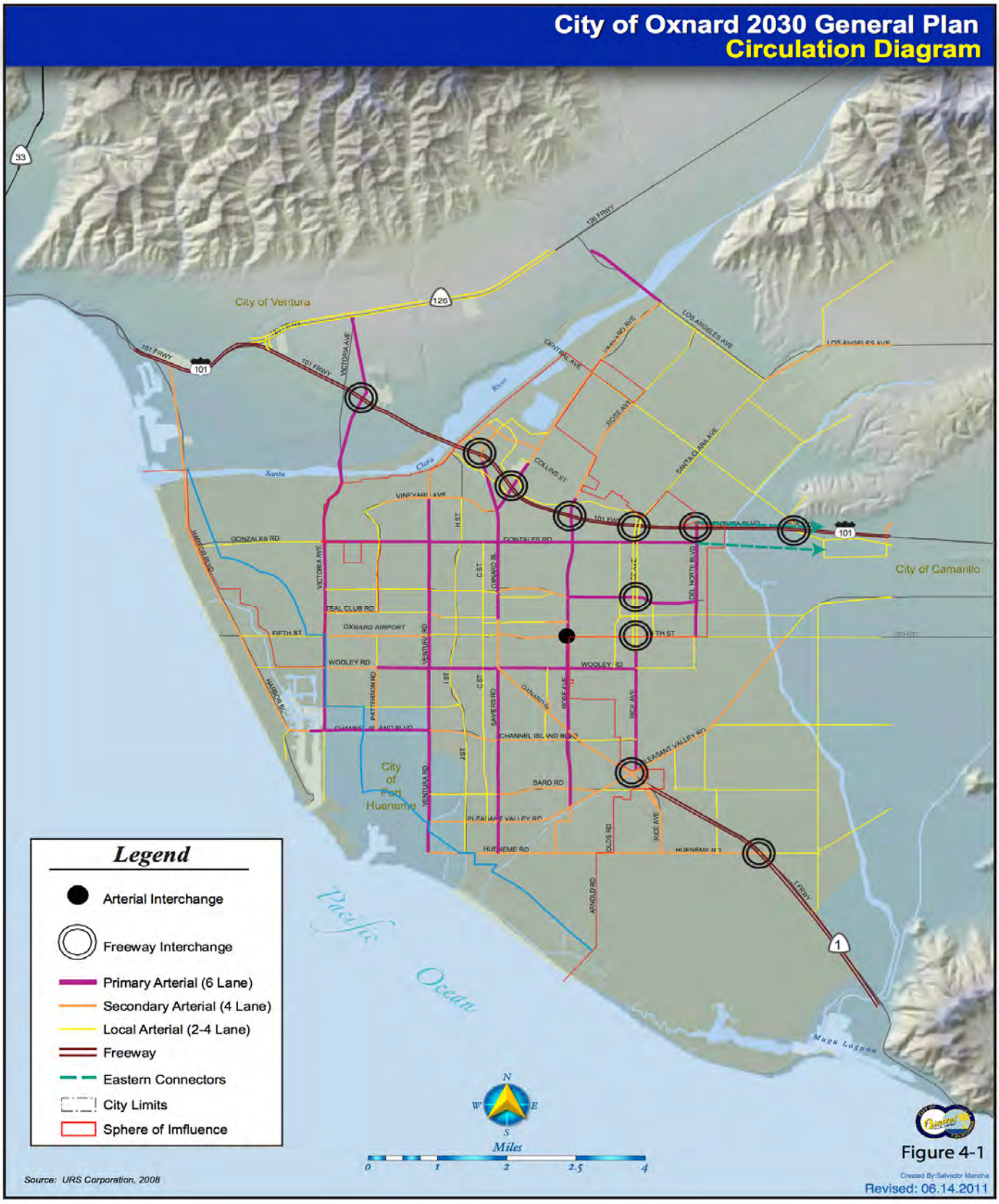


Figure 4-1 Circulation Diagram

Appendix 5

City of Oxnard Traffic Model 2030 Traffic Volumes

Oxnard Traffic Model (OTM) Peak Hour Intersection Post-Processing Summary

	Southbound					Westbound					Northbound					Eastbound				
Intersection	Left	Through	Right	Entering Total	Exiting Total	Left	Through	Right	Entering Total	Exiting Total	Left	Through	Right	Entering Total	Exiting Total	Left	Through	Right	Entering Total	Exiting Total
62. Rose & US101 NB Ramps																				
AM Peak Hour																				
Adjusted Future Year Volumes	0	1,490	320	1,810	1,560	620	0	220	840	810	0	1,340	810	2,150	2,110	0	0	0	0	320
PM Peak Hour																				
Adjusted Future Year Volumes	0	1,480	420	1,900	2,670	590	0	500	1,090	510	0	2,170	510	2,680	2,070	0	0	0	0	420
63. Rose & US101 SB Ramps																				
AM Peak Hour																				
Adjusted Future Year Volumes	0	1,920	250	2,170	2,150	0	0	0	0	510	0	1,690	510	2,200	2,630	460	0	710	1,170	250
PM Peak Hour																				
Adjusted Future Year Volumes	0	1,810	210	2,020	2,690	0	0	0	0	510	0	2,290	510	2,800	2,690	400	0	880	1,280	210
64. Rose & Lockwood																				
AM Peak Hour																				
Adjusted Future Year Volumes	740	1,830	70	2,640	2,170	100	30	210	340	1,060	100	1,760	230	2,090	2,000	200	90	70	360	200
PM Peak Hour																				
Adjusted Future Year Volumes	340	1,610	500	2,450	2,500	270	150	400	820	560	90	1,600	80	1,770	2,090	500	140	210	850	740
65. Rose & Gonzales																				
AM Peak Hour																				
Adjusted Future Year Volumes	450	1,200	400	2,050	2,260	150	440	280	870	2,270	380	1,180	550	2,110	1,830	800	1,270	480	2,550	1,220
PM Peak Hour																				
Adjusted Future Year Volumes	240	1,690	570	2,500	2,510	210	1,660	550	2,420	1,310	390	1,360	400	2,150	2,190	600	670	290	1,560	2,620
66. Rose & Camino del Sol																				
AM Peak Hour																				
Adjusted Future Year Volumes	460	1,340	110	1,910	1,900	200	290	230	720	1,270	190	1,460	230	1,880	1,730	210	580	190	980	590
PM Peak Hour																				
Adjusted Future Year Volumes	220	1,570	210	2,000	2,210	430	710	470	1,610	480	160	1,520	110	1,790	2,080	220	150	80	450	1,080
67. Rose & Third																				
AM Peak Hour																				
Adjusted Future Year Volumes	0	1,350	200	1,550	1,830	0	0	0	0	0	160	1,290	0	1,450	1,650	540	0	300	840	360
PM Peak Hour																				
Adjusted Future Year Volumes	0	1,630	530	2,160	2,000	0	0	0	0	0	460	1,770	0	2,230	1,770	230	0	140	370	990
68. Rose & 5th																				
AM Peak Hour																				
Adjusted Future Year Volumes	40	1,320	160	1,520	1,620	190	290	30	510	1,190	30	1,380	390	1,800	1,540	210	760	30	1,000	480
PM Peak Hour																				
Adjusted Future Year Volumes	40	1,660	290	1,870	1,880	590	800	170	1,560	690	40	1,360	90	1,490	2,360	350	560	110	1,020	1,130
79. Santa Clara & Auto Center																				
AM Peak Hour																				
Adjusted Future Year Volumes	0	750	160	910	940	1,080	450	30	1,560	0	140	700	0	840	2,310	210	0	480	690	750
PM Peak Hour																				
Adjusted Future Year Volumes	0	730	410	1,140	820	720	750	90	1,560	0	310	430	0	740	2,440	300	0	990	1,290	1,470
80. Rice & US101 SB Ramps																				
AM Peak Hour																				
Adjusted Future Year Volumes	160	2,200	0	2,360	1,730	0	0	0	0	950	0	1,380	790	2,170	4,440	350	0	2,240	2,590	0
PM Peak Hour																				

Oxnard Traffic Model (OTM) Peak Hour Intersection Post-Processing Summary

	Southbound					Westbound					Northbound					Eastbound				
Intersection	**Left**	**Through**	**Right**	**Entering Total**	**Exiting Total**	**Left**	**Through**	**Right**	**Entering Total**	**Exiting Total**	**Left**	**Through**	**Right**	**Entering Total**	**Exiting Total**	**Left**	**Through**	**Right**	**Entering Total**	**Exiting Total**
Adjusted Future Year Volumes	300	1,790	0	2,090	2,590	0	0	0	0	1,260	0	2,280	960	3,240	2,520	310	0	730	1,040	0
81. Rice & Gonzales																				
AM Peak Hour																				
Adjusted Future Year Volumes	790	2,610	820	4,220	2,160	170	640	270	1,080	2,540	340	1,280	660	2,280	3,130	610	1,090	350	2,050	1,800
PM Peak Hour																				
Adjusted Future Year Volumes	340	1,640	560	2,540	3,220	610	1,240	540	2,390	1,560	350	2,390	120	2,860	2,560	290	1,100	310	1,700	2,150
82. Rice & Camino Del Sol																				
AM Peak Hour																				
Adjusted Future Year Volumes	180	1,350	560	2,090	2,880	50	60	250	360	780	60	2,160	190	2,410	1,540	470	410	140	1,020	680
PM Peak Hour																				
Adjusted Future Year Volumes	200	2,330	360	2,890	2,150	110	410	290	810	750	40	1,620	220	1,880	2,560	240	330	120	690	810

Appendix 6
Intersection Level of Service Calculation Worksheets

Existing and Existing + Project AM and PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	385	100	1179	0	0	1142
Future Volume (veh/h)	385	100	1179	0	0	1142
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	264	275	1282	0	0	1241
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	386	349	3319	0	0	3319
Arrive On Green	0.22	0.22	0.65	0.00	0.00	0.65
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	264	275	1282	0	0	1241
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	8.2	9.7	7.0	0.0	0.0	6.7
Cycle Q Clear(g_c), s	8.2	9.7	7.0	0.0	0.0	6.7
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	386	349	3319	0	0	3319
V/C Ratio(X)	0.68	0.79	0.39	0.00	0.00	0.37
Avail Cap(c_a), veh/h	623	564	3319	0	0	3319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	22.2	4.9	0.0	0.0	4.9
Incr Delay (d2), s/veh	2.2	4.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.8	1.8	0.0	0.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.8	26.2	5.2	0.0	0.0	5.2
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	539		1282			1241
Approach Delay, s/veh	25.0		5.2			5.2
Approach LOS	C		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		43.0			43.0	17.0
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s		9.0			8.7	11.7
Green Ext Time (p_c), s		9.9			9.6	1.3

Intersection Summary	
HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	393	100	1188	0	0	1159
Future Volume (veh/h)	393	100	1188	0	0	1159
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	268	279	1291	0	0	1260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	390	353	3306	0	0	3306
Arrive On Green	0.22	0.22	0.65	0.00	0.00	0.65
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	268	279	1291	0	0	1260
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	8.3	9.8	7.2	0.0	0.0	6.9
Cycle Q Clear(g_c), s	8.3	9.8	7.2	0.0	0.0	6.9
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	390	353	3307	0	0	3307
V/C Ratio(X)	0.69	0.79	0.39	0.00	0.00	0.38
Avail Cap(c_a), veh/h	623	564	3306	0	0	3306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	22.1	5.0	0.0	0.0	4.9
Incr Delay (d2), s/veh	2.2	4.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.8	1.8	0.0	0.0	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.7	26.1	5.3	0.0	0.0	5.3
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	547		1291			1260
Approach Delay, s/veh	24.9		5.3			5.3
Approach LOS	C		A			A

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	42.9			42.9	17.1
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s	9.2			8.9	11.8
Green Ext Time (p_c), s	10.0			9.8	1.3

Intersection Summary	
HCM 6th Ctrl Delay	8.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	420	127	1458	0	0	1142
Future Volume (veh/h)	420	127	1458	0	0	1142
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	298	309	1585	0	0	1241
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	421	381	3218	0	0	3218
Arrive On Green	0.24	0.24	0.63	0.00	0.00	0.63
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	298	309	1585	0	0	1241
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	9.2	10.9	10.0	0.0	0.0	7.1
Cycle Q Clear(g_c), s	9.2	10.9	10.0	0.0	0.0	7.1
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	421	381	3218	0	0	3218
V/C Ratio(X)	0.71	0.81	0.49	0.00	0.00	0.39
Avail Cap(c_a), veh/h	594	537	3218	0	0	3218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	21.6	5.9	0.0	0.0	5.4
Incr Delay (d2), s/veh	2.2	6.3	0.5	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	4.4	2.7	0.0	0.0	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.2	28.0	6.5	0.0	0.0	5.8
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	607		1585			1241
Approach Delay, s/veh	25.7		6.5			5.8
Approach LOS	C		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		41.8			41.8	18.2
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		32.0			32.0	20.0
Max Q Clear Time (g_c+I1), s		12.0			9.1	12.9
Green Ext Time (p_c), s		11.9			9.8	1.3

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



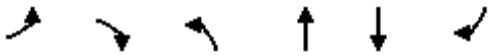
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	422	127	1462	0	0	1342
Future Volume (veh/h)	422	127	1462	0	0	1342
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	298	310	1589	0	0	1459
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	422	382	3215	0	0	3215
Arrive On Green	0.24	0.24	0.63	0.00	0.00	0.63
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	298	310	1589	0	0	1459
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	9.2	10.9	10.0	0.0	0.0	8.9
Cycle Q Clear(g_c), s	9.2	10.9	10.0	0.0	0.0	8.9
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	422	382	3215	0	0	3215
V/C Ratio(X)	0.71	0.81	0.49	0.00	0.00	0.45
Avail Cap(c_a), veh/h	594	537	3215	0	0	3215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	21.6	6.0	0.0	0.0	5.8
Incr Delay (d2), s/veh	2.2	6.4	0.5	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	4.5	2.7	0.0	0.0	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.2	28.0	6.5	0.0	0.0	6.2
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	608		1589			1459
Approach Delay, s/veh	25.7		6.5			6.2
Approach LOS	C		A			A

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	41.8			41.8	18.2
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	32.0			32.0	20.0
Max Q Clear Time (g_c+I1), s	12.0			10.9	12.9
Green Ext Time (p_c), s	11.9			11.2	1.3

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



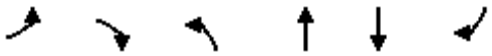
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	675	0	1796	1327	0
Future Volume (veh/h)	199	675	0	1796	1327	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	216	734	0	1952	1442	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	486	865	0	3032	3032	0
Arrive On Green	0.27	0.27	0.00	0.59	0.59	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	216	734	0	1952	1442	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	6.0	13.1	0.0	15.1	9.6	0.0
Cycle Q Clear(g_c), s	6.0	13.1	0.0	15.1	9.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	486	865	0	3032	3032	0
V/C Ratio(X)	0.44	0.85	0.00	0.64	0.48	0.00
Avail Cap(c_a), veh/h	534	951	0	3032	3032	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.1	20.6	0.0	8.0	6.9	0.0
Incr Delay (d2), s/veh	0.6	6.8	0.0	1.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	5.2	0.0	4.4	2.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.7	27.5	0.0	9.1	7.4	0.0
LnGrp LOS	B	C	A	A	A	A
Approach Vol, veh/h	950			1952	1442	
Approach Delay, s/veh	25.5			9.1	7.4	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		39.6		20.4		39.6
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		34.0		18.0		34.0
Max Q Clear Time (g_c+I1), s		17.1		15.1		11.6
Green Ext Time (p_c), s		12.7		1.2		11.5

Intersection Summary		
HCM 6th Ctrl Delay	12.1	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.



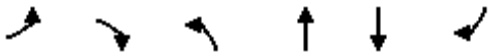
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	719	0	1826	1352	0
Future Volume (veh/h)	199	719	0	1826	1352	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	216	782	0	1985	1470	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	505	898	0	2979	2979	0
Arrive On Green	0.28	0.28	0.00	0.58	0.58	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	216	782	0	1985	1470	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	5.9	14.1	0.0	15.9	10.1	0.0
Cycle Q Clear(g_c), s	5.9	14.1	0.0	15.9	10.1	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	505	898	0	2979	2979	0
V/C Ratio(X)	0.43	0.87	0.00	0.67	0.49	0.00
Avail Cap(c_a), veh/h	534	951	0	2979	2979	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.5	20.5	0.0	8.5	7.3	0.0
Incr Delay (d2), s/veh	0.6	8.5	0.0	1.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.8	0.0	4.7	3.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.1	29.0	0.0	9.7	7.9	0.0
LnGrp LOS	B	C	A	A	A	A
Approach Vol, veh/h	998			1985	1470	
Approach Delay, s/veh	26.6			9.7	7.9	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		39.0		21.0		39.0
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		34.0		18.0		34.0
Max Q Clear Time (g_c+I1), s		17.9		16.1		12.1
Green Ext Time (p_c), s		12.4		0.9		11.6

Intersection Summary		
HCM 6th Ctrl Delay	12.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.



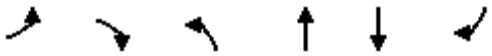
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	326	885	0	1944	1669	0
Future Volume (veh/h)	326	885	0	1944	1669	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	354	962	0	2113	1814	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	627	1117	0	2627	2627	0
Arrive On Green	0.35	0.35	0.00	0.51	0.51	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	354	962	0	2113	1814	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	9.6	16.9	0.0	20.6	16.1	0.0
Cycle Q Clear(g_c), s	9.6	16.9	0.0	20.6	16.1	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	627	1117	0	2627	2627	0
V/C Ratio(X)	0.56	0.86	0.00	0.80	0.69	0.00
Avail Cap(c_a), veh/h	683	1215	0	2627	2627	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.7	18.1	0.0	12.1	11.0	0.0
Incr Delay (d2), s/veh	0.9	6.1	0.0	2.7	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	6.4	0.0	6.9	5.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.6	24.2	0.0	14.8	12.5	0.0
LnGrp LOS	B	C	A	B	B	A
Approach Vol, veh/h	1316			2113	1814	
Approach Delay, s/veh	22.2			14.8	12.5	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		34.9		25.1		34.9
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		29.0		23.0		29.0
Max Q Clear Time (g_c+I1), s		22.6		18.9		18.1
Green Ext Time (p_c), s		5.7		2.2		8.4

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	326	893	0	1957	1674	0
Future Volume (veh/h)	326	893	0	1957	1674	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	354	971	0	2127	1820	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	631	1123	0	2617	2617	0
Arrive On Green	0.35	0.35	0.00	0.51	0.51	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	354	971	0	2127	1820	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	9.6	17.1	0.0	20.9	16.2	0.0
Cycle Q Clear(g_c), s	9.6	17.1	0.0	20.9	16.2	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	631	1123	0	2617	2617	0
V/C Ratio(X)	0.56	0.86	0.00	0.81	0.70	0.00
Avail Cap(c_a), veh/h	683	1215	0	2617	2617	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.6	18.0	0.0	12.2	11.1	0.0
Incr Delay (d2), s/veh	0.9	6.4	0.0	2.9	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	6.5	0.0	7.1	5.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.5	24.4	0.0	15.1	12.6	0.0
LnGrp LOS	B	C	A	B	B	A
Approach Vol, veh/h	1325			2127	1820	
Approach Delay, s/veh	22.3			15.1	12.6	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		34.8		25.2		34.8
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		29.0		23.0		29.0
Max Q Clear Time (g_c+I1), s		22.9		19.1		18.2
Green Ext Time (p_c), s		5.5		2.1		8.4

Intersection Summary		
HCM 6th Ctrl Delay		16.1
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	68	1805	33	281	1539	170	173	49	57	134	87	366
Project Trips	0	35	0	0	69	0	0	0	0	0	0	0
GEOMETRY	LL	TT TR		LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	68	68	0.05	0.05
NBT	3.0	4,800	1,805	1,840	0.38 *	0.39 *
NBR	0.0	0	33	33	0.00	0.00
SBL	2.0	2,880	281	281	0.10 *	0.10 *
SBT	3.0	4,800	1,539	1,608	0.32	0.34
SBR	1.0	1,600	170	170	0.11	0.11
EBL	2.0	2,880	173	173	0.06 *	0.06 *
EBT	1.0	1,600	49	49	0.07	0.07
EBR	1.0	1,600	57	57	0.04	0.04
WBL	0.0	0	134	134	0.00	0.00
WBT	2.0	3,200	87	87	0.07	0.07
WBR	1.0 (a)	1,600	227	227	0.14 *	0.14 *
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.20	0.20
ICU					0.68	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 38% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	213	1575	56	314	1838	374	362	112	175	32	19	267
Project Trips	0	15	0	0	13	0	0	0	0	0	0	0
GEOMETRY	LL	TT TR		LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	213	213	0.07 *	0.07 *
NBT	3.0	4,800	1,575	1,590	0.34	0.34
NBR	0.0	0	56	56	0.00	0.00
SBL	2.0	2,880	314	314	0.11	0.11
SBT	3.0	4,800	1,838	1,851	0.38 *	0.39 *
SBR	1.0	1,600	374	374	0.23	0.23
EBL	2.0	2,880	362	362	0.13 *	0.13 *
EBT	1.0	1,600	112	112	0.07	0.07
EBR	1.0	1,600	175	175	0.11	0.11
WBL	0.0	0	32	32	0.00	0.00
WBT	2.0	3,200	19	19	0.07	0.07
WBR	1.0 (a)	1,600	112	112	0.07 *	0.07 *
N/S Critical Movements					0.45	0.46
E/W Critical Movements					0.20	0.20
ICU					0.65	0.66
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 58% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	306	1111	179	328	989	262	677	828	240	85	381	89
Project Trips	78	35	7	0	69	0	0	0	153	11	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	306	384	0.11	0.13 *
NBT	3.0	4,800	1,111	1,146	0.23 *	0.24
NBR	1.0	1,600	179	186	0.11	0.12
SBL	2.0	2,880	328	328	0.11 *	0.11
SBT	3.0	4,800	989	1,058	0.21	0.22 *
SBR	1.0 (a)	1,600	105	105	0.07	0.07
EBL	3.0	4,800	677	677	0.14	0.14
EBT	2.0	3,200	828	828	0.26 *	0.26 *
EBR	1.0	1,600	240	393	0.15	0.25
WBL	1.0	1,600	85	96	0.05 *	0.06 *
WBT	3.0	4,800	381	381	0.08	0.08
WBR	1.0	1,600	89	89	0.06	0.06
N/S Critical Movements					0.34	0.35
E/W Critical Movements					0.31	0.32
ICU					0.65	0.67
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 60% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	397	1059	88	192	1312	528	493	445	170	214	953	166
Project Trips	33	15	3	0	13	0	0	0	30	2	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	397	430	0.14 *	0.15 *
NBT	3.0	4,800	1,059	1,074	0.22	0.22
NBR	1.0	1,600	88	91	0.06	0.06
SBL	2.0	2,880	192	192	0.07	0.07
SBT	3.0	4,800	1,312	1,325	0.27 *	0.28 *
SBR	1.0	(a) 1,600	364	364	0.23	0.23
EBL	3.0	4,800	493	493	0.10 *	0.10 *
EBT	2.0	3,200	445	445	0.14	0.14
EBR	1.0	1,600	170	200	0.11	0.13
WBL	1.0	1,600	214	216	0.13	0.14
WBT	3.0	4,800	953	953	0.20 *	0.20 *
WBR	1.0	1,600	166	166	0.10	0.10
N/S Critical Movements					0.41	0.43
E/W Critical Movements					0.30	0.30
ICU					0.71	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 31% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	130	1277	27	17	1164	129	255	39	186	123	72	35
Project Trips	40	121	12	0	233	0	0	0	81	22	0	0
GEOMETRY	L	T TR		L	TT	R		LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	130	170	0.08	0.11 *
NBT	2.0	3,200	1,277	1,398	0.41 *	0.45
NBR	0.0	0	27	39	0.00	0.00
SBL	1.0	1,600	17	17	0.05 *	0.05
SBT	2.0	3,200	1,164	1,397	0.36	0.44 *
SBR	1.0	1,600	129	129	0.08	0.08
EBL	0.0	0	255	255	0.00	0.00
EBT	1.0	1,600	39	39	0.18 *	0.18 *
EBR	1.0	1,600	186	267	0.12	0.17
WBL	1.0	1,600	123	145	0.08 *	0.09 *
WBT	1.0	1,600	72	72	0.07	0.07
WBR	0.0	0	35	35	0.00	0.00
N/S Critical Movements					0.46	0.55
E/W Critical Movements					0.26	0.27
ICU					0.72	0.82
Level of Service (LOS)					C	D

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue **MITIGATED**
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	130	1277	27	17	1164	129	255	39	186	123	72	35
Project Trips	40	121	12	0	233	0	0	0	81	22	0	0
GEOMETRY	L	T **T** TR		L	TT **TR**		**L**	**TR**		**L**	**TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	130	170	0.08 *	0.11 *
NBT	3.0	4,800	1,277	1,398	0.27	0.30
NBR	0.0	0	27	39	0.00	0.00
SBL	1.0	1,600	17	17	0.05	0.05
SBT	3.0	4,800	1,164	1,397	0.27 *	0.32 *
SBR	0.0	0	129	129	0.00	0.00
EBL	1.0	1,600	255	255	0.16 *	0.16
EBT	1.0	1,600	39	39	0.14	0.19 *
EBR	0.0	0	186	267	0.12	0.17
WBL	1.0	1,600	123	145	0.08	0.09 *
WBT	1.0	1,600	72	72	0.07 *	0.07
WBR	0.0	0	35	35	0.00	0.00
N/S Critical Movements					0.35	0.43
E/W Critical Movements					0.23	0.28
ICU					0.58	0.71
Level of Service (LOS)					A	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	93	1479	34	9	1539	255	124	15	53	148	54	26
Project Trips	17	51	5	0	44	0	0	0	15	4	0	0
GEOMETRY	L	T TR		L	TT	R		LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	93	110	0.06 *	0.07 *
NBT	2.0	3,200	1,479	1,530	0.47	0.49
NBR	0.0	0	34	39	0.00	0.00
SBL	1.0	1,600	9	9	0.05	0.05
SBT	2.0	3,200	1,539	1,583	0.48 *	0.49 *
SBR	1.0	1,600	255	255	0.16	0.16
EBL	0.0	0	124	124	0.00	0.00
EBT	1.0	1,600	15	15	0.09 *	0.09 *
EBR	1.0	1,600	53	68	0.03	0.04
WBL	1.0	1,600	148	152	0.09 *	0.10 *
WBT	1.0	1,600	54	54	0.07	0.07
WBR	0.0	0	26	26	0.00	0.00
N/S Critical Movements					0.54	0.56
E/W Critical Movements					0.18	0.19
ICU					0.72	0.75
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue **MITIGATED**
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	93	1479	34	9	1539	255	124	15	53	148	54	26
Project Trips	17	51	5	0	44	0	0	0	15	4	0	0
GEOMETRY	L	T **T** TR		L	TT **TR**		**L**	**TR**		**L**	**TR**	

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	93	110	0.06 *	0.07 *
NBT	3.0	4,800	1,479	1,530	0.32	0.33
NBR	0.0	0	34	39	0.00	0.00
SBL	1.0	1,600	9	9	0.05	0.05
SBT	3.0	4,800	1,539	1,583	0.37 *	0.38 *
SBR	0.0	0	255	255	0.16	0.16
EBL	1.0	1,600	124	124	0.08	0.08
EBT	1.0	1,600	15	15	0.07 *	0.07 *
EBR	0.0	0	53	68	0.03	0.04
WBL	1.0	1,600	148	152	0.09 *	0.10 *
WBT	1.0	1,600	54	54	0.07	0.07
WBR	0.0	0	26	26	0.00	0.00
N/S Critical Movements					0.43	0.45
E/W Critical Movements					0.16	0.17
ICU					0.59	0.62
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 Two-Way Stop-Control Report

