APPENDIX A: INITIAL STUDY, NOP, AND NOP COMMENTS

PEPPER AVENUE SPECIFIC PLAN AMENDMENT AND INDUSTRIAL DEVELOPMENT PROJECT

INITIAL STUDY

Lead Agency:
City of Rialto
150 S. Palm Avenue
Rialto, CA 92376

Project Sponsor:
Howard Industrial

February 23, 2022

E | P | D Solutions, Inc.

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1 INTRODUCTION

The proposed Project includes 1) amending the Specific Plan land use designations, development standards, and allowable uses to provide for light industrial uses; 2) splitting Planning Area (PA) 1 into two PAs: PA 1 (2.86 acres) and PA 10 (11.56 acres); 3) amending the Specific Plan land use designation of PAs 2, 3, and 10 from Community Commercial to Light Industrial to allow up to 750,000 square feet (SF) of industrial uses; and 4) development and operation of an approximately 485,000 square foot (SF) industrial warehousing building on a 23.83-acre site (APNs 0264-201-05, 0264-201-06, and 0264-201-26) on PAs 2-3.

1.1 PROJECT BACKGROUND

The Pepper Avenue Specific Plan (Specific Plan 2017-0001) and Final Environmental Impact Report (EIR) (Environmental Assessment Review 2017-0072) (State Clearinghouse Number 2016021047) was adopted by the City of Rialto in 2017 to guide development of the largely vacant and undeveloped area. The 101.7-acre Specific Plan includes zoning for 462,000 SF of retail shopping center, 125,000 SF of business park uses, 29.5 acres of natural open space, and 13.7 acres of water facilities, including water wells, a pump station, and a reservoir. The Specific Plan also has an overlay zone, which allows development up to 275 residential units subject to approval of a Conditional Use Permit (CUP).

1.2 PURPOSE OF THE INITIAL STUDY

This document serves as the Initial Study for the Pepper Avenue Specific Plan Amendment and Industrial Development Project.

This Initial Study has been prepared in accordance with the following:

- California Environmental Quality Act (CEQA) of 1970 (Public Resources Code Sections 21000 et seq.); and
- California Code of Regulations, Title 14, Division 6, Chapter 3 (State CEQA Guidelines, Sections 15000 et seq.) as amended and approved on December 28, 2018.

Pursuant to CEQA, this Initial Study has been prepared to analyze the potential for significant impacts on the environment resulting from implementation of the proposed Project. As required by State CEQA Guidelines ("Guidelines") Section 15063, this Initial Study is a preliminary analysis prepared by the Lead Agency, the City of Rialto, in consultation with other jurisdictional agencies, to determine the type of CEQA documentation and analysis that is required.

The proposed Project includes changes to land uses and development that was previously analyzed in a certified EIR. Therefore, pursuant to CEQA Guidelines Section 15162(a), a subsequent EIR shall be prepared when:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

I Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

As included herein a "significant effect" or "significant impact" on the environment means "*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project*" (Guidelines Section15382).

1.3 IMPACTS IDENTIFIED BY THE PEPPER AVENUE SPECIFIC PLAN FINAL EIR

The Pepper Avenue Specific Plan Final EIR (Final EIR) evaluated buildout of the Specific Plan area pursuant to the maximum allowable development of the Specific Plan land uses. Table ES-1 of the Draft EIR Executive Summary provides a list of the impacts that would result from construction and operation of the Specific Plan, which include the following:

Significant and Unavoidable Impacts:

- Noise (Cumulative Traffic Noise)

Less-Than-Significant Impacts with Mitigation:

- Air Quality
- Biological Resources
- Cultural Resources
- Transportation

Less-Than-Significant Impacts:

- Aesthetics
- Greenhouse Gas Emissions
- Land Use and Planning

1.4 PEPPER AVENUE SPECIFIC PLAN FINAL EIR MITIGATION MEASURES AND PROJECT DESIGN FEATURES

The Final EIR includes standard regulations, mitigation measures, and Project Design Features (DFs) that apply to all development projects within the Pepper Avenue Specific Plan area. The identified PDFs are included in the Final EIR Mitigation Monitoring and Reporting Program (MMRP) and are required to prevent the occurrence of or to minimize the significance of potential environmental

effects. The existing DFs are related to: Aesthetics, Geology, Hazards and Hazardous Material, Public Services, Traffic/Transportation, and Utilities and Service Systems. The mitigation measures adopted as part of the Final EIR are related to: Air Quality, Biological Resources, Cultural Resources, Noise, and Transportation.

1.5 ENVIRONMENTAL SETTING AND BASELINE

The environmental setting is normally existing conditions at the time the CEQA analysis begins (CEQA Guidelines Section 15125). In most cases, this forms the baseline that the impact analysis will use as its starting point. However, when the project is within the scope of a Program EIR (such as the Specific Plan EIR), the effective baseline is the previously approved and analyzed project for which the Program EIR was certified (*Sierra Club v. City of Orange* [2008] 163 Cal.App.4th 523). "When a lead agency is considering whether to prepare a Subsequent EIR, it is specifically authorized to limit its consideration of the later project to effects not considered in connection with the earlier project." [Citation.] (*Temecula Band of Luiseño Mission Indians v. Rancho Cal. Water Dist.* [1996] 43 Cal.App.4th 425, 437). Here, the previous project is the Pepper Avenue Specific Plan; the EIR for which commenced in January 2016 with the preparation of the Initial Study and Notice of Preparation.

1.6 DOCUMENT ORGANIZATION

The Initial Study, in its entirety, comprises the following components:

Section 1.0 Introduction and Purpose. Discusses the document's purpose, format and content, California Environmental Quality Act (CEQA) requirements, the planning context under which the document was prepared, the Initial Study findings, a summary of the public review and processing of the document, and a list of the technical reports used to prepare the document.

Section 2.0 Project Description. Provides a detailed description of the Project site and the discretionary actions required to implement the Project.

Section 3.0 Environmental Checklist. Provides the completed Initial Study and its associated analyses documenting the reasons to support the findings and conclusions of the Initial Study.

Section 4.0 References. Lists all plans, policies, regulatory requirements, and other documentation that are incorporated by reference in this document pursuant to CEQA Guidelines Section 15150.

Section 5.0 Preparers. Lists all the persons who were involved in the preparation of the IS.

1.7 INITIAL STUDY FINDINGS

Section 3.0 of this document contains the Environmental Checklist that was prepared for the proposed Project pursuant to CEQA requirements. The Environmental Checklist indicates that the proposed Project would result in no new impacts or less than significant new environmental effects under the issue areas of: agriculture and forestry resources, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, population and housing, public services, recreation, utilities and service systems, and wildfire.

The Environmental Checklist indicates that the proposed Project could potentially result in new significant environmental effects under the issue areas of: aesthetics, air quality, cultural resources, energy, greenhouse gas emissions, land use and planning, noise, transportation, and tribal cultural resources. Therefore, these subjects will be further evaluated in a Subsequent EIR.

2 ENVIRONMENTAL SETTING

2.1 PROJECT LOCATION

The Pepper Avenue Specific Plan ("Specific Plan" or "Specific Plan area") is located within the northeast portion of the City of Rialto. As depicted in Figure 1, *Regional Location*, the City of Rialto is located in the southwestern portion of San Bernardino County in the largely developed San Bernardino Valley Region. Rialto is adjacent to the Cities of Fontana, Colton, and San Bernardino and located in the San Bernardino North United States Geological Survey (USGS) 7.5' topographic quadrangle.

As depicted on Figure 2, *Local Vicinity,* the Specific Plan area is located east of Eucalyptus Avenue, south of Interstate 210 (I-210), west of Meridian Avenue and north of Walnut Avenue. Pepper Avenue bisects the Specific Plan area into two east and west halves of the site. The proposed industrial development site is located within the Specific Plan area on PAs 2 and 3, on the eastern side of Pepper Avenue, as shown on Figure 2. The center point latitude and longitude for the proposed industrial development site are 34.13153802° North and 117.35110039 West. Regional access is provided via I-210 and the Pepper Avenue interchange to the north of the Specific Plan area. Local access is provided by Pepper Avenue.

2.2 ENVIRONMENTAL SETTING AND SURROUNDING LAND USES485

Specific Plan Area and Proposed Industrial Development Site
The Specific Plan area is mostly vacant, with the exception of Pepper Avenue (a Major Arterial roadway), which bisects the Specific Plan area in a north-south direction, and a West Valley Water District (WVWD) water production facility in the southeast portion of the Specific Plan area that includes three production wells, a pump station, and a reservoir. The Specific Plan area is highly disturbed due to off-road vehicle (ORV) use and trash dumping.

Both the east and west portions of the Specific Plan area (divided by Pepper Avenue) generally have a consistent gradual downward slope of 1.5 - 2.5% from the northwest corner at 1,300 feet above mean sea level (amsl) to a low point at the southeast corner at 1,260 feet amsl. The existing drainage pattern is consistent with existing topography, which conveys storm flows southeasterly.

The proposed industrial development site is vacant and undeveloped land that is currently designated by the Specific Plan for Community Commercial land uses. In addition, a portion of the site has a Residential Overlay allowing for a maximum of 275 residences subject to approval of a CUP in lieu of 116,000 SF of retail use buildout space. The Community Commercial land use designation provides for a variety of commercial and retail uses, as well as business park development consisting of a mix of office, research and development, light industrial and other complementary uses.

Surrounding Land Uses
Land uses that surround the Specific Plan area and the proposed industrial development site are described below.

North: North of the Specific Plan area lies the CalTrans right-of-way/I-210 followed by vacant land and aggregate mining operations north of Highland Avenue. The area within the Specific Plan

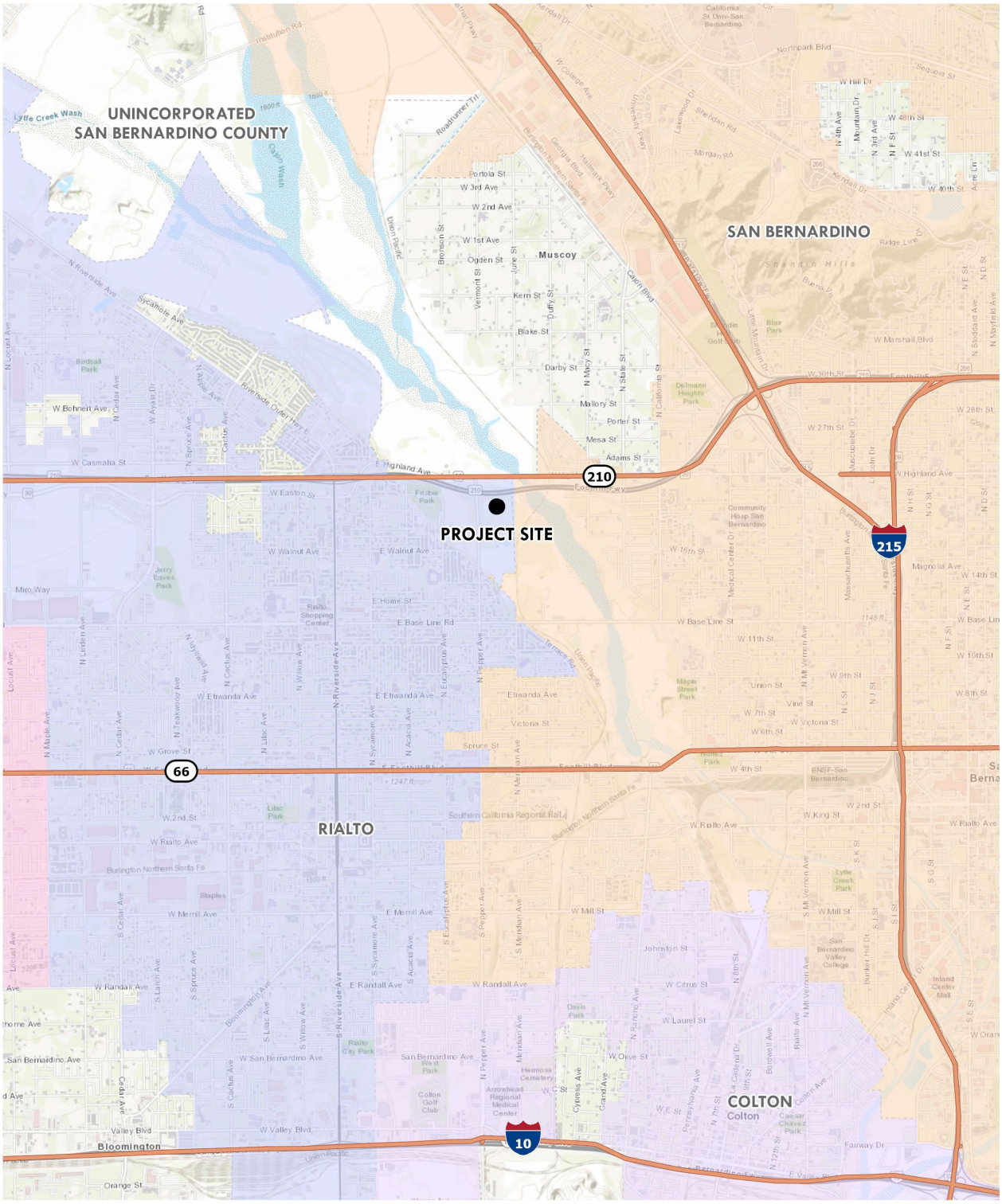
that is north of the proposed industrial development site is vacant and undeveloped land that is designated as Community Commercial.

East: East of both the Specific Plan area and the proposed industrial development site lies vacant land and the BNSF Railroad followed by the Lytle Creek Wash which trends in a southeast to southwest direction. In addition, a residence is located to the east of the Specific Plan area, beyond the railroad line, to the east of the on-site WVWD facility.

West: Areas west of the Specific Plan includes single-family residential uses and Frisbie Park. Pepper Avenue is located along the western boundary of the proposed industrial development site. Vacant undeveloped lands are located to the west beyond Pepper Avenue. Land to the west of the proposed industrial development site is designated by the Specific Plan for Open Space and Community Commercial uses.

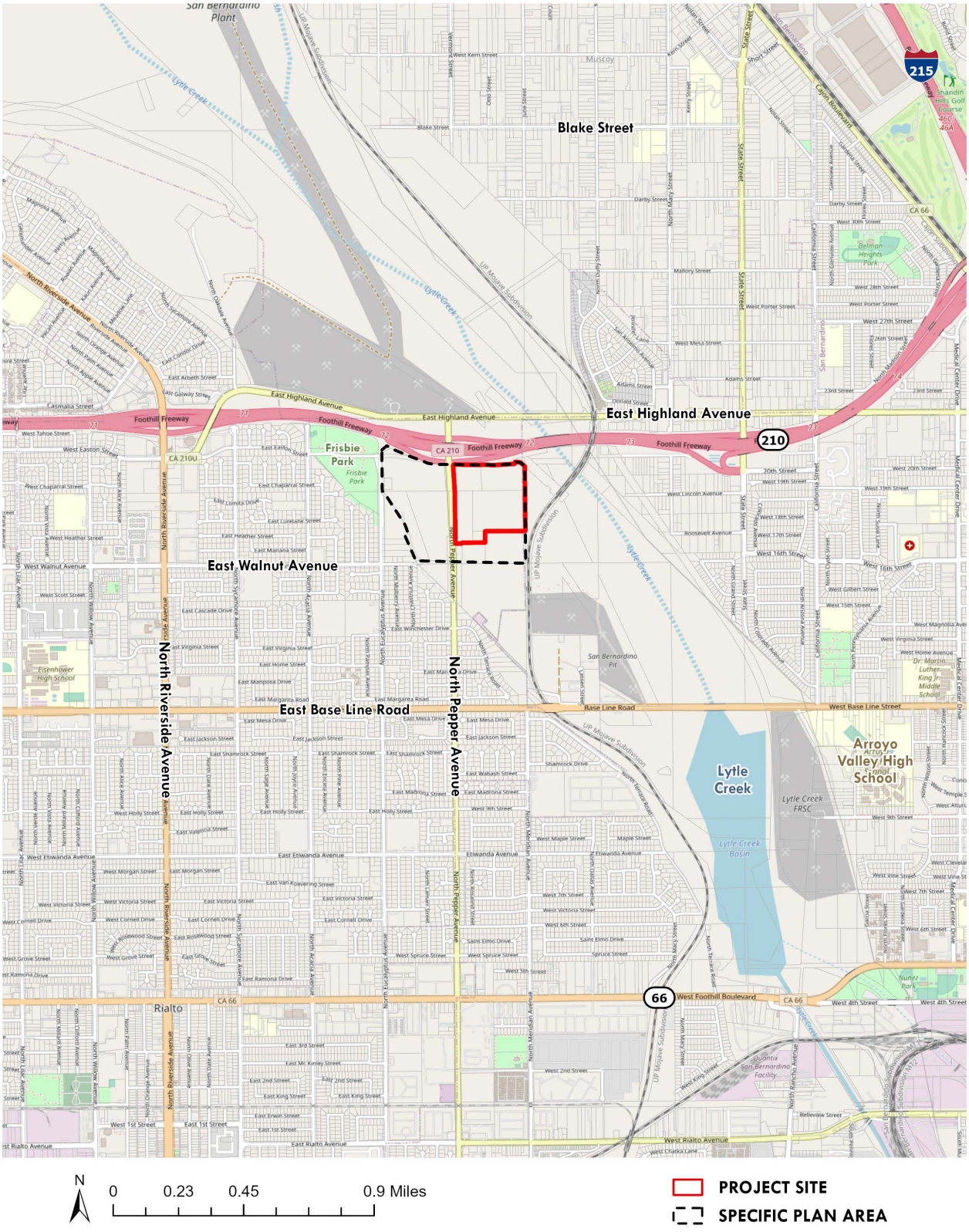
South: An unnamed wash and vacant land followed by single-family residential uses is located to the south of the Specific Plan area. The WVWD water production facility is located to the south of the proposed industrial development site. Land to the south of the proposed industrial development site is designated by the Specific Plan for Public Facility uses.

Regional Location



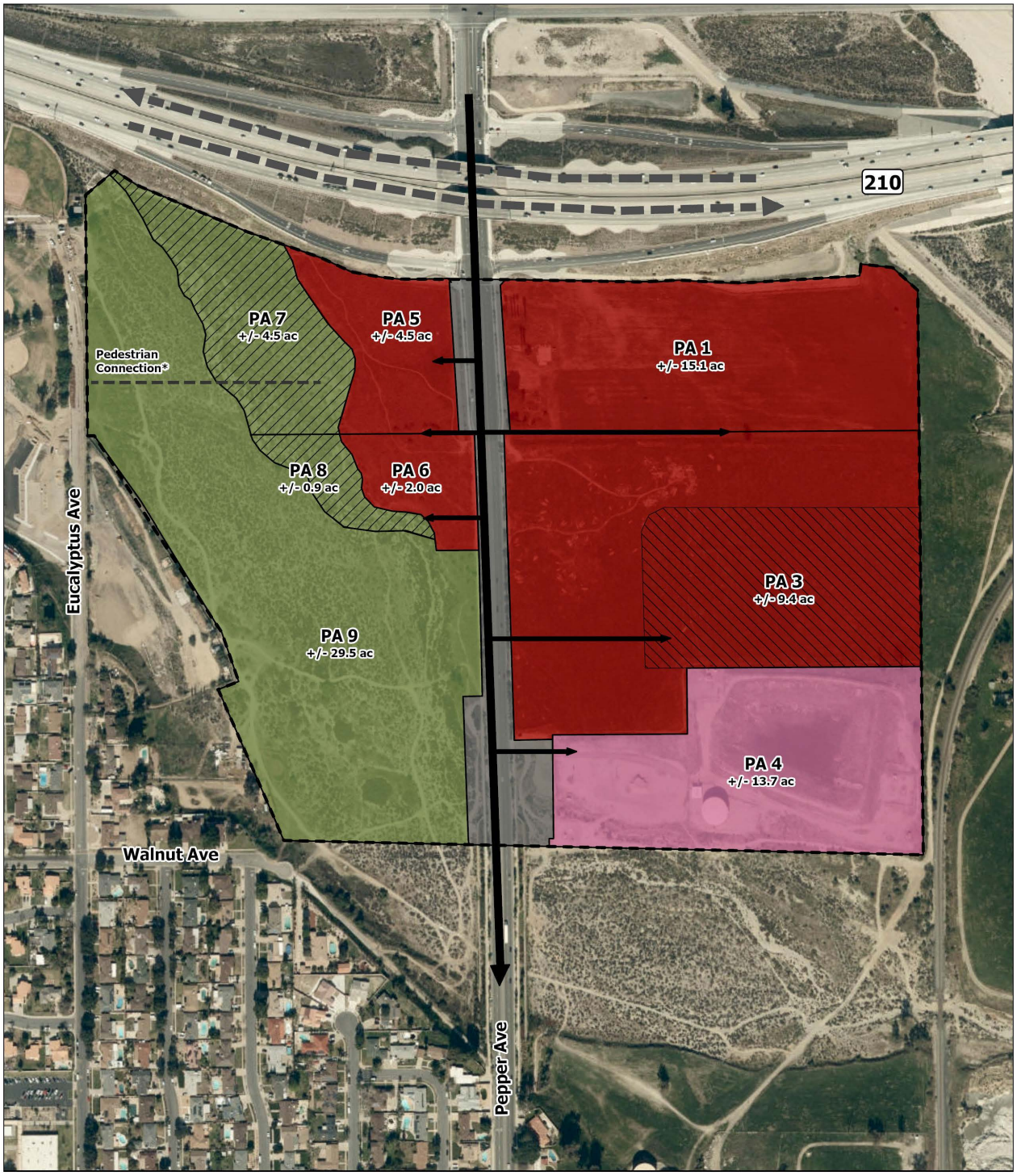
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Local Vicinity



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Existing Pepper Avenue Specific Plan



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3 PROPOSED PROJECT

The proposed Project includes two distinct components:

(1) a Specific Plan Amendment ("proposed Specific Plan Amendment") to add a new Light Industrial land use designation to PAs 1, 2, 3 and create a new PA10; and

(2) a development application for the construction and operation of a 485,000 square foot cross dock industrial warehousing building on PAs 2 and 3 ("proposed industrial development").

3.1.1 PROPOSED SPECIFIC PLAN AMENDMENT

The proposed Project includes a Specific Plan Amendment with the following components:

- Provision of a new Light Industrial land use designation that allows warehouse and logistic centers as permitted uses;
- provision of development standards for the new Light Industrial land use designation;
- splitting PA 1 into two PAs: PA 1, encompassing 2.86 acres, and PA 10, encompassing 11.56 acres;
- amending the land use designations of PAs 2, 3, and 10 from Community Commercial with a development maximum of 476,650 SF to the new Light Industrial designation with a development maximum of 750,000 SF, the residential overlay on PA 3 will remain;
- various circulation improvements, such as provision of new access points and new medians;
- and various textual and graphic amendments related to the changes listed above.

Light Industrial Land Use Designation

The proposed Specific Plan Amendment provides a new land use designation that allows warehouse and logistic centers as permitted uses. The Specific Plan Amendment states that the Light Industrial land use designation is intended to accommodate a variety of industrial-serving commercial, low-intensity office, technology, light manufacturing, and warehouse/distribution uses that are compatible with the site's location and close proximity to SR-210. The land use designation accommodates storage and warehousing uses located in larger buildings on larger sites. Uses may include e-commerce, high cube warehouses, or distribution, and a wide range of manufacturing and assembly uses are also permitted.

Light Industrial Development Standards

The development standards for the new Light Industrial Land Use designation include building and landscape setbacks, building height limits, and signage requirements.

Changes to Planning Areas 1, 2, and 3

The proposed Specific Plan Amendment would split PA 1 into two separate PAs – PA 1, encompassing approximately 2.86 acres, and the new PA 10, encompassing approximately 11.56 acres. The reduced PA 1 would remain as Community Commercial and no land use designation changes would occur. The proposed Specific Plan Amendment applies the new Light Industrial land use designation to PA 10. The Light Industrial land use designation is also applied to PAs 2 and 3, which encompass the northeastern portion of the Specific Plan area adjacent to SR-210.

The proposed Specific Plan Amendment identifies the maximum buildout of PAs 2, 3, and 10 to be 735,185 square feet of industrial uses. The reduced PA 1 would have a maximum buildout of 13,000 square feet of commercial retail uses. The land use changes are shown in Figure 4, *Proposed Specific Plan Amendment Land Uses*, and the development potential per PA is detailed in Table 1, *Planning Area Land Use Summary*.

Table 1: Planning Area Land Use Summary

Planning Area	Acres	Land Use	Development Potential
PA 1	2.86	Community Commercial	13,000 SF of Commercial Retail uses
PA 2	14.6	Light Industrial	295,000 SF of Industrial uses
PA 3	9.4	Light Industrial w/ Residential Overlay	190,000 SF of Industrial uses[1]
PA 10	11.56	Light Industrial	250,185 SF of Industrial uses

[1]As part of the Residential Overlay zone, up to 275 multi-family dwelling units may be permitted with a corresponding reduction of up to 190,000 square feet of industrial uses, as described in section 5.4.2, Residential Overlay Development Equivalency

The potential buildout of PAs 1, 2, 3 and 10 would result in a total development potential of 748,185 SF, or an increase of 271,535 SF of Light Industrial and Community Commercial development over the existing Specific Plan development maximum of 476,650 SF of Community Commercial.

3.1.2 PROPOSED INDUSTRIAL DEVELOPMENT ON PA 2 AND PA 3

In addition to the Specific Plan Amendment, the City has received a development application including a Conditional Development Permit and Precise Plan of Design for a 485,000 square foot cross dock industrial warehousing building on PAs 2 and 3 ("proposed industrial development").

Light Industrial Warehousing Uses

The proposed industrial development would develop a 23.83-acre Project site with one approximately 485,000 square foot cross dock industrial warehousing building, that would include up to 10,000 SF of office space and a 5,000 square foot mezzanine. The building would have 62 loading docks on the north side of the building and 54 loading docks on the south side of the building. The building would also have 4 drive through doors; two on each side of the building, as shown in Figure 5, *Proposed Industrial Development Conceptual Site Plan*. The building would be used for sorting, warehousing, distribution, and office space. The proposed building would have a maximum height of 46 feet, as shown in Figure 6, *Proposed Industrial Development Elevations*.

The proposed structure would be painted concrete and have accented glass window and doors at the front entrance location. The building's main entry would be identified by metal entry canopy and glass entry door. To vary the visual height of the 46-foot-high building, the roof would have architectural projections. In addition, the sides of the building would be articulated with windows and different setbacks, heights, and architectural projections to provide separation between different portions of the building.

Access and Circulation

The proposed industrial development would be accessible via two driveways: a 40-foot-wide access from Pepper Avenue at the southwest corner of the industrial development site for truck access to the gated loading bays and trailer parking, and a 40-foot-wide driveway from Pepper

Avenue at the northwest corner of the industrial development site for passenger car access. Internal vehicular circulation would be provided around the building (as shown in Figure 5, *Proposed Industrial Development Conceptual Site Plan*).

Parking

Truck and trailer parking and loading would be located on the northern and southern portions of the industrial development site. Passenger car parking would be available within the western portion of the industrial development site and would be provided at the following ratios pursuant to the City of Rialto Municipal Code:

- Office: 1 parking space per 250 SF
- Warehouse: 1 parking space per 1,000 SF up to 10,000 SF and 1 parking space per 2,000 SF for areas over 10,000 SF

The Project includes a total of 303 automobile parking spaces, which is 25 more parking spaces than is required by the Municipal Code, as shown in Table 2, *Proposed Parking* below. The Project also includes 89 truck and trailer parking spaces.

Table 2: Proposed Parking

Parking Spaces	Required	Provided
Office Parking Spaces	40	50
Warehouse Parking Spaces	238	253
Total Parking	**278**	**303**

Landscaping and Fencing

The proposed industrial development would install approximately 69,925 SF of new ornamental landscaping throughout the site that would include a variety of trees, shrubs, accent species, and ground covers.

Landscaping would be installed within building setbacks and parking lot areas, as well as around the building perimeter to provide layered landscape screening for adjacent parcels and public right-of-way. New plant species would be drought-tolerant, non-invasive, and compliant with the City's landscaping requirements. See Figure 7, *Conceptual Landscape Plan*. The proposed industrial development would provide water efficient irrigation that is compliant with California Title 24 related to water efficiency.

The Project includes installation of 9-foot-high walls along Pepper Avenue and along approximately 157 feet of the northern site boundary and along approximately 738 feet of the southern site boundary. The remainder of the site boundary would be lined with 8-foot-high tubular steel fencing.

Infrastructure Improvements

The industrial development site is located within an area that contains existing infrastructure within the adjacent right-of-way. The proposed industrial development would install onsite infrastructure that would connect to the existing infrastructure that is adjacent to the site as described below.

Water

The proposed industrial development would connect to and be served by the existing water infrastructure located in the adjacent right-of-way. Existing 30-inch and 12-inch water lines are located in Pepper Avenue that the proposed development would connect to.

Sewer

The proposed industrial development would connect to and be served by the existing sewer infrastructure located in the adjacent right-of-way. Existing 12-inch sewer line is located in Pepper Avenue.

Drainage

The proposed industrial development would install an onsite storm water drainage system that would route runoff to a proposed underground detention basin. The detention basin would filter, retain, and infiltrate runoff.

Other Infrastructure

The proposed industrial development would connect to existing dry utility infrastructure in the right of way of Pepper Avenue, including telephone, electrical, and cable. Dry utilities would be installed underground.

3.1.3 LEVEL OF ANALYSIS

The Initial Study analyzes the above components in the following manner:

- **Specific Plan Amendment (PAs 1 and 10).** The Initial Study analyzes the Specific Plan Amendments to PAs 1 and 10 at a programmatic level. There is no project-specific development proposed within PAs 1 and 10.
- **Proposed Industrial Development (PAs 2 and 3).** The proposed industrial development within PAs 2 and 3, along with the proposed Specific Plan Amendments to PAs 2 and 3, are analyzed at a project-specific level because a development application has been received for the construction and operation of an approximately 485,000 square foot cross dock industrial warehousing building on the site.

3.2 DISCRETIONARY APPROVALS AND PERMITS

In accordance with Sections 15050 and 15367 of the State CEQA Guidelines, the City is the designated Lead Agency for the proposed Specific Plan Amendment and proposed industrial development and has principal authority and jurisdiction for CEQA actions and Project approval. Responsible Agencies are those agencies that have jurisdiction or authority over one or more aspects associated with the development of a proposed project and/or mitigation. Trustee Agencies are State agencies that have jurisdiction by law over natural resources affected by a proposed project.

The discretionary actions to be considered by the City as part of the proposed Project include:

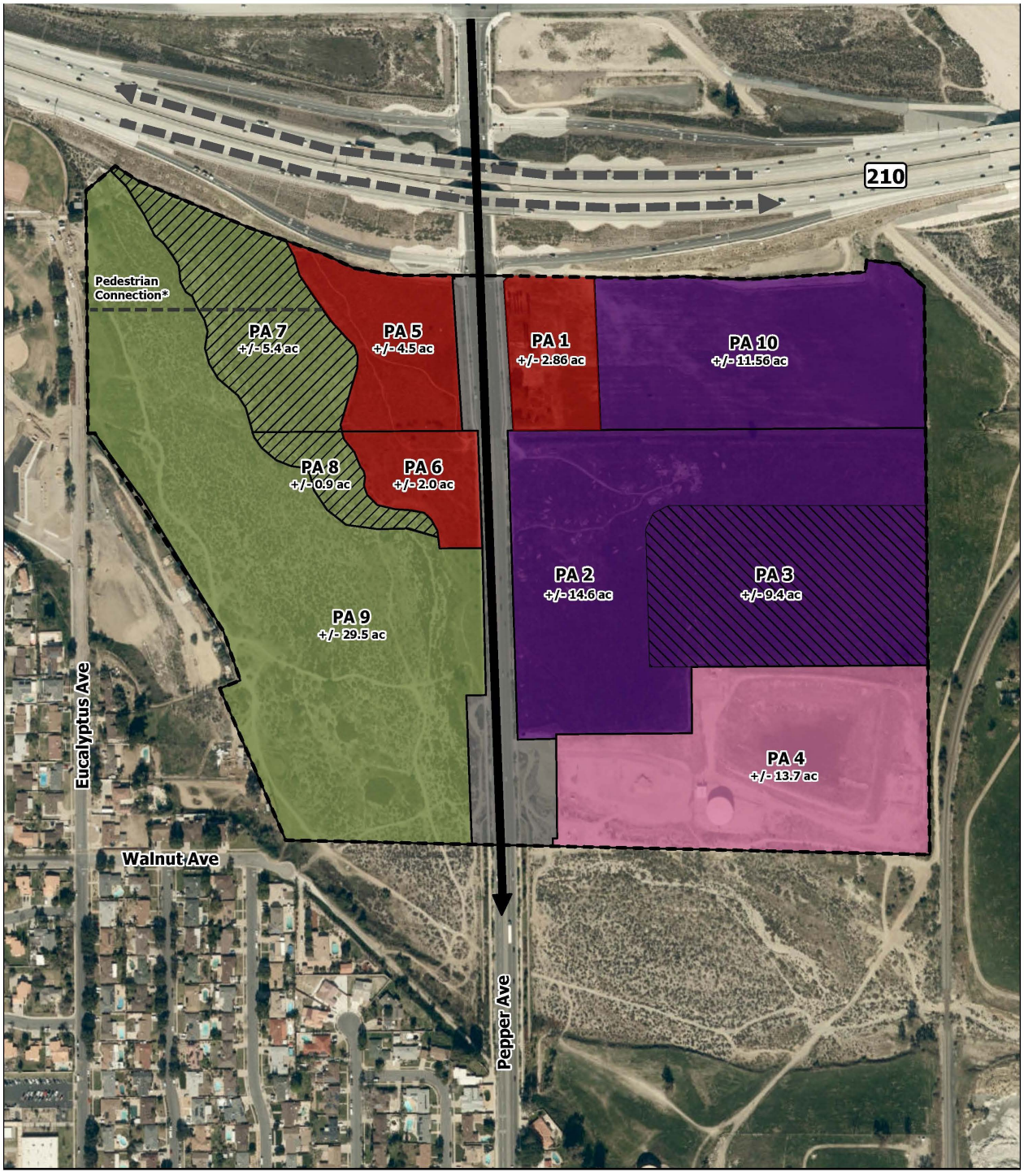
- Specific Plan Amendment
- Conditional Development Permit
- Precise Plan of Design

In addition, the proposed industrial development will require ministerial approvals that include, but are not limited to, the following:

- Regional Water Quality Control Board for approval of a Stormwater Pollution Prevention Plan and a Water Quality Management Plan.
- West Valley Water District permits
- South Coast Air Quality Management District construction permits