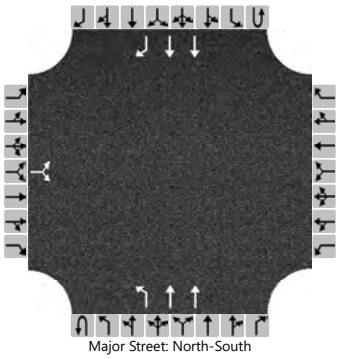
General Information

Analyst	06. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	OUHSD HS No. 8

Site Information

Intersection	Rose Ave/Cam De La Luna
Jurisdiction	Oxnard
East/West Street	Camino De La Luna
North/South Street	Rose Ave
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	1
Configuration			LR							L	T				T	R
Volume (veh/h)		19		75					0	39	1432				1461	21
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked		0.000		0.000						0.000						
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.86		6.96						4.16						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			94							39						
Capacity, c (veh/h)			259							445						
v/c Ratio			0.36							0.09						
95% Queue Length, Q_{95} (veh)			1.7							0.3						
Control Delay (s/veh)			26.8							13.9						
Level of Service (LOS)			D							B						
Approach Delay (s/veh)		26.8								0.4						
Approach LOS		D														

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak *	39	1432	15	7	1461	21	19	0	75	20	0	13
Project Trips	12	69	52	202	134	0	0	26	18	26	8	104
GEOMETRY	L	TT	**TR**	L	TT	R	L	**TR**		L	**T**	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	1.0	1,600	51	0.05 *
NBT	3.0	4,800	1,501	0.33
NBR	0.0	0	67	0.00
SBL	1.0	1,600	209	0.13
SBT	2.0	3,200	1,595	0.50 *
SBR	1.0	1,600	21	0.01
EBL	1.0	1,600	19	0.05 *
EBT	1.0	1,600	26	0.07
EBR	0.0	0	93	0.00
WBL	1.0	1,600	46	0.05
WBT	1.0	1,600	8	0.07 *
WBR	1.0	1,600	117	0.07
N/S Critical Movements				0.55
E/W Critical Movements				0.12
ICU				0.67
Level of Service (LOS)				B

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

HCS7 Two-Way Stop-Control Report

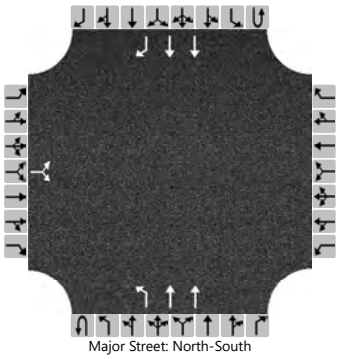
General Information

Analyst	06. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	OUHSD HS No. 8

Site Information

Intersection	Rose Ave/Cam De La Luna
Jurisdiction	Oxnard
East/West Street	Camino De La Luna
North/South Street	Rose Ave
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	1
Configuration			LR							L	T				T	R
Volume (veh/h)		7		24					0	43	1593				1648	75
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked		0.000		0.000						0.000						
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.86		6.96						4.16						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			31							43						
Capacity, c (veh/h)			208							359						
v/c Ratio			0.15							0.12						
95% Queue Length, Q_{95} (veh)			0.5							0.4						
Control Delay (s/veh)			25.3							16.4						
Level of Service (LOS)			D							C						
Approach Delay (s/veh)		25.3								0.4						
Approach LOS		D														

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak *	43	1593	20	15	1648	75	7	0	24	10	0	8
Project Trips	5	29	10	38	26	0	0	5	3	11	3	43
GEOMETRY	L	TT	**TR**	L	TT	R	L	**TR**		L	**T**	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	1.0	1,600	48	0.05 *
NBT	3.0	4,800	1,622	0.34
NBR	0.0	0	30	0.00
SBL	1.0	1,600	53	0.05
SBT	2.0	3,200	1,674	0.52 *
SBR	1.0	1,600	75	0.05
EBL	1.0	1,600	7	0.05 *
EBT	1.0	1,600	5	0.07
EBR	0.0	0	27	0.00
WBL	1.0	1,600	21	0.05
WBT	1.0	1,600	3	0.07 *
WBR	1.0	1,600	51	0.03
N/S Critical Movements				0.57
E/W Critical Movements				0.12
ICU				0.69
Level of Service (LOS)				B

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	102	1128	210	240	1190	104	163	264	121	175	154	188
Project Trips	0	0	0	0	0	0	0	0	0	0	0	0
GEOMETRY	L	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Existing	**V/C Ratio** Existing
NBL	1.0	1,600	102	0.06
NBT	2.0	3,200	1,128	0.35 *
NBR	1.0	1,600	210	0.13
SBL	1.0	1,600	240	0.15 *
SBT	2.0	3,200	1,190	0.37
SBR	1.0	1,600	104	0.07
EBL	1.0	1,600	163	0.10
EBT	2.0	3,200	264	0.08 *
EBR	1.0	1,600	121	0.08
WBL	1.0	1,600	175	0.11 *
WBT	2.0	3,200	154	0.05
WBR	1.0 (a)	1,600	188	0.12
N/S Critical Movements				0.50
E/W Critical Movements				0.19
ICU				0.69
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	102	1128	210	240	1190	104	163	264	121	175	154	188
Project Trips	0	33	200	152	17	9	19	109	0	93	60	81
GEOMETRY	L	TT	**T**R	L**L**	TT	**T**R	L	TT	R	L**L**	TT	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	1.0	1,600	102	0.06
NBT	3.0	4,800	1,161	0.33 *
NBR	0.0	0	410	0.00
SBL	2.0	2,880	392	0.14 *
SBT	3.0	4,800	1,207	0.28
SBR	0.0	0	113	0.00
EBL	1.0	1,600	182	0.11
EBT	2.0	3,200	373	0.12 *
EBR	1.0	1,600	121	0.08
WBL	2.0	2,880	268	0.09 *
WBT	2.0	3,200	214	0.07
WBR	1.0 (a)	1,600	269	0.17
N/S Critical Movements				0.47
E/W Critical Movements				0.21
ICU				0.68
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	89	1244	134	180	1297	199	122	143	74	269	491	272
Project Trips	0	0	0	0	0	0	0	0	0	0	0	0
GEOMETRY	L	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Existing	**V/C Ratio** Existing
NBL	1.0	1,600	89	0.06
NBT	2.0	3,200	1,244	0.39 *
NBR	1.0	1,600	134	0.08
SBL	1.0	1,600	180	0.11 *
SBT	2.0	3,200	1,297	0.41
SBR	1.0	1,600	199	0.12
EBL	1.0	1,600	122	0.08 *
EBT	2.0	3,200	143	0.04 *
EBR	1.0	1,600	74	0.05
WBL	1.0	1,600	269	0.17
WBT	2.0	3,200	491	0.15 *
WBR	1.0 (a)	1,600	272	0.17
N/S Critical Movements				0.50
E/W Critical Movements				0.23
ICU				0.73
Level of Service (LOS)				C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	89	1244	134	180	1297	199	122	143	74	269	491	272
Project Trips	0	6	38	29	7	4	4	21	0	39	25	34
GEOMETRY	L	TT	**T**R	L**L**	TT	**T**R	L	TT	R	L**L**	TT	R

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	1.0	1,600	89	0.06 *
NBT	3.0	4,800	1,250	0.30
NBR	0.0	0	172	0.00
SBL	2.0	2,880	209	0.07
SBT	3.0	4,800	1,304	0.31 *
SBR	0.0	0	203	0.00
EBL	1.0	1,600	126	0.08 *
EBT	2.0	3,200	164	0.05
EBR	1.0	1,600	74	0.05
WBL	2.0	2,880	308	0.11
WBT	2.0	3,200	516	0.16 *
WBR	1.0 (a)	1,600	306	0.19
N/S Critical Movements				0.37
E/W Critical Movements				0.24
ICU				0.61
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1280	18	70	1398	0	0	0	0	23	0	140
Project Trips	0	230	0	4	106	0	0	0	0	0	0	3
GEOMETRY		T TR		L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,280	1,510	0.41 *	0.48 *
NBR	0.0	0	18	18	0.00	0.00
SBL	1.0	1,600	70	74	0.05 *	0.05 *
SBT	3.0	4,800	1,398	1,504	0.29	0.31
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	23	23	0.00	0.00
WBT	1.0	1,600	0	0	0.10 *	0.10 *
WBR	0.0	0	140	143	0.00	0.00
N/S Critical Movements					0.46	0.53
E/W Critical Movements					0.10	0.10
ICU					0.56	0.63
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1401	26	67	1586	0	0	0	0	46	0	68
Project Trips	0	43	0	2	44	0	0	0	0	0	0	2
GEOMETRY		T TR			L TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,401	1,444	0.45 *	0.46 *
NBR	0.0	0	26	26	0.00	0.00
SBL	1.0	1,600	67	69	0.05 *	0.05 *
SBT	3.0	4,800	1,586	1,630	0.33	0.34
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	46	46	0.00	0.00
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	68	70	0.00	0.00
N/S Critical Movements					0.50	0.51
E/W Critical Movements					0.07	0.07
ICU					0.57	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: First Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	39	1190	0	0	1361	66	123	0	68	0	0	0
Project Trips	0	182	0	0	80	26	48	0	0	0	0	0
GEOMETRY	L	TT			TT TR			LR				

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	39	39	0.05	0.05
NBT	2.0	3,200	1,190	1,372	0.37 *	0.43 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	3.0	4,800	1,361	1,441	0.30	0.32
SBR	0.0	0	66	92	0.04	0.06
EBL	0.0	0	123	171	0.00	0.00
EBT	1.0	1,600	0	0	0.12 *	0.15 *
EBR	0.0	0	68	68	0.04	0.04
WBL	0.0	0	0	0	0.00 *	0.00 *
WBT	0.0	0	0	0	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.37	0.43
E/W Critical Movements					0.12	0.15
ICU					0.49	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: First Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	58	1324	0	0	1489	151	99	0	54	0	0	0
Project Trips	0	34	0	0	33	11	9	0	0	0	0	0
GEOMETRY	L	TT			TT TR			LR				

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	58	58	0.05	0.05
NBT	2.0	3,200	1,324	1,358	0.41 *	0.42 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	3.0	4,800	1,489	1,522	0.34	0.35
SBR	0.0	0	151	162	0.09	0.10
EBL	0.0	0	99	108	0.00	0.00
EBT	1.0	1,600	0	0	0.10 *	0.10 *
EBR	0.0	0	54	54	0.03	0.03
WBL	0.0	0	0	0	0.00 *	0.00 *
WBT	0.0	0	0	0	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.41	0.42
E/W Critical Movements					0.10	0.10
ICU					0.51	0.52
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1184	95	68	1363	0	0	0	0	137	0	60
Project Trips	0	175	0	4	76	0	0	0	0	0	0	7
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,184	1,359	0.37 *	0.42 *
NBR	1.0	1,600	95	95	0.06	0.06
SBL	1.0	1,600	68	72	0.05 *	0.05 *
SBT	3.0	4,800	1,363	1,439	0.28	0.30
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	137	137	0.00	0.00
WBT	1.0	1,600	0	0	0.12 *	0.13 *
WBR	0.0	0	60	67	0.00	0.00
N/S Critical Movements					0.42	0.47
E/W Critical Movements					0.12	0.13
ICU					0.54	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1334	163	59	1482	0	0	0	0	163	0	44
Project Trips	0	32	0	2	31	0	0	0	0	0	0	2
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,334	1,366	0.42 *	0.43 *
NBR	1.0	1,600	163	163	0.10	0.10
SBL	1.0	1,600	59	61	0.05 *	0.05 *
SBT	3.0	4,800	1,482	1,513	0.31	0.32
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	163	163	0.00	0.00
WBT	1.0	1,600	0	0	0.13 *	0.13 *
WBR	0.0	0	44	46	0.00	0.00
N/S Critical Movements					0.47	0.48
E/W Critical Movements					0.13	0.13
ICU					0.60	0.61
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	180	966	0	0	1179	334	320	0	283	0	0	0
Project Trips	0	123	0	0	50	26	52	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	180	180	0.06 *	0.06 *
NBT	3.0	4,800	966	1,089	0.20	0.23
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,179	1,229	0.32 *	0.33 *
SBR	0.0	0	334	360	0.21	0.23
EBL	2.0	2,880	320	372	0.11 *	0.13 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	283	283	0.18	0.18
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.38	0.39
E/W Critical Movements					0.11	0.13
ICU					0.49	0.52
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	415	1243	0	0	1273	374	263	0	154	0	0	0
Project Trips	0	34	0	0	33	11	9	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	415	415	0.14 *	0.14 *
NBT	3.0	4,800	1,243	1,277	0.26	0.27
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,273	1,306	0.34 *	0.35 *
SBR	0.0	0	374	385	0.23	0.24
EBL	2.0	2,880	263	272	0.09 *	0.09 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	154	154	0.10	0.10
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.09	0.09
ICU					0.57	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1039	218	207	1267	0	0	0	0	80	0	72
Project Trips	0	114	0	5	45	0	0	0	0	0	0	9
GEOMETRY		TT TR		L	TTT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,039	1,153	0.26 *	0.29 *
NBR	0.0	0	218	218	0.00	0.00
SBL	1.0	1,600	207	212	0.13 *	0.13 *
SBT	3.0	4,800	1,267	1,312	0.26	0.27
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	80	80	0.05 *	0.05 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0 (a)	1,600	72	81	0.05	0.05
N/S Critical Movements					0.39	0.42
E/W Critical Movements					0.05	0.05
ICU					0.44	0.47
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1405	105	67	1369	0	0	0	0	307	0	328
Project Trips	0	20	0	2	19	0	0	0	0	0	0	2
GEOMETRY		TT TR		L	TTT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,405	1,425	0.31 *	0.32 *
NBR	0.0	0	105	105	0.00	0.00
SBL	1.0	1,600	67	69	0.05 *	0.05 *
SBT	3.0	4,800	1,369	1,388	0.29	0.29
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	307	307	0.11	0.11
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	328	330	0.21 *	0.21 *
N/S Critical Movements					0.36	0.37
E/W Critical Movements					0.21	0.21
ICU					0.57	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	16	1057	54	39	1174	132	170	371	27	127	222	23
Project Trips	0	70	0	0	34	21	44	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Project
NBL	1.0	1,600	16	16	0.05 *	0.05 *
NBT	3.0	4,800	1,057	1,127	0.23	0.25
NBR	0.0	0	54	54	0.00	0.00
SBL	1.0	1,600	39	39	0.05	0.05
SBT	3.0	4,800	1,174	1,208	0.27 *	0.28 *
SBR	0.0	0	132	153	0.00	0.00
EBL	2.0	2,880	170	214	0.06	0.07
EBT	1.0	1,600	371	371	0.23 *	0.23 *
EBR	1.0	1,600	27	27	0.02	0.02
WBL	1.0	1,600	127	127	0.08 *	0.08 *
WBT	2.0	3,200	222	222	0.08	0.08
WBR	0.0	0	23	23	0.00	0.00
N/S Critical Movements					0.32	0.33
E/W Critical Movements					0.31	0.31
ICU					0.63	0.64
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	28	1148	78	18	1437	231	281	283	63	202	489	73
Project Trips	0	13	0	0	14	9	8	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Project
NBL	1.0	1,600	28	28	0.05 *	0.05 *
NBT	3.0	4,800	1,148	1,161	0.26	0.26
NBR	0.0	0	78	78	0.00	0.00
SBL	1.0	1,600	18	18	0.05	0.05
SBT	3.0	4,800	1,437	1,451	0.35 *	0.35 *
SBR	0.0	0	231	240	0.00	0.00
EBL	2.0	2,880	281	289	0.10	0.10
EBT	1.0	1,600	283	283	0.18 *	0.18 *
EBR	1.0	1,600	63	63	0.04	0.04
WBL	1.0	1,600	202	202	0.13 *	0.13 *
WBT	2.0	3,200	489	489	0.18	0.18
WBR	0.0	0	73	73	0.00	0.00
N/S Critical Movements					0.40	0.40
E/W Critical Movements					0.31	0.31
ICU					0.71	0.71
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

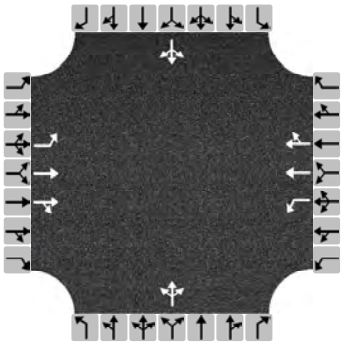
General Information

Analyst	14. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Juanita Ave
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Juanita Ave
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	96	103	22	13	96	114	38	189	49	99	146	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	96	52	74	13	48	162	276			360		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.085	0.046	0.065	0.012	0.043	0.144	0.245			0.320		
Final Departure Headway, hd (s)	7.69	7.17	6.96	7.70	7.18	6.67	6.56			6.38		
Final Degree of Utilization, x	0.205	0.103	0.142	0.028	0.096	0.300	0.503			0.638		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.39	4.87	4.66	5.40	4.88	4.37	4.26			4.08		

Capacity, Delay and Level of Service

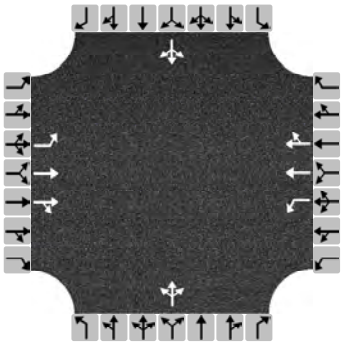
Flow Rate, v (veh/h)	96	52	74	13	48	162	276			360		
Capacity	468	502	518	467	501	539	549			564		
95% Queue Length, Q_{95} (veh)	0.8	0.3	0.5	0.1	0.3	1.3	3.0			5.0		
Control Delay (s/veh)	12.4	10.7	10.8	10.6	10.6	12.2	15.9			20.1		
Level of Service, LOS	B	B	B	B	B	B	C			C		
Approach Delay (s/veh)	11.5			11.8			15.9			20.1		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh | LOS	15.5						C					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	EXPR	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	96	129	22	13	109	123	39	189	58	116	146	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	96	65	87	13	55	178	286			377		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.085	0.057	0.077	0.012	0.048	0.158	0.254			0.335		
Final Departure Headway, hd (s)	7.94	7.42	7.24	7.95	7.44	6.93	6.82			6.65		
Final Degree of Utilization, x	0.212	0.133	0.174	0.029	0.113	0.342	0.542			0.696		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.64	5.12	4.94	5.65	5.14	4.63	4.52			4.35		

Capacity, Delay and Level of Service

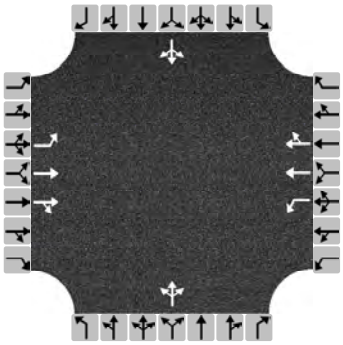
Flow Rate, v (veh/h)	96	65	87	13	55	178	286			377		
Capacity	453	485	498	453	484	519	528			541		
95% Queue Length, Q_{95} (veh)	0.8	0.5	0.6	0.1	0.4	1.5	3.4			6.4		
Control Delay (s/veh)	12.8	11.3	11.5	10.9	11.1	13.2	17.5			24.2		
Level of Service, LOS	B	B	B	B	B	B	C			C		
Approach Delay (s/veh)	11.9			12.6			17.5			24.2		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh | LOS	17.5						C					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	2019	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	98	11	40	298	66	8	75	23	14	67	62
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	49	60	40	149	215	106			143		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.044	0.053	0.036	0.132	0.191	0.094			0.127		
Final Departure Headway, hd (s)	6.33	5.82	5.69	6.04	5.53	5.32	6.00			5.80		
Final Degree of Utilization, x	0.079	0.079	0.095	0.067	0.229	0.317	0.177			0.231		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.03	3.52	3.39	3.74	3.23	3.02	3.70			3.50		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	45	49	60	40	149	215	106			143		
Capacity	569	619	633	596	651	677	600			620		
95% Queue Length, Q_{95} (veh)	0.3	0.3	0.3	0.2	0.9	1.4	0.6			0.9		
Control Delay (s/veh)	9.6	9.0	9.0	9.2	9.9	10.5	10.0			10.2		
Level of Service, LOS	A	A	A	A	A	B	A			B		
Approach Delay (s/veh)	9.2			10.1			10.0			10.2		
Approach LOS	A			B			A			B		
Intersection Delay, s/veh | LOS	9.9						A					

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HCS7 All-Way Stop Control Report

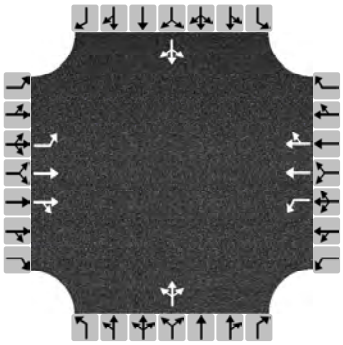
General Information

Analyst	14. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	EXPR
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Juanita Ave
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Juanita Ave
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	103	11	42	303	66	8	75	25	17	67	62
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	52	63	42	152	218	108			146		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.046	0.056	0.037	0.135	0.193	0.096			0.130		
Final Departure Headway, hd (s)	6.37	5.87	5.74	6.07	5.56	5.35	6.05			5.87		
Final Degree of Utilization, x	0.080	0.084	0.100	0.071	0.234	0.323	0.182			0.238		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.07	3.57	3.44	3.77	3.26	3.05	3.75			3.57		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	45	52	63	42	152	218	108			146		
Capacity	565	614	627	593	647	673	595			613		
95% Queue Length, Q_{95} (veh)	0.3	0.3	0.3	0.2	0.9	1.4	0.7			0.9		
Control Delay (s/veh)	9.6	9.1	9.1	9.2	10.0	10.6	10.1			10.4		
Level of Service, LOS	A	A	A	A	A	B	B			B		
Approach Delay (s/veh)	9.2			10.2			10.1			10.4		
Approach LOS	A			B			B			B		
Intersection Delay, s/veh | LOS	10.1						B					

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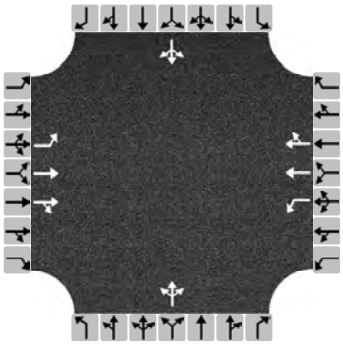
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	19	273	22	341	171	21	6	67	209	53	71	13
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	19	137	159	341	86	107	282			137		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.017	0.121	0.141	0.303	0.076	0.095	0.251			0.122		
Final Departure Headway, hd (s)	7.65	7.13	7.03	7.25	6.74	6.59	6.78			7.78		
Final Degree of Utilization, x	0.040	0.270	0.310	0.687	0.160	0.195	0.531			0.296		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.35	4.83	4.73	4.95	4.44	4.29	4.48			5.48		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	19	137	159	341	86	107	282			137		
Capacity	471	505	512	497	534	546	531			463		
95% Queue Length, Q_{95} (veh)	0.1	1.1	1.3	6.1	0.6	0.7	3.3			1.3		
Control Delay (s/veh)	10.7	12.5	12.9	25.4	10.7	10.9	17.1			13.7		
Level of Service, LOS	B	B	B	D	B	B	C			B		
Approach Delay (s/veh)	12.6			20.2			17.1			13.7		
Approach LOS	B			C			C			B		
Intersection Delay, s/veh | LOS	16.9						C					

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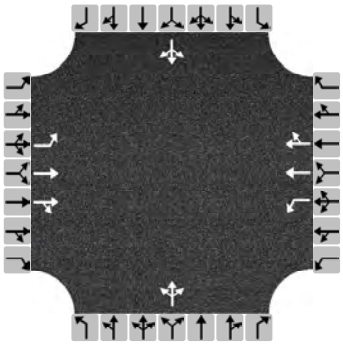
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	EXPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	19	325	22	380	197	25	6	67	275	62	71	13
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	19	163	185	380	99	124	348			146		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.017	0.144	0.164	0.338	0.088	0.110	0.309			0.130		
Final Departure Headway, hd (s)	8.34	7.82	7.74	7.88	7.36	7.22	7.27			8.56		
Final Degree of Utilization, x	0.044	0.353	0.396	0.832	0.202	0.248	0.702			0.347		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	6.04	5.52	5.44	5.58	5.06	4.92	4.97			6.26		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	19	163	185	380	99	124	348			146		
Capacity	432	460	465	457	489	499	495			421		
95% Queue Length, Q_{95} (veh)	0.1	1.6	1.9	11.4	0.8	1.0	6.5			1.6		
Control Delay (s/veh)	11.4	14.8	15.5	45.6	11.9	12.3	26.6			15.8		
Level of Service, LOS	B	B	C	E	B	B	D			C		
Approach Delay (s/veh)	15.0			33.2			26.6			15.8		
Approach LOS	B			D			D			C		
Intersection Delay, s/veh | LOS	25.3						D					

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HCS7 All-Way Stop Control Report

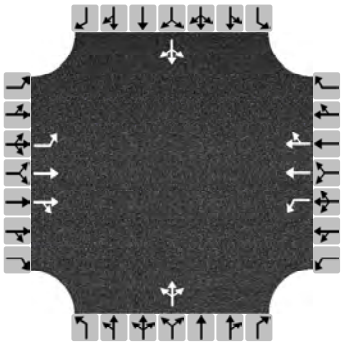
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	14	158	11	170	395	34	7	31	180	20	42	19
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	14	79	90	170	198	232	218			81		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.012	0.070	0.080	0.151	0.176	0.206	0.194			0.072		
Final Departure Headway, hd (s)	6.87	6.36	6.27	6.32	5.82	5.71	6.02			6.80		
Final Degree of Utilization, x	0.027	0.140	0.157	0.299	0.319	0.367	0.364			0.153		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.57	4.06	3.97	4.02	3.52	3.41	3.72			4.50		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	14	79	90	170	198	232	218			81		
Capacity	524	566	574	569	619	630	598			530		
95% Queue Length, Q_{95} (veh)	0.1	0.5	0.6	1.3	1.4	1.7	1.7			0.5		
Control Delay (s/veh)	9.8	10.1	10.1	11.7	11.2	11.7	12.2			10.7		
Level of Service, LOS	A	B	B	B	B	B	B			B		
Approach Delay (s/veh)	10.1			11.6			12.2			10.7		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh | LOS	11.4						B					

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HCS7 All-Way Stop Control Report

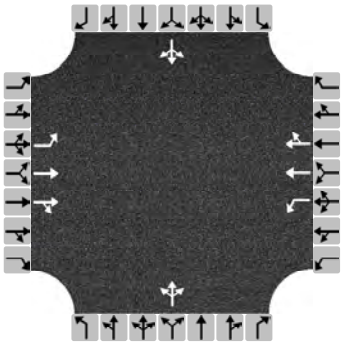
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	EXPR
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	14	168	11	186	406	36	7	31	193	22	42	19
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	14	84	95	186	203	239	231			83		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.012	0.075	0.084	0.165	0.180	0.212	0.205			0.074		
Final Departure Headway, hd (s)	7.00	6.49	6.41	6.42	5.91	5.80	6.12			6.95		
Final Degree of Utilization, x	0.027	0.151	0.169	0.332	0.333	0.385	0.392			0.160		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.70	4.19	4.11	4.12	3.61	3.50	3.82			4.65		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	14	84	95	186	203	239	231			83		
Capacity	514	555	562	561	609	620	589			518		
95% Queue Length, Q_{95} (veh)	0.1	0.5	0.6	1.5	1.5	1.9	1.9			0.6		
Control Delay (s/veh)	9.9	10.3	10.4	12.3	11.6	12.1	12.8			11.0		
Level of Service, LOS	A	B	B	B	B	B	B			B		
Approach Delay (s/veh)	10.3			12.0			12.8			11.0		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh | LOS	11.8						B					

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HCS7 All-Way Stop Control Report

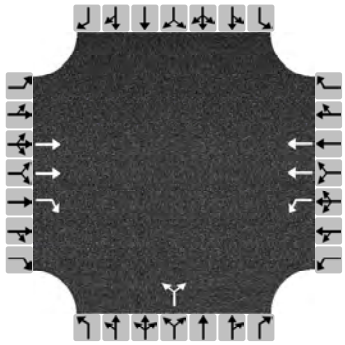
General Information

Analyst	16. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Gibraltar St
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		639	59	27	402		75		62			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	320	320	59	27	201	201	137					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.284	0.284	0.052	0.024	0.179	0.179	0.122					
Final Departure Headway, hd (s)	5.58	5.58	4.88	6.38	5.88	5.88	6.91					
Final Degree of Utilization, x	0.496	0.496	0.080	0.048	0.328	0.328	0.263					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	3.28	3.28	2.58	4.08	3.58	3.58	4.61					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	320	320	59	27	201	201	137					
Capacity	645	645	738	564	613	613	521					
95% Queue Length, Q_{95} (veh)	2.9	2.9	0.3	0.2	1.5	1.5	1.1					
Control Delay (s/veh)	13.7	13.7	8.0	9.4	11.4	11.4	12.1					
Level of Service, LOS	B	B	A	A	B	B	B					
Approach Delay (s/veh)	13.3			11.3			12.1					
Approach LOS	B			B			B					
Intersection Delay, s/veh | LOS	12.5						B					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	75	0	62	0	0	0	0	639	59	27	402	0
Project Trips	0	17	0	20	5	35	461	0	0	12	55	21
GEOMETRY		LTR			LT	R	L	T TR		L	T TR	

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Ex+Project
NBL	0.0	0	75	0.00
NBT	1.0	1,600	17	0.10 *
NBR	0.0	0	62	0.00
SBL	0.0	0	20	0.00
SBT	1.0	1,600	5	0.07 *
SBR	1.0	1,600	35	0.02
EBL	1.0	1,600	461	0.29 *
EBT	2.0	3,200	639	0.22
EBR	0.0	0	59	0.00
WBL	1.0	1,600	39	0.05
WBT	2.0	3,200	457	0.15 *
WBR	0.0	0	21	0.00
N/S Critical Movements				0.17
E/W Critical Movements				0.44
ICU				0.61
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

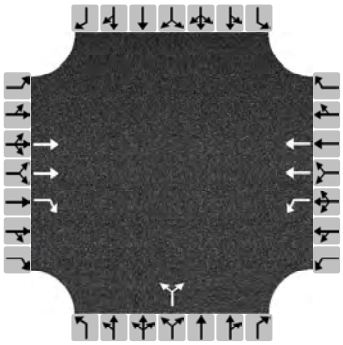
General Information

Analyst	16. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	2019
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Gibraltar St
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		314	99	87	979		33		42			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	157	157	99	87	490	490	75					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.140	0.140	0.088	0.077	0.435	0.435	0.067					
Final Departure Headway, hd (s)	6.00	6.00	5.29	5.80	5.29	5.29	7.16					
Final Degree of Utilization, x	0.262	0.262	0.146	0.140	0.720	0.720	0.149					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	3.70	3.70	2.99	3.50	2.99	2.99	4.86					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	157	157	99	87	490	490	75					
Capacity	600	600	680	621	680	680	503					
95% Queue Length, Q_{95} (veh)	1.1	1.1	0.5	0.5	7.2	7.2	0.5					
Control Delay (s/veh)	10.8	10.8	8.9	9.4	21.3	21.3	11.1					
Level of Service, LOS	B	B	A	A	C	C	B					
Approach Delay (s/veh)	10.4			20.3			11.1					
Approach LOS	B			C			B					
Intersection Delay, s/veh | LOS	17.2						C					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	33	0	42	0	0	0	0	314	99	87	979	0
Project Trips	0	3	0	6	2	12	88	0	0	5	23	4
GEOMETRY	LTR			LT		R	L	T TR		L	T TR	

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Ex+Project
NBL	0.0	0	33	0.00
NBT	1.0	1,600	3	0.07 *
NBR	0.0	0	42	0.00
SBL	0.0	0	6	0.00
SBT	1.0	1,600	2	0.07 *
SBR	1.0	1,600	12	0.00
EBL	1.0	1,600	88	0.06 *
EBT	2.0	3,200	314	0.13
EBR	0.0	0	99	0.06
WBL	1.0	1,600	92	0.06
WBT	2.0	3,200	1,002	0.31 *
WBR	0.0	0	4	0.00
N/S Critical Movements				0.14
E/W Critical Movements				0.37
ICU				0.51
Level of Service (LOS)				A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	39	33	62	63	16	183	127	565	11	17	199	25
Project Trips	0	0	0	0	0	10	5	23	0	0	48	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	39	39	0.00	0.00
NBT	1.0	1,600	33	33	0.08 *	0.08 *
NBR	0.0	0	62	62	0.00	0.00
SBL	0.0	0	63	63	0.00	0.00
SBT	1.0	1,600	16	16	0.16 *	0.17 *
SBR	0.0	0	183	193	0.00	0.00
EBL	1.0	1,600	127	132	0.08	0.08
EBT	2.0	3,200	565	588	0.18 *	0.19 *
EBR	0.0	0	11	11	0.00	0.00
WBL	1.0	1,600	17	17	0.05 *	0.05 *
WBT	2.0	3,200	199	247	0.07	0.09
WBR	0.0	0	25	25	0.00	0.00
N/S Critical Movements					0.24	0.25
E/W Critical Movements					0.23	0.24
ICU					0.47	0.49
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

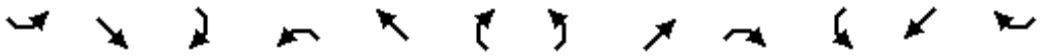
INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	24	27	29	20	20	110	112	221	18	103	930	68
Project Trips	0	0	0	0	0	2	2	10	0	0	9	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	24	24	0.00	0.00
NBT	1.0	1,600	27	27	0.07 *	0.07 *
NBR	0.0	0	29	29	0.00	0.00
SBL	0.0	0	20	20	0.00	0.00
SBT	1.0	1,600	20	20	0.09 *	0.10 *
SBR	0.0	0	110	112	0.00	0.00
EBL	1.0	1,600	112	114	0.07 *	0.07 *
EBT	2.0	3,200	221	231	0.07	0.08
EBR	0.0	0	18	18	0.00	0.00
WBL	1.0	1,600	103	103	0.06	0.06
WBT	2.0	3,200	930	939	0.31 *	0.31 *
WBR	0.0	0	68	68	0.00	0.00
N/S Critical Movements					0.16	0.17
E/W Critical Movements					0.38	0.38
ICU					0.54	0.55
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	151	0	211	649	139	17	157	582	0	0	621	180
Future Volume (veh/h)	151	0	211	649	139	17	157	582	0	0	621	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	164	0	229	705	151	18	171	633	0	0	675	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1853	853	102	265	1231	0	0	1036	322
Arrive On Green	0.00	0.00	0.00	0.52	0.52	0.52	0.08	0.35	0.00	0.00	0.20	0.20
Sat Flow, veh/h		0		3563	1640	195	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		705	0	169	171	633	0	0	675	196
Grp Sat Flow(s),veh/h/ln				1781	0	1835	1728	1777	0	0	1702	1585
Q Serve(g_s), s				7.1	0.0	2.9	2.9	8.5	0.0	0.0	7.3	6.2
Cycle Q Clear(g_c), s				7.1	0.0	2.9	2.9	8.5	0.0	0.0	7.3	6.2
Prop In Lane				1.00		0.11	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1853	0	955	265	1231	0	0	1036	322
V/C Ratio(X)				0.38	0.00	0.18	0.64	0.51	0.00	0.00	0.65	0.61
Avail Cap(c_a), veh/h				1853	0	955	288	1481	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				8.6	0.0	7.6	26.9	15.6	0.0	0.0	22.0	18.3
Incr Delay (d2), s/veh				0.6	0.0	0.4	4.3	0.3	0.0	0.0	0.7	1.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	1.1	1.3	3.1	0.0	0.0	2.8	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				9.2	0.0	8.0	31.2	15.9	0.0	0.0	22.7	20.1
LnGrp LOS				A	A	A	C	B	A	A	C	C
Approach Vol, veh/h					874			804			871	
Approach Delay, s/veh					9.0			19.2			22.1	
Approach LOS					A			B			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		35.2		24.8			8.6	16.2				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		19.0		25.0			5.0	16.0				
Max Q Clear Time (g_c+I1), s		9.1		10.5			4.9	9.3				
Green Ext Time (p_c), s		2.8		3.7			0.0	2.9				

Intersection Summary												
HCM 6th Ctrl Delay			16.7									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

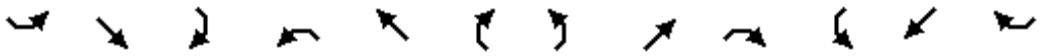
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	151	0	211	667	139	17	159	589	0	0	638	180
Future Volume (veh/h)	151	0	211	667	139	17	159	589	0	0	638	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	164	0	229	725	151	18	173	640	0	0	693	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1840	847	101	268	1245	0	0	1053	327
Arrive On Green	0.00	0.00	0.00	0.52	0.52	0.52	0.08	0.35	0.00	0.00	0.21	0.21
Sat Flow, veh/h		0		3563	1640	195	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		725	0	169	173	640	0	0	693	196
Grp Sat Flow(s),veh/h/ln				1781	0	1835	1728	1777	0	0	1702	1585
Q Serve(g_s), s				7.4	0.0	2.9	2.9	8.6	0.0	0.0	7.5	6.2
Cycle Q Clear(g_c), s				7.4	0.0	2.9	2.9	8.6	0.0	0.0	7.5	6.2
Prop In Lane				1.00		0.11	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1840	0	948	268	1245	0	0	1053	327
V/C Ratio(X)				0.39	0.00	0.18	0.65	0.51	0.00	0.00	0.66	0.60
Avail Cap(c_a), veh/h				1840	0	948	288	1481	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				8.8	0.0	7.7	26.9	15.4	0.0	0.0	21.9	18.1
Incr Delay (d2), s/veh				0.6	0.0	0.4	4.5	0.3	0.0	0.0	0.8	1.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	1.1	1.3	3.2	0.0	0.0	2.8	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				9.4	0.0	8.1	31.4	15.8	0.0	0.0	22.6	19.9
LnGrp LOS				A	A	A	C	B	A	A	C	B
Approach Vol, veh/h					894			813			889	
Approach Delay, s/veh					9.2			19.1			22.0	
Approach LOS					A			B			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		35.0		25.0			8.6	16.4				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		19.0		25.0			5.0	16.0				
Max Q Clear Time (g_c+I1), s		9.4		10.6			4.9	9.5				
Green Ext Time (p_c), s		2.8		3.8			0.0	2.9				

Intersection Summary		
HCM 6th Ctrl Delay		16.7
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	160	0	565	507	352	35	391	604	0	0	690	150
Future Volume (veh/h)	160	0	565	507	352	35	391	604	0	0	690	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	174	0	614	324	701	38	425	657	0	0	750	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	804	1588	86	461	1475	0	0	1098	341
Arrive On Green	0.00	0.00	0.00	0.45	0.45	0.45	0.13	0.42	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		1781	3516	190	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		324	373	366	425	657	0	0	750	163
Grp Sat Flow(s),veh/h/ln				1781	1870	1836	1728	1777	0	0	1702	1585
Q Serve(g_s), s				7.3	8.2	8.2	7.3	8.0	0.0	0.0	8.1	5.4
Cycle Q Clear(g_c), s				7.3	8.2	8.2	7.3	8.0	0.0	0.0	8.1	5.4
Prop In Lane				1.00		0.10	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				804	845	829	461	1475	0	0	1098	341
V/C Ratio(X)				0.40	0.44	0.44	0.92	0.45	0.00	0.00	0.68	0.48
Avail Cap(c_a), veh/h				804	845	829	461	1658	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.0	11.3	11.3	25.7	12.6	0.0	0.0	21.7	20.6
Incr Delay (d2), s/veh				1.5	1.7	1.7	24.1	0.2	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.8	3.3	3.3	4.3	2.8	0.0	0.0	3.1	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.5	12.9	13.0	49.8	12.8	0.0	0.0	22.7	21.6
LnGrp LOS				B	B	B	D	B	A	A	C	C
Approach Vol, veh/h					1063			1082			913	
Approach Delay, s/veh					12.8			27.3			22.5	
Approach LOS					B			C			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		31.1		28.9			12.0	16.9				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		16.0		28.0			8.0	16.0				
Max Q Clear Time (g_c+I1), s		10.2		10.0			9.3	10.1				
Green Ext Time (p_c), s		2.8		4.3			0.0	2.8				

Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

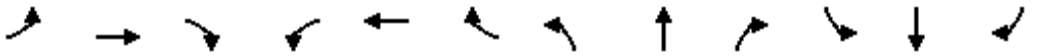
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	160	0	565	510	352	35	392	607	0	0	693	150
Future Volume (veh/h)	160	0	565	510	352	35	392	607	0	0	693	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	174	0	614	325	704	38	426	660	0	0	753	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	804	1587	86	461	1477	0	0	1101	342
Arrive On Green	0.00	0.00	0.00	0.45	0.45	0.45	0.13	0.42	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		1781	3517	190	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		325	374	368	426	660	0	0	753	163
Grp Sat Flow(s),veh/h/ln				1781	1870	1836	1728	1777	0	0	1702	1585
Q Serve(g_s), s				7.3	8.2	8.2	7.3	8.0	0.0	0.0	8.1	5.4
Cycle Q Clear(g_c), s				7.3	8.2	8.2	7.3	8.0	0.0	0.0	8.1	5.4
Prop In Lane				1.00		0.10	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				804	844	828	461	1477	0	0	1101	342
V/C Ratio(X)				0.40	0.44	0.44	0.92	0.45	0.00	0.00	0.68	0.48
Avail Cap(c_a), veh/h				804	844	828	461	1658	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.1	11.3	11.3	25.7	12.6	0.0	0.0	21.7	20.6
Incr Delay (d2), s/veh				1.5	1.7	1.7	24.5	0.2	0.0	0.0	1.1	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.8	3.3	3.3	4.4	2.8	0.0	0.0	3.1	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.6	13.0	13.0	50.2	12.8	0.0	0.0	22.7	21.6
LnGrp LOS				B	B	B	D	B	A	A	C	C
Approach Vol, veh/h					1067			1086			916	
Approach Delay, s/veh					12.9			27.5			22.5	
Approach LOS					B			C			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		31.1		28.9			12.0	16.9				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		16.0		28.0			8.0	16.0				
Max Q Clear Time (g_c+I1), s		10.2		10.0			9.3	10.1				
Green Ext Time (p_c), s		2.8		4.3			0.0	2.8				

Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	46	1011	0	0	0	0	966	465	82	1226	0
Future Volume (veh/h)	264	46	1011	0	0	0	0	966	465	82	1226	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	323	0	0				0	1050	505	89	1333	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	467	0					0	3243	1772	170	3809	0
Arrive On Green	0.13	0.00	0.00				0.00	0.64	0.64	0.05	0.75	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	323	0	0				0	1050	505	89	1333	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.6	0.0	0.0				0.0	6.1	5.2	1.6	5.8	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0				0.0	6.1	5.2	1.6	5.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	467	0					0	3243	1772	170	3809	0
V/C Ratio(X)	0.69	0.00					0.00	0.32	0.28	0.52	0.35	0.00
Avail Cap(c_a), veh/h	1096	0					0	3243	1772	372	3809	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.0	0.0	0.0				0.0	5.4	5.3	30.2	2.8	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0				0.0	0.3	0.4	2.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0				0.0	1.7	1.2	0.7	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	0.0	0.0				0.0	5.7	5.7	32.6	3.1	0.0
LnGrp LOS	C	A					A	A	A	C	A	A
Approach Vol, veh/h		323	A					1555			1422	
Approach Delay, s/veh		28.8						5.7			4.9	
Approach LOS		C						A			A	

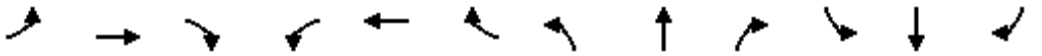
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.2	45.3		12.5		52.5
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	7.0	26.0		20.0		37.0
Max Q Clear Time (g_c+I1), s	3.6	8.1		7.6		7.8
Green Ext Time (p_c), s	0.1	9.3		0.9		11.9

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	46	1011	0	0	0	0	975	473	82	1261	0
Future Volume (veh/h)	264	46	1011	0	0	0	0	975	473	82	1261	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	323	0	0				0	1060	514	89	1371	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	467	0					0	3243	1772	170	3809	0
Arrive On Green	0.13	0.00	0.00				0.00	0.64	0.64	0.05	0.75	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	323	0	0				0	1060	514	89	1371	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.6	0.0	0.0				0.0	6.2	5.4	1.6	6.1	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0				0.0	6.2	5.4	1.6	6.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	467	0					0	3243	1772	170	3809	0
V/C Ratio(X)	0.69	0.00					0.00	0.33	0.29	0.52	0.36	0.00
Avail Cap(c_a), veh/h	1096	0					0	3243	1772	372	3809	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.0	0.0	0.0				0.0	5.5	5.3	30.2	2.9	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0				0.0	0.3	0.4	2.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0				0.0	1.7	1.3	0.7	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	0.0	0.0				0.0	5.7	5.7	32.6	3.1	0.0
LnGrp LOS	C	A					A	A	A	C	A	A
Approach Vol, veh/h		323	A					1574			1460	
Approach Delay, s/veh		28.8						5.7			4.9	
Approach LOS		C						A			A	

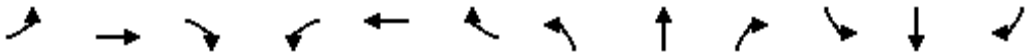
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	7.2	45.3		12.5		52.5						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	7.0	26.0		20.0		37.0						
Max Q Clear Time (g_c+I1), s	3.6	8.2		7.6		8.1						
Green Ext Time (p_c), s	0.1	9.4		0.9		12.3						

Intersection Summary			
HCM 6th Ctrl Delay			7.6
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	3	537	0	0	0	0	1766	579	230	1273	0
Future Volume (veh/h)	200	3	537	0	0	0	0	1766	579	230	1273	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	219	0	0				0	1920	629	250	1384	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	310	0					0	3492	1908	331	4208	0
Arrive On Green	0.09	0.00	0.00				0.00	0.68	0.68	0.10	0.82	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	219	0	0				0	1920	629	250	1384	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.4	0.0	0.0				0.0	17.1	8.3	6.3	5.9	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0				0.0	17.1	8.3	6.3	5.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	310	0					0	3492	1908	331	4208	0
V/C Ratio(X)	0.71	0.00					0.00	0.55	0.33	0.76	0.33	0.00
Avail Cap(c_a), veh/h	673	0					0	3492	1908	461	4208	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	0.0				0.0	7.2	5.8	39.7	1.9	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.0				0.0	0.6	0.5	4.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0				0.0	5.4	2.2	2.9	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	0.0	0.0				0.0	7.8	6.3	44.2	2.1	0.0
LnGrp LOS	D	A					A	A	A	D	A	A
Approach Vol, veh/h		219	A					2549			1634	
Approach Delay, s/veh		42.9						7.5			8.6	
Approach LOS		D						A			A	

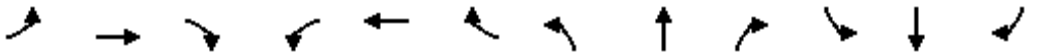
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.6	65.5		11.8		78.2						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	12.0	49.0		17.0		65.0						
Max Q Clear Time (g_c+I1), s	8.3	19.1		7.4		7.9						
Green Ext Time (p_c), s	0.3	22.3		0.5		15.2						

Intersection Summary			
HCM 6th Ctrl Delay			9.6
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	3	537	0	0	0	0	1770	582	230	1279	0
Future Volume (veh/h)	200	3	537	0	0	0	0	1770	582	230	1279	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	219	0	0				0	1924	633	250	1390	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	310	0					0	3492	1908	331	4208	0
Arrive On Green	0.09	0.00	0.00				0.00	0.68	0.68	0.10	0.82	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	219	0	0				0	1924	633	250	1390	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.4	0.0	0.0				0.0	17.2	8.4	6.3	5.9	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0				0.0	17.2	8.4	6.3	5.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	310	0					0	3492	1908	331	4208	0
V/C Ratio(X)	0.71	0.00					0.00	0.55	0.33	0.76	0.33	0.00
Avail Cap(c_a), veh/h	673	0					0	3492	1908	461	4208	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	0.0				0.0	7.2	5.8	39.7	1.9	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.0				0.0	0.6	0.5	4.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0				0.0	5.4	2.2	2.9	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	0.0	0.0				0.0	7.8	6.3	44.2	2.1	0.0
LnGrp LOS	D	A					A	A	A	D	A	A
Approach Vol, veh/h		219	A					2557			1640	
Approach Delay, s/veh		42.9						7.5			8.5	
Approach LOS		D						A			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.6	65.5		11.8		78.2						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	12.0	49.0		17.0		65.0						
Max Q Clear Time (g_c+I1), s	8.3	19.2		7.4		7.9						
Green Ext Time (p_c), s	0.3	22.3		0.5		15.3						

Intersection Summary			
HCM 6th Ctrl Delay			9.6
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Existing + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	253	1004	3	2	1527	1026	546	2	265	0	2	0
Project Trips	0	17	0	0	35	0	0	0	0	0	0	0
GEOMETRY	LL	TT	TR	L	TTT	R	LL	LT	R		LTR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	253	253	0.09 *	0.09 *
NBT	3.0	4,800	1,004	1,021	0.21	0.21
NBR	0.0	0	3	3	0.00	0.00
SBL	1.0	1,600	2	2	0.00	0.00
SBT	3.0	4,800	1,527	1,562	0.32	0.33
SBR	1.0 (a)	1,600	841	841	0.53 *	0.53 *
EBL	0.0	0	546	546	0.00	0.00
EBT	3.0	4,800	2	2	0.11 *	0.11 *
EBR	1.0	1,600	265	265	0.17	0.17
WBL	0.0	0	0	0	0.00 *	0.00 *
WBT	1.0	1,600	2	2	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.61	0.61
E/W Critical Movements					0.11	0.11
ICU					0.72	0.72
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 18% RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Existing + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	401	1656	2	1	1348	653	865	0	334	1	0	0
Project Trips	0	7	0	0	6	0	0	0	0	0	0	0
GEOMETRY	LL	TT	TR	L	TTT	R	LL	LT	R		LTR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	2,880	401	401	0.14 *	0.14 *
NBT	3.0	4,800	1,656	1,663	0.35	0.35
NBR	0.0	0	2	2	0.00	0.00
SBL	1.0	1,600	1	1	0.00	0.00
SBT	3.0	4,800	1,348	1,354	0.28 *	0.28 *
SBR	1.0 (a)	1,600	366	366	0.23	0.23
EBL	0.0	0	865	865	0.00	0.00
EBT	3.0	4,800	0	0	0.18 *	0.18 *
EBR	1.0	1,600	334	334	0.21	0.21
WBL	0.0	0	1	1	0.00 *	0.00 *
WBT	1.0	1,600	0	0	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.42	0.42
E/W Critical Movements					0.18	0.18
ICU					0.60	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 44% RTOR overlap w/EBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	93	909	63	235	1272	111	101	278	138	21	102	55
Project Trips	13	0	0	0	0	35	17	0	6	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	93	106	0.06 *	0.07 *
NBT	3.0	4,800	909	909	0.19	0.19
NBR	1.0	1,600	63	63	0.04	0.04 *
SBL	1.0	1,600	235	235	0.15	0.15
SBT	3.0	4,800	1,272	1,272	0.29 *	0.30 *
SBR	0.0	0	111	146	0.00	0.00
EBL	1.0	1,600	101	118	0.06	0.07 *
EBT	2.0	3,200	278	278	0.09 *	0.09
EBR	1.0	1,600	138	144	0.09	0.09
WBL	1.0	1,600	21	21	0.05 *	0.05
WBT	2.0	3,200	102	102	0.07	0.07 *
WBR	1.0	1,600	55	55	0.03	0.03
N/S Critical Movements					0.35	0.37
E/W Critical Movements					0.14	0.14
ICU					0.49	0.51
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	173	1302	22	66	1145	200	147	154	81	84	336	225
Project Trips	3	0	0	0	0	6	7	0	3	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	173	176	0.11 *	0.11 *
NBT	3.0	4,800	1,302	1,302	0.27	0.27
NBR	1.0	1,600	22	22	0.01	0.01 *
SBL	1.0	1,600	66	66	0.05	0.05
SBT	3.0	4,800	1,145	1,145	0.28 *	0.28 *
SBR	0.0	0	200	206	0.00	0.00
EBL	1.0	1,600	147	154	0.09 *	0.10 *
EBT	2.0	3,200	154	154	0.07	0.07
EBR	1.0	1,600	81	84	0.05	0.05
WBL	1.0	1,600	84	84	0.05	0.05
WBT	2.0	3,200	336	336	0.11 *	0.11 *
WBR	1.0 (a)	1,600	158	225	0.10	0.14
N/S Critical Movements					0.39	0.39
E/W Critical Movements					0.20	0.21
ICU					0.59	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 30% RTOR overlap w/SBL

Cumulative and Cumulative + Project AM and PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	438	100	1213	0	0	1146
Future Volume (veh/h)	438	100	1213	0	0	1146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	578	0	1318	0	0	1246
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	759	343	3338	0	0	3338
Arrive On Green	0.21	0.00	0.65	0.00	0.00	0.65
Sat Flow, veh/h	3563	1610	5443	0	0	5443
Grp Volume(v), veh/h	578	0	1318	0	0	1246
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	9.1	0.0	7.2	0.0	0.0	6.7
Cycle Q Clear(g_c), s	9.1	0.0	7.2	0.0	0.0	6.7
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	759	343	3338	0	0	3338
V/C Ratio(X)	0.76	0.00	0.39	0.00	0.00	0.37
Avail Cap(c_a), veh/h	1247	564	3338	0	0	3338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	4.8	0.0	0.0	4.8
Incr Delay (d2), s/veh	1.6	0.0	0.4	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	1.8	0.0	0.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.8	0.0	5.2	0.0	0.0	5.1
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	578		1318			1246
Approach Delay, s/veh	23.8		5.2			5.1
Approach LOS	C		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		43.2			43.2	16.8
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s		9.2			8.7	11.1
Green Ext Time (p_c), s		10.2			9.7	1.6

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	446	100	1222	0	0	1163
Future Volume (veh/h)	446	100	1222	0	0	1163
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	587	0	1328	0	0	1264
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	768	347	3325	0	0	3325
Arrive On Green	0.22	0.00	0.65	0.00	0.00	0.65
Sat Flow, veh/h	3563	1610	5443	0	0	5443
Grp Volume(v), veh/h	587	0	1328	0	0	1264
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	9.3	0.0	7.4	0.0	0.0	6.9
Cycle Q Clear(g_c), s	9.3	0.0	7.4	0.0	0.0	6.9
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	768	347	3325	0	0	3325
V/C Ratio(X)	0.76	0.00	0.40	0.00	0.00	0.38
Avail Cap(c_a), veh/h	1247	564	3325	0	0	3325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	4.9	0.0	0.0	4.9
Incr Delay (d2), s/veh	1.6	0.0	0.4	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	1.9	0.0	0.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.7	0.0	5.3	0.0	0.0	5.2
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	587		1328			1264
Approach Delay, s/veh	23.7		5.3			5.2
Approach LOS	C		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		43.1			43.1	16.9
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s		9.4			8.9	11.3
Green Ext Time (p_c), s		10.3			9.8	1.7