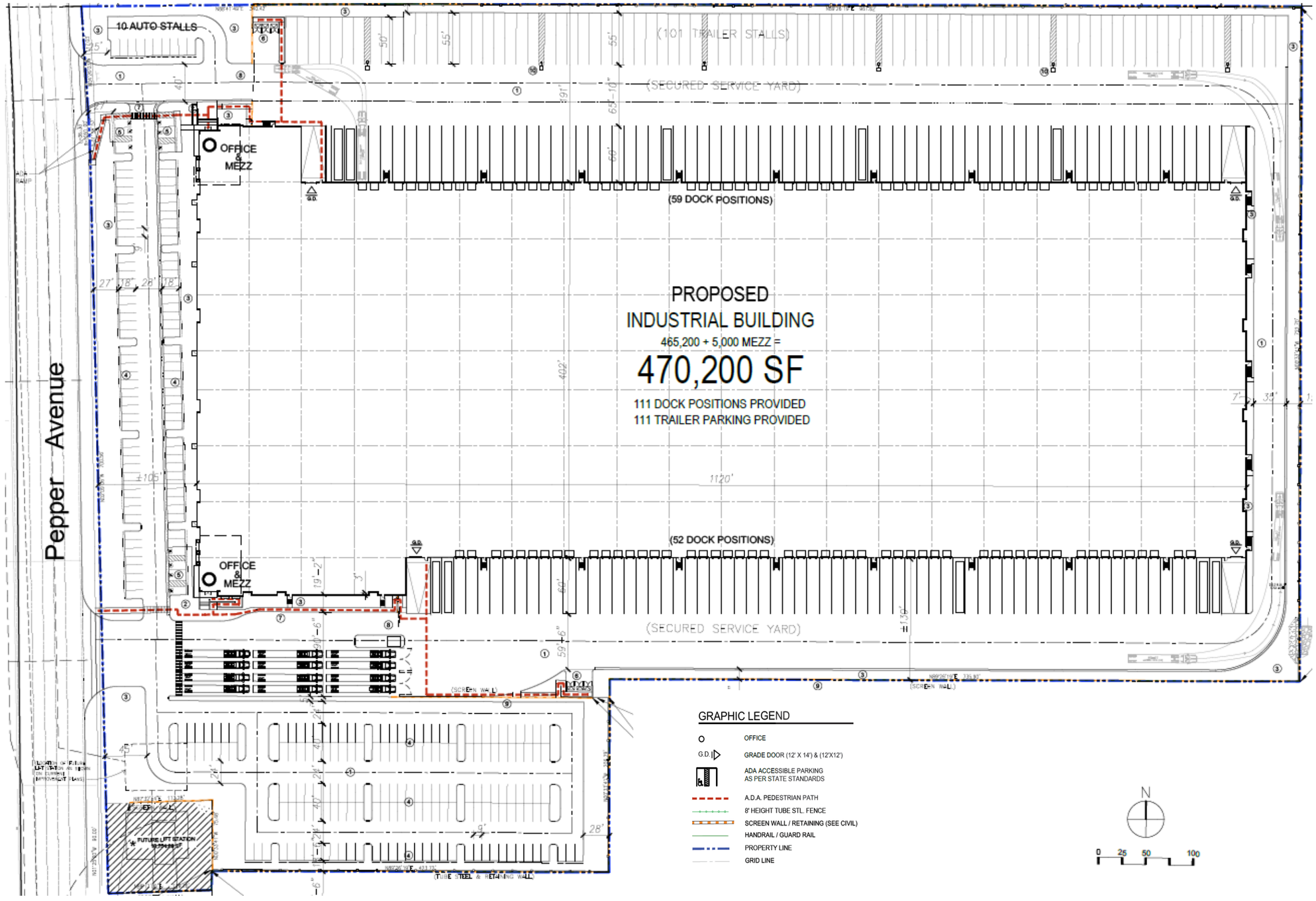
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Proposed Pepper Avenue Specific Plan



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Proposed Industrial Development Conceptual Site Plan



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Proposed Industrial Development Elevations



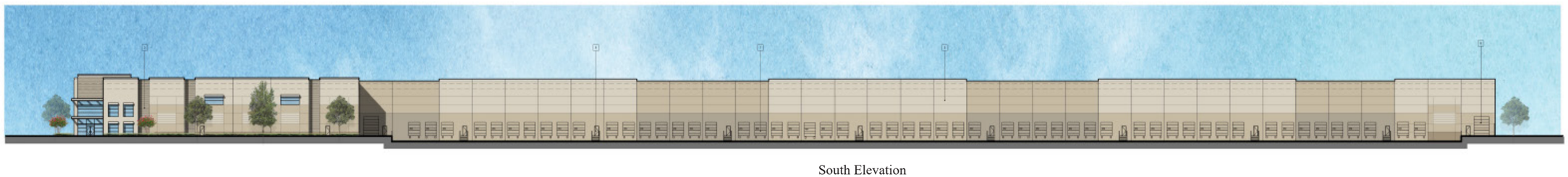
West Elevation



East Elevation



North Elevation



South Elevation



Partial West Elevation



Partial West Elevation



Partial North Elevation

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Proposed Industrial Development Conceptual Landscaping Plan



Pepper Avenue Specific Plan Amendment/
Industrial Development Project Initial Study

Figure 7

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4 ENVIRONMENTAL CHECKLIST

This section includes the completed environmental checklist form. The checklist form is used to assist in evaluating the potential environmental impacts of the proposed Project. The checklist form identifies potential Project effects as follows: 1) Potentially Significant Impact; 2) Less Than Significant with Mitigation Incorporated; 3) Less Than Significant Impact; and, 4) No Impact. Substantiation and clarification for each checklist response is provided in Section 5 (Environmental Evaluation). Included in the discussion for each topic are standard condition/regulations and mitigation measures, if necessary, that are recommended for implementation as part of the proposed Project.

4.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below (☒) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant New Impact" that was not previously identified in the Final EIR as indicated by the checklist on the following pages.

New Potentially Affected Environmental Factors

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

4.2 DETERMINATION

(To be completed by the Lead Agency) on the basis of this initial evaluation

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

Signature Date

Printed Name For

EVALUATION OF ENVIRONMENTAL IMPACTS

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

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

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant New Impact" is

appropriate if there is substantial evidence that a new effect may be significant that was not previously identified in the Final EIR. If there are one or more "Potentially New Significant Impact" entries when the determination is made, a Supplemental EIR is required.

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

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

   (a) Earlier Analysis Used. Identify and state where they are available for review.

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

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

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

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

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

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

4.3 ENVIRONMENTAL CHECKLIST QUESTIONS

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

Summary of Impacts Identified in the Final EIR

The EIR describes that the Specific Plan area is located with the south-facing line of sight toward the La Loma Hills from I-210 and southeasterly-facing views from Eucalyptus Avenue and Frisbie Park. However, the EIR describes that due to the topographical differences, distance, and height restrictions on the Specific Plan buildings, impacts on a scenic vista was determined to be less than significant (Draft EIR page 4.A-18).

The EIR describes that the City of Rialto General Plan (2010) (General Plan) General Plan Update Draft EIR (2010) determined that there are no eligible or officially designated State Scenic Highways within the vicinity of the Specific Plan. In addition, no valued scenic resources or other notable aesthetic features are located within the Specific Plan area. Therefore, the Final EIR determined that implementation of the Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway (Draft EIR page 6-16).

The EIR also determined that the Specific Plan Design Guidelines would guide development and ensure aesthetically pleasing building design, streetscape, landscape, building orientation, pedestrian amenities and other features that would positively contribute to the visual character of the area. Thus, EIR determined that buildout of the Specific Plan would not substantially degrade the existing visual character or quality of the site and its surroundings, and impacts were determined

to be less than significant (Draft EIR page 4.A-18).

Regarding impacts related to light and glare, the EIR determined that the Specific Plan guidelines and municipal code regulations require shielding of streetlights and other exterior lighting requirements would reduce light trespass and glare to a less than significant level (Draft EIR page 4.A-19).

Impacts Related to the Proposed Project

a) Have a substantial adverse effect on a scenic vista?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
Scenic vistas consist of expansive, panoramic views of important, unique, or highly valued visual features that are seen from public viewing areas. This definition combines visual quality with information about view exposure to describe the level of interest or concern that viewers may have for the quality of a particular view or visual setting. A scenic vista can be impacted in two ways: a development project can have visual impacts by either directly diminishing the scenic quality of the vista or by blocking the view corridors or "vista" of the scenic resource. Important factors in determining whether a proposed project would block scenic vistas include the project's proposed height, mass, and location relative to surrounding land uses and travel corridors.

As described previously, the EIR determined that due to in part, to the Specific Plan height restrictions and design features, impacts to a scenic vista was determined to be less than significant. The proposed Specific Plan Amendment would change the design features and setbacks of building structures within the Specific Plan area, and therefore, may result in a new impact to a scenic vista. Therefore, potential impacts related to scenic vistas will be included in the Subsequent EIR.

b) Substantially damage scenic resources, including, trees, rock outcroppings, and historic buildings within a state scenic highway?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Specific Plan area and proposed industrial development site is not located within view of a state scenic highway, as there are no designated scenic highways within the vicinity. The proposed Project would not result in impacts to trees, rock outcroppings, or historic buildings within a state scenic highway. The nearest eligible state scenic highways are Route 38 and Route 330, both are approximately 10 miles from the Specific Plan area and are not visible from the Specific Plan area. Therefore, no impacts to scenic resources would occur and this topic will not be analyzed in the Subsequent EIR.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The proposed Specific Plan Amendment would change areas previously designated for Community Commercial to areas designated for Light Industrial uses, which would change the visual character of the area. In addition, the proposed Specific Plan Amendment would provide new design standards for the Light Industrial designation that may have the potential to conflict with applicable regulations governing scenic quality. Therefore, a potentially new impact related to scenic quality could occur from implementation of the proposed Project, and this topic will be evaluated in the Subsequent EIR.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan Amendment for PAs 1-3 and the new PA 10, and the proposed industrial development on PA 2 and 3 would result in urban development of the area that would result in similar levels of new lighting as identified in the Final EIR that would generally occur from interior lighting emanating from windows, security lighting, building entrance lighting, and parking lot lighting. However, consistent with the existing Specific Plan lighting would be required to meet the City's municipal code standards that require light fixtures to be situated and shielded as not to direct or reflect lighting adjacent properties or public rights-of-way. Thus, the increase in light that would be generated by the proposed Project would not adversely affect day or nighttime views in the area. Lighting impacts would be less than significant, which is consistent with the findings of the Final EIR.

Reflective light (glare) can be caused by sunlight or artificial light reflecting from finished surfaces such as window glass or other reflective materials. Generally, darker or mirrored glass would have a higher visible light reflectance than clear glass. Buildings constructed of highly reflective materials from which the sun reflects at a low angle can cause adverse glare. The proposed light industrial development would not use highly reflective surfaces, or glass sided buildings. Although the buildings would contain windows and glass doorway entrances, the windows and doorway areas would be separated by stucco and architectural elements, which would limit the potential of glare. In addition, as described previously, lighting would be required to be angled down and shielded, which would avoid the potential of Project lighting to generate glare. Therefore, the proposed Project would not generate substantial sources of glare, and impacts would be less than significant, which is consistent with the findings of the Final EIR. Therefore, lighting and glare will not be further evaluated in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Aesthetics

As detailed previously, it is possible that new or substantially more severe aesthetics related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential aesthetics in the Subsequent EIR. Thus, aesthetics will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that the Specific Plan area is not located on designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program. As such, buildout of the Specific Plan would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses. No impact on farmlands would occur (Draft EIR page 6-16).

The EIR also determined that the Specific Plan would not conflict with the existing zoning for an agricultural use, as the site is currently zoned for residential uses. Additionally, no portion of the Project site is enrolled in a Williamson Act Contract. Thus, no impact would occur (Draft EIR page 6-16).

Regarding forestland and timberland, the EIR determined that no forestland or timberland exists and that the Specific Plan would not result in changes to or cause rezoning of forest land, timber land or timberland zoned for Timberland Production. Thus, no impact to forestland or timberland would occur (Draft EIR page 6-16).

Impacts Related to the Proposed Project

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The California Department of Conservation Important Farmland mapping identifies the Specific Plan area as Grazing land. No areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is located on or adjacent to the Specific Plan area. Therefore, the proposed Project would not have impacts related to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use and this topic will not be analyzed in the Subsequent EIR.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Williamson Act (California Land Conservation Act of 1965) restricts the use of agricultural and open space lands to farming and ranching by enabling local governments to contract with private landowners for indefinite terms in exchange for reduced property tax assessments. The Specific Plan area is not under an active Williamson Act contract. In addition, the proposed industrial development site is currently zoned for Community Commercial uses. Therefore, the proposed Project would not result in impacts related to a Williamson Act contract or zoning for agricultural uses, and this topic will not be analyzed in the Subsequent EIR.

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Specific Plan area contains a limited number of trees and does not include forestland or timberland. Additionally, the Specific Plan area does not include areas zoned as forestland. The Project would not conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timberland zoned Timberland Production. Thus, no impact would occur this topic will not be analyzed in the Subsequent EIR.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
As discussed in Response 3.2(c), the proposed Project would not result in the loss of forestland or the conversion of forestland to non-forest use. The Specific Plan area does not include forestland and has not historically been used as forestland. Thus, no impact would occur this topic will not be analyzed in the Subsequent EIR.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
As discussed in Response 3.2(a), the Specific Plan area has no agricultural or forest resources and is not designated as Prime, Unique, or Farmland of Statewide Importance[1]. Therefore, the proposed Project would not convert Farmland to non-agricultural uses or forestland to non-forest use. Thus, no impact would occur and this topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Agricultural and Forest Resources

No new impacts nor substantially more severe agricultural and forest resources related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to agricultural or forest resources from implementation of the proposed Project would not occur. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate agricultural and forest resources in the Subsequent EIR. Thus, agricultural and forest resources will not be analyzed in the Subsequent EIR.

[1] California Department of Conservation California Important Farmland Finder. Website: https://maps.conservation.ca.gov/DLRP/CIFF/ (accessed November 15, 2021)

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

Summary of Impacts Identified in the Final EIR

The EIR determined that buildout of the Specific Plan would not conflict with or obstruct implementation of the applicable air quality plan because the employment and population growth would be consistent with SCAG's regional forecast projections. Therefore, impacts related to consistency with the AQMP were determined to be less than significant (Draft EIR page 4.B-22).

The EIR determined that construction of the Specific Plan could violate air quality standard or contribute substantially to an existing or projected air quality violation during construction activities. It was estimated that maximum regional construction emissions resulting from construction activities could exceed the SCAQMD daily significance thresholds for NO_X, and that localized emissions could exceed thresholds for $PM_{2.5}$. Therefore, the EIR included mitigation measures to reduce potential construction related NOx and $PM_{2.5}$ emissions to a less than significant level. The EIR determined that emissions resulting from operation of the Specific Plan would not exceed any SCAQMD daily significance thresholds (Draft EIR pages 4.B-23 through 4.B-39).

Regarding objectionable odors, the EIR determined that implementation of the Specific Plan would not create objectionable odors affecting a substantial number of people. In addition, the EIR determined that the Specific Plan area is not located near any sources of odors identified by the SCAQMD handbook. Therefore, impacts regarding objectionable odors were determined to be less than significant (Draft EIR page 4.B-39).

Impacts Related to the Proposed Project

a) Conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The City of Rialto is located within the South Coast Air Basin (Basin). The Basin includes all of Orange County and portions of Los Angeles, Riverside, and San Bernardino Counties. Air quality within the Basin is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). Standards for air quality within the Basin are documented in the SCAQMD's Air Quality Management Plan (AQMP).[2] The main purpose of an AQMP is to describe air pollution control strategies to be taken by a city, county, or region classified as a nonattainment area in order to bring the area into compliance with federal and State air quality standards. SCAQMD's 2016 AQMP is based on regional growth forecasts for the Southern California Association of Governments region. Whether the project would exceed the growth assumptions in the AQMP is, in part, based on projections from local general plans.

The Specific Plan currently designates PA 1, PA 2, and PA 3 as Community Commercial with a maximum development potential for 476,650 SF of business park and retail uses. The proposed Specific Plan Amendment would change the designation of a PA 2, PA 3, and PA 10 (which is a portion of the current PA 1) to Light Industrial and allow a maximum development of 735,185 SF. The remaining approximately 2.86-acre portion of PA 1 will remain Community Commercial and would allow development of up to 13,000 SF of commercial uses. The proposed industrial development includes approximately 485,000 SF of this total. This change in Specific Plan buildout, and the proposed industrial development, may result in growth that is inconsistent with regional forecasts and may result in emissions that could exceed thresholds and result in conflict with SCAQMD's AQMP and new impacts that were not previously identified in the Final EIR. Thus, the potential for implementation of the proposed Project to conflict with or obstruct implementation of the AQMP will be evaluated in the Subsequent EIR.

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
As discussed in Response 3(a), the Specific Plan Amendment would change the allowable uses and maximum development within PA 2, PA 3, and the new PA 10, would change the maximum development in PA 1, and would develop an approximately 485,000 square foot light industrial building, which could result in an increase in criteria pollutants in comparison to those identified in the Final EIR and may result in significant impacts. Therefore, an air quality analysis will be prepared to model the emissions generated by the proposed Project with inclusion of the certified EIR mitigation measures to determine if air quality impacts would occur. This impact will be analyzed in the Subsequent EIR, and additional mitigation measures will be provided as needed.

[2] South Coast Air Quality Management District (SCAQMD). 2016. Air Quality Management Plan (March 2017), Website: https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp.

c) Expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
Sensitive receptors are locations where uses or activities result in increased exposure of persons more sensitive to the unhealthful effects of emissions (such as children and the elderly). Examples of land uses that can be classified as sensitive receptors include residences, schools, daycare centers, parks, recreational areas, medical facilities, rest homes, and convalescent care facilities. Existing sensitive receptors in the vicinity of the Specific Plan area and proposed industrial development site include residential uses. The Subsequent EIR will evaluate the potential for construction and operation of the proposed Project to expose sensitive receptors to substantial pollutant concentrations, and additional mitigation measures will be recommended as needed.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The amended Specific Plan and the proposed industrial development would not emit other emissions, such as those generating objectionable odors, that would affect a substantial number of people. The threshold for odor is identified by SCAQMD Rule 402, Nuisance, which states:

> *A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.*

The type of facilities that are considered to result in other emissions, such as objectionable odors, include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. Odors generated by the operation of light industrial and commercial uses are not expected to be significant or highly objectionable and would be required to be in compliance with SCAQMD Rule 402, which would prevent nuisances to sensitive land uses.

During construction, emissions from construction equipment, such as diesel exhaust, and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be temporary and are not expected to affect a substantial number of people.