Intersection Summary	
HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



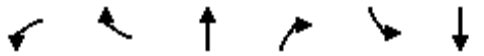
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	584	127	1486	0	0	1374
Future Volume (veh/h)	584	127	1486	0	0	1374
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	764	0	1615	0	0	1493
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	944	427	3073	0	0	3073
Arrive On Green	0.26	0.00	0.60	0.00	0.00	0.60
Sat Flow, veh/h	3563	1610	5443	0	0	5443
Grp Volume(v), veh/h	764	0	1615	0	0	1493
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	12.0	0.0	11.1	0.0	0.0	9.9
Cycle Q Clear(g_c), s	12.0	0.0	11.1	0.0	0.0	9.9
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	944	427	3073	0	0	3073
V/C Ratio(X)	0.81	0.00	0.53	0.00	0.00	0.49
Avail Cap(c_a), veh/h	1247	564	3073	0	0	3073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	7.0	0.0	0.0	6.7
Incr Delay (d2), s/veh	3.1	0.0	0.6	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	3.1	0.0	0.0	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.7	0.0	7.6	0.0	0.0	7.3
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	764		1615			1493
Approach Delay, s/veh	23.7		7.6			7.3
Approach LOS	C		A			A

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	40.1			40.1	19.9
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s	13.1			11.9	14.0
Green Ext Time (p_c), s	11.2			10.8	1.9

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



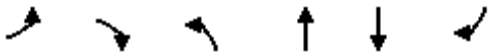
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	586	127	1490	0	0	1377
Future Volume (veh/h)	586	127	1490	0	0	1377
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	766	0	1620	0	0	1497
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	946	427	3070	0	0	3070
Arrive On Green	0.27	0.00	0.60	0.00	0.00	0.60
Sat Flow, veh/h	3563	1610	5443	0	0	5443
Grp Volume(v), veh/h	766	0	1620	0	0	1497
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	12.1	0.0	11.1	0.0	0.0	9.9
Cycle Q Clear(g_c), s	12.1	0.0	11.1	0.0	0.0	9.9
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	946	427	3070	0	0	3070
V/C Ratio(X)	0.81	0.00	0.53	0.00	0.00	0.49
Avail Cap(c_a), veh/h	1247	564	3070	0	0	3070
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	7.0	0.0	0.0	6.8
Incr Delay (d2), s/veh	3.1	0.0	0.7	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	3.2	0.0	0.0	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.7	0.0	7.6	0.0	0.0	7.3
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	766		1620			1497
Approach Delay, s/veh	23.7		7.6			7.3
Approach LOS	C		A			A

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	40.1			40.1	19.9
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	31.0			31.0	21.0
Max Q Clear Time (g_c+I1), s	13.1			11.9	14.1
Green Ext Time (p_c), s	11.3			10.9	1.9

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



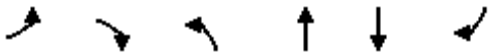
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	751	0	1900	1404	0
Future Volume (veh/h)	199	751	0	1900	1404	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	216	816	0	2065	1526	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	516	919	0	2945	2945	0
Arrive On Green	0.29	0.29	0.00	0.58	0.58	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	216	816	0	2065	1526	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	5.9	14.8	0.0	17.2	10.8	0.0
Cycle Q Clear(g_c), s	5.9	14.8	0.0	17.2	10.8	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	516	919	0	2945	2945	0
V/C Ratio(X)	0.42	0.89	0.00	0.70	0.52	0.00
Avail Cap(c_a), veh/h	534	951	0	2945	2945	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	20.4	0.0	9.0	7.7	0.0
Incr Delay (d2), s/veh	0.5	10.0	0.0	1.4	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.2	0.0	5.2	3.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.8	30.4	0.0	10.4	8.3	0.0
LnGrp LOS	B	C	A	B	A	A
Approach Vol, veh/h	1032			2065	1526	
Approach Delay, s/veh	27.8			10.4	8.3	
Approach LOS	C			B	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		38.6		21.4		38.6
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		34.0		18.0		34.0
Max Q Clear Time (g_c+I1), s		19.2		16.8		12.8
Green Ext Time (p_c), s		11.8		0.6		11.8

Intersection Summary		
HCM 6th Ctrl Delay	13.6	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.



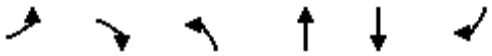
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	795	0	1930	1429	0
Future Volume (veh/h)	199	795	0	1930	1429	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	216	864	0	2098	1553	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	531	946	0	2902	2902	0
Arrive On Green	0.30	0.30	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	216	864	0	2098	1553	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	5.8	15.8	0.0	18.1	11.3	0.0
Cycle Q Clear(g_c), s	5.8	15.8	0.0	18.1	11.3	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	531	946	0	2902	2902	0
V/C Ratio(X)	0.41	0.91	0.00	0.72	0.54	0.00
Avail Cap(c_a), veh/h	534	951	0	2902	2902	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.8	20.3	0.0	9.5	8.0	0.0
Incr Delay (d2), s/veh	0.5	12.9	0.0	1.6	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.9	0.0	5.6	3.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.3	33.2	0.0	11.1	8.7	0.0
LnGrp LOS	B	C	A	B	A	A
Approach Vol, veh/h	1080			2098	1553	
Approach Delay, s/veh	30.0			11.1	8.7	
Approach LOS	C			B	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		38.1		21.9		38.1
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		34.0		18.0		34.0
Max Q Clear Time (g_c+I1), s		20.1		17.8		13.3
Green Ext Time (p_c), s		11.4		0.1		11.9

Intersection Summary		
HCM 6th Ctrl Delay		14.6
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.



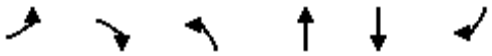
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	326	1022	0	2082	1798	0
Future Volume (veh/h)	326	1022	0	2082	1798	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	354	1111	0	2263	1954	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	675	1201	0	2492	2492	0
Arrive On Green	0.38	0.38	0.00	0.49	0.49	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	354	1111	0	2263	1954	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	9.2	20.1	0.0	24.5	19.0	0.0
Cycle Q Clear(g_c), s	9.2	20.1	0.0	24.5	19.0	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	675	1201	0	2492	2492	0
V/C Ratio(X)	0.52	0.93	0.00	0.91	0.78	0.00
Avail Cap(c_a), veh/h	683	1215	0	2492	2492	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.5	17.8	0.0	14.1	12.7	0.0
Incr Delay (d2), s/veh	0.7	11.9	0.0	6.2	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	8.4	0.0	9.1	6.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.2	29.7	0.0	20.3	15.3	0.0
LnGrp LOS	B	C	A	C	B	A
Approach Vol, veh/h	1465			2263	1954	
Approach Delay, s/veh	26.2			20.3	15.3	
Approach LOS	C			C	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		33.3		26.7		33.3
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		29.0		23.0		29.0
Max Q Clear Time (g_c+I1), s		26.5		22.1		21.0
Green Ext Time (p_c), s		2.4		0.6		6.7

Intersection Summary		
HCM 6th Ctrl Delay		20.1
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	326	1030	0	2095	1803	0
Future Volume (veh/h)	326	1030	0	2095	1803	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	354	1120	0	2277	1960	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	677	1204	0	2485	2485	0
Arrive On Green	0.38	0.38	0.00	0.49	0.49	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	354	1120	0	2277	1960	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	9.2	20.3	0.0	24.8	19.2	0.0
Cycle Q Clear(g_c), s	9.2	20.3	0.0	24.8	19.2	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	677	1204	0	2485	2485	0
V/C Ratio(X)	0.52	0.93	0.00	0.92	0.79	0.00
Avail Cap(c_a), veh/h	683	1215	0	2485	2485	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.4	17.8	0.0	14.3	12.8	0.0
Incr Delay (d2), s/veh	0.7	12.5	0.0	6.7	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	8.5	0.0	9.3	6.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.1	30.3	0.0	21.0	15.5	0.0
LnGrp LOS	B	C	A	C	B	A
Approach Vol, veh/h	1474			2277	1960	
Approach Delay, s/veh	26.7			21.0	15.5	
Approach LOS	C			C	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		33.2		26.8		33.2
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		29.0		23.0		29.0
Max Q Clear Time (g_c+I1), s		26.8		22.3		21.2
Green Ext Time (p_c), s		2.1		0.5		6.6

Intersection Summary		
HCM 6th Ctrl Delay	20.5	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	98	2040	33	281	1663	200	192	50	86	134	89	366
Project Trips	0	35	0	0	69	0	0	0	0	0	0	0
GEOMETRY	LL	TT TR		LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	2.0	2,880	98	98	0.05	0.05
NBT	3.0	4,800	2,040	2,075	0.43 *	0.44 *
NBR	0.0	0	33	33	0.00	0.00
SBL	2.0	2,880	281	281	0.10 *	0.10 *
SBT	3.0	4,800	1,663	1,732	0.35	0.36
SBR	1.0	1,600	200	200	0.13	0.13
EBL	2.0	2,880	192	192	0.07 *	0.07 *
EBT	1.0	1,600	50	50	0.07	0.07
EBR	1.0	1,600	86	86	0.05	0.05
WBL	0.0	0	134	134	0.00	0.00
WBT	2.0	3,200	89	89	0.07	0.07
WBR	1.0 (a)	1,600	227	227	0.14 *	0.14 *
N/S Critical Movements					0.53	0.54
E/W Critical Movements					0.20	0.20
ICU					0.73	0.74
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 38% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	243	1749	56	314	2084	404	390	114	203	32	22	267
Project Trips	0	15	0	0	13	0	0	0	0	0	0	0
GEOMETRY	LL	TT TR		LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	2.0	2,880	243	243	0.08 *	0.08 *
NBT	3.0	4,800	1,749	1,764	0.38	0.38
NBR	0.0	0	56	56	0.00	0.00
SBL	2.0	2,880	314	314	0.11	0.11
SBT	3.0	4,800	2,084	2,097	0.43 *	0.44 *
SBR	1.0	1,600	404	404	0.25	0.25
EBL	2.0	2,880	390	390	0.14 *	0.14 *
EBT	1.0	1,600	114	114	0.07	0.07
EBR	1.0	1,600	203	203	0.13	0.13
WBL	0.0	0	32	32	0.00	0.00
WBT	2.0	3,200	22	22	0.07	0.07
WBR	1.0 (a)	1,600	112	112	0.07 *	0.07 *
N/S Critical Movements					0.51	0.52
E/W Critical Movements					0.20	0.20
ICU					0.71	0.72
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 58% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	348	1353	205	388	1121	272	687	839	257	95	382	95
Project Trips	78	35	7	0	69	0	0	0	153	11	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	2.0	2,880	348	426	0.12	0.15
NBT	3.0	4,800	1,353	1,388	0.28 *	0.29 *
NBR	1.0	1,600	205	212	0.13	0.13
SBL	2.0	2,880	388	388	0.13 *	0.13 *
SBT	3.0	4,800	1,121	1,190	0.23	0.25
SBR	1.0	(a) 1,600	109	109	0.07	0.07
EBL	3.0	4,800	687	687	0.14	0.14
EBT	2.0	3,200	839	839	0.26 *	0.26 *
EBR	1.0	1,600	257	410	0.16	0.26
WBL	1.0	1,600	95	106	0.06 *	0.07 *
WBT	3.0	4,800	382	382	0.08	0.08
WBR	1.0	1,600	95	95	0.06	0.06
N/S Critical Movements					0.41	0.42
E/W Critical Movements					0.32	0.33
ICU					0.73	0.75
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 60% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	425	1264	105	197	1571	538	503	447	215	241	964	175
Project Trips	33	15	3	0	13	0	0	0	30	2	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	2.0	2,880	425	458	0.15 *	0.16 *
NBT	3.0	4,800	1,264	1,279	0.26	0.27
NBR	1.0	1,600	105	108	0.07	0.07
SBL	2.0	2,880	197	197	0.07	0.07
SBT	3.0	4,800	1,571	1,584	0.33 *	0.33 *
SBR	1.0	(a) 1,600	371	371	0.23	0.23
EBL	3.0	4,800	503	503	0.10 *	0.10 *
EBT	2.0	3,200	447	447	0.14	0.14
EBR	1.0	1,600	215	245	0.13	0.15
WBL	1.0	1,600	241	243	0.15	0.15
WBT	3.0	4,800	964	964	0.20 *	0.20 *
WBR	1.0	1,600	175	175	0.11	0.11
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.30	0.30
ICU					0.78	0.79
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 31% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	130	1504	27	81	1267	130	256	39	186	155	72	117
Project Trips	40	121	12	0	233	0	0	0	81	22	0	0
GEOMETRY	L	TT	**T**R	L	TT**T**	R		LT	R	**L**	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	1.0	1,600	130	170	0.08	0.11 *
NBT	3.0	4,800	1,504	1,625	0.32 *	0.35
NBR	0.0	0	27	39	0.00	0.00
SBL	1.0	1,600	81	81	0.05 *	0.05
SBT	3.0	4,800	1,267	1,500	0.26	0.31 *
SBR	1.0	1,600	130	130	0.08	0.08
EBL	0.0	0	256	256	0.00	0.00
EBT	1.0	1,600	39	39	0.18 *	0.18 *
EBR	1.0	1,600	186	267	0.12	0.17
WBL	1.0	1,600	155	177	0.10 *	0.11 *
WBT	1.0	1,600	72	72	0.07	0.07
WBR	1.0	1,600	117	117	0.00	0.00
N/S Critical Movements					0.37	0.42
E/W Critical Movements					0.28	0.29
ICU					0.65	0.71
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	93	1675	34	190	1688	226	125	15	53	163	54	81
Project Trips	17	51	5	0	44	0	0	0	15	4	0	0
GEOMETRY	L	TT	**T**R	L	TT**T**	R		LT	R	**L**	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Ex+Project
NBL	1.0	1,600	93	110	0.06	0.07
NBT	3.0	4,800	1,675	1,726	0.36 *	0.37 *
NBR	0.0	0	34	39	0.00	0.00
SBL	1.0	1,600	190	190	0.12 *	0.12 *
SBT	3.0	4,800	1,688	1,732	0.35	0.36
SBR	1.0	1,600	226	226	0.14	0.14
EBL	0.0	0	125	125	0.00	0.00
EBT	1.0	1,600	15	15	0.09 *	0.09 *
EBR	1.0	1,600	53	68	0.03	0.04
WBL	1.0	1,600	163	167	0.10 *	0.10 *
WBT	1.0	1,600	54	54	0.07	0.07
WBR	1.0	1,600	81	81	0.05	0.05
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.19	0.19
ICU					0.67	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak *	39	1520	50	38	1561	22	20	0	75	131	0	71
Project Trips	12	69	52	202	134	0	0	26	18	26	8	104
GEOMETRY	L	TT **TR**		L	TT**T**	R	L	**TR**		L	**T**	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	39	51	0.05 *	0.05
NBT	3.0	4,800	1,520	1,589	0.33	0.35 *
NBR	0.0	0	50	102	0.00	0.00
SBL	1.0	1,600	38	240	0.05	0.15 *
SBT	3.0	4,800	1,561	1,695	0.33 *	0.35
SBR	1.0	1,600	22	22	0.01	0.01
EBL	0.0	0	20	20	0.00	0.00
EBT	1.0	1,600	0	26	0.07 *	0.07 *
EBR	1.0	1,600	75	93	0.05	0.06
WBL	1.0	1,600	131	157	0.08 *	0.10 *
WBT	1.0	1,600	0	8	0.00	0.01
WBR	1.0	1,600	71	175	0.04	0.11
N/S Critical Movements					0.38	0.50
E/W Critical Movements					0.15	0.17
ICU					0.53	0.67
Level of Service (LOS)					A	B

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak *	43	1728	96	101	1739	76	8	0	24	65	0	46
Project Trips	5	29	10	38	26	0	0	5	3	11	3	43
GEOMETRY	L	TT	**TR**	L	TT	R	L	**TR**		L	**T**	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	43	48	0.05 *	0.05 *
NBT	3.0	4,800	1,728	1,757	0.38	0.39
NBR	0.0	0	96	106	0.00	0.00
SBL	1.0	1,600	101	139	0.06	0.09
SBT	2.0	3,200	1,739	1,765	0.54 *	0.55 *
SBR	1.0	1,600	76	76	0.05	0.05
EBL	0.0	0	8	8	0.00	0.00
EBT	1.0	1,600	0	5	0.07 *	0.07 *
EBR	1.0	1,600	24	27	0.02	0.02
WBL	1.0	1,600	65	76	0.05 *	0.05 *
WBT	1.0	1,600	0	3	0.00	0.00
WBR	1.0	1,600	46	89	0.03	0.06
N/S Critical Movements					0.59	0.60
E/W Critical Movements					0.12	0.12
ICU					0.71	0.72
Level of Service (LOS)					C	C

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	103	1188	213	251	1331	138	178	265	123	191	162	189
Project Trips	0	33	200	152	17	9	19	109	0	93	60	81
GEOMETRY	L	TT	**T**R	L**L**	TT	**T**R	L	TT	R	L**L**	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	103	103	0.06	0.06
NBT	3.0	4,800	1,188	1,221	0.29 *	0.34 *
NBR	0.0	0	213	413	0.13	0.00
SBL	2.0	2,880	251	403	0.09 *	0.14 *
SBT	3.0	4,800	1,331	1,348	0.31	0.31
SBR	0.0	0	138	147	0.09	0.00
EBL	1.0	1,600	178	197	0.11 *	0.12
EBT	2.0	3,200	265	374	0.08	0.12 *
EBR	1.0	1,600	123	123	0.08	0.08
WBL	2.0	2,880	191	284	0.07	0.10 *
WBT	2.0	3,200	162	222	0.05 *	0.07
WBR	1.0 (a)	1,600	189	270	0.12	0.17
N/S Critical Movements					0.38	0.48
E/W Critical Movements					0.16	0.22
ICU					0.54	0.70
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	91	1378	134	214	1376	222	163	147	75	279	500	273
Project Trips	0	6	38	29	7	4	4	21	0	39	25	34
GEOMETRY	L	TT	**T**R	L**L**	TT	**T**R	L	TT	R	L**L**	TT	R

Move-ment	Lane		Capacity	Cumulative	Project	Cumu	Project
	Lanes			**Volume**		**V/C Ratio**	
	Level of Service Calculations						
NBL	1.0		1,600	91	91	0.06 *	0.06 *
NBT	3.0		4,800	1,378	1,384	0.32	0.32
NBR	0.0		0	134	172	0.08	0.00
SBL	2.0		2,880	214	243	0.07	0.08
SBT	3.0		4,800	1,376	1,383	0.33 *	0.34 *
SBR	0.0		0	222	226	0.14	0.00
EBL	1.0		1,600	163	167	0.10 *	0.10 *
EBT	2.0		3,200	147	168	0.05	0.05
EBR	1.0		1,600	75	75	0.05	0.05
WBL	2.0		2,880	279	318	0.10	0.11
WBT	2.0		3,200	500	525	0.16 *	0.16 *
WBR	1.0	(a)	1,600	273	307	0.17	0.19
N/S Critical Movements						0.39	0.40
E/W Critical Movements						0.26	0.26
ICU						0.65	0.66
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1342	18	72	1527	0	0	0	0	23	0	142
Project Trips	0	230	0	4	106	0	0	0	0	0	0	3
GEOMETRY		T TR		L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,342	1,572	0.43 *	0.50 *
NBR	0.0	0	18	18	0.00	0.00
SBL	1.0	1,600	72	76	0.05 *	0.05 *
SBT	3.0	4,800	1,527	1,633	0.32	0.34
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	23	23	0.00	0.00
WBT	1.0	1,600	0	0	0.10 *	0.11 *
WBR	0.0	0	142	145	0.00	0.00
N/S Critical Movements					0.48	0.55
E/W Critical Movements					0.10	0.11
ICU					0.58	0.66
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1544	27	69	1672	0	0	0	0	47	0	70
Project Trips	0	43	0	2	44	0	0	0	0	0	0	2
GEOMETRY		T TR		L	TTT						LR	

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Cumulative	Project	**V/C Ratio** Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,544	1,587	0.49 *	0.50 *
NBR	0.0	0	27	27	0.00	0.00
SBL	1.0	1,600	69	71	0.05 *	0.05 *
SBT	3.0	4,800	1,672	1,716	0.35	0.36
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00 *	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	47	47	0.00	0.00
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	70	72	0.00	0.00
N/S Critical Movements					0.54	0.55
E/W Critical Movements					0.07	0.07
ICU					0.61	0.62
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: First Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	40	1249	0	0	1488	68	126	0	69	0	0	0
Project Trips	0	182	0	0	80	26	48	0	0	0	0	0
GEOMETRY	L	TT			TT TR			LR				

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	40	40	0.03	0.03
NBT	2.0	3,200	1,249	1,431	0.39 *	0.45 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	3.0	4,800	1,488	1,568	0.32	0.35
SBR	0.0	0	68	94	0.04	0.06
EBL	0.0	0	126	174	0.00	0.00
EBT	1.0	1,600	0	0	0.12 *	0.15 *
EBR	0.0	0	69	69	0.04	0.04
WBL	0.0	0	0	0	0.00 *	0.00 *
WBT	0.0	0	0	0	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.39	0.45
E/W Critical Movements					0.12	0.15
ICU					0.51	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: First Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	60	1465	0	0	1572	155	102	0	56	0	0	0
Project Trips	0	34	0	0	33	11	9	0	0	0	0	0
GEOMETRY	L	TT			TT TR			LR				

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	60	60	0.04	0.04
NBT	2.0	3,200	1,465	1,499	0.46 *	0.47 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	3.0	4,800	1,572	1,605	0.36	0.37
SBR	0.0	0	155	166	0.10	0.10
EBL	0.0	0	102	111	0.00	0.00
EBT	1.0	1,600	0	0	0.10 *	0.10 *
EBR	0.0	0	56	56	0.04	0.04
WBL	0.0	0	0	0	0.00 *	0.00 *
WBT	0.0	0	0	0	0.00	0.00
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.46	0.47
E/W Critical Movements					0.10	0.10
ICU					0.56	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1234	95	69	1490	0	0	0	0	137	0	61
Project Trips	0	175	0	4	76	0	0	0	0	0	0	7
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Cumulative	Project	**V/C Ratio** Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,234	1,409	0.39 *	0.44 *
NBR	1.0	1,600	95	95	0.06	0.06
SBL	1.0	1,600	69	73	0.05 *	0.05 *
SBT	3.0	4,800	1,490	1,566	0.31	0.33
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	137	137	0.00	0.00
WBT	1.0	1,600	0	0	0.12 *	0.13 *
WBR	0.0	0	61	68	0.00	0.00
N/S Critical Movements					0.44	0.49
E/W Critical Movements					0.12	0.13
ICU					0.56	0.62
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1476	163	60	1566	0	0	0	0	163	0	45
Project Trips	0	32	0	2	31	0	0	0	0	0	0	2
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,476	1,508	0.46 *	0.47 *
NBR	1.0	1,600	163	163	0.10	0.10
SBL	1.0	1,600	60	62	0.05 *	0.05 *
SBT	3.0	4,800	1,566	1,597	0.33	0.33
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	163	163	0.00	0.00
WBT	1.0	1,600	0	0	0.13 *	0.13 *
WBR	0.0	0	45	47	0.00	0.00
N/S Critical Movements					0.51	0.52
E/W Critical Movements					0.13	0.13
ICU					0.64	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	181	1022	0	0	1305	335	321	0	285	0	0	0
Project Trips	0	123	0	0	50	26	52	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	2.0	2,880	181	181	0.06 *	0.06 *
NBT	3.0	4,800	1,022	1,145	0.21	0.24
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,305	1,355	0.34 *	0.36 *
SBR	0.0	0	335	361	0.21	0.23
EBL	2.0	2,880	321	373	0.11 *	0.13 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	285	285	0.18	0.18
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.40	0.42
E/W Critical Movements					0.11	0.13
ICU					0.51	0.55
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	417	1384	0	0	1355	376	265	0	155	0	0	0
Project Trips	0	34	0	0	33	11	9	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	2.0	2,880	417	417	0.14 *	0.14 *
NBT	3.0	4,800	1,384	1,418	0.29	0.30
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,355	1,388	0.36 *	0.37 *
SBR	0.0	0	376	387	0.24	0.24
EBL	2.0	2,880	265	274	0.09 *	0.10 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	155	155	0.10	0.10
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.50	0.51
E/W Critical Movements					0.09	0.10
ICU					0.59	0.61
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1153	218	212	1312	0	0	0	0	80	0	81
Project Trips	0	114	0	5	45	0	0	0	0	0	0	9
GEOMETRY		TT TR		L	TTT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,153	1,267	0.29 *	0.31 *
NBR	0.0	0	218	218	0.00	0.00
SBL	1.0	1,600	212	217	0.13 *	0.14 *
SBT	3.0	4,800	1,312	1,357	0.27	0.28
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	80	80	0.05 *	0.05 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0 (a)	1,600	81	90	0.05	0.06
N/S Critical Movements					0.42	0.45
E/W Critical Movements					0.05	0.05
ICU					0.47	0.50
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1425	105	69	1388	0	0	0	0	307	0	330
Project Trips	0	20	0	2	19	0	0	0	0	0	0	2
GEOMETRY		TT TR		L	TTT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,425	1,445	0.32 *	0.32 *
NBR	0.0	0	105	105	0.00	0.00
SBL	1.0	1,600	69	71	0.05 *	0.05 *
SBT	3.0	4,800	1,388	1,407	0.29	0.29
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	307	307	0.11	0.11
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	330	332	0.21 *	0.21 *
N/S Critical Movements					0.37	0.37
E/W Critical Movements					0.21	0.21
ICU					0.58	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	23	1091	55	49	1249	168	186	371	34	128	222	29
Project Trips	0	70	0	0	34	21	44	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Cumulative	Project	**V/C Ratio** Cumu	Project
NBL	1.0	1,600	23	23	0.05 *	0.05 *
NBT	3.0	4,800	1,091	1,161	0.24	0.25
NBR	0.0	0	55	55	0.00	0.00
SBL	1.0	1,600	49	49	0.05	0.05
SBT	3.0	4,800	1,249	1,283	0.30 *	0.31 *
SBR	0.0	0	168	189	0.00	0.00
EBL	2.0	2,880	186	230	0.06	0.08
EBT	1.0	1,600	371	371	0.23 *	0.23 *
EBR	1.0	1,600	34	34	0.02	0.02
WBL	1.0	1,600	128	128	0.08 *	0.08 *
WBT	2.0	3,200	222	222	0.08	0.08
WBR	0.0	0	29	29	0.00	0.00
N/S Critical Movements					0.35	0.36
E/W Critical Movements					0.31	0.31
ICU					0.66	0.67
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	46	1244	80	27	1485	260	320	283	67	203	489	90
Project Trips	0	13	0	0	14	9	8	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

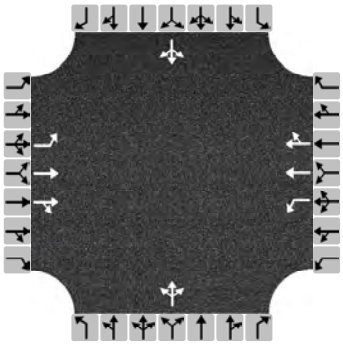
	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	46	46	0.05 *	0.05 *
NBT	3.0	4,800	1,244	1,257	0.28	0.28
NBR	0.0	0	80	80	0.00	0.00
SBL	1.0	1,600	27	27	0.05	0.05
SBT	3.0	4,800	1,485	1,499	0.36 *	0.37 *
SBR	0.0	0	260	269	0.00	0.00
EBL	2.0	2,880	320	328	0.11	0.11
EBT	1.0	1,600	283	283	0.18 *	0.18 *
EBR	1.0	1,600	67	67	0.04	0.04
WBL	1.0	1,600	203	203	0.13 *	0.13 *
WBT	2.0	3,200	489	489	0.18	0.18
WBR	0.0	0	90	90	0.00	0.00
N/S Critical Movements					0.41	0.42
E/W Critical Movements					0.31	0.31
ICU					0.72	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	Cumu	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	96	106	22	13	106	116	39	189	49	100	146	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	96	53	75	13	53	169	277			361		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.085	0.047	0.067	0.012	0.047	0.150	0.246			0.321		
Final Departure Headway, hd (s)	7.75	7.23	7.02	7.74	7.22	6.73	6.63			6.45		
Final Degree of Utilization, x	0.207	0.106	0.146	0.028	0.106	0.316	0.510			0.646		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.45	4.93	4.72	5.44	4.92	4.43	4.33			4.15		