During operations of the amended Specific Plan and proposed industrial development, all Project-generated solid waste would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations and would not generate objectionable odors. Therefore, impacts relating to both operational and construction activity odors would be less than significant, and odors will not be evaluated in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measure AQ-1: All off-road construction equipment with a horsepower (HP) greater than 50 shall be required to have USEPA certified Tier 4 interim engines or engines that are certified to meet or exceed the emission ratings for USEPA Tier 4 engines. In the event that all construction equipment cannot meet the Tier 4 engine certification, the applicant must demonstrate through future study with written findings supported by substantial evidence that is approved by the Lead Agency before using other technologies/strategies that reductions in the daily NOx and $PM_{2.5}$ emissions can be achieved by other technologies/strategies so that emissions from all concurrent construction would not exceed applicable SCAQMD daily emission thresholds. Alternative measures may include, but would not be limited to: reduction in the number and/or horsepower rating of construction equipment, limiting the number of daily construction haul truck trips to and from the Specific Plan area, using cleaner vehicle fuel, and/or limiting the number of individual construction project phases occurring simultaneously.

Proposed Industrial Development Project Applicability: Mitigation Measure AQ-1 is applicable to the proposed industrial development and would be implemented as part of the Subsequent EIR evaluation and as part of grading permit requirements.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure AQ-1 is applicable to future developments within PA 1 and PA 10 and would be implemented as part of the subsequent EIR evaluation and ask part of grading permit requirements.

Conclusion for Air Quality

As detailed previously, it is possible that new or substantially more severe air quality related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential air quality impacts in the Subsequent EIR. Thus, air quality will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The Final EIR determined that buildout of the Specific Plan could result in a substantial adverse effect on a sensitive natural community, or a species identified as a candidate, sensitive, or special status species, threatened or endangered in various portion of the Specific Plan area. However, compliance with applicable regulatory requirements and the EIR mitigation measures would reduce impacts to a less than significant level (Draft EIR page 4.C-22). The EIR determined that Mitigation Measure BIO-1 would minimize temporary direct and indirect impacts to special status plant and animal wildlife species by controlling construction activities and use of pesticides. Mitigation

Measures BIO-2 through BIO-6 would minimize impacts to the San Bernardino Kangaroo Rat and the Santa Ana River Woolystar by avoiding, maintaining or replanting suitable habitat. Mitigation Measure BIO-7 requires mitigation for the protection of the Burrowing Owl through focused surveys and avoidance of occupied burrows and habitat (Draft EIR page 6-4).

The Final EIR describes that potential permanent impacts could occur to USACE/RWQCB jurisdiction in Specific Plan PA 7 if pedestrian bridge pilings cannot be located outside of the drainages. In response, Mitigation Measure BIO-8 is included in the EIR to require compliance with Sections 404 and 401 of the Clean Water Act (CWA), respectively, including applying for a permit and mitigation subject to approval by USACE and/or RWQCB, which would reduce impacts to a less than significant level (Draft EIR page 4.C-33).

The Final EIR also describes that wildlife movement within the Specific Plan area is limited to the native Riversidean Alluvial Fan Sage Scrub (RAFSS) vegetation and associated drainages that supports protected wildlife species and it provides a potential corridor for wildlife movement between the Specific Plan area and Lytle Creek downstream. The Specific Plan would reduce impacts by including a pedestrian crossing to minimize impacts to habitat and allow continued movement of the species. The Final EIR also determined that potential impacts related to nesting birds could occur from implementation of the Specific Plan and Mitigation Measure BIO-9 was included to provide for nesting bird surveys that would reduce impacts to a less than significant level (Draft EIR page 4.C-33).

The EIR determined that the Specific Plan would be consistent with local policies related to biological resources and included mitigation measures to ensure compliance (Draft EIR page 4.C-34). Furthermore, the EIR determined that the Specific Plan area is not subject to a Habitat Conservation Plan or other type of Natural Community Conservation Plan; and thus, no impacts would occur (Draft EIR page 4.C-35).

Impacts Related to the Proposed Project

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

Less Than Significant New Impact with Mitigation Incorporated.

Specific Plan Amendment
The potential impacts related to biological resources that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same areas of disturbance would occur. Thus, the same potential for impacting biological resources would occur under the amended Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures BIO-1 through BIO-9, which would reduce potential impacts to a less than significant level consistent with the findings of the Final EIR. No further evaluation in the Subsequent EIR is required.

Proposed Industrial Development
The General Biological Assessment that was prepared for the proposed industrial development site (included as Appendix A) describes that the site is disturbed land that was historically used for

agriculture and appears to be continually disced for weed abatement purposes. The habitat onsite is identified as disturbed ruderal that is dominated by non-native species.

Special Status Plant Species. The General Biological Assessment describes that although suitable habitat for Smooth tarplant (*Centromadia pungens ssp. laevis*) and Parry's spineflower (*Chorizanthe parryi var. parryi*) exist onsite, there are no special status plant species present on the site. Thus, impacts related to special status plant species would not occur.

Special Status Animal Species. The General Biological Assessment describes that there is potential habitat for one special status species on the proposed industrial development site. Consistent with the findings of the EIR, the proposed industrial development site contains potential habitat for burrowing owl (*Athene cunicularia*), which is a CDFW Species of Special Concern. Its habitat includes coastal prairie, coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, and valley and foothill grassland. This species is typically found in open and dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. It is a subterranean nester and is dependent upon burrowing mammals, most notably the California ground squirrel. The General Biological Assessment completed focused surveys for burrowing owl pursuant to Final EIR Mitigation Measure BIO-8, which did not observe any signs of the species. Thus, it was determined that the species is not present on site.

Overall, the General Biological Assessment determined that no endangered, rare, threatened, or special status plant species (or associated habitats) occur on or adjacent to the site and no impacts to these types of resources would occur from implementation of the proposed industrial development. Therefore, this topic will not be analyzed in the Subsequent EIR.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?

Less Than Significant New Impact with Mitigation Incorporated.

Specific Plan Amendment

The potential impacts related to riparian habitat or other sensitive natural community that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures BIO-1 and BIO-2, which would reduce potential impacts to a less than significant level consistent with the findings of the Final EIR. No further evaluation in the Subsequent EIR is required.

Proposed Industrial Development

Riparian habitats are those occurring along the banks of rivers and streams. Sensitive natural communities are natural communities that are considered rare in the region by regulatory agencies, known to provide habitat for sensitive animal or plant species, or known to be important wildlife corridors.

As described above, the proposed industrial development site is disturbed ruderal habitat that is dominated by non-native species. No riparian habitat or other sensitive natural communities occur within the proposed development area. The development area is also not included in any local or regional plans, policies, and regulations that identify the area as riparian habitat or other sensitive

natural community. Therefore, no impact would occur, and this topic will not be analyzed in the Subsequent EIR.

c) Have a substantial adverse effect on state or federally protected wetlands (including but not limited to, marsh, vernal, pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less Than Significant New Impact with Mitigation Incorporated.

Specific Plan Amendment
The potential impacts related to riparian habitat or other sensitive natural community that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measure BIO-8, which would reduce potential impacts to a less than significant level consistent with the findings of the Final EIR. No further evaluation in the Subsequent EIR is required.

Proposed Industrial Development
Wetlands are defined under the federal Clean Water Act as land that is flooded or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, a prevalence of vegetation adapted to life in saturated soils. Wetlands include areas such as swamps, marshes, and bogs. The General Biological Assessment determined that the proposed industrial development site does not contain wetlands. Therefore, no impacts to wetlands would occur, and this topic will not be analyzed in the Subsequent EIR.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant New Impact with Mitigation Incorporated.

Specific Plan Amendment
The potential impacts related to wildlife corridors and nursery sites that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measure BIO-9, which would reduce potential impacts to a less than significant level consistent with the findings of the Final EIR. No further evaluation in the Subsequent EIR is required.

Proposed Industrial Development
The General Biological Assessment describes that wildlife movement corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species present. Wildlife corridors represent areas where wildlife movement is concentrated due to natural or anthropogenic constraints. Local corridors provide access to resources such as food, water, and shelter. Animals use these corridors, which are often hillsides or riparian areas, to move between different habitats. Regional corridors provide these functions and link two or more large habitat areas. They provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

The General Biological Assessment determined that the proposed industrial development site is not located within a designated wildlife corridor or linkage. The site is flat land surrounded by residential uses to the north, water facilities to the south, I-210 to the north, the railroad to the east, and Pepper Avenue to the east, and does not function as a wildlife movement corridor. Thus, impacts related to wildlife corridors would not occur.

However, the site contains trees and shrubs that could be utilized by nesting birds and raptors during the nesting bird season. Thus, consistent with the direction of the Final EIR Mitigation Measure BIO-9 would be implemented to require nesting bird surveys occur prior to vegetation removal during nesting season. Consistent with the findings of the EIR, with implementation of Mitigation Measure BIO-9, potential impacts related to nesting birds would be less than significant. Therefore, no new or increased impacts would occur from implementation of the proposed industrial development, and this topic will not be analyzed further in the Subsequent EIR.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No New Impact.

Specific Plan Amendment

The proposed Specific Plan Amendment would not result in conflict with local ordinances such as tree preservation ordinances. The amended Specific Plan would be required to be implemented in compliance with the City's municipal code; including Municipal Code Chapter 11.08 that provides regulations related to removal and planting public street trees. Thus, no impacts would occur.

Proposed Industrial Development

The proposed industrial development site contains a variety of ornamental trees, which would be removed and replaced with implementation of the proposed Project. Public trees in Rialto are protected by Chapter 11.08 of the Municipal Code, which was established to preserve, protect, and maintain public trees. The proposed industrial development would be required to comply with the municipal code requirements as part of the City permitting process, which would ensure that the Project does not conflict with local policies or ordinances protecting trees. As a result, there would be no impact and this topic will not be analyzed in the Subsequent EIR.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area is not within the study area of an adopted Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, implementation of the proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. This topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measure BIO-1: Prior to and during construction within and adjacent to Riversidean alluvial fan sage scrub habitat the following measures shall be implemented to minimize temporary direct and indirect effects to special-status plant and wildlife species:

- Construction limits shall be temporarily fenced prior to construction activities to avoid the inadvertent disturbance of areas adjacent to the construction limits. This fence shall be constructed as SBKR proof within alluvial fan sage scrub habitat (see Mitigation Measure BIO-2);
- A biological monitor shall be present during clearing and grubbing of the Project Site;
- All movement of construction contractors, including ingress and egress of equipment and personnel, shall be limited to the designated construction zones;
- Construction staging areas shall be located as far from the wash area as feasible;
- The use or rodenticides, herbicides, insecticides, or other chemicals that could potentially harm special-status plant and animal species shall be prohibited;
- The proposed use and disposal of oil, gasoline, and diesel fuel shall be enforced;
- Orientation meetings shall be conducted for construction personnel to review construction limits, conservation measures, and the locations of any listed species that must be avoided; and
- Best Management Practices (BMPs) shall be implemented with a storm water pollution prevention plan to avoid and minimize impacts to biological resources outside of construction areas.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-1 is not applicable to the proposed industrial development because no Riversidean alluvial fan sage scrub habitat is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-1 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Riversidean alluvial fan sage scrub habitat within the future development site.

Mitigation Measure BIO-2: Prior to construction within and adjacent to Riversidean alluvial fan sage scrub habitat the following design features shall be implemented to minimize long-term indirect effects to San Bernardino kangaroo rat (SBKR) and the Santa Ana River woollystar (SARWS):

- The Project shall be designed to avoid Riversidean alluvial fan sage scrub habitat, where possible.
- The pedestrian crossing shall be designed to minimize changes in the hydrology that could impact the ability of the SARWS to disperse or to establish in sandy soils created by scour, and also minimize the amount of habitat that could become less suitable for SBKR with reduced scour.
- Water runoff from impervious surfaces shall be captured to ensure that the hydrological regime is not altered from the existing condition. Capturing the flows would also help reduce the number of road contaminants that enter the wash.
- Temporary impact areas shall require a weed abatement program for approximately 5-years to ensure it remains suitable to SARWS and SBKR.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-2 is not applicable to the proposed industrial development because no Riversidean alluvial fan sage scrub habitat is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-2 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Riversidean alluvial fan sage scrub habitat within the future development site.

Mitigation Measure BIO-3: Prior to any permanent or temporary direct impacts to the Santa Ana River woollystar (SARWS) and where avoidance of impacts through Project design is not possible, the following measures shall be implemented:

- Seeds from all the SARWS proposed for impacts shall be collected from the Project Site and deposited at the Rancho Santa Ana Botanic Garden. The seeds shall be collected in September before the first sizeable rain event (i.e., one of ½ inch or more) to increase the ability to collect the seeds and to ensure a high rate of germination.
- The Rancho Santa Ana Botanic Garden shall divide the seeds for three uses: 1) for a permanent seed bank; 2) for germination and growing seedlings; and 3) to preserve for later seeding or authorized research purposes.
- The propagated seedlings and a portion of preserved seeds shall be replanted within any temporary impact areas once construction has ceased, and any permanent impacts to individual plants shall be replaced at a minimum 1:1 ratio within the proposed avoidance area (PA 9). Planting shall be conducted October to December or as close to the winter rainy season as possible. All replanting shall be conducted pursuant to an approved mitigation and monitoring plan prepared and overseen by a qualified biologist. The plan should include, at minimum, a map of the restoration areas, a description of any irrigation methodology, measures to control exotic vegetation, specific success criteria, a detailed monitoring program, contingency measures should the success criteria not be met, and identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-3 is not applicable to the proposed industrial development t because no Santa Ana River woollystar (SARWS) is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-3 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Santa Ana woollystar (SARWS) within the future development site.

Mitigation Measure BIO-4: Prior to construction within San Bernardino Kangaroo Rat (SBKR) critical habitat, which consists of Riversidean Alluvial Fan Sage Scrub (RAFSS), the project applicant shall purchase mitigation credits from the Vulcan Materials mitigation land bank in Cajon Wash or equivalent preserved SBKR RAFSS habitat to offset permanent impacts to occupied SBKR critical habitat at a 3:1 ratio, and temporary or indirect impacts at a 1:1 ratio.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-4 is not applicable to the proposed industrial development because no Riversidean Alluvial Fan Sage Scrub (RAFSS) is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-4 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Riversidean Alluvial Fan Sage Scrub (RAFSS) within the future development site.

Mitigation Measure BIO-5: Prior to construction within Riversidean alluvial fan sage scrub habitat the following measures shall be implemented to minimize temporary direct and indirect effects to San Bernardino kangaroo rat (SBKR):

- A 4-foot high, 0.5-inch temporary steel mesh SBKR exclusionary fence shall be placed along the perimeter footprint where suitable SBKR habitat exists. The bottom of the exclusionary fence shall be buried below ground a minimum depth of 24 inches to minimize the potential that SBKR can re- enter the construction area and to preclude impacts to adjacent habitat. Trapping shall be conducted for SBKR within 30 days prior to ground disturbing activities. Any SBKR or other sensitive mammal species that are captured shall be relocated outside the exclusionary fencing. Trapping shall be conducted by a permitted biologist and according to protocol;
- The temporary SBKR exclusionary fencing shall be maintained in place throughout the duration of construction in these areas to minimize take of SBKR during the construction phase and preclude the inadvertent disturbance of outlying areas by construction personnel. Access to SBKR habitat outside of the construction limits shall be prohibited and posted accordingly. The exclusionary fence shall be inspected weekly and repaired as necessary so that there are no gaps greater than 0.5 inch on any portion of the fence that could allow SBKR entry into the Project Site;
- All the construction equipment shall meet applicable noise ordinances. Compliance with this requirement would minimize noise stress to SBKR in the vicinity of the Project Site; and
- Contractor pets shall be prohibited in and adjacent to the construction area.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-5 is not applicable to the proposed industrial development because no Riversidean Alluvial Fan Sage Scrub (RAFSS) is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-5 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Riversidean Alluvial Fan Sage Scrub (RAFSS) within the future development site.

Mitigation Measure BIO-6: Prior to construction within and adjacent to Riversidean alluvial fan sage scrub habitat the following design features shall be implemented to minimize long-term indirect effects to San Bernardino kangaroo rat (SBKR):

- The pedestrian bridge supports shall be designed to minimize impacts to SBKR habitat and allow continued movement of SBKR.
- Temporary impacts areas shall be revegetated with native shrub vegetation through container plantings to reestablish SBKR habitat and provide cover and facilitate movement of small mammals. All replanting shall be conducted pursuant to a mitigation and monitoring plan prepared and overseen by a qualified biologist.
- To minimize light and noise pollution, no night lighting shall be directed into the open space areas and noise levels should not exceed City standards.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-6 is not applicable to the proposed industrial development because no Riversidean Alluvial Fan Sage Scrub (RAFSS) is located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-6 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no Riversidean Alluvial Fan Sage Scrub (RAFSS) within the future development site.

Mitigation Measure BIO-7: Protocol survey for burrowing owl shall be required prior to any ground disturbing activities within disturbed and non-native grassland habitats. The surveys shall be conducted pursuant to the protocol provided as Appendix D of the Staff Report on Burrowing Owl Mitigation published by the California Department of Fish and Wildlife (CDFW) dated March 7, 2012. A qualified biologist, as defined in the CDFW Staff Report, shall conduct the surveys. Surveys shall preferably be conducted during the breeding season which requires 4 site visits, including at least one site visit between February 15 and April 15; and a minimum of three site visits at least three weeks apart between April 15 and July 15, with at least one visit after June 15.

If burrowing owls are determined present during the focused survey, occupied burrows and habitat shall be avoided if feasible following the guidelines in the above referenced CDFW Staff Report. This includes, but is not limited to, avoiding direct or indirect destruction of burrows, implementing a worker awareness program, biological monitoring, establishing avoidance buffers, and flagging burrows for avoidance with visible markers. Avoidance measures shall be implemented under the direction of the qualified biologist. If occupied burrows or habitat cannot be avoided, appropriate compensation measures shall be determined by the qualified biologist in accordance with the guidelines detailed in the CDFW staff report and subject to approval by CDFW. This includes a Burrowing Owl Exclusion Plan for temporary or permanent exclusion of owls from occupied burrows, and/or a Mitigation Land Management Plan for permanent conservation of similar vegetation communities to provide for burrowing owl nesting, foraging, wintering and dispersal comparable to or of higher quality than the impact area.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-7 is applicable to the proposed industrial development site and has been implemented as part of the General Biological Assessment, which is included as Appendix A.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-7 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there is no burrowing owl habitat within the future development site.