Capacity, Delay and Level of Service

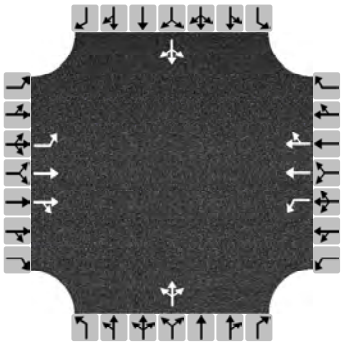
Flow Rate, v (veh/h)	96	53	75	13	53	169	277			361		
Capacity	465	498	513	465	498	535	543			559		
95% Queue Length, Q_{95} (veh)	0.8	0.4	0.5	0.1	0.4	1.4	3.1			5.2		
Control Delay (s/veh)	12.5	10.8	10.9	10.7	10.8	12.5	16.2			20.7		
Level of Service, LOS	B	B	B	B	B	B	C			C		
Approach Delay (s/veh)	11.6			12.0			16.2			20.7		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh | LOS	15.8						C					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	CuPr	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	96	132	22	17	119	125	39	189	58	117	146	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	96	66	88	17	60	185	286			378		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.085	0.059	0.078	0.015	0.053	0.164	0.254			0.336		
Final Departure Headway, hd (s)	8.01	7.50	7.31	8.00	7.48	6.99	6.91			6.73		
Final Degree of Utilization, x	0.214	0.137	0.179	0.038	0.124	0.358	0.549			0.707		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.71	5.20	5.01	5.70	5.18	4.69	4.61			4.43		

Capacity, Delay and Level of Service

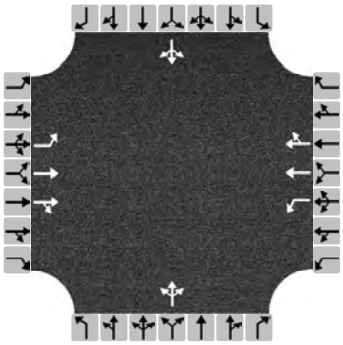
Flow Rate, v (veh/h)	96	66	88	17	60	185	286			378		
Capacity	449	480	492	450	481	515	521			535		
95% Queue Length, Q_{95} (veh)	0.8	0.5	0.7	0.1	0.4	1.7	3.5			6.7		
Control Delay (s/veh)	12.9	11.4	11.6	11.0	11.2	13.6	17.9			25.2		
Level of Service, LOS	B	B	B	B	B	B	C			D		
Approach Delay (s/veh)	12.0			12.9			17.9			25.2		
Approach LOS	B			B			C			D		
Intersection Delay, s/veh | LOS	17.9						C					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	Cumu	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	109	11	40	305	67	8	75	23	16	67	62
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	55	66	40	153	220	106			145		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.048	0.058	0.036	0.136	0.195	0.094			0.129		
Final Departure Headway, hd (s)	6.36	5.86	5.74	6.07	5.56	5.35	6.08			5.88		
Final Degree of Utilization, x	0.080	0.089	0.104	0.067	0.236	0.326	0.179			0.237		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.06	3.56	3.44	3.77	3.26	3.05	3.78			3.58		

Capacity, Delay and Level of Service

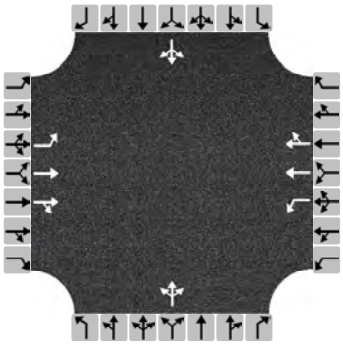
Flow Rate, v (veh/h)	45	55	66	40	153	220	106			145		
Capacity	566	615	627	593	647	673	592			612		
95% Queue Length, Q_{95} (veh)	0.3	0.3	0.3	0.2	0.9	1.4	0.7			0.9		
Control Delay (s/veh)	9.6	9.1	9.1	9.2	10.0	10.6	10.1			10.4		
Level of Service, LOS	A	A	A	A	A	B	B			B		
Approach Delay (s/veh)	9.3			10.3			10.1			10.4		
Approach LOS	A			B			B			B		
Intersection Delay, s/veh | LOS	10.1						B					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	CuPr	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	114	11	42	310	71	8	75	25	19	67	62
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	57	68	42	155	226	108			148		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.051	0.060	0.037	0.138	0.201	0.096			0.132		
Final Departure Headway, hd (s)	6.41	5.90	5.78	6.10	5.60	5.37	6.12			5.95		
Final Degree of Utilization, x	0.080	0.093	0.109	0.071	0.241	0.337	0.184			0.244		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.11	3.60	3.48	3.80	3.30	3.07	3.82			3.65		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	45	57	68	42	155	226	108			148		
Capacity	562	610	622	590	643	670	588			606		
95% Queue Length, Q_{95} (veh)	0.3	0.3	0.4	0.2	0.9	1.5	0.7			1.0		
Control Delay (s/veh)	9.7	9.2	9.2	9.3	10.1	10.8	10.2			10.6		
Level of Service, LOS	A	A	A	A	B	B	B			B		
Approach Delay (s/veh)	9.3			10.4			10.2			10.6		
Approach LOS	A			B			B			B		
Intersection Delay, s/veh | LOS	10.2						B					

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HCS7 All-Way Stop Control Report

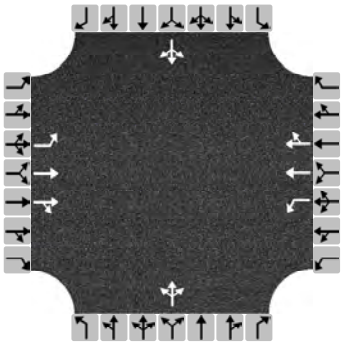
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	Cumu
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	19	277	22	371	183	21	6	67	220	53	71	13
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	19	139	161	371	92	113	293			137		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.017	0.123	0.143	0.330	0.081	0.100	0.260			0.122		
Final Departure Headway, hd (s)	7.83	7.31	7.21	7.36	6.84	6.71	6.93			7.98		
Final Degree of Utilization, x	0.041	0.281	0.321	0.758	0.174	0.210	0.564			0.304		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.53	5.01	4.91	5.06	4.54	4.41	4.63			5.68		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	19	139	161	371	92	113	293			137		
Capacity	460	493	499	489	526	537	520			451		
95% Queue Length, Q_{95} (veh)	0.1	1.2	1.4	8.3	0.6	0.8	3.8			1.3		
Control Delay (s/veh)	10.9	12.9	13.3	32.0	11.0	11.2	18.5			14.2		
Level of Service, LOS	B	B	B	D	B	B	C			B		
Approach Delay (s/veh)	13.0			24.6			18.5			14.2		
Approach LOS	B			C			C			B		
Intersection Delay, s/veh | LOS	19.4						C					

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HCS7 All-Way Stop Control Report

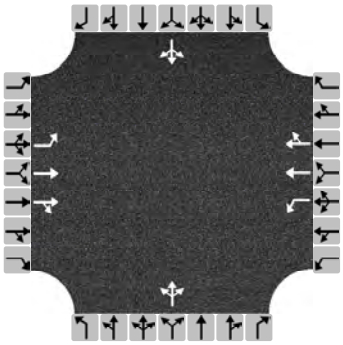
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	CuPr
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	19	329	22	410	209	25	6	67	287	62	71	13
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	19	165	187	410	105	130	360			146		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.017	0.146	0.166	0.364	0.093	0.115	0.320			0.130		
Final Departure Headway, hd (s)	8.55	8.02	7.94	8.01	7.49	7.35	7.42			8.79		
Final Degree of Utilization, x	0.045	0.367	0.411	0.913	0.218	0.265	0.742			0.356		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	6.25	5.72	5.64	5.71	5.19	5.05	5.12			6.49		

Capacity, Delay and Level of Service

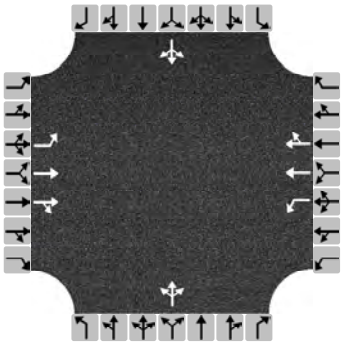
Flow Rate, v (veh/h)	19	165	187	410	105	130	360			146		
Capacity	421	449	453	449	480	490	485			410		
95% Queue Length, Q_{95} (veh)	0.1	1.7	2.1	16.9	0.8	1.1	7.7			1.6		
Control Delay (s/veh)	11.7	15.4	16.2	71.2	12.3	12.7	30.6			16.3		
Level of Service, LOS	B	C	C	F	B	B	D			C		
Approach Delay (s/veh)	15.6			49.8			30.6			16.3		
Approach LOS	C			E			D			C		
Intersection Delay, s/veh | LOS	33.7						D					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	15. DJL	Intersection	Cam Del Sol/Colonia Rd
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	Cumu	North/South Street	Colonia Rd
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	14	171	11	190	403	34	7	31	211	20	42	19
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	14	86	97	190	202	236	249			81		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.012	0.076	0.086	0.169	0.179	0.209	0.221			0.072		
Final Departure Headway, hd (s)	7.07	6.56	6.48	6.49	5.98	5.88	6.13			7.00		
Final Degree of Utilization, x	0.028	0.156	0.174	0.342	0.335	0.384	0.424			0.158		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.77	4.26	4.18	4.19	3.68	3.58	3.83			4.70		

Capacity, Delay and Level of Service

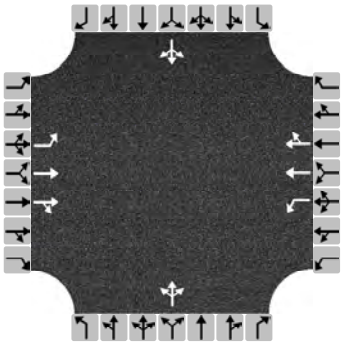
Flow Rate, v (veh/h)	14	86	97	190	202	236	249			81		
Capacity	509	548	555	555	602	613	588			514		
95% Queue Length, Q_{95} (veh)	0.1	0.6	0.6	1.5	1.5	1.9	2.2			0.6		
Control Delay (s/veh)	10.0	10.5	10.5	12.6	11.7	12.2	13.3			11.0		
Level of Service, LOS	A	B	B	B	B	B	B			B		
Approach Delay (s/veh)	10.5			12.2			13.3			11.0		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh | LOS	12.0						B					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	15. DJL	Intersection	Cam Del Sol/Colonia Rd
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	CuPr	North/South Street	Colonia Rd
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	14	181	11	206	414	36	7	31	224	22	42	19
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	14	91	102	206	207	243	262			83		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.012	0.080	0.090	0.183	0.184	0.216	0.233			0.074		
Final Departure Headway, hd (s)	7.21	6.70	6.62	6.60	6.09	5.98	6.25			7.19		
Final Degree of Utilization, x	0.028	0.168	0.187	0.377	0.350	0.404	0.455			0.166		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	4.91	4.40	4.32	4.30	3.79	3.68	3.95			4.89		

Capacity, Delay and Level of Service

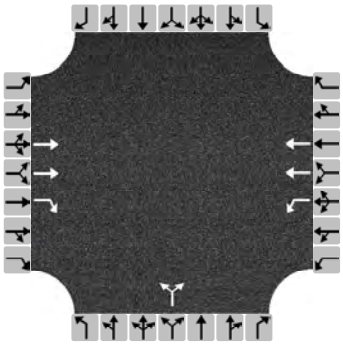
Flow Rate, v (veh/h)	14	91	102	206	207	243	262			83		
Capacity	499	537	543	546	591	602	576			501		
95% Queue Length, Q_{95} (veh)	0.1	0.6	0.7	1.8	1.6	2.0	2.5			0.6		
Control Delay (s/veh)	10.1	10.8	10.8	13.3	12.1	12.7	14.1			11.3		
Level of Service, LOS	B	B	B	B	B	B	B			B		
Approach Delay (s/veh)	10.8			12.7			14.1			11.3		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh | LOS	12.6						B					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	16. DJL	Intersection	Cam Del Sol/Gibraltar St
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	Cumu	North/South Street	Colonia Rd
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		673	59	27	414		75		62			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	337	337	59	27	207	207	137					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.299	0.299	0.052	0.024	0.184	0.184	0.122					
Final Departure Headway, hd (s)	5.61	5.61	4.90	6.43	5.93	5.93	6.99					
Final Degree of Utilization, x	0.524	0.524	0.080	0.048	0.341	0.341	0.266					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	3.31	3.31	2.60	4.13	3.63	3.63	4.69					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	337	337	59	27	207	207	137					
Capacity	642	642	734	560	608	608	515					
95% Queue Length, Q_{95} (veh)	3.2	3.2	0.3	0.2	1.5	1.5	1.1					
Control Delay (s/veh)	14.5	14.5	8.0	9.5	11.7	11.7	12.2					
Level of Service, LOS	B	B	A	A	B	B	B					
Approach Delay (s/veh)	13.9			11.5			12.2					
Approach LOS	B			B			B					
Intersection Delay, s/veh | LOS	13.0						B					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	75	0	62	0	0	0	0	673	59	27	414	0
Project Trips	0	17	0	20	5	35	461	0	0	12	55	21
GEOMETRY		LTR			LT	R	L	T TR		L	T TR	

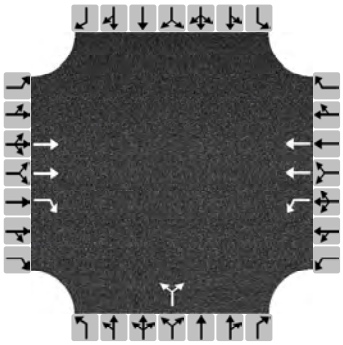
	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	0.0	0	75	0.00
NBT	1.0	1,600	17	0.10 *
NBR	0.0	0	62	0.00
SBL	0.0	0	20	0.00
SBT	1.0	1,600	5	0.07 *
SBR	1.0	1,600	35	0.02
EBL	1.0	1,600	461	0.29 *
EBT	2.0	3,200	673	0.23
EBR	0.0	0	59	0.00
WBL	1.0	1,600	39	0.02
WBT	2.0	3,200	469	0.15 *
WBR	0.0	0	21	0.00
N/S Critical Movements				0.17
E/W Critical Movements				0.44
ICU				0.61
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	16. DJL	Intersection	Cam Del Sol/Gibraltar St
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	Cumu	North/South Street	Colonia Rd
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		337	99	87	1015		33		42			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	169	169	99	87	508	508	75					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.150	0.150	0.088	0.077	0.451	0.451	0.067					
Final Departure Headway, hd (s)	6.05	6.05	5.35	5.83	5.33	5.33	7.25					
Final Degree of Utilization, x	0.283	0.283	0.147	0.141	0.752	0.752	0.151					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	3.75	3.75	3.05	3.53	3.03	3.03	4.95					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	169	169	99	87	508	508	75					
Capacity	595	595	673	617	675	675	497					
95% Queue Length, Q_{95} (veh)	1.2	1.2	0.5	0.5	8.3	8.3	0.5					
Control Delay (s/veh)	11.1	11.1	9.0	9.5	23.6	23.6	11.2					
Level of Service, LOS	B	B	A	A	C	C	B					
Approach Delay (s/veh)	10.6			22.5			11.2					
Approach LOS	B			C			B					
Intersection Delay, s/veh | LOS	18.8						C					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	33	0	42	0	0	0	0	337	99	87	1015	0
Project Trips	0	3	0	6	2	12	88	0	0	5	23	4
GEOMETRY		LTR			LT	R	L	T TR		L	T TR	

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Ex+Project
NBL	0.0	0	33	0.00
NBT	1.0	1,600	3	0.07 *
NBR	0.0	0	42	0.00
SBL	0.0	0	6	0.00
SBT	1.0	1,600	2	0.07 *
SBR	1.0	1,600	12	0.00
EBL	1.0	1,600	88	0.06 *
EBT	2.0	3,200	337	0.14
EBR	0.0	0	99	0.06
WBL	1.0	1,600	92	0.06
WBT	2.0	3,200	1,038	0.33 *
WBR	0.0	0	4	0.00
N/S Critical Movements				0.14
E/W Critical Movements				0.39
ICU				0.53
Level of Service (LOS)				A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	39	33	62	63	16	183	127	599	11	17	211	25
Project Trips	0	0	0	0	0	10	5	23	0	0	48	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	0.0	0	39	39	0.00	0.00
NBT	1.0	1,600	33	33	0.08 *	0.08 *
NBR	0.0	0	62	62	0.00	0.00
SBL	0.0	0	63	63	0.00	0.00
SBT	1.0	1,600	16	16	0.16 *	0.17 *
SBR	0.0	0	183	193	0.00	0.00
EBL	1.0	1,600	127	132	0.08	0.08
EBT	2.0	3,200	599	622	0.19 *	0.20 *
EBR	0.0	0	11	11	0.00	0.00
WBL	1.0	1,600	17	17	0.05 *	0.05 *
WBT	2.0	3,200	211	259	0.07	0.09
WBR	0.0	0	25	25	0.00	0.00
N/S Critical Movements					0.24	0.24
E/W Critical Movements					0.24	0.25
ICU					0.48	0.49
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	24	27	29	20	20	110	112	244	18	103	966	68
Project Trips	0	0	0	0	0	2	2	10	0	0	9	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Cumulative	Project	**V/C Ratio** Cumu	Project
NBL	0.0	0	24	24	0.00	0.00
NBT	1.0	1,600	27	27	0.07 *	0.07 *
NBR	0.0	0	29	29	0.00	0.00
SBL	0.0	0	20	20	0.00	0.00
SBT	1.0	1,600	20	20	0.09 *	0.10 *
SBR	0.0	0	110	112	0.00	0.00
EBL	1.0	1,600	112	114	0.07 *	0.07 *
EBT	2.0	3,200	244	254	0.08	0.09
EBR	0.0	0	18	18	0.00	0.00
WBL	1.0	1,600	103	103	0.06	0.06
WBT	2.0	3,200	966	975	0.32 *	0.33 *
WBR	0.0	0	68	68	0.00	0.00
N/S Critical Movements					0.16	0.17
E/W Critical Movements					0.39	0.40
ICU					0.55	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	151	0	211	649	139	17	157	582	0	0	621	180
Future Volume (veh/h)	151	0	211	649	139	17	157	582	0	0	621	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	164	0	229	705	151	18	171	633	0	0	675	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1853	853	102	265	1231	0	0	1036	322
Arrive On Green	0.00	0.00	0.00	0.52	0.52	0.52	0.08	0.35	0.00	0.00	0.20	0.20
Sat Flow, veh/h		0		3563	1640	195	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		705	0	169	171	633	0	0	675	196
Grp Sat Flow(s),veh/h/ln				1781	0	1835	1728	1777	0	0	1702	1585
Q Serve(g_s), s				7.1	0.0	2.9	2.9	8.5	0.0	0.0	7.3	6.2
Cycle Q Clear(g_c), s				7.1	0.0	2.9	2.9	8.5	0.0	0.0	7.3	6.2
Prop In Lane				1.00		0.11	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1853	0	955	265	1231	0	0	1036	322
V/C Ratio(X)				0.38	0.00	0.18	0.64	0.51	0.00	0.00	0.65	0.61
Avail Cap(c_a), veh/h				1853	0	955	288	1481	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				8.6	0.0	7.6	26.9	15.6	0.0	0.0	22.0	18.3
Incr Delay (d2), s/veh				0.6	0.0	0.4	4.3	0.3	0.0	0.0	0.7	1.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	1.1	1.3	3.1	0.0	0.0	2.8	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				9.2	0.0	8.0	31.2	15.9	0.0	0.0	22.7	20.1
LnGrp LOS				A	A	A	C	B	A	A	C	C
Approach Vol, veh/h					874			804			871	
Approach Delay, s/veh					9.0			19.2			22.1	
Approach LOS					A			B			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		35.2		24.8			8.6	16.2				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		19.0		25.0			5.0	16.0				
Max Q Clear Time (g_c+I1), s		9.1		10.5			4.9	9.3				
Green Ext Time (p_c), s		2.8		3.7			0.0	2.9				

Intersection Summary												
HCM 6th Ctrl Delay			16.7									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

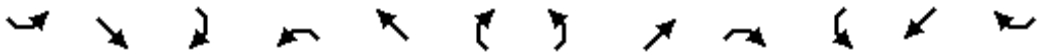
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	151	0	211	820	139	17	159	621	0	0	680	180
Future Volume (veh/h)	151	0	211	820	139	17	159	621	0	0	680	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	164	0	229	891	151	18	173	675	0	0	739	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1850	851	101	230	1235	0	0	1093	339
Arrive On Green	0.00	0.00	0.00	0.52	0.52	0.52	0.07	0.35	0.00	0.00	0.21	0.21
Sat Flow, veh/h		0		3563	1640	195	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		891	0	169	173	675	0	0	739	196
Grp Sat Flow(s),veh/h/ln				1781	0	1835	1728	1777	0	0	1702	1585
Q Serve(g_s), s				9.6	0.0	2.9	3.0	9.2	0.0	0.0	8.0	6.1
Cycle Q Clear(g_c), s				9.6	0.0	2.9	3.0	9.2	0.0	0.0	8.0	6.1
Prop In Lane				1.00		0.11	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1850	0	953	230	1235	0	0	1093	339
V/C Ratio(X)				0.48	0.00	0.18	0.75	0.55	0.00	0.00	0.68	0.58
Avail Cap(c_a), veh/h				1850	0	953	230	1421	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.2	0.0	7.6	27.5	15.8	0.0	0.0	21.7	17.7
Incr Delay (d2), s/veh				0.9	0.0	0.4	12.9	0.4	0.0	0.0	1.0	1.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	0.0	1.1	1.6	3.4	0.0	0.0	3.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				10.1	0.0	8.0	40.4	16.1	0.0	0.0	22.6	19.3
LnGrp LOS				B	A	A	D	B	A	A	C	B
Approach Vol, veh/h					1060			848			935	
Approach Delay, s/veh					9.8			21.1			21.9	
Approach LOS					A			C			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		35.2		24.8			8.0	16.8				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		20.0		24.0			4.0	16.0				
Max Q Clear Time (g_c+I1), s		11.6		11.2			5.0	10.0				
Green Ext Time (p_c), s		3.1		3.8			0.0	2.9				

Intersection Summary												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	160	0	565	600	352	35	392	655	0	0	728	150
Future Volume (veh/h)	160	0	565	600	352	35	392	655	0	0	728	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	174	0	614	729	275	38	426	712	0	0	791	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1585	716	99	461	1498	0	0	1132	351
Arrive On Green	0.00	0.00	0.00	0.45	0.45	0.45	0.13	0.42	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3563	1608	222	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		729	0	313	426	712	0	0	791	163
Grp Sat Flow(s),veh/h/ln				1781	0	1830	1728	1777	0	0	1702	1585
Q Serve(g_s), s				8.6	0.0	6.9	7.3	8.7	0.0	0.0	8.6	5.4
Cycle Q Clear(g_c), s				8.6	0.0	6.9	7.3	8.7	0.0	0.0	8.6	5.4
Prop In Lane				1.00		0.12	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1585	0	815	461	1498	0	0	1132	351
V/C Ratio(X)				0.46	0.00	0.38	0.92	0.48	0.00	0.00	0.70	0.46
Avail Cap(c_a), veh/h				1585	0	815	461	1658	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.6	0.0	11.1	25.7	12.5	0.0	0.0	21.5	20.3
Incr Delay (d2), s/veh				1.0	0.0	1.4	24.5	0.2	0.0	0.0	1.3	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.1	0.0	2.7	4.4	3.1	0.0	0.0	3.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.6	0.0	12.5	50.2	12.8	0.0	0.0	22.8	21.2
LnGrp LOS				B	A	B	D	B	A	A	C	C
Approach Vol, veh/h					1042			1138			954	
Approach Delay, s/veh					12.6			26.8			22.5	
Approach LOS					B			C			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		30.7		29.3			12.0	17.3				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		16.0		28.0			8.0	16.0				
Max Q Clear Time (g_c+I1), s		10.6		10.7			9.3	10.6				
Green Ext Time (p_c), s		2.4		4.6			0.0	2.7				

Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

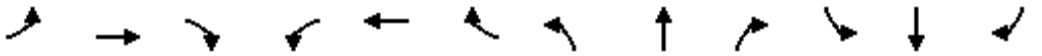
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	160	0	565	603	352	35	392	658	0	0	731	150
Future Volume (veh/h)	160	0	565	603	352	35	392	658	0	0	731	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	174	0	614	730	277	38	426	715	0	0	795	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1583	715	98	461	1501	0	0	1135	352
Arrive On Green	0.00	0.00	0.00	0.44	0.44	0.44	0.13	0.42	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3563	1610	221	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		730	0	315	426	715	0	0	795	163
Grp Sat Flow(s),veh/h/ln				1781	0	1831	1728	1777	0	0	1702	1585
Q Serve(g_s), s				8.6	0.0	6.9	7.3	8.7	0.0	0.0	8.6	5.3
Cycle Q Clear(g_c), s				8.6	0.0	6.9	7.3	8.7	0.0	0.0	8.6	5.3
Prop In Lane				1.00		0.12	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1583	0	814	461	1501	0	0	1135	352
V/C Ratio(X)				0.46	0.00	0.39	0.92	0.48	0.00	0.00	0.70	0.46
Avail Cap(c_a), veh/h				1583	0	814	461	1658	0	0	1362	423
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.6	0.0	11.2	25.7	12.5	0.0	0.0	21.5	20.2
Incr Delay (d2), s/veh				1.0	0.0	1.4	24.5	0.2	0.0	0.0	1.3	0.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.1	0.0	2.7	4.4	3.1	0.0	0.0	3.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.6	0.0	12.6	50.2	12.8	0.0	0.0	22.8	21.2
LnGrp LOS				B	A	B	D	B	A	A	C	C
Approach Vol, veh/h					1045			1141			958	
Approach Delay, s/veh					12.6			26.8			22.5	
Approach LOS					B			C			C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		30.7		29.3			12.0	17.3				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		16.0		28.0			8.0	16.0				
Max Q Clear Time (g_c+I1), s		10.6		10.7			9.3	10.6				
Green Ext Time (p_c), s		2.4		4.7			0.0	2.7				

Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	46	1011	0	0	0	0	966	465	82	1226	0
Future Volume (veh/h)	264	46	1011	0	0	0	0	966	465	82	1226	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	323	0	0				0	1050	505	89	1333	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	467	0					0	3243	1772	170	3809	0
Arrive On Green	0.13	0.00	0.00				0.00	0.64	0.64	0.05	0.75	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	323	0	0				0	1050	505	89	1333	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.6	0.0	0.0				0.0	6.1	5.2	1.6	5.8	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0				0.0	6.1	5.2	1.6	5.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	467	0					0	3243	1772	170	3809	0
V/C Ratio(X)	0.69	0.00					0.00	0.32	0.28	0.52	0.35	0.00
Avail Cap(c_a), veh/h	1096	0					0	3243	1772	372	3809	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.0	0.0	0.0				0.0	5.4	5.3	30.2	2.8	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0				0.0	0.3	0.4	2.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0				0.0	1.7	1.2	0.7	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	0.0	0.0				0.0	5.7	5.7	32.6	3.1	0.0
LnGrp LOS	C	A					A	A	A	C	A	A
Approach Vol, veh/h		323	A					1555			1422	
Approach Delay, s/veh		28.8						5.7			4.9	
Approach LOS		C						A			A	