Mitigation Measure BIO-8: Prior to the issuance of any grading permit for permanent or temporary impacts in the areas designated as jurisdictional features, the project applicant shall obtain regulatory permits from the USACE, RWQCB, and CDFW, as applicable. The following shall be incorporated into the permitting, subject to approval by the regulatory agencies:

1. On-site and/or off-site creation, enhancement, and/or restoration of USACE/RWQCB jurisdictional "waters of the U.S."/"waters of the State" within the Santa Ana Watershed at a ratio no less than 1:1 or within an adjacent watershed at a ratio no less than 2:1 for permanent impacts, and for any temporary impacts to restore the impact area to pre-Project conditions (i.e., pre-Project contours and revegetate where applicable). Off-site mitigation may occur on land acquired for the purpose of in-perpetuity preservation, or through the purchase of mitigation credits at an agency-approved off-site mitigation bank.
2. On-site and/or off-site replacement and/or restoration of CDFW jurisdictional streambed and associated riparian habitat within the Santa Ana Watershed at a ratio no less than 2:1 or within an adjacent watershed at a ratio no less than 3:1 for permanent impacts, and for any temporary impacts to restore the impact area to pre-Project conditions (i.e., pre-Project contours

and revegetate where applicable). Any off-site mitigation may occur on land acquired for the purpose of inperpetuity preservation, or through the purchase of mitigation credits at an agency-approved off-site mitigation bank.

3. Any purchase of mitigation credits through an agency approved mitigation bank or in-lieu fee program shall occur prior to any impacts to jurisdictional drainages. If off-site mitigation is proposed on land acquired for the purpose of inperpetuity mitigation that is not part of an agency-approved mitigation bank or in-lieu fee program shall include the preservation, creation, restoration, and/or enhancement of similar habitat pursuant to a Habitat Mitigation and Monitoring Plan (HMMP). A HMMP shall also be prepared for on-site mitigation. The HMMP shall be prepared prior to any impacts to jurisdictional features, and shall provide details as to the implementation of the mitigation, maintenance, and future monitoring. The goal of the mitigation shall be to preserve, create, restore, and/or enhance similar habitat with equal or greater function and value than the impacted habitat.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-8 is not applicable to the proposed industrial development because no areas under the jurisdiction of the USACE, RWQCB, and/or CDFW are located within or adjacent to the development site.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-8 is applicable to future developments within PA 1 and PA 10, unless a Biological Resources Analysis demonstrates there are no areas under the jurisdiction of the USACE, RWQCB, and/or CDFW within the future development site.

Mitigation Measure BIO-9: Prior to the issuance of any grading permit that would remove potentially suitable nesting habitat for raptors or songbirds, the project applicant shall demonstrate to the satisfaction of the City of Rialto that either of the following have been or will be accomplished.

1. Vegetation removal activities shall be scheduled outside the nesting season (i.e., September 1 to February 14 for songbirds; September 1 to January 14 for raptors) to avoid potential impacts to nesting birds.
2. Any construction activities that occur during the nesting season (i.e., February 15 to August 31 for songbirds; January 15 to August 31 for raptors) would require that all suitable habitat be thoroughly surveyed for the presence of nesting birds by a qualified biologist before commencement of clearing. If any active nests are detected a buffer of 100 feet (300 feet for raptors) around the nest adjacent to construction, or as determined appropriate by the biologist, shall be delineated, flagged, and avoided until the nesting cycle is complete. An appropriate buffer shall be determined by the biological monitor to minimize impacts to the nesting bird(s) accounting for factors such as the species, type of construction activities, in addition to habitat and topography that may provide natural sound attenuation. The buffer may be modified and/or other recommendations proposed as determined appropriate by the biologist to minimize impacts.

Proposed Industrial Development Project Applicability: Mitigation Measure BIO-9 is applicable to the proposed industrial development and would be implemented prior to issuance of grading permits.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure BIO-9 is applicable to future developments within PA 1 and PA 10.

Conclusion for Biological Resources

No new impacts nor substantially more severe biological resources related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to biological resources from implementation of the proposed Project would be less than significant with mitigation measures that were prescribed in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate biological resources in the Subsequent EIR. Thus, biological resources will not be analyzed in the Subsequent EIR. However, Final EIR Mitigation Measure BIO-9 is applicable to the proposed Project and will be included in the Subsequent EIR Mitigation Monitoring and Reporting Program (MMRP).

	Potentially Significant New Impact	Less Than Significant New Impact with Mitigation Incorporated	Less Than Significant New Impact	No Impact / No New Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Summary of Impacts Identified in the Final EIR

The EIR determined that there are no historic resources within areas that are proposed for development by the Specific Plan. Therefore, no impacts related to historic resources would occur (Draft EIR page 4.D-15). However, the EIR determined that ground disturbing construction activities within the Specific Plan area could have a significant impact on archaeological resources. Thus, mitigation related to development level site screening was included to reduce potential impacts to a less than significant level (Draft EIR page 4.D-16).

The EIR also describes that no known human remains or Native American cultural resources have been identified within the Specific Plan area or within a one-half mile buffer. However, the Specific Plan area is located within close proximity to a major water source (Lyle Creek) which would have attracted prehistoric and historic period inhabitants to the area and several historic period water control/management resources have been identified nearby. As a result, the EIR determined that the Specific Plan area has a moderate to high potential to encounter human remains and mitigation was included to reduce potential impacts to a less than significant level (Draft EIR page 4.D-17).

The EIR Mitigation Measure CUL-1 requires Phase I archaeological resources assessment prior to excavation, clearing, trenching, grading, or boring. If resources are discovered, a Phase II report is required by Mitigation Measure CUL-2. If resources are determined eligible for listing in the California Register or are considered "unique archaeological resources", Mitigation Measure CUL-3 requires preparation of a Phase III assessment. Mitigation Measure CUL-4 includes methods for construction monitoring of archaeological resources. Mitigation Measure CUL-5 requires that ground-disturbing activities be ceased and a treatment plan be implemented if archaeological resources are encountered. Mitigation Measure CUL-6 requires the preparation of an archaeological monitoring report, if needed. Mitigation Measures CUL-7 requires cessation of ground-disturbing activity and consultation with the County Coroner and Native American tribes in the event human remains are encountered (Draft EIR page 6-5).

Impacts Related to the Proposed Project

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No New Impact. Section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency. Generally, a resource is considered "historically significant" if it meets one of the following criteria:

i. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
ii. Is associated with the lives of persons important in our past;
iii. Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values;
iv. Has yielded, or may be likely to yield, information important in prehistory or history.

Specific Plan Amendment
As described previously, the Final EIR determined that there are no historic resources within areas that are proposed for development by the Specific Plan. The Specific Plan Amendment does not change the areas proposed to be developed. Thus, no historic resources exist, and no impacts related to historic resources would occur from implementation of the Specific Plan Amendment.

Proposed Industrial Development
The proposed industrial development site is undeveloped land that was previously used as agricultural land (an orchard) since at least the 1930s. The Phase I Environmental Site Assessment (Appendix B) describes that the orchard was removed from the site by the mid-1980s and that it has remained vacant and undeveloped since then. As described in Section 4, *Biological Resources*, the site is vacant with disturbed ruderal habitat that is continually disced. There are no historic resources on the proposed industrial development site, and impacts would not occur. This topic will not be further evaluated in the Subsequent EIR.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Potentially Significant New Impact.

Specific Plan Amendment
The potential impacts related to archaeological resources that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same areas of ground disturbance would occur. Thus, the same potential for impacting an archeological resource would occur under the amended Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures CUL-1 through CUL-8, which would reduce potential impacts to a less than significant level, consistent with the findings of the Final EIR.

Proposed Industrial Development
As discussed previously, the EIR determined that ground disturbing construction activities within the Specific Plan area could have a significant impact on archaeological resources. Thus, pursuant to

Final EIR Mitigation Measure CUL-1 an archaeological resources assessment will be prepared as part of the Subsequent EIR that will include a literature review, records search, and survey of the proposed industrial development site. Also, Final EIR Mitigation Measures CUL-2 through CUL-3 will be implemented, if determined necessary by the resource assessment prepared pursuant to Mitigation Measure CUL-1. Therefore, this topic will be evaluated in the Subsequent EIR, and additional mitigation measures will be identified if necessary.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant New Impact with Mitigation Incorporated.

Specific Plan Amendment
The potential impacts related to human remains that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same, and the same areas of ground disturbance would occur. Thus, the same potential for disturbing a human remain would occur by the amended Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measure CUL-7, which provides for stopping ground-disturbing activities and notifying the county coroner if human remains are encountered would reduce potential impacts to a less than significant level, consistent with the findings of the Final EIR.

Proposed Industrial Development
There are no known human remains on the proposed industrial development site. The site is not part of a formal cemetery and is not known to have been used for disposal of human remains. In addition, the ground has been previously disturbed by previous agricultural uses. Thus, human remains are not expected to be encountered during construction of the proposed Project. In addition, existing state regulations (California Health and Safety Code Section 7050.5) requires that in the unanticipated event of discovery or recognition of any human remains, there shall be no further excavation until the coroner has made recommendations concerning the treatment and disposition of the human remains to the person responsible. If the coroner determines that the remains are not subject to his or her authority and has reason to believe that they are those of a Native American, he or she shall contact the Native American Heritage Commission within 24 hours. These requirements were included in the Final EIR as Mitigation Measure CUL-7. Implementation of the proposed industrial development would comply with provisions of state law and Mitigation Measure CUL-7 regarding discovery of human remains, and impacts relating to the disturbance of human remains would be less than significant with implementation of the Final EIR mitigation measure. This topic will not be further evaluated in the Subsequent EIR. However, Mitigation Measure CUL-7 will be included in the Project's MMRP to ensure implementation.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measure CUL-1: Conduct a Phase I Archaeological/ Historical Resources Assessment. For specific development proposals that are initiated under the Project that require excavation (e.g., clearing/grubbing, grading, trenching, or boring) or demolition activities, the City shall require Phase I Archaeological Resources Assessments on a project-by-project basis within the Specific Plan area to identify any archaeological resources within the footprint or immediate vicinity. The level of effort for a Phase I assessment shall include a Sacred Lands File search through the California Native American Heritage Commission (NAHC) and a full-coverage pedestrian survey of the Project Site. In addition, the assessment shall include a review available geotechnical studies, site plans, and drilling/grading studies to determine the nature and depth of the construction activities to assist

in determining the depths of fill versus native soils across the improvement footprint. If no resources are identified as a result of the pedestrian survey, it does not preclude the existence of buried resources within the improvement footprint. If this is the case, a qualified archaeologist shall determine the potential for the Project to encounter buried resources during construction based on the results of the record searches, depth of native versus fill soils, and proposed excavation parameters.

The following scenarios shall be followed depending on the results of the Phase I assessment:

- If resources are identified during the Phase I assessment, then a Phase II evaluation shall be required, as described in CUL-2.
- If no resources are identified as part of the assessment, no further analyses or mitigation shall be warranted, unless it can be determined that the project has a moderate to high potential to encounter buried archaeological resources.
- If it is determined that there is a moderate or high potential to encounter buried archaeological resources, appropriate mitigation such as construction monitoring shall be required as described in CUL-4, -5, and -6.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-1 is applicable to the proposed industrial development site and will be implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-1 is applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-2: Conduct a Phase II Archaeological/Historical Resources Evaluation. If resources are identified during the Phase I assessment, a Phase II Archaeological Resources Evaluation may be warranted if impacts from the improvements cannot be avoided. The Phase II assessment shall evaluate the resource(s) for listing in the California Register and to determine whether the resource qualifies as a "unique archaeological resource" pursuant to CEQA. If enough data is obtained from the Phase I assessment to conduct a proper evaluation, a Phase II evaluation may not be necessary. Methodologies for evaluating a resource can include but are not limited to: subsurface archaeological test excavations, additional background research, property history research, and coordination with Native Americans and other interested individuals in the community.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-2 may be applicable to the proposed industrial development site. Applicability will be determined as part of the Phase I Archaeological Assessment that will be prepared pursuant to Mitigation Measure CUL-1, as implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-2 is potentially applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-3: Conduct a Phase III Assessment if Resources are Eligible. If, as a result of the Phase II evaluation, resources are determined eligible for listing in the California Register or are considered "unique archaeological resources" pursuant to Section 21083.2 of the Public Resources Code, potential impacts to the resources shall be analyzed and if impacts are significant (i.e., the improvement will cause a "substantial adverse change" to the resource) and cannot be avoided, mitigation measures shall be developed and implemented, such as archaeological data recovery excavations to reduce impacts to the resources to a level that is less than significant.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-3 may be applicable to the proposed industrial development site. Applicability will be determined as part of the Phase II Archaeological Assessment, if required pursuant to the results of Mitigation Measure CUL-1, as implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-3 is potentially applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-4: Conduct Archaeological and Native American Construction Monitoring. If it is determined by the qualified archaeologist preparing the Phase I Archaeological Resources Assessment that there is a moderate or high potential to encounter buried archaeological resources; and 2) that construction monitoring is required during construction excavations such as clearing/grubbing, grading, trenching, or any other construction excavation activity associated with the proposed improvements, then the City shall require future development/Project applicants on a project-by-project basis within the Specific Plan area to retain a qualified archaeological monitor and/or Native American monitor who shall be present during construction excavation activities. The frequency of monitoring shall be based on the rate of excavation and grading activities, proximity to known archaeological resources, the materials being excavated (native versus fill soils), and the depth of excavation, and if found, the abundance and type of archaeological resources encountered. Full-time monitoring can be reduced to part-time inspections if determined adequate by the archaeological monitor.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-4 may be applicable to the proposed industrial development site. Applicability will be determined as part of the Phase I Archaeological Assessment that will be prepared pursuant to Mitigation Measure CUL-1, as implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-4 is potentially applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-5: Cease Ground-Disturbing Activities and Implement Treatment Plan if Archaeological Resources Are Encountered. In the event that archaeological resources are unearthed during ground-disturbing activities, the archaeological monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find so that the find can be evaluated. Work shall be allowed to continue outside of the vicinity of the find. All archaeological resources unearthed by Project construction activities shall be evaluated by the archaeologist. The Applicant and City shall coordinate with the archaeologist and Native American monitor (if the resources are prehistoric in age) to develop an appropriate treatment plan for the resources. Treatment may include implementation of archaeological data recovery excavations to remove the resource or preserve it in place. The Applicant, in consultation with the archaeologist and Native American monitor (if the resources are prehistoric in age), shall designate repositories in the event that archaeological material is recovered.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-5 is applicable to the proposed industrial development site and will be included the Subsequent EIR and its MMRP.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-5 is applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-6: Prepare Archaeological Monitoring Report. The archaeological monitor shall prepare a final report at the conclusion of archaeological monitoring. The report shall be submitted to the City and the San Bernardino Archaeological Information Center, and representatives of other appropriate or concerned agencies to signify the satisfactory completion of the project and required mitigation measures. The report shall include a description of resources unearthed, if any, evaluation of the resources with respect to the California Register of Historical Resources and CEQA, and treatment of the resources.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-6 may be applicable to the proposed industrial development site. Applicability will be determined as part of the Phase I Archaeological Assessment that will be prepared pursuant to Mitigation Measure CUL-1, as implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-6 is potentially applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-7: Cease Ground-Disturbing Activities and Notify County Coroner If Human Remains Are Encountered. If human remains are unearthed during construction exaction activities, the construction contractor shall comply with State Health and Safety Code Section 7050.5. The contractor and Project applicant shall immediately notify the County Coroner and no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC shall then identify the person(s) thought to be the Most Likely Descendent (MLD). The MLD may, with the permission of the landowner, inspect the site of the discovery of the Native American remains and may recommend to the landowner means for treating or disposing, with appropriate dignity, the human remains and any associated funerary objects. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the landowner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and cultural items associated with Native American burials. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this mitigation measure, with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. MLDs in the region typically recommend reburial of the remains as close to the original burial location as feasible accompanied by a ceremony. The MLD shall file a record of the reburial with the NAHC and the Project archaeologist shall file a record of the reburial with the CHRIS-SBAIC.

If the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in Subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance. A record of the reburial shall be filed with the NAHC and the CHRIS-SBAIC.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-7 is applicable to the proposed industrial development site and will be included the Subsequent EIR and its MMRP.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-7 is applicable to future developments within PA 1 and PA 10.

Mitigation Measure CUL-8: If a tribe formally requests, in writing, to be notified of future specific development proposals that are initiated under the Project, the City shall begin AB 52 consultations with those particular tribes for all future development proposals within the Project Site. The purpose of those consultations would be to identify, evaluate, and mitigate impacts to tribal cultural resources from a given development proposal.

Proposed Industrial Development Project Applicability: Mitigation Measure CUL-8 is applicable to the proposed industrial development site and will be implemented as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure CUL-8 is applicable to future developments within PA 1 and PA 10.

Conclusion for Cultural Resources

Although no historic resources exist on the proposed industrial development site, the area is sensitive for archaeological resources. Therefore, pursuant to the Final EIR mitigation measures, a site-specific archaeological resource study will be completed as part of the Subsequent EIR. Thus, archaeologic related cultural resources will be analyzed in the Subsequent EIR. In addition, the applicable mitigation measures from the Final EIR will be included in the Subsequent EIR MMRP.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that the Specific Plan incorporates, sustainable design features and would be implement in consistency with the existing energy related regulations. The EIR describes that construction related energy usage would not represent a substantial portion of the available energy supply in terms of equipment and transportation fuels, and compliance with regulations (i.e., idling restrictions and the use of low-pollutant engines and equipment) would result in less fuel combustion and energy consumption, a more efficient use of energy, and the minimization or elimination of wasteful and unnecessary consumption of energy during construction (Draft EIR page 6-10).