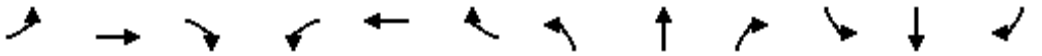
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.2	45.3		12.5		52.5
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	7.0	26.0		20.0		37.0
Max Q Clear Time (g_c+I1), s	3.6	8.1		7.6		7.8
Green Ext Time (p_c), s	0.1	9.3		0.9		11.9

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	46	1123	0	0	0	0	1037	537	82	1457	0
Future Volume (veh/h)	264	46	1123	0	0	0	0	1037	537	82	1457	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	323	0	0				0	1127	584	89	1584	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	467	0					0	3243	1772	170	3809	0
Arrive On Green	0.13	0.00	0.00				0.00	0.64	0.64	0.05	0.75	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	323	0	0				0	1127	584	89	1584	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.6	0.0	0.0				0.0	6.7	6.3	1.6	7.4	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0				0.0	6.7	6.3	1.6	7.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	467	0					0	3243	1772	170	3809	0
V/C Ratio(X)	0.69	0.00					0.00	0.35	0.33	0.52	0.42	0.00
Avail Cap(c_a), veh/h	1096	0					0	3243	1772	372	3809	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.0	0.0	0.0				0.0	5.6	5.5	30.2	3.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0				0.0	0.3	0.5	2.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0				0.0	1.9	1.5	0.7	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	0.0	0.0				0.0	5.8	6.0	32.6	3.4	0.0
LnGrp LOS	C	A					A	A	A	C	A	A
Approach Vol, veh/h		323	A					1711			1673	
Approach Delay, s/veh		28.8						5.9			4.9	
Approach LOS		C						A			A	

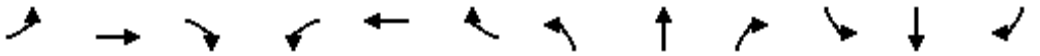
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	7.2	45.3		12.5		52.5						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	7.0	26.0		20.0		37.0						
Max Q Clear Time (g_c+I1), s	3.6	8.7		7.6		9.4						
Green Ext Time (p_c), s	0.1	10.0		0.9		14.3						

Intersection Summary			
HCM 6th Ctrl Delay			7.5
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	3	592	0	0	0	0	1919	742	230	1404	0
Future Volume (veh/h)	200	3	592	0	0	0	0	1919	742	230	1404	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	219	0	0				0	2086	807	250	1526	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	309	0					0	3497	1911	329	4209	0
Arrive On Green	0.09	0.00	0.00				0.00	0.68	0.68	0.10	0.82	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	219	0	0				0	2086	807	250	1526	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.4	0.0	0.0				0.0	19.6	11.5	6.4	6.7	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0				0.0	19.6	11.5	6.4	6.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	309	0					0	3497	1911	329	4209	0
V/C Ratio(X)	0.71	0.00					0.00	0.60	0.42	0.76	0.36	0.00
Avail Cap(c_a), veh/h	633	0					0	3497	1911	422	4209	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	0.0				0.0	7.6	6.3	39.7	2.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.8	0.7	6.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0				0.0	6.1	3.0	2.9	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.0	0.0	0.0				0.0	8.3	7.0	45.7	2.2	0.0
LnGrp LOS	D	A					A	A	A	D	A	A
Approach Vol, veh/h		219	A					2893			1776	
Approach Delay, s/veh		43.0						7.9			8.3	
Approach LOS		D						A			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.6	65.6		11.8		78.2						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	11.0	51.0		16.0		66.0						
Max Q Clear Time (g_c+I1), s	8.4	21.6		7.4		8.7						
Green Ext Time (p_c), s	0.2	24.2		0.5		18.0						

Intersection Summary			
HCM 6th Ctrl Delay			9.7
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	3	592	0	0	0	0	1923	745	230	1410	0
Future Volume (veh/h)	200	3	592	0	0	0	0	1923	745	230	1410	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	219	0	0				0	2090	810	250	1533	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	309	0					0	3497	1911	329	4209	0
Arrive On Green	0.09	0.00	0.00				0.00	0.68	0.68	0.10	0.82	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	219	0	0				0	2090	810	250	1533	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	5.4	0.0	0.0				0.0	19.7	11.6	6.4	6.8	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0				0.0	19.7	11.6	6.4	6.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	309	0					0	3497	1911	329	4209	0
V/C Ratio(X)	0.71	0.00					0.00	0.60	0.42	0.76	0.36	0.00
Avail Cap(c_a), veh/h	633	0					0	3497	1911	422	4209	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	0.0				0.0	7.6	6.3	39.7	2.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.8	0.7	6.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0				0.0	6.1	3.0	2.9	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.0	0.0	0.0				0.0	8.3	7.0	45.7	2.2	0.0
LnGrp LOS	D	A					A	A	A	D	A	A
Approach Vol, veh/h		219	A					2900			1783	
Approach Delay, s/veh		43.0						8.0			8.3	
Approach LOS		D						A			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.6	65.6		11.8		78.2
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	11.0	51.0		16.0		66.0
Max Q Clear Time (g_c+I1), s	8.4	21.7		7.4		8.8
Green Ext Time (p_c), s	0.2	24.2		0.5		18.1

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	264	1039	89	208	1577	1078	571	2	269	26	17	62
Project Trips	0	17	0	0	35	0	0	0	0	0	0	0
GEOMETRY	LL	TT	TR	L	TTT	R	LL	LT	R	**L**	**T**	**R**

	Level of Service Calculations					
Move-ment	**Lanes** Lane		Capacity	**Volume** Cumulative	Project	**V/C Ratio** Cumu	Project
NBL	2.0		2,880	264	264	0.09 *	0.09 *
NBT	3.0		4,800	1,039	1,056	0.24	0.24
NBR	0.0		0	89	89	0.00	0.00
SBL	1.0		1,600	208	208	0.13	0.13
SBT	3.0		4,800	1,577	1,612	0.33	0.34
SBR	1.0	(a)	1,600	884	884	0.55 *	0.55 *
EBL	0.0		0	571	571	0.00	0.00
EBT	3.0		4,800	2	2	0.12 *	0.12 *
EBR	1.0	(b)	1,600	137	137	0.09	0.09
WBL	1.0		1,600	26	26	0.02 *	0.02 *
WBT	1.0		1,600	17	17	0.01	0.01
WBR	1.0		1,600	62	62	0.04	0.04
N/S Critical Movements						0.61	0.61
E/W Critical Movements						0.14	0.14
ICU						0.75	0.75
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 18% RTOR
(b) 49% RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Cumulative + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	405	1705	35	83	1386	692	918	20	349	92	55	209
Project Trips	0	7	0	0	6	0	0	0	0	0	0	0
GEOMETRY	LL	TT	TR	L	TTT	R	LL	LT	R	**L**	**T**	**R**

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	2.0	2,880	405	405	0.14 *	0.14 *
NBT	3.0	4,800	1,705	1,712	0.36	0.36
NBR	0.0	0	35	35	0.00	0.00
SBL	1.0	1,600	83	83	0.05	0.05
SBT	3.0	4,800	1,386	1,392	0.29 *	0.29 *
SBR	1.0 (a)	1,600	388	388	0.24	0.24
EBL	0.0	0	918	918	0.00	0.00
EBT	3.0	4,800	20	20	0.20 *	0.20 *
EBR	1.0 (b)	1,600	147	147	0.09	0.09
WBL	1.0	1,600	92	92	0.06 *	0.06 *
WBT	1.0	1,600	55	55	0.03	0.03
WBR	1.0	1,600	209	209	0.13	0.13
N/S Critical Movements					0.43	0.43
E/W Critical Movements					0.26	0.26
ICU					0.69	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 44% RTOR overlap w/EBL
(b) 58% RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	97	1008	74	259	1319	122	137	289	152	25	104	59
Project Trips	13	0	0	0	0	35	17	0	6	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	97	110	0.06	0.07 *
NBT	3.0	4,800	1,008	1,008	0.21 *	0.21
NBR	1.0	1,600	74	74	0.05	0.05 *
SBL	1.0	1,600	259	259	0.16 *	0.16
SBT	3.0	4,800	1,319	1,319	0.30 *	0.31 *
SBR	0.0	0	122	157	0.00	0.00
EBL	1.0	1,600	137	154	0.09 *	0.10 *
EBT	2.0	3,200	289	289	0.09	0.09
EBR	1.0	1,600	152	158	0.10	0.10
WBL	1.0	1,600	25	25	0.05	0.02
WBT	2.0	3,200	104	104	0.07 *	0.07 *
WBR	1.0	1,600	59	59	0.04	0.04
N/S Critical Movements					0.37	0.38
E/W Critical Movements					0.16	0.17
ICU					0.53	0.55
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	187	1346	26	70	1267	238	166	156	90	96	346	246
Project Trips	3	0	0	0	0	6	7	0	3	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumu	Project
NBL	1.0	1,600	187	190	0.12 *	0.12 *
NBT	3.0	4,800	1,346	1,346	0.28	0.28
NBR	1.0	1,600	26	26	0.02	0.02 *
SBL	1.0	1,600	70	70	0.05	0.04
SBT	3.0	4,800	1,267	1,267	0.31 *	0.31 *
SBR	0.0	0	238	244	0.00	0.00
EBL	1.0	1,600	166	173	0.10 *	0.11 *
EBT	2.0	3,200	156	156	0.05	0.05
EBR	1.0	1,600	90	93	0.06	0.06
WBL	1.0	1,600	96	96	0.05	0.06
WBT	2.0	3,200	346	346	0.11 *	0.11 *
WBR	1.0 (a)	1,600	172	172	0.11	0.11
N/S Critical Movements					0.43	0.43
E/W Critical Movements					0.21	0.22
ICU					0.64	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 30% RTOR overlap w/SBL

Buildout and Buildout + Project AM and PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	612	220	1333	0	0	1474
Future Volume (veh/h)	612	220	1333	0	0	1474
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	452	467	1449	0	0	1602
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	592	535	2727	0	0	2727
Arrive On Green	0.33	0.33	0.53	0.00	0.00	0.53
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	452	467	1449	0	0	1602
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	13.6	16.4	11.1	0.0	0.0	12.8
Cycle Q Clear(g_c), s	13.6	16.4	11.1	0.0	0.0	12.8
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	592	535	2727	0	0	2727
V/C Ratio(X)	0.76	0.87	0.53	0.00	0.00	0.59
Avail Cap(c_a), veh/h	683	617	2727	0	0	2727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	18.8	9.1	0.0	0.0	9.5
Incr Delay (d2), s/veh	4.4	11.8	0.7	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	7.2	3.5	0.0	0.0	4.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.3	30.6	9.8	0.0	0.0	10.4
LnGrp LOS	C	C	A	A	A	B
Approach Vol, veh/h	919		1449			1602
Approach Delay, s/veh	26.5		9.8			10.4
Approach LOS	C		A			B

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		36.0			36.0	24.0
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		29.0			29.0	23.0
Max Q Clear Time (g_c+I1), s		13.1			14.8	18.4
Green Ext Time (p_c), s		9.3			9.5	1.6

Intersection Summary	
HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



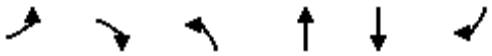
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	620	220	1340	0	0	1490
Future Volume (veh/h)	620	220	1340	0	0	1490
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	456	472	1457	0	0	1620
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	597	540	2714	0	0	2714
Arrive On Green	0.34	0.34	0.53	0.00	0.00	0.53
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	456	472	1457	0	0	1620
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	13.7	16.5	11.2	0.0	0.0	13.1
Cycle Q Clear(g_c), s	13.7	16.5	11.2	0.0	0.0	13.1
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	597	540	2714	0	0	2714
V/C Ratio(X)	0.76	0.87	0.54	0.00	0.00	0.60
Avail Cap(c_a), veh/h	683	617	2714	0	0	2714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	18.8	9.2	0.0	0.0	9.6
Incr Delay (d2), s/veh	4.5	12.1	0.8	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	7.3	3.6	0.0	0.0	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.3	30.9	10.0	0.0	0.0	10.6
LnGrp LOS	C	C	A	A	A	B
Approach Vol, veh/h	928		1457			1620
Approach Delay, s/veh	26.7		10.0			10.6
Approach LOS	C		A			B

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		35.9			35.9	24.1
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		29.0			29.0	23.0
Max Q Clear Time (g_c+I1), s		13.2			15.1	18.5
Green Ext Time (p_c), s		9.3			9.4	1.6

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	400	877	0	2281	1808	0
Future Volume (veh/h)	400	877	0	2281	1808	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	435	953	0	2479	1965	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	609	1083	0	2907	2907	0
Arrive On Green	0.34	0.34	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	435	953	0	2479	1965	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	19.1	25.5	0.0	36.6	24.2	0.0
Cycle Q Clear(g_c), s	19.1	25.5	0.0	36.6	24.2	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	609	1083	0	2907	2907	0
V/C Ratio(X)	0.71	0.88	0.00	0.85	0.68	0.00
Avail Cap(c_a), veh/h	673	1198	0	2907	2907	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.8	27.9	0.0	16.2	13.6	0.0
Incr Delay (d2), s/veh	3.2	7.3	0.0	3.4	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	10.3	0.0	13.6	8.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.0	35.2	0.0	19.6	14.8	0.0
LnGrp LOS	C	D	A	B	B	A
Approach Vol, veh/h	1388			2479	1965	
Approach Delay, s/veh	33.2			19.6	14.8	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		55.2		34.8		55.2
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		48.0		34.0		48.0
Max Q Clear Time (g_c+I1), s		38.6		27.5		26.2
Green Ext Time (p_c), s		8.7		3.3		15.5

Intersection Summary		
HCM 6th Ctrl Delay	21.3	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	590	500	2170	0	0	1480
Future Volume (veh/h)	590	500	2170	0	0	1480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	592	595	2359	0	0	1609
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	695	629	2659	0	0	2659
Arrive On Green	0.39	0.39	0.52	0.00	0.00	0.52
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	592	595	2359	0	0	1609
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	27.3	32.2	37.0	0.0	0.0	19.8
Cycle Q Clear(g_c), s	27.3	32.2	37.0	0.0	0.0	19.8
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	695	629	2659	0	0	2659
V/C Ratio(X)	0.85	0.95	0.89	0.00	0.00	0.61
Avail Cap(c_a), veh/h	713	644	2659	0	0	2659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	26.5	19.2	0.0	0.0	15.1
Incr Delay (d2), s/veh	9.5	22.9	4.9	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	15.7	14.5	0.0	0.0	7.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.6	49.4	24.1	0.0	0.0	16.1
LnGrp LOS	C	D	C	A	A	B
Approach Vol, veh/h	1187		2359			1609
Approach Delay, s/veh	42.0		24.1			16.1
Approach LOS	D		C			B

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	50.9			50.9	39.1
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	46.0			46.0	36.0
Max Q Clear Time (g_c+I1), s	39.0			21.8	34.2
Green Ext Time (p_c), s	6.4			13.6	1.0

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



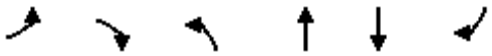
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	590	500	2167	0	0	1479
Future Volume (veh/h)	590	500	2167	0	0	1479
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1870	0	0	1870
Adj Flow Rate, veh/h	592	595	2355	0	0	1608
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	0	0	2
Cap, veh/h	695	629	2659	0	0	2659
Arrive On Green	0.39	0.39	0.52	0.00	0.00	0.52
Sat Flow, veh/h	1781	1610	5443	0	0	5443
Grp Volume(v), veh/h	592	595	2355	0	0	1608
Grp Sat Flow(s),veh/h/ln	1781	1610	1702	0	0	1702
Q Serve(g_s), s	27.3	32.2	36.9	0.0	0.0	19.8
Cycle Q Clear(g_c), s	27.3	32.2	36.9	0.0	0.0	19.8
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	695	629	2659	0	0	2659
V/C Ratio(X)	0.85	0.95	0.89	0.00	0.00	0.60
Avail Cap(c_a), veh/h	713	644	2659	0	0	2659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	26.5	19.2	0.0	0.0	15.1
Incr Delay (d2), s/veh	9.5	22.9	4.8	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	15.7	14.4	0.0	0.0	7.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.6	49.4	24.0	0.0	0.0	16.1
LnGrp LOS	C	D	C	A	A	B
Approach Vol, veh/h	1187		2355			1608
Approach Delay, s/veh	42.0		24.0			16.1
Approach LOS	D		C			B

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	50.9			50.9	39.1
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	46.0			46.0	36.0
Max Q Clear Time (g_c+I1), s	38.9			21.8	34.2
Green Ext Time (p_c), s	6.5			13.6	1.0

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



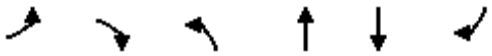
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	400	667	0	1666	1896	0
Future Volume (veh/h)	400	667	0	1666	1896	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	387	777	0	1811	2061	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	535	953	0	2891	2891	0
Arrive On Green	0.30	0.30	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	387	777	0	1811	2061	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	11.6	13.6	0.0	14.3	17.6	0.0
Cycle Q Clear(g_c), s	11.6	13.6	0.0	14.3	17.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	535	953	0	2891	2891	0
V/C Ratio(X)	0.72	0.82	0.00	0.63	0.71	0.00
Avail Cap(c_a), veh/h	623	1110	0	2891	2891	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.8	19.4	0.0	8.7	9.5	0.0
Incr Delay (d2), s/veh	3.5	4.2	0.0	1.0	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	5.1	0.0	4.4	5.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.2	23.7	0.0	9.8	11.0	0.0
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	1164			1811	2061	
Approach Delay, s/veh	23.2			9.8	11.0	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		38.0		22.0		38.0
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		31.0		21.0		31.0
Max Q Clear Time (g_c+I1), s		16.3		15.6		19.6
Green Ext Time (p_c), s		10.7		2.4		9.5

Intersection Summary	
HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



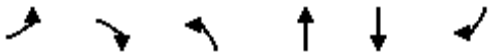
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	400	710	0	1690	1920	0
Future Volume (veh/h)	400	710	0	1690	1920	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	402	807	0	1837	2087	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	549	976	0	2853	2853	0
Arrive On Green	0.31	0.31	0.00	0.56	0.56	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	402	807	0	1837	2087	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	12.1	14.2	0.0	14.9	18.3	0.0
Cycle Q Clear(g_c), s	12.1	14.2	0.0	14.9	18.3	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	549	976	0	2853	2853	0
V/C Ratio(X)	0.73	0.83	0.00	0.64	0.73	0.00
Avail Cap(c_a), veh/h	623	1110	0	2853	2853	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.6	19.3	0.0	9.1	9.9	0.0
Incr Delay (d2), s/veh	3.9	4.7	0.0	1.1	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	5.3	0.0	4.6	5.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.4	24.0	0.0	10.3	11.6	0.0
LnGrp LOS	C	C	A	B	B	A
Approach Vol, veh/h	1209			1837	2087	
Approach Delay, s/veh	23.5			10.3	11.6	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		37.5		22.5		37.5
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		31.0		21.0		31.0
Max Q Clear Time (g_c+I1), s		16.9		16.2		20.3
Green Ext Time (p_c), s		10.5		2.3		9.0

Intersection Summary		
HCM 6th Ctrl Delay	13.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	400	880	0	2290	1810	0
Future Volume (veh/h)	400	880	0	2290	1810	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	435	957	0	2489	1967	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	610	1086	0	2903	2903	0
Arrive On Green	0.34	0.34	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1781	3170	0	5443	5443	0
Grp Volume(v), veh/h	435	957	0	2489	1967	0
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1702	1702	0
Q Serve(g_s), s	19.1	25.6	0.0	36.9	24.3	0.0
Cycle Q Clear(g_c), s	19.1	25.6	0.0	36.9	24.3	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	610	1086	0	2903	2903	0
V/C Ratio(X)	0.71	0.88	0.00	0.86	0.68	0.00
Avail Cap(c_a), veh/h	673	1198	0	2903	2903	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.7	27.9	0.0	16.4	13.6	0.0
Incr Delay (d2), s/veh	3.2	7.4	0.0	3.5	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	10.4	0.0	13.8	8.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.9	35.2	0.0	19.9	14.9	0.0
LnGrp LOS	C	D	A	B	B	A
Approach Vol, veh/h	1392			2489	1967	
Approach Delay, s/veh	33.3			19.9	14.9	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		55.2		34.8		55.2
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		48.0		34.0		48.0
Max Q Clear Time (g_c+I1), s		38.9		27.6		26.3
Green Ext Time (p_c), s		8.4		3.3		15.5

Intersection Summary		
HCM 6th Ctrl Delay	21.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	100	1732	230	740	1763	70	200	90	70	100	30	210
Project Trips	0	28	0	0	67	0	0	0	0	0	0	0
GEOMETRY	LL	TT	TR	LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Ex+Project
NBL	2.0	2,880	100	100	0.05	0.05
NBT	3.0	4,800	1,732	1,760	0.41 *	0.41 *
NBR	0.0	0	230	230	0.00	0.00
SBL	2.0	2,880	740	740	0.26 *	0.26 *
SBT	3.0	4,800	1,763	1,830	0.37	0.38
SBR	1.0	1,600	70	70	0.04	0.04
EBL	2.0	2,880	200	200	0.07 *	0.07 *
EBT	1.0	1,600	90	90	0.06	0.06
EBR	1.0	1,600	70	70	0.04	0.04
WBL	0.0	0	100	100	0.00	0.00
WBT	2.0	3,200	30	30	0.04	0.04
WBR	1.0 (a)	1,600	130	130	0.08 *	0.08 *
N/S Critical Movements					0.67	0.67
E/W Critical Movements					0.15	0.15
ICU					0.82	0.82
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 38% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Lockwood Street (Split Phased)
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	90	1590	80	340	1605	500	500	140	210	270	150	400
Project Trips	0	10	0	0	5	0	0	0	0	0	0	0
GEOMETRY	LL	TT TR		LL	TTT	R	LL	T	R	L	LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Ex+Project
NBL	2.0	2,880	90	90	0.03	0.03
NBT	3.0	4,800	1,590	1,600	0.35 *	0.35 *
NBR	0.0	0	80	80	0.00	0.00
SBL	2.0	2,880	340	340	0.12 *	0.12 *
SBT	3.0	4,800	1,605	1,610	0.33	0.34
SBR	1.0	1,600	500	500	0.31	0.31
EBL	2.0	2,880	500	500	0.17 *	0.17 *
EBT	1.0	1,600	140	140	0.09	0.09
EBR	1.0	1,600	210	210	0.13	0.13
WBL	0.0	0	270	270	0.00	0.00
WBT	2.0	3,200	150	150	0.13	0.13
WBR	1.0 (a)	1,600	168	168	0.11 *	0.11 *
N/S Critical Movements					0.47	0.47
E/W Critical Movements					0.28	0.28
ICU					0.75	0.75
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 58% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	338	1128	524	450	1133	400	800	1270	322	139	440	280
Project Trips	62	28	6	0	67	0	0	0	148	11	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Ex+Project
NBL	2.0	2,880	338	400	0.12	0.14
NBT	3.0	4,800	1,128	1,156	0.24 *	0.24 *
NBR	1.0	1,600	524	530	0.33	0.33
SBL	2.0	2,880	450	450	0.16 *	0.16 *
SBT	3.0	4,800	1,133	1,200	0.24	0.25
SBR	1.0 (a)	1,600	160	160	0.10	0.10
EBL	3.0	4,800	800	800	0.17	0.17
EBT	2.0	3,200	1,270	1,270	0.40 *	0.40 *
EBR	1.0	1,600	322	470	0.20	0.29
WBL	1.0	1,600	139	150	0.09 *	0.09 *
WBT	3.0	4,800	440	440	0.09	0.09
WBR	1.0	1,600	280	280	0.18	0.18
N/S Critical Movements					0.40	0.40
E/W Critical Movements					0.49	0.49
ICU					0.89	0.89
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 60% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: 176200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	378	1360	358	240	1685	570	600	710	268	209	1660	550
Project Trips	22	10	2	0	5	0	0	0	12	1	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LLL	TT	R	L	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Ex+Project
NBL	2.0	2,880	378	400	0.13 *	0.14 *
NBT	3.0	4,800	1,360	1,370	0.28	0.29
NBR	1.0	1,600	358	360	0.22	0.23
SBL	2.0	2,880	240	240	0.08	0.08
SBT	3.0	4,800	1,685	1,690	0.35 *	0.35 *
SBR	1.0 (a)	1,600	393	393	0.25	0.25
EBL	3.0	4,800	600	600	0.13 *	0.13 *
EBT	2.0	3,200	710	710	0.22	0.22
EBR	1.0	1,600	268	280	0.17	0.18
WBL	1.0	1,600	209	210	0.13	0.13
WBT	3.0	4,800	1,660	1,660	0.35 *	0.35 *
WBR	1.0	1,600	550	550	0.34	0.34
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.48	0.48
ICU					0.96	0.97
Level of Service (LOS)					E	E

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 31% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	98	1604	31	80	1364	130	260	40	112	154	75	120
Project Trips	32	96	9	0	226	0	0	0	79	21	0	0
GEOMETRY	L	TT	**T**R	L	TT**T**	R		LT	R	**L**	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	98	130	0.06	0.08 *
NBT	3.0	4,800	1,604	1,700	0.34 *	0.36
NBR	0.0	0	31	40	0.00	0.00
SBL	1.0	1,600	80	80	0.05 *	0.05
SBT	3.0	4,800	1,364	1,590	0.28	0.33 *
SBR	1.0	1,600	130	130	0.08	0.08
EBL	0.0	0	260	260	0.00	0.00
EBT	1.0	1,600	40	40	0.19 *	0.19 *
EBR	1.0	1,600	112	191	0.07	0.12
WBL	1.0	1,600	154	175	0.10 *	0.11 *
WBT	1.0	1,600	75	75	0.05	0.05
WBR	1.0	1,600	120	120	0.00	0.00
N/S Critical Movements					0.39	0.41
E/W Critical Movements					0.29	0.30
ICU					0.68	0.71
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Cesar Chavez Drive
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	84	1916	37	190	1833	225	125	15	49	168	55	80
Project Trips	11	34	5	0	17	0	0	0	6	2	0	0
GEOMETRY	L	TT	**T**R	L	TT**T**	R		LT	R	**L**	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	84	95	0.05	0.06
NBT	3.0	4,800	1,916	1,950	0.41 *	0.42 *
NBR	0.0	0	37	42	0.00	0.00
SBL	1.0	1,600	190	190	0.12 *	0.12 *
SBT	3.0	4,800	1,833	1,850	0.38	0.39
SBR	1.0	1,600	225	225	0.14	0.14
EBL	0.0	0	125	125	0.00	0.00
EBT	1.0	1,600	15	15	0.09 *	0.09 *
EBR	1.0	1,600	49	55	0.03	0.03
WBL	1.0	1,600	168	170	0.11 *	0.11 *
WBT	1.0	1,600	55	55	0.03	0.03
WBR	1.0	1,600	80	80	0.05	0.05
N/S Critical Movements					0.53	0.54
E/W Critical Movements					0.20	0.20
ICU					0.73	0.74
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 60% RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak *	41	1765	52	44	1,635	25	20	1	78	136	2	93
Project Trips	9	55	50	196	130	0	0	25	17	21	6	82
GEOMETRY	L	TT **TR**		L	TT**T**	R	L	**TR**		L	**T**	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	41	50	0.05	0.05
NBT	3.0	4,800	1,765	1,820	0.38 *	0.40 *
NBR	0.0	0	52	102	0.00	0.00
SBL	1.0	1,600	44	240	0.03 *	0.15 *
SBT	3.0	4,800	1,635	1,765	0.34	0.37
SBR	1.0	1,600	25	25	0.02	0.02
EBL	0.0	0	20	20	0.00	0.00
EBT	1.0	1,600	1	26	0.07 *	0.07 *
EBR	1.0	1,600	78	95	0.05	0.06
WBL	1.0	1,600	136	157	0.09 *	0.10 *
WBT	1.0	1,600	2	8	0.00	0.01
WBR	1.0	1,600	93	175	0.06	0.11
N/S Critical Movements					0.41	0.55
E/W Critical Movements					0.16	0.17
ICU					0.57	0.72
Level of Service (LOS)					A	C