The EIR also describes that operation of the Specific Plan would utilize energy for necessary building usage and transportation associated with vehicles traveling within the Specific Plan area. The amount of energy used would represent an insubstantial fraction of the region's available energy supply. The developments pursuant to the Specific Plan would be required to incorporate green building measures and encourage use of nonmotorized transportation (walking and cycling), it would not result in the wasteful, inefficient, and unnecessary consumption of energy. Thus, the EIR determined that impacts related to energy would be less than significant (Draft EIR page 6-15).

Impacts Related to the Proposed Project

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Potentially Significant New Impact

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan currently designates PA 1, PA 2, and PA 3 as Community Commercial with a maximum development potential for 476,650 SF of business park and retail uses. The proposed Specific Plan Amendment would change the designation of PA 2, PA 3, and the new PA 10 to Light Industrial and allow a maximum development of 735,185 SF. The decreased PA 1 would allow for the development of up to 13,000 SF of commercial uses. This change may result in an increase in energy usage that could be wasteful, inefficient, or unnecessary and result in new impacts that were not previously identified in the Final EIR. Thus, the potential for implementation of the Project to

result in wasteful, inefficient, and unnecessary energy consumption will be evaluated in the Subsequent EIR.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Potentially Significant New Impact

Specific Plan Amendment and Proposed Industrial Development
The State of California has established a comprehensive framework for the use of efficient energy. This occurs through the implementation of the Clean Energy and Pollution Reduction Act of 2015 (SB 350), Assembly Bill (AB) 1007 (Pavley 2007), Title 24 Energy Efficiency Standards, and the California Green Building Standards. As described previously, the proposed Project may result in an increase in energy use. The potential for the Project to conflict with or obstruct a plan for renewable energy or energy efficiency will be evaluated in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Energy

As detailed previously, it is possible that increased energy usage and new or substantially more severe energy related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential energy impacts in the Subsequent EIR. Thus, energy will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that Specific Plan area is located within the State of California designated Alquist-Priolo Earthquake Fault Zone for the San Jacinto fault. Therefore, the EIR included DF GEO-1 to

provides for detailed, site-specific geotechnical investigation(s) prior to approval of a grading permit to determine the existence of any fault traces and if any exist, delineate the exact location of any fault traces and provide for appropriate setbacks to reduce impacts related to the fault to a less than significant impact (Draft EIR page 6-16).

The EIR also describes that the site is subject to strong seismic shaking, but that the effects of seismic shaking on structures can be reduced through conformance with the structural and seismic requirements recommendations of future site-specific and design-specific geotechnical and geologic reports (see DF GEO-1), the California Building Code, and/or other local governing requirements that would reduce the impacts of ground shaking, liquefaction, landslides, and other seismic hazards to a less than significant level (Draft EIR page 6-17).

Regarding soil erosion and the loss of topsoil, the EIR describes that construction with ground surface disruption during excavation, grading, and trenching would create the potential for erosion to occur. However, a Storm Water Pollution Prevention Program (SWPPP) incorporating Best Management Practices (BMPs) for erosion control would be required to be prepared prior to the start of grading activities for each development in accordance with the Santa Ana Regional Water Quality Control Board (RWQCB) included in the EIR as DF HYDRO-1 that would reduce impacts to a less than significant level (Draft EIR page 6-18).

The EIR also describes that soil erosion during operation of the Specific Plan development projects would be minimized by site drainage design and maintenance practices, as required by the RWQCB as part of a project-specific Water Quality Management Plans (WQMPs) for development, included in the EIR as DF HYDRO-2. Also, the EIR describes that design procedures can be incorporated to reduce soil erosion, included as DF HYDRO-3. The EIR determined that compliance with existing regulations would reduce potential impacts to a less than significant level (Draft EIR page 6-18).

The EIR describes that based on the soil types within the Specific Plan area (sand and gravel to silty sand), have a very low expansion potential. Therefore, the EIR determined that implementation of the Specific Plan would result in less than significant impacts associated with expansive soils (Draft EIR page 6-20).

The EIR also describes that the Specific Plan area is capable of being served by existing and new wastewater infrastructure, and that no septic tanks or alternative wastewater disposal systems would be required, and no impacts related to septic tanks or alternative wastewater disposal systems would occur (Draft EIR page 6-21).

The EIR also determined that the sediments that underlie the Specific Plan area are not old enough to have potential for yielding paleontological resources. Therefore, the implementation of ground disturbing construction would have no impact to paleontological resources (Draft EIR page 4.D-17).

Impacts Related to the Proposed Project

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

Less than Significant New Impact. In 1972, the Alquist-Priolo Special Studies Zones Act was signed into law and renamed the Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) in 1994. The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy access the trace of an active fault. The A-P Act requires the State Geologist (Chief of the California Geology Survey) to delineate "Earthquake Fault Zones" along with faults that are "sufficiently active" and "well-defined." The boundary of an "Earthquake Fault Zone" is generally about 500 feet from major active faults and 200 to 300 feet from well-defined minor faults. The A-P Act dictates that cities and counties withhold development permits for sites within an Alquist-Priolo Earthquake Zone until geologic investigations demonstrate that the site zones are not threatened by surface displacements from future faulting.

Specific Plan Amendment

As described in the Final EIR, the Specific Plan area is within the Alquist-Priolo Earthquake Fault Zone for the San Jacinto fault. The potential impacts related to fault rupture that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same fault setback and building code regulations would be applicable. Additionally, the same design features that were included in the Final EIR (DF GEO-1 and DF GEO-2) would continue to be appliable to the amended Specific Plan. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts related to fault rupture from the amended Specific Plan to a less than significant level.

Proposed Industrial Development

Because the proposed industrial development site is located within a fault zone, the Alquist-Priolo Earthquake Fault Zoning Act requires a fault trenching investigation to determine the presence of on-site strands of any active or potentially active fault and to determine the need for a structural setback, which is also required by Final EIR Design Feature DF GEO-1. Thus, a Fault Study was prepared for the proposed industrial development site, which is included as Appendix C. The Fault Study describes that a segment of the San Jacinto fault is mapped 650± feet southwest of the proposed industrial development site and another segment of the San Jacinto fault is mapped 7500± feet northeast of the proposed industrial development site. The segment of the San Jacinto fault near the proposed industrial development site is identified as the San Bernardino segment, which is a right-lateral fault with an average slip rate is 5 millimeters per year.

As detailed in the Fault Study, approximately 18-20 feet of onsite sediments were trenched in two locations across the proposed industrial development site. The upper 10 to 12 feet generally consisted of unbroken sediments. The deeper alluvial soils were characteristic of channel deposits with interbedded sand and gravel layers that pinch out horizontally. The cobbles were generally rounded and sub-rounded and were generally concentrated in the lower section of each depositional channel. None of the deeper alluvial channel deposits were offset. The sediments exposed near the bottom of the trenches were determined to be deposited approximately 2,100 years ago and the recurrence interval for the San Bernardino segment of the San Jacinto fault is 107 years. Based on the recurrence interval with respect to the approximate date of the deeper exposed sediments, an offset in the deeper sediments would be evident if the fault transected the site. Therefore, the Fault Study determined that the San Bernardino segment of the San Jacinto fault does not transect the site. As a result, potential impacts related to fault rupture were determined to be less than significant and no new impact would result. This topic will not be analyzed in the Subsequent EIR.

ii. Strong seismic ground shaking?

Less than Significant New Impact.

Specific Plan Amendment
As described in the Final EIR, the Specific Plan area is subject to strong seismic shaking, but that the effects of seismic shaking on structures can be reduced through conformance with the structural and seismic requirements of future site-specific and design-specific geotechnical and geologic reports (included as DF GEO-1) and the California Building Code. The potential impacts related to seismic shaking that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same geotechnical and building code regulations would be applicable, and DF GEO-1 requires site specific geotechnical studies to identify appropriate structural engineering. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts related to seismic ground shaking from the amended Specific Plan to a less than significant level.

Proposed Industrial Development
The proposed industrial development site, like most of southern California, could be subject to seismically related strong ground shaking. Ground shaking is a major cause of structural damage from earthquakes. The amount of motion expected at a building site can vary from none to forceful depending upon the distance to the fault, the magnitude of the earthquake, and the local geology.

The closest fault is the San Jacinto fault that is mapped 650± feet southwest of the proposed industrial development site and another segment of the San Jacinto fault is mapped 7500± feet northeast of the proposed industrial development site. A major earthquake along this fault or another regional fault could cause substantial seismic ground shaking at the site. However, structures built in the City are required to be built in compliance with the CBC (California Code of Regulations, Title 24, Part 2) that provides provisions for earthquake safety based on factors including building occupancy type, the types of soils onsite, and the probable strength of ground motion. Compliance with the CBC would require the incorporation of: 1) seismic safety features to minimize the potential for significant effects as a result of earthquakes; 2) proper building footings and foundations; and 3) construction of the building structure so that it would withstand the effects of strong ground shaking. As required by Design Feature DF GEO-1 a site-specific geotechnical investigation has been completed with recommendations for construction to withstand seismic ground shaking.

The City's permitting process would ensure that all required CBC seismic safety measures are incorporated into the building. Compliance with the CBC as verified by the City's review process and included as a condition of approval, would reduce impacts related to strong seismic ground shaking to a less than significant level, which is consistent with the findings of the Final EIR. Thus, no new impact would result, and this topic will not be analyzed in the Subsequent EIR.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant New Impact. Soil liquefaction is a phenomenon in which saturated, cohesionless soils layers, located within approximately 50 feet of the ground surface, lose strength due to cyclic pore water pressure generation from seismic shaking or other large cyclic loading. During the loss of stress, the soil acquires "mobility" sufficient to permit both horizontal

and vertical movements. Soil properties and soil conditions such as type, age, texture, color, and consistency, along with historical depths to ground water are used to identify, characterize, and correlate liquefaction susceptible soils.

Soils that are most susceptible to liquefaction are clean, loose, saturated, and uniformly graded fine-grained sands that lie below the groundwater table within approximately 50 feet below ground surface. Lateral spreading is a form of seismic ground failure due to liquefaction in a subsurface layer.

Specific Plan Amendment

As described in the Final EIR, the Specific Plan area has a low potential for liquefaction that would be further reduced through conformance with design-specific geotechnical and geologic reports (included as DF GEO-1) and the California Building Code. The potential impacts related to seismic ground failure and liquefaction that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same geotechnical and building code regulations would be applicable. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts related to liquefaction from the amended Specific Plan to a less than significant level.

Proposed Industrial Development

The Geotechnical Feasibility Study (Appendix D) for the proposed industrial development did not identify ground water within the 50-foot-deep borings and describes that water level readings at the nearest groundwater well show a high groundwater of 418 feet below the ground surface. Thus, the high groundwater (within 50 feet of the ground surface) does not exist, and onsite liquefaction would not occur. In addition, the Geotechnical Feasibility Study describes that the site is not mapped as within a liquefaction zone and that based on subsurface conditions, liquefaction is not a design concern. Therefore, consistent with the findings of the Final EIR, impacts related to liquefaction would be less than significant and this topic will not be analyzed in the Subsequent EIR.

iv. Landslides?

No New Impact. Landslides and other slope failures are secondary seismic effects that are common during or soon after earthquakes. Areas that are most susceptible to earthquake induced landslides are steep slopes underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits.

Specific Plan Amendment

As described in the Final EIR, the Specific Plan area has various topographical features that includes slopes as steep as 1:1. Implementation of the proposed Specific Plan Amendment would have the same potential effects related to landslides that would be reduced to a less than significant level with compliance with the California Building Code and site-specific geologic reports (that are included as DF GEO-1). Thus, consistent with the findings of the Final EIR, implementation of existing regulations would reduce potential impacts related to landslides from the amended Specific Plan to a less than significant level.

Proposed Industrial Development

The Geotechnical Feasibility Study (Appendix D) for the proposed industrial development site describes that there are no hills or substantial changes to topography on the development site. The site topography ranges from approximately 1,267 feet mean sea level (msl) on the

southeast corner of the site to approximately 1,290 msl in the northwest corner of the site. The site generally slopes downward to the southeast at a gradient of 1½± percent. Due to the lack of substantial slopes on or adjacent to the proposed industrial development site, impacts related to landslides would not occur. This topic will not be analyzed in the Subsequent EIR.

b) Result in soil erosion or the loss of topsoil?

Less Than Significant New Impact.

Specific Plan Amendment

The potential impacts related to soil erosion and loss of topsoil that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same, the same areas of ground disturbance would occur, and the same regulations would require implementation of project specific SWPPPs and WQMPs that were included in the Final EIR as DF HYDRO-1 and DF HYDRO-2. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts to a less than significant level.

Proposed Industrial Development

Construction of the proposed industrial development has the potential to contribute to soil erosion and the loss of topsoil. Grading and excavation activities that would be required that would expose and loosen topsoil, which could be eroded by wind or water. However, the Final EIR DF HYDRO-1 implements the requirements of the NDPES Storm Water Permit that all projects in the City are required to conform to. To reduce the potential for soil erosion and the loss of topsoil, a Stormwater Pollution Prevention Plan (SWPPP) is required by the Regional Water Quality Control Board (RWQCB) regulations to be developed by a QSD (Qualified SWPPP Developer). The SWPPP is required to address site-specific conditions related to specific grading and construction activities. The SWPPP is required to identify potential sources of erosion and sedimentation loss of topsoil during construction, identify erosion control BMPs to reduce or eliminate the erosion and loss of topsoil, such as use of silt fencing, fiber rolls, or gravel bags, stabilized construction entrance/exit, hydroseeding. With implementation of the SWPPP included as DF HYDRO-1, construction impacts related to erosion and loss of topsoil would be less than significant, which is consistent with the findings of the Final EIR.

In addition, the proposed industrial development includes installation of landscaping, such that during operation of the proposed industrial development large areas of loose topsoil that could erode would not exist. As described in Section 10, *Hydrology and Water Quality*, the onsite drainage features that would be installed by the proposed industrial development have been designed to slow, filter, and infiltrate stormwater, which would also reduce the potential for stormwater to erode topsoil during operations. Furthermore, implementation of the proposed industrial development requires City approval of a site- specific Water Quality Management Plan (WQMP), included as DF HYDRO-2, which would ensure that appropriate operational BMPs would be implemented to minimize or eliminate the potential for soil erosion or loss of topsoil to occur. As a result, potential impacts related to substantial soil erosion or loss of topsoil would be less than significant, which is consistent with the findings of the Final EIR. Thus, no new or increased impacts would result from the proposed Project, and this topic will not be further evaluated in the Subsequent EIR.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than Significant New Impact.

Specific Plan Amendment
As described previously, the Specific Plan area has a low potential for landslides and liquefaction; thus, the related lateral spreading and collapse potential would also be low. In addition, seismic and soil stability effects would be reduced through conformance with design-specific geotechnical and geologic reports (included as DF GEO-1) and the California Building Code. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts related to landslide, collapse, liquefaction, subsidence, and lateral spreading from the amended Specific Plan to a less than significant level.

Proposed Industrial Development
As described previously the proposed industrial development site does not contain or is adjacent to large slopes, and impacts related to landslides would not occur. Also, the Geotechnical Feasibility Study (Appendix D) describes that the site does not have potential for liquefaction. Thus, the related impacts of lateral spreading and subsidence would also not occur. In addition, the Geotechnical Feasibility Study provides CBC design criteria to limit the potential for soils movement or collapse. Therefore, consistent with the findings of the Final EIR, impacts would be less than significant and this topic will not be analyzed in the Subsequent EIR.

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
Expansive soils contain certain types of clay minerals that shrink or swell as the moisture content changes; the shrinking or swelling can shift, crack, or break structures built on such soils. Arid or semiarid areas with seasonal changes of soil moisture experience, such as southern California, have a higher potential of expansive soils than areas with higher rainfall and more constant soil moisture.

The Final EIR described that the soils within the Specific Plan area (sand and gravel to silty sand), have a very low expansion potential. In addition, the Geotechnical Feasibility Study (Appendix D) preformed expansion testing on the soils within the proposed industrial development site, which determined that soils have a 0 expansion index and are not expansive. Therefore, no impacts related to expansive soils would occur, and this topic will not be further be analyzed in the Subsequent EIR.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The development within the Specific Plan area would not use septic tanks or alternative methods for disposal of wastewater into subsurface soils. Furthermore, the proposed industrial development would connect to existing public wastewater infrastructure that is adjacent to the site within Pepper Avenue. Therefore, the proposed Project would not result in any impacts related to septic tanks or alternative wastewater disposal methods and this topic will not be analyzed in the Subsequent EIR.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
As determined by the Final EIR, the sediments that underlie the Specific Plan area are not old enough to have potential for yielding paleontological resources. Therefore, the implementation of ground disturbing construction would have no impact to paleontological resources. This topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF GEO-1: Geotechnical Investigation – Prior to the approval of a precise grading permit for any building within the Project Site, a subsequent site- and design-specific geotechnical and geologic report prepared by a licensed geologist shall be submitted to the City Engineer for review and approval. The report shall document the feasibility of each proposed use and the appropriate geotechnical, geologic, and seismic conditions associated with that use. The geologic investigation shall demonstrate that buildings for human occupancy will not be constructed across active faults and must be setback in accordance with Alquist-Priolo Earthquake Fault Zoning Act requirements. For residential uses, setback distances may vary, but a minimum 50-foot setback is required.

To demonstrate compliance with the Alquist-Priolo Earthquake Fault Zoning Act requirements, the analysis shall include the results of a subsurface investigation, including on-site trenching activities as necessary, to delineate the precise location(s) of any fault traces that could impact buildings on the future development. Unless otherwise modified, any conditions, recommendations, or construction measures contained therein, including the imposition of specified setback requirements for proposed development activities within Alquist-Priolo Earthquake Fault Zones, shall become conditions of approval for the requested use. The report shall comply with all applicable State and local code requirements, including the current building code in effect at the time of precise grading permit issuance.

Proposed Industrial Development Project Applicability: Design Feature DF GEO-1 is applicable to the proposed industrial development site, has been completed, is included as Appendix D.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature GEO-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF GEO-2: Geotechnical Disclosures – Pursuant to the requirements of the Natural Hazards Disclosure Act, under Sec. 1103 of the California Civil Code, real estate sellers and brokers shall disclose to future buyers that if the Project lies within one or more state or locally mapped hazard areas, including an earthquake fault zone. This hazard shall also be disclosed on a statutory form called the Natural Hazard Disclosure Statement (NHDS) to all prospective buyers within the Project Site.

Proposed Industrial Development Project Applicability: Design Feature DF GEO-2 is applicable to the proposed industrial development and would be implemented as part of real estate disclosures.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature GEO-2 is applicable to future developments within PA 1 and PA 10.

Design Features DF HYDRO-1 and DF HYDRO-2. As listed in Section 10, *Hydrology and Water Quality*.

Proposed Industrial Development Project Applicability: Design Features DF HYDRO-1 and DF HYDRO-2 are applicable to the proposed industrial development and would be implemented as part of Project permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Features DF HYDRO-1 and DF HYDRO-2 are applicable to future developments within PA 1 and PA 10.

Conclusion for Geology and Soils

No new impacts nor substantially more severe geology and soils related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to geology and soils from implementation of the proposed Project would be less than significant with implementation of design features that were identified in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate biological resources in the Subsequent EIR. Thus, geology and soils will not be analyzed in the Subsequent EIR. However, Final EIR Design Features DF GEO-1, DF GEO-2, DF HYDRO-1, and DF HYDRO-2 will be included in the Subsequent EIR MMRP to ensure implementation.

	Potentially Significant New Impact	Less Than Significant New Impact with Mitigation Incorporated	Less Than Significant New Impact	No Impact/ No New Impact
8. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Summary of Impacts Identified in the Final EIR

The EIR determined that construction and operation of the Specific Plan would generate GHG emissions due to construction and operational activities; however, the net increase in annual GHG emissions, directly and indirectly, would be consistent with the City of Rialto GHG reduction measures and San Bernardino County Reduction Plan. Therefore, The EIR determined that GHG emissions and associated impacts would be less than significant (Draft EIR page 4.E-16).

The EIR also describes that the Specific Plan is consistent with the AB 32 goals and CARB guidelines for assessing GHG emissions. Further, the Specific Plan includes land use characteristics and design strategies that would be consistent with state, regional, and local regulations for reducing GHG emissions. Therefore, the EIR determined that impacts regarding greenhouse gas reduction plans would be less than significant (Draft EIR page 4.E-20).

Impacts Related to the Proposed Project

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan currently designates PA 1, PA 2, and PA 3 as Community Commercial with a maximum development potential for 476,650 SF of business park and retail uses. The proposed Specific Plan Amendment would change the designation of PA 2, PA 3, and the new PA 10 to Light Industrial and allow a maximum development of 735,185 SF. The remaining approximately 2.86-acre portion of PA 1 would remain Community Commercial to allow for up to 13,000 SF of commercial development. This change and/or the proposed approximately 485,000 square foot industrial development may result in an increased volume of GHG emissions that could exceed thresholds and result in new impacts that were not identified in the Final EIR. Therefore, a GHG emissions analysis will be prepared to model the emissions generated by the proposed Project to determine if GHG impacts would occur. This impact will be analyzed in the Subsequent EIR, and mitigation measures will be identified if necessary.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Potentially Significant Impact.

Specific Plan Amendment and Proposed Industrial Development
The State of California, through its Governors and Legislature, has established a comprehensive framework for the substantial reduction of GHG emissions over the next 40-plus years. This will occur primarily through the implementation of Assembly Bill (AB) 32 (2006), Senate Bill (SB) 375 (2008), Executive Order S-3-05 (2005), Executive Order B-30-15 (2015), and SB 32 (2016), which address GHG emissions on a statewide, cumulative basis.

As described previously, it is possible that the proposed Project would result in an increase in GHG emissions. Therefore, the Subsequent EIR will further evaluate the level of GHG emissions produced by the proposed Project and evaluate its consistency with the applicable plans and policies. Mitigation measures will be identified if necessary.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Greenhouse Gas Emissions

As detailed previously, it is possible that new or substantially more GHG related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential GHG impacts in the Subsequent EIR. Thus, GHG will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that hazardous materials used for construction and operation of the Specific Plan would be used in concentrations that would not pose significant threats during the transport, use and storage of such materials. Also, hazardous materials would be contained, stored, and used in accordance with manufacturers' instructions and handled in compliance with applicable standards and regulations, including California Occupational Safety and Health Administration requirements, and Title 8 and 22 of the Code of California Regulations. Accordingly, risks associated with hazards to the public or environment posed by the transport, use, disposal, or accident conditions related to hazardous materials were determined to be less than significant (Draft EIR page 6-21).

The EIR determined that the Specific Plan area is not on any hazardous materials lists or databases and that no off-site facilities appear to present an environmental concern for the Specific Plan. Therefore, the EIR determined that impacts related to a hazardous materials site would be less than significant (Draft EIR page 6-23).

The EIR also determined that the Specific Plan area is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport, Rialto Municipal Airport, was closed in 2014, is located approximately 2.25 miles to the west. Therefore, the EIR determined that no impacts related to airport hazards would occur (Draft EIR page 6-23).

Regarding emergency access, the EIR describes that the Specific Plan area is located in an area where adequate circulation and access is provided to facilitate emergency response. Future driveway and building configurations would comply with applicable fire access and code requirements for emergency evacuation that would be verified as part of the City permitting process, and therefore, impacts were determined to be less than significant (Draft EIR page 6-23).

Appendix A of the Final EIR, contains the Initial Study for the Pepper Avenue Specific Plan, which describes (Page B-20) that the Specific Plan area is not located in an area that has a significant amount of vegetation and is characterized by low sloping, gradual topography. The Initial Study states that according to Exhibit 4.7-2, *Wildfire Hazards Map*, in the 2010 General Plan Draft EIR, the site and immediate surrounding areas are not located within an area subject to wildfire hazards. Furthermore, future development on site would be subject to all applicable standards and regulations related to fire protection and prevention, and it was determined that impacts related to wildland fire hazards would be less than significant.

Impacts Related to the Proposed Project

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

A hazardous material is defined as any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material that regulatory agencies believe would be injurious to the health and safety of persons or harmful to the environment if released into the home, workplace, or environment. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment.

Construction

The construction activities that would occur by the proposed change in the Specific Plan allowable land uses and by the proposed industrial development would involve transport, use, and disposal of hazardous materials such as paints, solvents, oils, grease, and caulking. In addition, hazardous materials would be needed for fueling and servicing construction equipment on the site. These types of materials are not acutely hazardous, and all storage, handling, use, and disposal of these materials are regulated by county, state, and federal regulations, which construction activities are required to strictly adhere to. As a result, the routine transport, use or disposal of hazardous materials during construction activities for the proposed Project would be less than significant, which

is consistent with the findings of the Final EIR. Therefore, this topic will not be further evaluated in the Subsequent EIR.

Operation

The proposed change in Specific Plan allowable land uses and the proposed industrial development would include operation of light industrial uses, which was not previously allowed by the Specific Plan. Light industrial uses generally use and store limited hazardous materials, such as: cleaning agents, paints, pesticides, batteries, and aerosol cans. Normal routine use of these products would not result in a significant hazard to residents or workers in the vicinity of the Specific Plan area and industrial development site.

Also, should any future business that occupies the proposed industrial building or other buildings within the Specific Plan area handle acutely hazardous materials (as defined in Section 25500 of California Health and Safety Code, Division 20, Chapter 6.95) the business would require a hazardous materials permit from the Fire Department, as part of City operational permitting procedures. Such businesses are also required to comply with California's Hazardous Materials Release Response Plans and Inventory Law, which requires immediate reporting to the Fire Department regarding any release or threatened release of a hazardous material, regardless of the amount handled by the business. In addition, any business handling at any one time, greater than 500 pounds of solid, 55 gallons of liquid, or 200 cubic feet of gaseous hazardous material, is required, under Assembly Bill 2185 (AB 2185), to file a Hazardous Materials Business Emergency Plan. A Hazardous Materials Business Emergency Plan is a written set of procedures and information created to help minimize the effects and extent of a release or threatened release of a hazardous material. The intent of the Hazardous Materials Business Emergency Plan is to satisfy federal and state right-to-know laws and to provide detailed information for use by emergency responders.

Therefore, if future businesses that use or store hazardous materials occupy a building within the Specific Plan area, the business owners and operators would be required to comply with all applicable federal, state, and local regulations, as verified by City operational permitting. Therefore, operational impacts associated with the disposal of hazardous materials and/or the potential release of hazardous materials would be less than significant, which is consistent with the findings of the Final EIR, and this topic will not be analyzed further in the Subsequent EIR.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

Construction

As described previously, construction of the proposed industrial development and allowable uses under the proposed Specific Plan Amendment would involve the limited use and disposal of hazardous materials. Equipment that would be used in construction has the potential to release gas, oils, greases, solvents; and spills of paint and other finishing substances. However, the amount of hazardous materials onsite would be limited, and construction activities would be required to adhere to all applicable regulations regarding hazardous materials storage and handling, as well as to implement construction BMPs (through implementation of a required SWPPP implemented by City permitting) to prevent a hazardous materials release and to promptly contain and clean up any spills, which would minimize the potential for harmful exposures. With compliance to existing laws

and regulations, which is mandated by the City through construction permitting, the potential construction-related impacts would be less than significant, which is consistent with the findings of the Final EIR. Therefore, this topic will not be further evaluated in the Subsequent EIR.

Operation
As described previously, operation of the allowable uses proposed by the Specific Plan Amendment and the proposed industrial development includes use of limited hazardous materials, such as: cleaning agents, paints, pesticides, batteries, and aerosol cans. These types of hazardous materials are not acutely hazardous and regulated by existing laws that have been implemented to reduce risks related to the use of these substances. Similarly, should any future business that occupies a building within the Specific Plan area handle acutely hazardous materials, it would be required to file a Hazardous Materials Business Plan to ensure proper use, storage, and disposal of hazardous substances. As a result, operation of the proposed Specific Plan Amendment and proposed industrial development would not create a reasonably foreseeable upset and accident condition involving the release of hazardous materials into the environment, and impacts would be less than significant, which is consistent with the findings of the Final EIR. This topic will not be analyzed further in the Subsequent EIR.

c) Emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
Allowable uses proposed by the Specific Plan Amendment and the proposed industrial development would not produce hazardous emissions or handle acutely hazardous materials, substances, or wastes. The nearest school to the Specific Plan area is Frisbie Middle School, located at 1442 N. Eucalyptus Avenue (approximately 0.7 mi southwest of the proposed industrial development site. As noted in Response 9(a), the allowable uses by the Specific Plan Amendment and proposed industrial development are not anticipated to release hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes in significant quantities. Construction activities associated with the Specific Plan Amendment buildout and proposed industrial development site would use a limited amount of hazardous and flammable substances/oils during heavy equipment operation for site excavation, grading, and construction. The amount of hazardous chemicals present during construction is limited and would be contained in compliance with existing government regulations. Therefore, impacts related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or wastes within 0.25 mi of an existing or proposed school would be less than significant, which is consistent with the findings of the Final EIR. This topic will not be analyzed further in the Subsequent EIR.

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
According to the California Department of Toxic Substances Control (DTSC) EnviroStor database and the Phase I Environmental Site Assessment that was prepared for the proposed industrial development site, the area is not located on a federal Superfund site, State response site, voluntary

cleanup site, school cleanup site, corrective action site, or tiered permit site. Therefore, the proposed Project would not be located on a hazardous materials site pursuant to Government Code Section 65965.5. Thus, impacts related to being located on a known hazardous materials site pursuant to Government Code Section 65965.5 will not be analyzed in the Subsequent EIR.

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area is not within an airport land use plan and is located over 6 miles to the northwest of the closest operating public airport or public use airport (San Bernardino International Airport). Additionally, the proposed industrial development would be a maximum of 46-feet high and would not be of a sufficient height to require modifications to the existing air traffic patterns at the airport and, therefore, would not affect aviation traffic levels or otherwise result in substantial aviation-related safety risks. Hence, the proposed Project would not result in impacts to an airport land use plan, or where such a plan has not been adopted, and would not result in a safety hazard or excessive noise for people residing or working in the Specific Plan area or proposed industrial development site. This topic will not be further analyzed in the Subsequent EIR.

f) Impair implementation of an adopted emergency response plan or emergency evacuation plan?

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The proposed Specific Plan Amendment and proposed industrial development would not physically interfere with an adopted emergency response plan or emergency evacuation plan. Direct access to the proposed industrial development site would be provided by two driveway locations along Pepper Avenue, which is directly adjacent to the site. Construction activities would occur within the proposed industrial development site and would not restrict access of emergency vehicles to the site or adjacent areas. In addition, travel along Pepper Avenue would remain open and would not interfere with emergency access in the site vicinity. The proposed industrial development and all other Specific Plan development projects are required to design and construct internal access, and size and location of fire suppression facilities (e.g., hydrants and sprinklers) to conform to Rialto Fire Department standards. The Rialto Fire Department would review the development plans prior to approval to ensure adequate emergency access pursuant to the requirements in Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9). As such, the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant, which is consistent with the findings of the Final EIR. This topic will not be analyzed further in the Subsequent EIR.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area does not contain and is not adjacent to any wildland areas. According to the CalFire Fire Hazard Severity Zone map, the Specific Plan area is not within an area identified as a Fire Hazard Area. As a result, the proposed Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Therefore, this topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF HAZ-1: Soil Investigation – Soil samples shall be collected for new development within the Project Site prior to issuance of grading permits and analyzed for the presence of organochlorine pesticides and Title 22 Metals. Sampling and analysis shall be conducted in accordance with appropriate California guidelines (e.g., Department of Toxic Substances Control, 2008, Interim Guidance for Sampling Agricultural Properties). Soils with elevated organochlorine pesticides or metals compared with these guidelines shall be removed and disposed offsite in accordance applicable federal, state, and local regulations.

Proposed Industrial Development Project Applicability: Design Feature DF HAZ-1 is not applicable to the proposed industrial development site as determined by the Phase I Environmental Site Assessment (Appendix B). Previous agricultural uses were cleared from the site by the mid-1980 and the site has remained vacant since. The Phase I Environmental Site Assessment determined that potential trace levels of pesticides on the site is considered a de minimis condition and collection and analysis of soil samples for pesticides is unwarranted (page 9).

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature HAZ-1 is applicable to future developments within PA 1 and PA 10, unless a Phase I Environmental Site Assessment determines it is not applicable.

Conclusion for Hazards and Hazardous Materials

No new impacts nor substantially more severe hazards and hazardous materials related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to hazards and hazardous materials from implementation of the proposed Project would be less than significant with compliance with existing regulations related to hazardous materials. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate hazards and hazardous materials in the Subsequent EIR. Thus, hazards and hazardous materials will not be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that development (disturbing 1 or more acre) is required to prepare a SWPPP (see DF HYDRO-1), that would reduce construction related water quality impacts to a less than significant level. The EIR also describes that future development would require implementation of a WQMP that meets applicable RWQCB requirements (see DF HYDRO-2) and would reduce impacts

to a less than significant level (Draft EIR page 6-23).

The EIR also describes that impacts to groundwater supplies would be less than significant, and that development projects would incorporate site-specific LID BMPs (DF HYDRO-2). As such, construction and operation of the Project would not substantially deplete groundwater supplies or result in a substantial net deficit in the aquifer volume or lowering of the local groundwater table (Draft EIR page 6-24).

The EIR also determined that the Specific Plan area is not subject to tsunami hazards given the distance from the Pacific Ocean and elevation of the site relative to sea level. No open reservoirs or other large water bodies are located within or upstream of the Specific Plan area. Therefore, the site is not subject to flooding hazards associated with seiches or tsunamis. The EIR further determined that the potential for mudflows to affect the proposed uses would be negligible given the distance of the nearest mountains, and the gently sloping topography of the Specific Plan area is not conducive to sustaining mudflows (Draft EIR page 6-25).

Impacts Related to the Proposed Project

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Specific Plan area is under the jurisdiction of the Santa Ana Regional Water Quality Control Board (RWQCB), which sets water quality standards for all ground and surface waters within its region. Water quality standards are defined under the Clean Water Act (CWA) to include both the beneficial uses of specific water bodies and the levels of water quality that must be met and maintained to protect those uses (water quality objectives). Water quality standards for all ground and surface waters overseen by the Santa Ana RWQCB are documented in its Basin Plan, and the regulatory program of the Santa Ana RWQCB is designed to minimize and control discharges to surface and groundwater, largely through permitting, such that water quality standards are effectively attained.

Construction
Construction of the proposed industrial development and the other development projects under the proposed Specific Plan Amendment would be required through City permitting to implement of a grading and erosion control plan that is required by the Construction Activities General Permit (State Water Resources Board Order No. 2012-0006-DWQ, NPDES No. CAS000002), which requires preparation of a SWPPP by a Qualified SWPPP Developer, included as Design Feature DF HYDRO-1. The SWPPP is required for plan check and approval by the City's Building and Safety Division, prior to provision of permits for the construction, and would include construction BMPs such as:

- Silt fencing, fiber rolls, or gravel bags
- Street sweeping and vacuuming
- Storm drain inlet protection
- Stabilized construction entrance/exit
- Vehicle and equipment maintenance, cleaning, and fueling
- Hydroseeding
- Material delivery and storage

- Stockpile management
- Spill prevention and control
- Solid waste management
- Concrete waste management

Adherence to the existing requirements and implementation of the appropriate BMPs per the permitting process would ensure that activities associated with construction would not violate any water quality standards. The proposed industrial development and the other Specific Plan projects would be required to have an approved grading and erosion control plan and approval of a SWPPP, which would include construction BMPs to minimize the potential for construction related sources of pollution, which would be implemented during construction to protect water quality. As a result, impacts related to the degradation of water quality during construction activities would be less than significant, which is consistent with the findings of the Final EIR. This topic will not be further evaluated in the Subsequent EIR.