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino De La Luna
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064178800

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak *	47	1801	99	124	1970	75	10	3	28	69	1	61
Project Trips	3	19	7	15	10	0	0	2	2	7	2	29
GEOMETRY	L	TT	**TR**	L	TT	R	L	**TR**		L	**T**	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	47	50	0.05 *	0.05 *
NBT	3.0	4,800	1,801	1,820	0.40	0.40
NBR	0.0	0	99	106	0.00	0.00
SBL	1.0	1,600	124	139	0.08	0.09
SBT	2.0	3,200	1,970	1,980	0.62 *	0.62 *
SBR	1.0	1,600	75	75	0.05	0.05
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	3	5	0.07 *	0.07 *
EBR	1.0	1,600	28	30	0.02	0.02
WBL	1.0	1,600	69	76	0.05 *	0.05 *
WBT	1.0	1,600	1	3	0.00	0.00
WBR	1.0	1,600	61	90	0.04	0.06
N/S Critical Movements					0.67	0.67
E/W Critical Movements					0.12	0.12
ICU					0.79	0.79
Level of Service (LOS)					C	C

Notes: * Turning volumes adjusted to account for diverted traffic from neighborhoods east of project

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	190	1428	36	340	1327	103	192	474	190	127	243	166
Project Trips	0	32	194	120	13	7	18	106	0	73	47	64
GEOMETRY	L	TT	TR	LL	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	190	190	0.12	0.12
NBT	3.0	4,800	1,428	1,460	0.31 *	0.35 *
NBR	0.0	0	36	230	0.00	0.00
SBL	2.0	2,880	340	460	0.12 *	0.16 *
SBT	3.0	4,800	1,327	1,340	0.30	0.30
SBR	0.0	0	103	110	0.00	0.00
EBL	1.0	1,600	192	210	0.12 *	0.13
EBT	2.0	3,200	474	580	0.15	0.18 *
EBR	1.0	1,600	190	190	0.12	0.12
WBL	2.0	2,880	127	200	0.04	0.07 *
WBT	2.0	3,200	243	290	0.08 *	0.09
WBR	1.0 (a)	1,600	166	230	0.10	0.14
N/S Critical Movements					0.43	0.51
E/W Critical Movements					0.20	0.25
ICU					0.63	0.76
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	160	1518	95	201	1565	207	218	142	80	404	693	447
Project Trips	0	2	15	19	5	3	2	8	0	26	17	23
GEOMETRY	L	TT	TR	LL	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	160	160	0.10 *	0.10 *
NBT	3.0	4,800	1,518	1,520	0.34	0.34
NBR	0.0	0	95	110	0.00	0.00
SBL	2.0	2,880	201	220	0.07	0.08
SBT	3.0	4,800	1,565	1,570	0.37 *	0.37 *
SBR	0.0	0	207	210	0.00	0.00
EBL	1.0	1,600	218	220	0.14 *	0.14 *
EBT	2.0	3,200	142	150	0.04	0.05
EBR	1.0	1,600	80	80	0.05	0.05
WBL	2.0	2,880	404	430	0.14	0.15
WBT	2.0	3,200	693	710	0.22 *	0.22 *
WBR	1.0 (a)	1,600	447	470	0.28	0.29
N/S Critical Movements					0.47	0.47
E/W Critical Movements					0.36	0.36
ICU					0.83	0.83
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1637	20	72	1606	0	0	0	0	25	0	142
Project Trips	0	223	0	3	84	0	0	0	0	0	0	3
GEOMETRY		T TR		L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,637	1,860	0.52 *	0.59 *
NBR	0.0	0	20	20	0.00	0.00
SBL	1.0	1,600	72	75	0.05 *	0.05 *
SBT	3.0	4,800	1,606	1,690	0.33	0.35
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	25	25	0.00	0.00
WBT	1.0	1,600	0	0	0.10 *	0.11 *
WBR	0.0	0	142	145	0.00	0.00
N/S Critical Movements					0.57	0.64
E/W Critical Movements					0.10	0.11
ICU					0.67	0.75
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: San Gorgonio Ave
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1743	30	69	1976	0	0	0	0	50	0	69
Project Trips	0	17	0	1	29	0	0	0	0	0	0	1
GEOMETRY		T TR		L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,743	1,760	0.55 *	0.56 *
NBR	0.0	0	30	30	0.00	0.00
SBL	1.0	1,600	69	70	0.05 *	0.05 *
SBT	3.0	4,800	1,976	2,005	0.41	0.42
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	50	50	0.00	0.00
WBT	1.0	1,600	0	0	0.07 *	0.08 *
WBR	0.0	0	69	70	0.00	0.00
N/S Critical Movements					0.60	0.61
E/W Critical Movements					0.07	0.08
ICU					0.67	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1505	95	67	1585	0	0	0	0	140	0	58
Project Trips	0	170	0	3	60	0	0	0	0	0	0	7
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,505	1,675	0.47 *	0.52 *
NBR	1.0	1,600	95	95	0.06	0.06
SBL	1.0	1,600	67	70	0.05 *	0.05 *
SBT	3.0	4,800	1,585	1,645	0.33	0.34
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	140	140	0.00	0.00
WBT	1.0	1,600	0	0	0.12 *	0.13 *
WBR	0.0	0	58	65	0.00	0.00
N/S Critical Movements					0.52	0.57
E/W Critical Movements					0.12	0.13
ICU					0.64	0.70
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Santa Lucia
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1476	163	60	1566	0	0	0	0	163	0	45
Project Trips	0	12	0	1	21	0	0	0	0	0	0	1
GEOMETRY		TT	R	L	TTT						LR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,476	1,488	0.46 *	0.47 *
NBR	1.0	1,600	163	163	0.10	0.10
SBL	1.0	1,600	60	61	0.05 *	0.05 *
SBT	3.0	4,800	1,566	1,587	0.33	0.33
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	163	163	0.00	0.00
WBT	1.0	1,600	0	0	0.13 *	0.13 *
WBR	0.0	0	45	46	0.00	0.00
N/S Critical Movements					0.51	0.52
E/W Critical Movements					0.13	0.13
ICU					0.64	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	160	1171	0	0	1310	179	490	0	300	0	0	0
Project Trips	0	119	0	0	40	21	50	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	2,880	160	160	0.06 *	0.06 *
NBT	3.0	4,800	1,171	1,290	0.24	0.27
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,310	1,350	0.31 *	0.32 *
SBR	0.0	0	179	200	0.11	0.13
EBL	2.0	2,880	490	540	0.17 *	0.19 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	300	300	0.19	0.19
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.37	0.38
E/W Critical Movements					0.17	0.19
ICU					0.54	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Third Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: 2064174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	460	1757	0	0	1608	523	226	0	140	0	0	0
Project Trips	0	13	0	0	22	7	4	0	0	0	0	0
GEOMETRY	LL	TTT			TT TR		LL		R			

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	2,880	460	460	0.16 *	0.16 *
NBT	3.0	4,800	1,757	1,770	0.37	0.37
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	3.0	4,800	1,608	1,630	0.44 *	0.45 *
SBR	0.0	0	523	530	0.33	0.33
EBL	2.0	2,880	226	230	0.08 *	0.08 *
EBT	0.0	0	0	0	0.00	0.00
EBR	1.0	(a) 1,600	140	140	0.09	0.09
WBL	0.0	0	0	0	0.00	0.00
WBT	0.0	0	0	0	0.00 *	0.00 *
WBR	0.0	0	0	0	0.00	0.00
N/S Critical Movements					0.60	0.61
E/W Critical Movements					0.08	0.08
ICU					0.68	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1289	220	206	1404	0	0	0	0	80	0	66
Project Trips	0	111	0	4	36	0	0	0	0	0	0	9
GEOMETRY		TT TR		L	TTT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,289	1,400	0.31 *	0.34 *
NBR	0.0	0	220	220	0.00	0.00
SBL	1.0	1,600	206	210	0.13 *	0.13 *
SBT	3.0	4,800	1,404	1,440	0.29	0.30
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	80	80	0.05 *	0.05 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0 (a)	1,600	66	75	0.04	0.05
N/S Critical Movements					0.44	0.47
E/W Critical Movements					0.05	0.05
ICU					0.49	0.52
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) Not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Eastman Ave
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	1767	105	69	1667	0	0	0	0	310	0	339
Project Trips	0	8	0	1	13	0	0	0	0	0	0	1
GEOMETRY		TT TR		L	TTT					LL		R

Move-ment	Level of Service Calculations					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	3.0	4,800	1,767	1,775	0.39 *	0.39 *
NBR	0.0	0	105	105	0.00	0.00
SBL	1.0	1,600	69	70	0.05 *	0.05 *
SBT	3.0	4,800	1,667	1,680	0.35	0.35
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00 *
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	2,880	310	310	0.11	0.11
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	339	340	0.21 *	0.21 *
N/S Critical Movements					0.44	0.44
E/W Critical Movements					0.21	0.21
ICU					0.65	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	30	1312	390	40	1293	143	167	760	30	190	290	30
Project Trips	0	68	0	0	27	17	43	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	30	30	0.05	0.05
NBT	3.0	4,800	1,312	1,380	0.35 *	0.37 *
NBR	0.0	0	390	390	0.00	0.00
SBL	1.0	1,600	40	40	0.05 *	0.05 *
SBT	3.0	4,800	1,293	1,320	0.30	0.31
SBR	0.0	0	143	160	0.00	0.00
EBL	2.0	2,880	167	210	0.06	0.07
EBT	1.0	1,600	760	760	0.48 *	0.48 *
EBR	1.0	1,600	30	30	0.02	0.02
WBL	1.0	1,600	190	190	0.12 *	0.12 *
WBT	2.0	3,200	290	290	0.10	0.10
WBR	0.0	0	30	30	0.00	0.00
N/S Critical Movements					0.40	0.42
E/W Critical Movements					0.60	0.60
ICU					1.00	1.02
Level of Service (LOS)					E	F

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue **MITIGATED**
EAST/WEST STREET: Fifth Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	30	1312	390	40	1293	143	167	760	30	190	290	30
Project Trips	0	68	0	0	27	17	43	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T **T**	R	L **L**	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	30	30	0.05	0.05
NBT	3.0	4,800	1,312	1,380	0.35 *	0.37 *
NBR	0.0	0	390	390	0.00	0.00
SBL	1.0	1,600	40	40	0.05 *	0.05 *
SBT	3.0	4,800	1,293	1,320	0.30	0.31
SBR	0.0	0	143	160	0.00	0.00
EBL	2.0	2,880	167	210	0.06	0.07
EBT	2.0	3,200	760	760	0.24 *	0.24 *
EBR	1.0	1,600	30	30	0.02	0.02
WBL	2.0	2,880	190	190	0.07 *	0.07 *
WBT	2.0	3,200	290	290	0.10	0.10
WBR	0.0	0	30	30	0.00	0.00
N/S Critical Movements					0.40	0.42
E/W Critical Movements					0.31	0.31
ICU					0.71	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue
EAST/WEST STREET: Fifth Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	40	1355	90	40	1651	284	347	560	110	590	800	170
Project Trips	0	5	0	0	9	6	3	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T	R	L	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	40	40	0.05 *	0.05 *
NBT	3.0	4,800	1,355	1,360	0.30	0.30
NBR	0.0	0	90	90	0.00	0.00
SBL	1.0	1,600	40	40	0.05	0.05
SBT	3.0	4,800	1,651	1,660	0.40 *	0.41 *
SBR	0.0	0	284	290	0.00	0.00
EBL	2.0	2,880	347	350	0.12	0.12
EBT	1.0	1,600	560	560	0.35 *	0.35 *
EBR	1.0	1,600	110	110	0.07	0.07
WBL	1.0	1,600	590	590	0.37 *	0.37 *
WBT	2.0	3,200	800	800	0.30	0.30
WBR	0.0	0	170	170	0.00	0.00
N/S Critical Movements					0.45	0.46
E/W Critical Movements					0.72	0.72
ICU					1.17	1.18
Level of Service (LOS)					F	F

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Rose Avenue **MITIGATED**
EAST/WEST STREET: Fifth Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	40	1355	90	40	1651	284	347	560	110	590	800	170
Project Trips	0	5	0	0	9	6	3	0	0	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	LL	T **T**	R	L **L**	T	TR

Move-ment	Level of Service Calculations					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	40	40	0.05 *	0.05 *
NBT	3.0	4,800	1,355	1,360	0.30	0.30
NBR	0.0	0	90	90	0.00	0.00
SBL	1.0	1,600	40	40	0.05	0.05
SBT	3.0	4,800	1,651	1,660	0.40 *	0.41 *
SBR	0.0	0	284	290	0.00	0.00
EBL	2.0	2,880	347	350	0.12 *	0.12 *
EBT	2.0	3,200	560	560	0.18 *	0.18
EBR	1.0	1,600	110	110	0.07	0.07
WBL	2.0	2,880	590	590	0.20	0.20
WBT	2.0	3,200	800	800	0.30 *	0.30 *
WBR	0.0	0	170	170	0.00	0.00
N/S Critical Movements					0.45	0.46
E/W Critical Movements					0.42	0.42
ICU					0.87	0.88
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

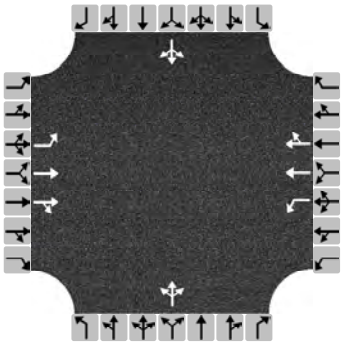
General Information

Analyst	14. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Juanita Ave
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Juanita Ave
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	95	545	25	12	192	110	40	190	41	84	145	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	95	273	298	12	96	206	271			344		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.084	0.242	0.264	0.011	0.085	0.183	0.241			0.306		
Final Departure Headway, hd (s)	8.64	8.12	8.06	9.27	8.74	8.35	8.57			8.26		
Final Degree of Utilization, x	0.228	0.615	0.666	0.031	0.233	0.478	0.645			0.789		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	6.34	5.82	5.76	6.97	6.44	6.05	6.27			5.96		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	95	273	298	12	96	206	271			344		
Capacity	416	443	447	388	412	431	420			436		
95% Queue Length, Q_{95} (veh)	0.9	4.5	5.6	0.1	0.9	2.7	5.1			9.3		
Control Delay (s/veh)	13.9	23.5	26.4	12.3	14.1	18.6	26.5			39.6		
Level of Service, LOS	B	C	D	B	B	C	D			E		
Approach Delay (s/veh)	23.5			17.0			26.5			39.6		
Approach LOS	C			C			D			E		
Intersection Delay, s/veh | LOS	26.2						D					

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HCS7 All-Way Stop Control Report

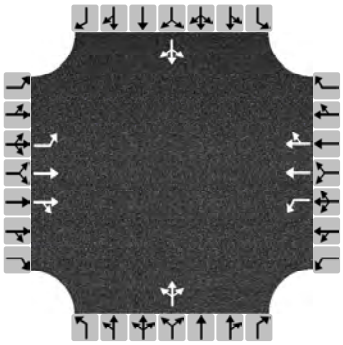
General Information

Analyst	14. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BOPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Juanita Ave
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Juanita Ave
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	95	570	25	15	205	115	40	190	50	100	145	115
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	95	285	310	15	103	218	280			360		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.084	0.253	0.276	0.013	0.091	0.193	0.249			0.320		
Final Departure Headway, hd (s)	8.94	8.41	8.35	9.55	9.02	8.63	8.84			8.54		
Final Degree of Utilization, x	0.236	0.666	0.719	0.040	0.257	0.521	0.688			0.854		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	6.64	6.11	6.05	7.25	6.72	6.33	6.54			6.24		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	95	285	310	15	103	218	280			360		
Capacity	403	428	431	377	399	417	407			422		
95% Queue Length, Q_{95} (veh)	0.9	5.6	6.9	0.1	1.0	3.2	6.0			12.5		
Control Delay (s/veh)	14.4	27.4	31.6	12.6	14.8	20.6	30.4			54.1		
Level of Service, LOS	B	D	D	B	B	C	D			F		
Approach Delay (s/veh)	27.5			18.5			30.4			54.1		
Approach LOS	D			C			D			F		
Intersection Delay, s/veh | LOS	31.9						D					

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HCS7 All-Way Stop Control Report

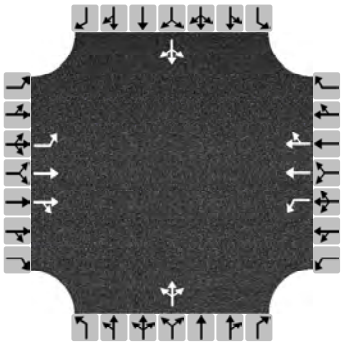
General Information

Analyst	14. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Juanita Ave
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Juanita Ave
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	433	10	39	730	67	10	75	24	19	70	65
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	217	227	39	365	432	109			154		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.192	0.201	0.035	0.324	0.384	0.097			0.137		
Final Departure Headway, hd (s)	7.40	6.89	6.86	6.96	6.45	6.34	7.97			7.70		
Final Degree of Utilization, x	0.093	0.415	0.432	0.075	0.654	0.761	0.241			0.329		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.10	4.59	4.56	4.66	4.15	4.04	5.67			5.40		

Capacity, Delay and Level of Service

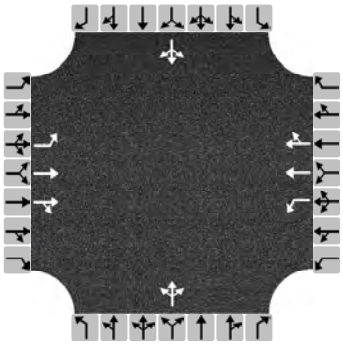
Flow Rate, v (veh/h)	45	217	227	39	365	432	109			154		
Capacity	486	522	525	517	558	568	452			468		
95% Queue Length, Q_{95} (veh)	0.3	2.1	2.2	0.2	5.4	8.5	0.9			1.5		
Control Delay (s/veh)	10.9	14.4	14.7	10.2	21.1	28.4	13.2			14.2		
Level of Service, LOS	B	B	B	B	C	D	B			B		
Approach Delay (s/veh)	14.3			24.3			13.2			14.2		
Approach LOS	B			C			B			B		
Intersection Delay, s/veh | LOS	19.5						C					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	14. DJL	Intersection	Cam Del Sol/Juanita Ave
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	BOPR	North/South Street	Juanita Ave
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	435	10	40	735	70	10	75	25	20	70	65
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	45	218	228	40	368	438	110			155		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.040	0.193	0.202	0.036	0.327	0.389	0.098			0.138		
Final Departure Headway, hd (s)	7.43	6.92	6.89	6.98	6.47	6.36	7.99			7.73		
Final Degree of Utilization, x	0.093	0.418	0.435	0.078	0.661	0.773	0.244			0.333		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.13	4.62	4.59	4.68	4.17	4.06	5.69			5.43		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	45	218	228	40	368	438	110			155		
Capacity	484	520	523	516	556	566	451			466		
95% Queue Length, Q_{95} (veh)	0.3	2.1	2.3	0.3	5.5	9.0	1.0			1.5		
Control Delay (s/veh)	10.9	14.6	14.9	10.3	21.5	29.6	13.3			14.3		
Level of Service, LOS	B	B	B	B	C	D	B			B		
Approach Delay (s/veh)	14.4			25.2			13.3			14.3		
Approach LOS	B			D			B			B		
Intersection Delay, s/veh | LOS	20.0						C					

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HCS7 All-Way Stop Control Report

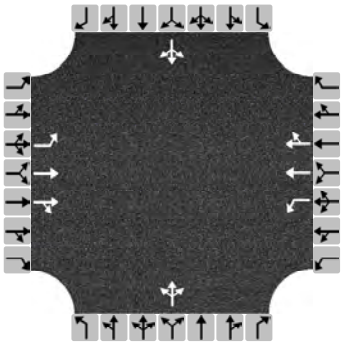
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	20	625	25	219	289	17	10	65	155	46	70	15
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	20	313	338	219	145	162	230			131		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.018	0.278	0.300	0.195	0.128	0.144	0.204			0.116		
Final Departure Headway, hd (s)	7.55	7.03	6.98	7.74	7.23	7.15	7.54			8.39		
Final Degree of Utilization, x	0.042	0.610	0.654	0.471	0.290	0.321	0.482			0.305		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.25	4.73	4.68	5.44	4.93	4.85	5.24			6.09		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	20	313	338	219	145	162	230			131		
Capacity	477	512	516	465	498	504	477			429		
95% Queue Length, Q_{95} (veh)	0.1	4.5	5.4	2.6	1.2	1.4	2.7			1.3		
Control Delay (s/veh)	10.6	20.6	22.6	17.3	12.9	13.2	17.2			14.8		
Level of Service, LOS	B	C	C	C	B	B	C			B		
Approach Delay (s/veh)	21.3			14.8			17.2			14.8		
Approach LOS	C			B			C			B		
Intersection Delay, s/veh | LOS	18.0						C					

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HCS7 All-Way Stop Control Report

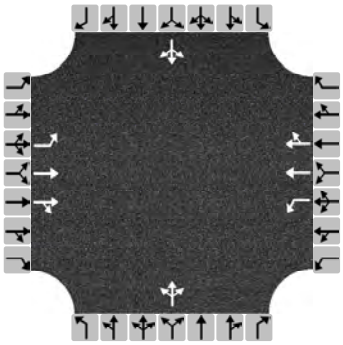
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BOPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	20	675	25	250	310	20	10	65	220	55	70	15
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	20	338	363	250	155	175	295			140		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.018	0.300	0.322	0.222	0.138	0.156	0.262			0.124		
Final Departure Headway, hd (s)	8.18	7.66	7.61	8.36	7.84	7.76	7.93			9.08		
Final Degree of Utilization, x	0.045	0.719	0.767	0.581	0.338	0.377	0.650			0.353		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.88	5.36	5.31	6.06	5.54	5.46	5.63			6.78		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	20	338	363	250	155	175	295			140		
Capacity	440	470	473	431	459	464	454			396		
95% Queue Length, Q_{95} (veh)	0.1	6.9	8.5	4.0	1.5	1.8	5.2			1.6		
Control Delay (s/veh)	11.3	29.2	34.0	22.5	14.5	15.1	25.0			16.7		
Level of Service, LOS	B	D	D	C	B	C	D			C		
Approach Delay (s/veh)	31.1			18.1			25.0			16.7		
Approach LOS	D			C			D			C		
Intersection Delay, s/veh | LOS	24.6						C					

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HCS7 All-Way Stop Control Report

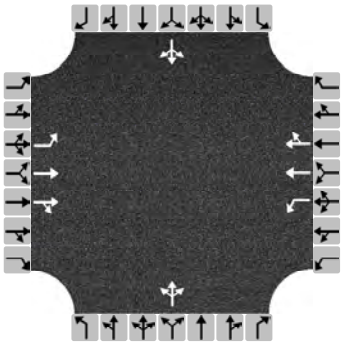
General Information

Analyst	15. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Colonia Rd
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	15	451	10	239	808	34	10	30	205	19	45	20
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	15	226	236	239	404	438	245			84		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.013	0.200	0.209	0.212	0.359	0.389	0.218			0.075		
Final Departure Headway, hd (s)	8.17	7.66	7.63	7.41	6.90	6.84	7.78			8.85		
Final Degree of Utilization, x	0.034	0.480	0.499	0.492	0.774	0.833	0.529			0.206		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.87	5.36	5.33	5.11	4.60	4.54	5.48			6.55		

Capacity, Delay and Level of Service

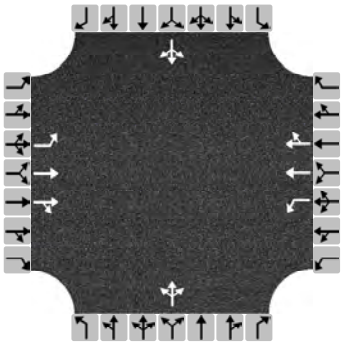
Flow Rate, v (veh/h)	15	226	236	239	404	438	245			84		
Capacity	440	470	472	486	522	526	463			407		
95% Queue Length, Q_{95} (veh)	0.1	2.7	2.9	2.8	8.9	11.8	3.3			0.8		
Control Delay (s/veh)	11.2	17.4	17.9	17.2	32.0	40.4	19.1			13.8		
Level of Service, LOS	B	C	C	C	D	E	C			B		
Approach Delay (s/veh)	17.4			32.2			19.1			13.8		
Approach LOS	C			D			C			B		
Intersection Delay, s/veh | LOS	25.9						D					

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HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	15. DJL	Intersection	Cam Del Sol/Colonia Rd
Agency/Co.	Stantec	Jurisdiction	Oxnard
Date Performed	2/18/2019	East/West Street	Camino Del Sol
Analysis Year	BOPR	North/South Street	Colonia Rd
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	PM Peak hour		
Project Description	OUHSD HS No. 8		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	15	455	10	250	815	35	10	30	210	20	45	20
% Thrus in Shared Lane			50			50						
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	TR	L	T	TR	LTR			LTR		
Flow Rate, v (veh/h)	15	228	238	250	408	443	250			85		
Percent Heavy Vehicles	2	2	2	2	2	2	2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20			3.20		
Initial Degree of Utilization, x	0.013	0.202	0.211	0.222	0.362	0.393	0.222			0.076		
Final Departure Headway, hd (s)	8.23	7.71	7.68	7.45	6.94	6.88	7.82			8.91		
Final Degree of Utilization, x	0.034	0.487	0.507	0.518	0.786	0.846	0.543			0.210		
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3			2.3		
Service Time, ts (s)	5.93	5.41	5.38	5.15	4.64	4.58	5.52			6.61		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	15	228	238	250	408	443	250			85		
Capacity	437	467	469	483	519	523	460			404		
95% Queue Length, Q_{95} (veh)	0.1	2.8	3.0	3.1	9.4	12.6	3.5			0.8		
Control Delay (s/veh)	11.2	17.7	18.2	18.1	33.6	43.3	19.7			14.0		
Level of Service, LOS	B	C	C	C	D	E	C			B		
Approach Delay (s/veh)	17.7			34.0			19.7			14.0		
Approach LOS	C			D			C			B		
Intersection Delay, s/veh | LOS	27.2						D					

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HCS7 All-Way Stop Control Report

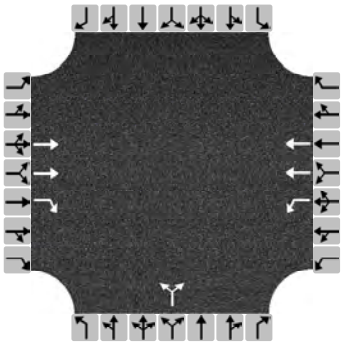
General Information

Analyst	16. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	AM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Gibraltar St
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		790	60	21	562		75		62			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	395	395	60	21	281	281	137					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.351	0.351	0.053	0.019	0.250	0.250	0.122					
Final Departure Headway, hd (s)	5.86	5.86	5.16	6.67	6.16	6.16	7.46					
Final Degree of Utilization, x	0.643	0.643	0.086	0.039	0.481	0.481	0.284					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	3.56	3.56	2.86	4.37	3.86	3.86	5.16					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	395	395	60	21	281	281	137					
Capacity	614	614	698	540	584	584	483					
95% Queue Length, Q_{95} (veh)	5.2	5.2	0.3	0.1	2.7	2.7	1.2					
Control Delay (s/veh)	19.0	19.0	8.3	9.6	14.5	14.5	13.1					
Level of Service, LOS	C	C	A	A	B	B	B					
Approach Delay (s/veh)	18.2			14.4			13.1					
Approach LOS	C			B			B					
Intersection Delay, s/veh | LOS	16.3						C					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	75	0	65	0	0	0	0	790	60	21	444	0
Project Trips	0	17	0	20	5	35	461	0	0	12	55	21
GEOMETRY	LTR			LT		R	L	T TR		L	T TR	

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Project
NBL	0.0	0	75	0.00
NBT	1.0	1,600	17	0.10 *
NBR	0.0	0	65	0.00
SBL	0.0	0	20	0.00
SBT	1.0	1,600	5	0.07 *
SBR	1.0	1,600	35	0.02
EBL	1.0	1,600	461	0.29 *
EBT	2.0	3,200	790	0.27
EBR	0.0	0	60	0.00
WBL	1.0	1,600	33	0.02
WBT	2.0	3,200	499	0.16 *
WBR	0.0	0	21	0.00
N/S Critical Movements				0.17
E/W Critical Movements				0.45
ICU				0.62
Level of Service (LOS)				B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

HCS7 All-Way Stop Control Report

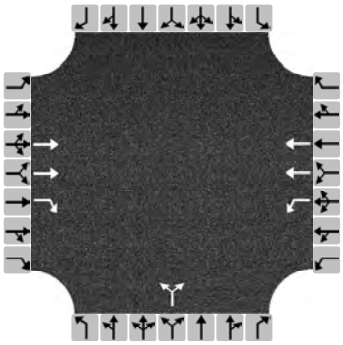
General Information

Analyst	16. DJL
Agency/Co.	Stantec
Date Performed	2/18/2019
Analysis Year	BO
Analysis Time Period (hrs)	1.00
Time Analyzed	PM Peak hour
Project Description	OUHSD HS No. 8

Site Information

Intersection	Cam Del Sol/Gibraltar St
Jurisdiction	Oxnard
East/West Street	Camino Del Sol
North/South Street	Colonia Rd
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		340	100	87	1235		35		45			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	T	R	L	T	T	LR					
Flow Rate, v (veh/h)	170	170	100	87	618	618	80					
Percent Heavy Vehicles	2	2	2	2	2	2	2					

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20					
Initial Degree of Utilization, x	0.151	0.151	0.089	0.077	0.549	0.549	0.071					
Final Departure Headway, hd (s)	6.43	6.43	5.72	5.91	5.41	5.41	7.56					
Final Degree of Utilization, x	0.303	0.303	0.159	0.143	0.927	0.927	0.168					
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3	2.3					
Service Time, ts (s)	4.13	4.13	3.42	3.61	3.11	3.11	5.26					

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	170	170	100	87	618	618	80					
Capacity	560	560	629	609	666	666	476					
95% Queue Length, Q_{95} (veh)	1.3	1.3	0.6	0.5	20.6	20.6	0.6					
Control Delay (s/veh)	11.9	11.9	9.5	9.6	58.0	58.0	11.8					
Level of Service, LOS	B	B	A	A	F	F	B					
Approach Delay (s/veh)	11.4			54.8			11.8					
Approach LOS	B			F			B					
Intersection Delay, s/veh | LOS	42.6						E					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Gibraltar Ave
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: February, 2019
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	35	0	45	0	0	0	0	490	100	87	1235	0
Project Trips	0	3	0	6	2	12	88	0	0	5	23	4
GEOMETRY		LTR			LT	R	L	T TR		L	T TR	

	Level of Service Calculations			
Move-ment	**Lanes** Lane	Capacity	**Volume** Project	**V/C Ratio** Ex+Project
NBL	0.0	0	35	0.00
NBT	1.0	1,600	3	0.07 *
NBR	0.0	0	45	0.00
SBL	0.0	0	6	0.00
SBT	1.0	1,600	2	0.07 *
SBR	1.0	1,600	12	0.00
EBL	1.0	1,600	88	0.06 *
EBT	2.0	3,200	490	0.18
EBR	0.0	0	100	0.06
WBL	1.0	1,600	92	0.06
WBT	2.0	3,200	1,258	0.39 *
WBR	0.0	0	4	0.00
N/S Critical Movements				0.14
E/W Critical Movements				0.45
ICU				0.59
Level of Service (LOS)				A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	40	35	65	65	20	175	126	842	10	20	398	25
Project Trips	0	0	0	0	0	10	4	18	0	0	47	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	40	40	0.00	0.00
NBT	1.0	1,600	35	35	0.09 *	0.09 *
NBR	0.0	0	65	65	0.00	0.00
SBL	0.0	0	65	65	0.00	0.00
SBT	1.0	1,600	20	20	0.16 *	0.17 *
SBR	0.0	0	175	185	0.00	0.00
EBL	1.0	1,600	126	130	0.08	0.08
EBT	2.0	3,200	842	860	0.27 *	0.27 *
EBR	0.0	0	10	10	0.00	0.00
WBL	1.0	1,600	20	20	0.05 *	0.05 *
WBT	2.0	3,200	398	445	0.13	0.15
WBR	0.0	0	25	25	0.00	0.00
N/S Critical Movements					0.24	0.24
E/W Critical Movements					0.32	0.32
ICU					0.56	0.56
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Camino Del Sol
EAST/WEST STREET: Kohala Street
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	25	30	30	20	20	110	114	643	20	105	1166	70
Project Trips	0	0	0	0	0	1	1	7	0	0	4	0
GEOMETRY	LTR			LTR			L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	25	25	0.00	0.00
NBT	1.0	1,600	30	30	0.07 *	0.07 *
NBR	0.0	0	30	30	0.00	0.00
SBL	0.0	0	20	20	0.00	0.00
SBT	1.0	1,600	20	20	0.09 *	0.09 *
SBR	0.0	0	110	111	0.00	0.00
EBL	1.0	1,600	114	115	0.07 *	0.07 *
EBT	2.0	3,200	643	650	0.21	0.21
EBR	0.0	0	20	20	0.00	0.00
WBL	1.0	1,600	105	105	0.07	0.07
WBT	2.0	3,200	1,166	1,170	0.39 *	0.39 *
WBR	0.0	0	70	70	0.00	0.00
N/S Critical Movements					0.16	0.17
E/W Critical Movements					0.46	0.46
ICU					0.62	0.63
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	210	0	480	1063	450	30	138	694	0	0	733	160
Future Volume (veh/h)	210	0	480	1063	450	30	138	694	0	0	733	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	228	0	522	1155	489	33	150	754	0	0	797	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	2052	998	67	233	1128	0	0	1004	312
Arrive On Green	0.00	0.00	0.00	0.58	0.58	0.58	0.07	0.32	0.00	0.00	0.20	0.20
Sat Flow, veh/h		0		3563	1732	117	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		1155	0	522	150	754	0	0	797	174
Grp Sat Flow(s),veh/h/ln				1781	0	1849	1728	1777	0	0	1702	1585
Q Serve(g_s), s				15.3	0.0	12.5	3.2	13.8	0.0	0.0	11.1	7.4
Cycle Q Clear(g_c), s				15.3	0.0	12.5	3.2	13.8	0.0	0.0	11.1	7.4
Prop In Lane				1.00		0.06	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				2052	0	1065	233	1128	0	0	1004	312
V/C Ratio(X)				0.56	0.00	0.49	0.64	0.67	0.00	0.00	0.79	0.56
Avail Cap(c_a), veh/h				2052	0	1065	369	1327	0	0	1089	338
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.0	0.0	9.4	34.1	22.2	0.0	0.0	28.7	27.2
Incr Delay (d2), s/veh				1.1	0.0	1.6	3.0	1.0	0.0	0.0	3.8	1.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.4	0.0	4.8	1.4	5.6	0.0	0.0	4.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				11.1	0.0	11.0	37.1	23.2	0.0	0.0	32.5	28.9
LnGrp LOS				B	A	B	D	C	A	A	C	C
Approach Vol, veh/h					1677			904			971	
Approach Delay, s/veh					11.1			25.5			31.9	
Approach LOS					B			C			C	

Timer - Assigned Phs	2		4			7	8					
Phs Duration (G+Y+Rc), s	47.2		27.8			9.1	18.8					
Change Period (Y+Rc), s	4.0		4.0			4.0	4.0					
Max Green Setting (Gmax), s	29.0		28.0			8.0	16.0					
Max Q Clear Time (g_c+I1), s	17.3		15.8			5.2	13.1					
Green Ext Time (p_c), s	6.5		4.1			0.1	1.6					

Intersection Summary		
HCM 6th Ctrl Delay	20.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	210	0	480	1063	450	30	138	694	0	0	733	160
Future Volume (veh/h)	210	0	480	1063	450	30	138	694	0	0	733	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	228	0	522	1155	489	33	150	754	0	0	797	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	2052	998	67	233	1128	0	0	1004	312
Arrive On Green	0.00	0.00	0.00	0.58	0.58	0.58	0.07	0.32	0.00	0.00	0.20	0.20
Sat Flow, veh/h		0		3563	1732	117	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		1155	0	522	150	754	0	0	797	174
Grp Sat Flow(s),veh/h/ln				1781	0	1849	1728	1777	0	0	1702	1585
Q Serve(g_s), s				15.3	0.0	12.5	3.2	13.8	0.0	0.0	11.1	7.4
Cycle Q Clear(g_c), s				15.3	0.0	12.5	3.2	13.8	0.0	0.0	11.1	7.4
Prop In Lane				1.00		0.06	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				2052	0	1065	233	1128	0	0	1004	312
V/C Ratio(X)				0.56	0.00	0.49	0.64	0.67	0.00	0.00	0.79	0.56
Avail Cap(c_a), veh/h				2052	0	1065	369	1327	0	0	1089	338
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.0	0.0	9.4	34.1	22.2	0.0	0.0	28.7	27.2
Incr Delay (d2), s/veh				1.1	0.0	1.6	3.0	1.0	0.0	0.0	3.8	1.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.4	0.0	4.8	1.4	5.6	0.0	0.0	4.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				11.1	0.0	11.0	37.1	23.2	0.0	0.0	32.5	28.9
LnGrp LOS				B	A	B	D	C	A	A	C	C
Approach Vol, veh/h					1677			904			971	
Approach Delay, s/veh					11.1			25.5			31.9	
Approach LOS					B			C			C	

Timer - Assigned Phs	2		4			7	8					
Phs Duration (G+Y+Rc), s	47.2		27.8			9.1	18.8					
Change Period (Y+Rc), s	4.0		4.0			4.0	4.0					
Max Green Setting (Gmax), s	29.0		28.0			8.0	16.0					
Max Q Clear Time (g_c+I1), s	17.3		15.8			5.2	13.1					
Green Ext Time (p_c), s	6.5		4.1			0.1	1.6					

Intersection Summary		
HCM 6th Ctrl Delay	20.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

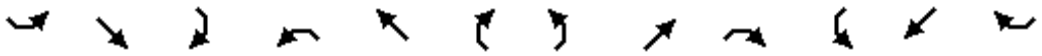
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	300	0	990	719	750	90	309	428	0	0	729	410
Future Volume (veh/h)	300	0	990	719	750	90	309	428	0	0	729	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	326	0	750	565	1119	98	336	465	0	0	792	229
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1134	2158	189	346	1034	0	0	789	245
Arrive On Green	0.00	0.00	0.00	0.64	0.64	0.64	0.10	0.29	0.00	0.00	0.15	0.15
Sat Flow, veh/h		0		1781	3391	297	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		565	617	600	336	465	0	0	792	229
Grp Sat Flow(s),veh/h/ln				1781	1870	1817	1728	1777	0	0	1702	1585
Q Serve(g_s), s				18.6	19.7	19.7	10.7	11.7	0.0	0.0	17.0	15.7
Cycle Q Clear(g_c), s				18.6	19.7	19.7	10.7	11.7	0.0	0.0	17.0	15.7
Prop In Lane				1.00		0.16	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1134	1190	1156	346	1034	0	0	789	245
V/C Ratio(X)				0.50	0.52	0.52	0.97	0.45	0.00	0.00	1.00	0.93
Avail Cap(c_a), veh/h				1134	1190	1156	346	1034	0	0	789	245
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.7	10.9	10.9	49.3	31.8	0.0	0.0	46.5	46.0
Incr Delay (d2), s/veh				1.6	1.6	1.7	40.9	0.3	0.0	0.0	32.9	40.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.3	8.1	7.9	6.5	5.1	0.0	0.0	9.5	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.2	12.5	12.5	90.2	32.1	0.0	0.0	79.4	86.0
LnGrp LOS				B	B	B	F	C	A	A	F	F
Approach Vol, veh/h					1782			801			1021	
Approach Delay, s/veh					12.4			56.5			80.9	
Approach LOS					B			E			F	

Timer - Assigned Phs	2		4			7	8					
Phs Duration (G+Y+Rc), s	74.0		36.0			15.0	21.0					
Change Period (Y+Rc), s	4.0		4.0			4.0	4.0					
Max Green Setting (Gmax), s	38.0		32.0			11.0	17.0					
Max Q Clear Time (g_c+I1), s	21.7		13.7			12.7	19.0					
Green Ext Time (p_c), s	9.5		2.9			0.0	0.0					

Intersection Summary		
HCM 6th Ctrl Delay	41.6	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.



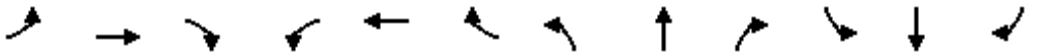
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	300	0	990	720	750	90	310	430	0	0	730	410
Future Volume (veh/h)	300	0	990	720	750	90	310	430	0	0	730	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	326	0	750	565	1120	98	337	467	0	0	793	229
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	0	1094	2082	182	423	1113	0	0	789	245
Arrive On Green	0.00	0.00	0.00	0.61	0.61	0.61	0.12	0.31	0.00	0.00	0.15	0.15
Sat Flow, veh/h		0		1781	3391	296	3456	3647	0	0	5274	1585
Grp Volume(v), veh/h		0.0		565	617	601	337	467	0	0	793	229
Grp Sat Flow(s),veh/h/ln				1781	1870	1817	1728	1777	0	0	1702	1585
Q Serve(g_s), s				19.7	20.9	21.0	10.4	11.4	0.0	0.0	17.0	15.7
Cycle Q Clear(g_c), s				19.7	20.9	21.0	10.4	11.4	0.0	0.0	17.0	15.7
Prop In Lane				1.00		0.16	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1094	1148	1116	423	1113	0	0	789	245
V/C Ratio(X)				0.52	0.54	0.54	0.80	0.42	0.00	0.00	1.00	0.93
Avail Cap(c_a), veh/h				1094	1148	1116	848	1551	0	0	789	245
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				12.0	12.2	12.2	46.9	29.9	0.0	0.0	46.5	46.0
Incr Delay (d2), s/veh				1.7	1.8	1.9	3.5	0.3	0.0	0.0	33.2	40.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.9	8.8	8.6	4.7	4.9	0.0	0.0	9.6	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.7	14.0	14.1	50.4	30.1	0.0	0.0	79.7	86.0
LnGrp LOS				B	B	B	D	C	A	A	F	F
Approach Vol, veh/h					1783			804			1022	
Approach Delay, s/veh					14.0			38.6			81.1	
Approach LOS					B			D			F	

Timer - Assigned Phs	2		4			7	8					
Phs Duration (G+Y+Rc), s	71.5		38.5			17.5	21.0					
Change Period (Y+Rc), s	4.0		4.0			4.0	4.0					
Max Green Setting (Gmax), s	39.0		48.0			27.0	17.0					
Max Q Clear Time (g_c+I1), s	23.0		13.4			12.4	19.0					
Green Ext Time (p_c), s	9.4		3.4			1.0	0.0					

Intersection Summary												
HCM 6th Ctrl Delay		38.5										
HCM 6th LOS		D										

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	45	2240	0	0	0	0	1372	754	160	2166	0
Future Volume (veh/h)	350	45	2240	0	0	0	0	1372	754	160	2166	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	415	0	0				0	1491	820	174	2354	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	523	0					0	2667	1457	683	3902	0
Arrive On Green	0.15	0.00	0.00				0.00	0.52	0.52	0.20	0.76	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	415	0	0				0	1491	820	174	2354	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	10.1	0.0	0.0				0.0	17.7	17.9	3.8	18.2	0.0
Cycle Q Clear(g_c), s	10.1	0.0	0.0				0.0	17.7	17.9	3.8	18.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0					0	2667	1457	683	3902	0
V/C Ratio(X)	0.79	0.00					0.00	0.56	0.56	0.25	0.60	0.00
Avail Cap(c_a), veh/h	871	0					0	2667	1457	683	3902	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.1	0.0	0.0				0.0	14.5	14.5	30.5	4.6	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0				0.0	0.9	1.6	0.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0				0.0	6.6	5.6	1.6	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	0.0				0.0	15.4	16.1	30.7	5.3	0.0
LnGrp LOS	D	A					A	B	B	C	A	A
Approach Vol, veh/h		415	A					2311			2528	
Approach Delay, s/veh		39.8						15.6			7.1	
Approach LOS		D						B			A	

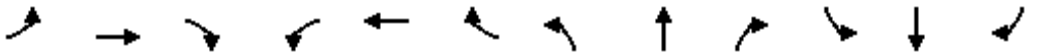
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	21.8	51.0		17.2		72.8
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	9.0	47.0		22.0		60.0
Max Q Clear Time (g_c+I1), s	5.8	19.9		12.1		20.2
Green Ext Time (p_c), s	0.2	18.0		1.1		29.2

Intersection Summary			
HCM 6th Ctrl Delay			13.4
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	45	2240	0	0	0	0	1380	760	160	2200	0
Future Volume (veh/h)	350	45	2240	0	0	0	0	1380	760	160	2200	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	415	0	0				0	1500	826	174	2391	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	523	0					0	2667	1457	683	3902	0
Arrive On Green	0.15	0.00	0.00				0.00	0.52	0.52	0.20	0.76	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	415	0	0				0	1500	826	174	2391	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	10.1	0.0	0.0				0.0	17.9	18.1	3.8	18.7	0.0
Cycle Q Clear(g_c), s	10.1	0.0	0.0				0.0	17.9	18.1	3.8	18.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	523	0					0	2667	1457	683	3902	0
V/C Ratio(X)	0.79	0.00					0.00	0.56	0.57	0.25	0.61	0.00
Avail Cap(c_a), veh/h	871	0					0	2667	1457	683	3902	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.1	0.0	0.0				0.0	14.5	14.6	30.5	4.7	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0				0.0	0.9	1.6	0.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0				0.0	6.6	5.6	1.6	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	0.0				0.0	15.4	16.2	30.7	5.4	0.0
LnGrp LOS	D	A					A	B	B	C	A	A
Approach Vol, veh/h		415	A					2326			2565	
Approach Delay, s/veh		39.8						15.7			7.1	
Approach LOS		D						B			A	

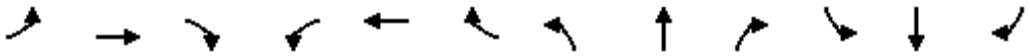
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.8	51.0		17.2		72.8						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	9.0	47.0		22.0		60.0						
Max Q Clear Time (g_c+I1), s	5.8	20.1		12.1		20.7						
Green Ext Time (p_c), s	0.2	18.0		1.1		29.4						

Intersection Summary												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	5	730	0	0	0	0	2277	948	300	1788	0
Future Volume (veh/h)	310	5	730	0	0	0	0	2277	948	300	1788	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	341	0	0				0	2475	1030	326	1943	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	423	0					0	3013	1646	592	4092	0
Arrive On Green	0.12	0.00	0.00				0.00	0.59	0.59	0.17	0.80	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	341	0	0				0	2475	1030	326	1943	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	9.3	0.0	0.0				0.0	38.6	24.0	8.6	12.2	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0				0.0	38.6	24.0	8.6	12.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	423	0					0	3013	1646	592	4092	0
V/C Ratio(X)	0.81	0.00					0.00	0.82	0.63	0.55	0.47	0.00
Avail Cap(c_a), veh/h	570	0					0	3013	1646	592	4092	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	0.0				0.0	16.3	13.3	37.9	3.2	0.0
Incr Delay (d2), s/veh	6.2	0.0	0.0				0.0	2.7	1.8	1.1	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0				0.0	14.3	7.4	3.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	0.0				0.0	19.0	15.1	39.0	3.6	0.0
LnGrp LOS	D	A					A	B	B	D	A	A
Approach Vol, veh/h		341	A					3505			2269	
Approach Delay, s/veh		49.1						17.8			8.7	
Approach LOS		D						B			A	

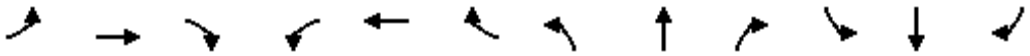
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.1	63.0		15.9		84.1						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	13.0	59.0		16.0		76.0						
Max Q Clear Time (g_c+I1), s	10.6	40.6		11.3		14.2						
Green Ext Time (p_c), s	0.3	17.4		0.5		28.3						

Intersection Summary			
HCM 6th Ctrl Delay			16.2
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	5	730	0	0	0	0	2280	950	300	1790	0
Future Volume (veh/h)	310	5	730	0	0	0	0	2280	950	300	1790	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	341	0	0				0	2478	1033	326	1946	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	423	0					0	3013	1646	592	4092	0
Arrive On Green	0.12	0.00	0.00				0.00	0.59	0.59	0.17	0.80	0.00
Sat Flow, veh/h	3563	0	1585				0	5274	2790	3456	5274	0
Grp Volume(v), veh/h	341	0	0				0	2478	1033	326	1946	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	1395	1728	1702	0
Q Serve(g_s), s	9.3	0.0	0.0				0.0	38.7	24.1	8.6	12.2	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0				0.0	38.7	24.1	8.6	12.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	423	0					0	3013	1646	592	4092	0
V/C Ratio(X)	0.81	0.00					0.00	0.82	0.63	0.55	0.48	0.00
Avail Cap(c_a), veh/h	570	0					0	3013	1646	592	4092	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	0.0	0.0				0.0	16.3	13.3	37.9	3.2	0.0
Incr Delay (d2), s/veh	6.2	0.0	0.0				0.0	2.7	1.8	1.1	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0				0.0	14.4	7.4	3.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	0.0				0.0	19.0	15.2	39.0	3.6	0.0
LnGrp LOS	D	A					A	B	B	D	A	A
Approach Vol, veh/h		341	A					3511			2272	
Approach Delay, s/veh		49.1						17.9			8.7	
Approach LOS		D						B			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	21.1	63.0		15.9		84.1
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	13.0	59.0		16.0		76.0
Max Q Clear Time (g_c+I1), s	10.6	40.7		11.3		14.2
Green Ext Time (p_c), s	0.3	17.4		0.5		28.3

Intersection Summary		
HCM 6th Ctrl Delay		16.2
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Buildout + Project Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	340	1266	660	790	2576	820	610	1090	350	170	640	270
Project Trips	0	14	0	0	34	0	0	0	0	0	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		**LL**	**TTT**	**R**

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	2,880	340	340	0.12 *	0.12 *
NBT	3.0	4,800	1,266	1,280	0.26	0.27
NBR	1.0	1,600	660	660	0.41	0.41
SBL	2.0	2,880	790	790	0.27	0.27
SBT	3.0	4,800	2,576	2,610	0.54 *	0.54 *
SBR	1.0 (a)	1,600	672	672	0.42	0.42
EBL	2.0	2,880	610	610	0.21	0.21
EBT	3.0	4,800	1,090	1,090	0.30 *	0.30 *
EBR	0.0	0	350	350	0.00	0.22
WBL	2.0	2,880	170	170	0.06 *	0.06 *
WBT	3.0	4,800	640	640	0.13	0.13
WBR	1.0	1,600	270	270	0.17	0.17
N/S Critical Movements					0.61	0.61
E/W Critical Movements					0.36	0.36
ICU					0.97	0.97
Level of Service (LOS)					E	E

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 18% RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Gonzales Road
SCENARIO: Buildout + Project Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: November, 2018
WORK ORDER #: #########

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	350	2385	120	340	1638	560	290	1100	310	610	1240	540
Project Trips	0	5	0	0	2	0	0	0	0	0	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		**LL**	**TTT**	**R**

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	2,880	350	350	0.12	0.12
NBT	3.0	4,800	2,385	2,390	0.50 *	0.50 *
NBR	1.0	1,600	120	120	0.08	0.08
SBL	2.0	2,880	340	340	0.12	0.12
SBT	3.0	4,800	1,638	1,640	0.34 *	0.34 *
SBR	1.0 (a)	1,600	459	459	0.29	0.29
EBL	2.0	2,880	290	290	0.10	0.10
EBT	3.0	4,800	1,100	1,100	0.29 *	0.29 *
EBR	0.0	0	310	310	0.00	0.19
WBL	2.0	2,880	610	610	0.21 *	0.21 *
WBT	3.0	4,800	1,240	1,240	0.26	0.26
WBR	1.0	1,600	540	540	0.34	0.34
N/S Critical Movements					0.61	0.61
E/W Critical Movements					0.50	0.50
ICU					1.11	1.11
Level of Service (LOS)					F	F

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 18% RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	47	2160	190	180	1350	516	456	410	135	50	60	250
Project Trips	13	0	0	0	0	34	14	0	5	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	47	60	0.03	0.04
NBT	3.0	4,800	2,160	2,160	0.45 *	0.45 *
NBR	1.0	1,600	190	190	0.12	0.12
SBL	1.0	1,600	180	180	0.11 *	0.11 *
SBT	3.0	4,800	1,350	1,350	0.39	0.40
SBR	0.0	0	516	550	0.00	0.00
EBL	1.0	1,600	456	470	0.29 *	0.29 *
EBT	2.0	3,200	410	410	0.13	0.13
EBR	1.0	1,600	135	140	0.08	0.09
WBL	1.0	1,600	50	50	0.05	0.05
WBT	2.0	3,200	60	60	0.07 *	0.07 *
WBR	1.0	1,600	250	250	0.16	0.16
N/S Critical Movements					0.56	0.56
E/W Critical Movements					0.36	0.36
ICU					0.92	0.92
Level of Service (LOS)					E	E

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Rice Avenue
EAST/WEST STREET: Camino Del Sol
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: December, 2018
WORK ORDER #: 174200

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	239	1620	220	200	2330	358	235	330	118	110	410	290
Project Trips	1	0	0	0	0	2	5	0	2	0	0	0
GEOMETRY	L	TTT	R	L	TT	TR	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	239	240	0.15 *	0.15 *
NBT	3.0	4,800	1,620	1,620	0.34	0.34
NBR	1.0	1,600	220	220	0.14	0.14
SBL	1.0	1,600	200	200	0.05	0.13
SBT	3.0	4,800	2,330	2,330	0.56 *	0.56 *
SBR	0.0	0	358	360	0.00	0.00
EBL	1.0	1,600	235	240	0.15 *	0.15 *
EBT	2.0	3,200	330	330	0.10	0.10
EBR	1.0	1,600	118	120	0.07	0.08
WBL	1.0	1,600	110	110	0.05	0.07
WBT	2.0	3,200	410	410	0.13 *	0.13 *
WBR	1.0 (a)	1,600	203	203	0.13	0.13
N/S Critical Movements					0.71	0.71
E/W Critical Movements					0.28	0.28
ICU					0.99	0.99
Level of Service (LOS)					E	E

Notes: V/C - Volume to Capacity Ratio
Right Turn Conditions:
(a) 30% RTOR overlap w/SBL