Operation
The proposed industrial development and other uses allowed by the proposed Specific Plan Amendment would operate industrial and warehouse type facilities, which would introduce the potential for pollutants such as, chemicals from cleaners, pesticides and sediment from landscaping, trash and debris, and oil and grease from vehicles. These pollutants could potentially discharge into surface waters and result in degradation of water quality. However, in accordance with State Water Resources Board Order No. 2012-0006-DWQ, NPDES No. CAS000002 each development would be required to incorporate a WQMP with post-construction (or permanent) Low Impact Development (LID) site design, source control, and treatment control BMPs. The LID site design would minimize impervious surfaces and provide infiltration of runoff into landscaped areas.

The source control BMPs would minimize the introduction of pollutants that may result in water quality impacts; and treatment control BMPs that would treat stormwater runoff. The proposed industrial development would install an onsite detention basin to treat stormwater, which would remove coarse sediment, trash, and pollutants (i.e., sediments, nutrients, heavy metals, oxygen demanding substances, oil and grease, bacteria, and pesticides). The additional types of BMPs that would be implemented as part of the proposed industrial development are listed in Table HWQ-1; and similar BMPs would be required to be included in other developments pursuant to the amended Specific Plan.

Table HWQ-1: Types of BMPs Incorporated into the Project Design

Type of BMP	Description of BMPs
LID Site Design	Optimize the site layout: The site has been designed so that runoff from impervious surfaces would flow over pervious surfaces or to the detention basin. Runoff would be directed to the onsite detention basin that would slow and retain runoff.
	Use pervious surfaces: Landscaping and an onsite detention basin is incorporated into the Project design to increase the amount of pervious area and onsite retention of stormflows.
Source Control	Storm Drain Stenciling: All inlets/catch basins would be stenciled with the words "Only Rain Down the Storm Drain," or equivalent message.

Type of BMP	Description of BMPs
	Need for future indoor & structural pest control: The building would be designed to avoid openings that would encourage entry of pests.
	Landscape/outdoor pesticide use: Final landscape plans would accomplish all of the following: • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. • Consider using pest-resistant plants, especially adjacent to hardscape. • To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions
	Roofing, gutters and trim: The architectural design would avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.
	Sidewalks and parking lots: Sidewalks and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing would be collected to prevent entry into the storm drain system. Wash water containing any cleaning agent or degreaser would be collected and discharged to the sanitary sewer and not discharged to a storm drain.
Treatment Control	Biofiltration Systems: The detention basin proposed for the Project would detain runoff, filter it prior to discharge.

With implementation of the operational source and treatment control BMPs that is outlined in the preliminary WQMP (Appendix F) that would be reviewed and approved by the City during the project permitting and approval process, potential pollutants would be reduced to the maximum extent feasible, and implementation of the proposed industrial development and Specific Plan Amendment would not substantially degrade water quality. Therefore, impacts would be less than significant, which is consistent with the findings of the Final EIR, and this topic will not be further evaluated in the Subsequent EIR.

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

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area, including the industrial development site, is largely undeveloped, vacant, and pervious. Thus, stormwater currently infiltrates into the soils. Consistent with the findings of the Final EIR, both the development projects under the proposed Specific Plan Amendment and the proposed industrial development would result in areas of impervious surfaces. However, consistent with the Final EIR and pursuant to Design Feature DF HYDRO-2, WQMPs are required to be completed for each development that are required to demonstrate that runoff would be infiltrated to retain the runoff from the 85th percentile, 24-hour rain event. Thus, a majority of stormwater would continue to infiltrate into site soils, such that the potential for groundwater recharge onsite would not be substantially affected.

In addition, groundwater within the Specific Plan area is adjudicated, which manages groundwater pumping such that substantial depletion of groundwater supplies would not occur. The 2020 Upper Santa Ana River Watershed Integrated Regional Urban Water Management Plan that includes the West Valley Water District (WVWD) that supplies water to the Specific Plan area describes that WVWD draws the majority of its water supply from its wells that extract groundwater from five regional groundwater basins: Bunker Hill and Lytle Creek (which are both part of the San Bernardino Basin or SBB), Rialto-Colton, Riverside North, and Chino Basins. All five basins have been adjudicated and are managed for long term sustainability. Groundwater extractions and conditions are monitored and tracked annually by the Western-San Bernardino Watermaster and the Basin Technical Advisory Committee. The proposed Specific Plan Amendment and proposed industrial development would not conflict with the groundwater basing adjudications. Thus, impacts related to the groundwater recharge would be less than significant, which is consistent with the Final EIR, and this topic will not be further evaluated in the Subsequent EIR.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

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

Less Than Significant New Impact.

Specific Plan Amendment

The potential impacts related to soil erosion and siltation that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same, the same areas of ground disturbance would occur, and the same regulations would require implementation of project specific SWPPPs and WQMPs that were included in the Final EIR as DF HYDRO-1 and DF HYDRO-2. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts to a less than significant level, which is consistent with the findings of the Final EIR.

Proposed Industrial Development

Construction of the proposed industrial development has the potential to contribute to soil erosion and siltation. Grading and excavation activities that would be required that would expose and loosen topsoil, which could be eroded by wind or water. However, the Final EIR DF HYDRO-1 implements the requirements of the NDPES Storm Water Permit that all projects in the City are required to conform to. To reduce the potential for soil erosion and the loss of topsoil, a SWPPP is required by the RWQCB regulations to be developed by a QSD (Qualified SWPPP Developer). The SWPPP is required to address site-specific conditions related to specific grading and construction activities. The SWPPP is required to identify potential sources of erosion and siltation during construction, identify erosion control BMPs to reduce or eliminate the erosion and siltation, such as use of silt fencing, fiber rolls, or gravel bags, stabilized construction entrance/exit, hydroseeding. With implementation of the SWPPP included as DF HYDRO-1, construction impacts related to erosion and siltation would be less than significant, which is consistent with the findings of the Final EIR.

In addition, the proposed industrial development includes installation of landscaping, such that during operation of the proposed industrial development large areas of loose

topsoil that could erode would not exist. The onsite drainage features that would be installed by the proposed industrial development have been designed to slow, filter, and infiltrate stormwater, which would also reduce the potential for stormwater to erode soil during operations. Furthermore, implementation of the proposed industrial development requires City approval of a site- specific Water Quality Management Plan (WQMP), included as DF HYDRO-2, which would ensure that appropriate operational BMPs would be implemented to minimize or eliminate the potential for soil erosion and sedimentation to occur. As a result, potential impacts related to substantial soil erosion or sedimentation would be less than significant, which is consistent with the findings of the Final EIR. Thus, no new or increased impacts would result from the proposed Project, and this topic will not be further evaluated in the Subsequent EIR.

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

Less Than Significant New Impact.

Specific Plan Amendment

The potential impacts related to surface runoff and drainage that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be generally the same and the same regulations would require implementation of project specific WQMPs that are included in the Final EIR as DF HYDRO-2, that requires the 85th percentile of stormwater runoff to be infiltrated on site. Therefore, the proposed Specific Plan Amendment would not substantially increase surface water runoff in a manner that would result in flooding. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts to a less than significant level, which is consistent with the findings of the Final EIR.

Proposed Industrial Development

As detailed previously, runoff generated by the proposed industrial development would be conveyed to a detention basin that would be installed on site to filter and infiltrate into site soils. In addition, the proposed industrial development includes installation of landscaping that provide for infiltration of stormwater runoff. As described previously, the onsite drainage features that would be installed by the proposed industrial development have been designed to slow, filter, and infiltrate stormwater, such that a substantial increase in stormwater runoff would not occur. Furthermore, implementation of the proposed industrial development requires City approval of a site- specific Water Quality Management Plan (WQMP), included as DF HYDRO-2, which would manage stormwater runoff. As a result, potential impacts related an increase in stormwater runoff that could result in flooding would be less than significant, which is consistent with the findings of the Final EIR. Thus, no new or increased impacts would result from the proposed Project, and this topic will not be further evaluated in the Subsequent EIR.

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

Less Than Significant New Impact.

Specific Plan Amendment
As described in the previous response, the potential impacts related to surface runoff and drainage that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be generally the same and the same regulations would require implementation of project specific WQMPs that are included in the Final EIR as DF HYDRO-2, that requires the 85th percentile of stormwater runoff to be infiltrated on site. Therefore, the proposed Specific Plan Amendment would not substantially increase surface water runoff in a manner that would exceed the capacity of drainage systems or result in polluted runoff. Thus, consistent with the findings of the Final EIR implementation of existing regulations would reduce potential impacts to a less than significant level, which is consistent with the findings of the Final EIR.

Proposed Industrial Development
As detailed previously, runoff generated by the proposed industrial development would be conveyed to a detention basin that would be installed on site to filter and infiltrate into site soils. In addition, the proposed industrial development includes installation of landscaping that provide for infiltration of stormwater runoff. As described previously, the onsite drainage features that would be installed by the proposed industrial development have been designed to meet the 85th percentile storm water capture requirements that would be verified in project specific WQMPs, included as DF HYDRO-2. As a result, potential impacts related an increase in stormwater runoff that could exceed the capacity of drainage systems or result in polluted runoff would be less than significant, which is consistent with the findings of the Final EIR. Thus, no new or increased impacts would result from the proposed Project, and this topic will not be further evaluated in the Subsequent EIR.

iv. impede or redirect flood flows?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
According to the Flood Insurance Rate Map (FIRM), published by the Federal Emergency Management Agency (FEMA) (06071C7940J), the Specific Plan area is located in Zone X, which is an area located outside of the 100-year and 500-year flood plains. Therefore, the proposed Project would not impede or redirect flood flows and impacts will not be analyzed further in the Subsequent EIR.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
As discussed in Response 10(c)(iv), the Specific Plan area is not within a flood hazard area. As such, the Project is not at risk of inundation during a storm event. Therefore, the proposed Project would not risk release of pollutants within a flood hazard area. No new impacts would occur.

Tsunamis are generated ocean wave trains generally caused by tectonic displacement of the sea floor associated with shallow earthquakes, sea floor landslides, rock falls, and exploding volcanic

islands. The Specific Plan area is over 45 miles from the nearest ocean shoreline. Based on the inland location of the site, the Specific Plan area is not at risk of inundation from tsunami. Therefore, consistent with the findings of the Final EIR, the proposed Project would not risk release of pollutants from inundation from a tsunami.

Seiching is a phenomenon that occurs when seismic ground shaking induces standing waves (seiches) inside water retention facilities (e.g., reservoirs and lakes). Such waves can cause retention structures to fail and flood downstream properties. The Specific Plan area is not located adjacent to any water retention facilities. For this reason, the Specific Plan area is not at risk of inundation from seiche waves. Therefore, the proposed Project would not risk release of pollutants from inundation from seiche and impacts. No new impacts would occur and this topic will not be analyzed further in the Subsequent EIR.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
As described previously, development projects are required to have an approved SWPPP, which would include construction BMPs to minimize the potential for construction related sources of pollution, included as DF HYDRO-1. Also, WQMPs with source control BMPs are required to minimize the introduction of pollutants and treatment control BMPs are included to treat runoff. With implementation of the WQMPs that are (included as DF HYDRO-2) required by the City during the project permitting and approval process, potential pollutants would be reduced to the maximum extent feasible, and implementation of the proposed Project would not obstruct implementation of a water quality control plan.

Also as described previously, the Specific Plan area receives water from groundwater basins that are adjudicated. Thus, the allowable withdrawal of water from the basin by water purveyors is limited. Additionally, the proposed Specific Plan Amendment and proposed industrial development would not pump water and water supplies would be provided by WVWD. Thus, the proposed Project would not conflict with or obstruct a groundwater management plan. No new impacts would occur, and this topic will not be further evaluated in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF HYDRO-1: SWPPP - A Storm Water Pollution Prevention Plan (SWPPP) shall be developed by the applicant of each future development proposed within the Specific Plan that disturbs 1 or more acre. The SWPPP shall comply current Construction General Permit (CGP) and associated local National Pollutant Discharge Elimination System (NPDES) regulations at the time of development to ensure that the potential for soil erosion and short-term water quality impacts is minimized on a project-by-project basis.

Proposed Industrial Development Project Applicability: Design Feature DF HYDRO-1 is applicable to the proposed industrial development and would be implemented as part of construction related City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF HYDRO-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF HYDRO-2: WQMP - A Water Quality Management Plan (WQMP) shall be developed by the applicant of each future development proposed within the Specific Plan. The WQMP shall comply with all applicable provisions of the San Bernardino County Technical Guidance Document for Water Quality Management Plan (TGD-WQMP), WQMP Template (Template), and Transportation Project BMP Guidance, as required under Section XI.D.2 of Order No. R8-2010-0036. The WQMP shall include, but not be limited to, the following:

- Incorporation of site design/Low Impact Development (LID) strategies and source control measures in a systematic manner that maximize the use of LID features to provide treatment of stormwater and reduce runoff. For those areas of the Project Site where LID features are not feasible or do not meet the feasibility criteria, treatment control Best Management Practices (BMPs) with biotreatment enhancement design features shall be utilized to provide treatment. LID features shall be sized to infiltrate the required design capture volume (DCV) to reduce impacts of pollutants and runoff volumes to downstream receiving waters.
- Assuming complete build-out of the project, the entire Project Site shall require approximately 5.4 acre-feet of runoff to be infiltrated to retain the runoff from the 85th percentile, 24-hour rain event. Individual developments shall be responsible for their proportionate share. Infiltration BMPs would be sized in accordance with Form 4.3-3 of the TGD for WQMPs.
- Should infiltration prove infeasible based on future geotechnical studies associated with the site-specific plans, harvest and reuse BMPs shall be evaluated as part of the future site-specific plans and WQMPs.

Proposed Industrial Development Project Applicability: Design Feature DF HYDRO-2 is applicable to the proposed industrial development and would be implemented as part of Project permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF HYDRO-2 is applicable to future developments within PA 1 and PA 10.

Design Feature DF HYDRO-3: Storm Drain Infrastructure - Should the "West and East Systems Drainage Scenario," as depicted in Section IX, Hydrology and Water Quality, in Attachment B of the Initial Study be implemented by the Project, then DF HYDRO-3 shall be required. If an alternative drainage system is implemented, DF HYDRO-3 would not be required. As stated above, the final storm water design may differ from this design, as the Project's Specific Plan does not mandate specific building locations. Additionally, the final design could include green roofs, bioswales, etc. that would alter the minimum required size of the underground basin, or even eliminate the need for an underground basin. Other designs such as at-grade basins, or storm water designs that only treat individual developments could also be implemented.

Regardless, the precise drainage conveyance system design would be analyzed as part of the Water Quality Management Plan for each future, precise development consistent with State and City requirements for storm water conveyance.

If the Project Site west or east of Pepper Avenue is developed concurrently, the respective West or East drainage and water quality system would be constructed in its entirety consistent with DF HYDRO-2. In this scenario, the developers within either system would enter into a development agreement to delineate their fair share cost of design and construction of the facilities, as

applicable. If the northerly portion within either system is developed prior to the southerly portion, the owner would be responsible to do one of the following:

1. Install the proposed retention/detention system within the southerly portion of the Project Site (within their respective system) as well as any drainage conveyances to and from the basin system, sized to accommodate the south site as well. This could require a development agreement for reimbursement of the fair share of costs and shared land use between both owners; or
2. Install drainage and water quality facilities to accommodate only the north portion of their respective system. This would most likely require the design and implementation of an interim Grading and Drainage Plan to mitigate any impacts to the southerly owner.

In this scenario, if the southerly portion of either system is developed prior to the northerly portion, the southern property owner would be responsible to install a drainage and water quality system within the southerly portion of the Project Site to include the anticipated demand and capacity contributed from the northerly site (within their respective system). Specifically, the proposed stormwater conveyances and retention/detention basin within each system would be sized per stormwater and water quality demand for the either the entire West system (Planning Areas 5, 6, 7 and 8) or entire East system (Planning Areas 1, 2 and 3). As such, a development agreement between owners within each system would be implemented for the reimbursement of the fair share of costs.

Proposed Industrial Development Project Applicability: Design Feature DF HYDRO-3 is applicable to the proposed industrial development and would be implemented as part of construction related City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF HYDRO-3 is applicable to future developments within PA 1 and PA 10.

Design Feature DF HYDRO-4: Storm Drain Fees - The applicant of each future development proposed within the Project Site shall be responsible for paying development impacts fees per Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.270 – Storm Drain Facilities Development Impact Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF HYDRO-4 is applicable to the proposed industrial development and would be implemented as part of Project permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF HYDRO-4 is applicable to future developments within PA 1 and PA 10.

Conclusion for Hydrology and Water Quality

No new impacts nor substantially more severe hydrology and water quality related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to hydrology and water quality from implementation of the proposed Project would be less than significant with implementation of design features that were identified in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate biological resources in the Subsequent EIR. Thus, hydrology and water quality will not be analyzed in the Subsequent EIR. However, Final EIR Design Features DF

HYDRO-1 through DF HYDRO-4 will be included in the Subsequent EIR MMRP to ensure implementation.

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

Summary of Impacts Identified in the Final EIR

The EIR determined that while there are several developed residential, commercial, and public facility uses within the Project vicinity, no established communities are located within the Project Site that could be physically divided by Project implementation. Therefore, no impacts related to the physical division of an established community would result from the Specific Plan (Draft EIR page 6-25).

The EIR also determined that implementation of the Specific Plan would not conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the planning area, including California Government Code 65450, SCAG policy documents, the City of Rialto General Plan, and the City's Zoning Ordinance. Therefore, impacts were determined to be less than significant (Draft EIR page 4.F-11).

Impacts Related to the Proposed Project

a) Physically divide an established community?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area is generally undeveloped vacant land that is bisected by Pepper Avenue. The Specific Plan area has been previously designated for development. The proposed Specific Plan Amendment would modify the specific types of uses that are allowed to be developed on the site, but those new uses would not physically divide an established community. The proposed Industrial development is to be located adjacent to Pepper Avenue, WVWD water infrastructure facilities, a rail line, and undeveloped land that is planned for similar development. Implementation of the proposed Project would change future planned land uses within the eastern portion of the Specific Plan area and would change the current undeveloped land of the proposed development site to light industrial uses.

These changes would not physically divide an established community. The new light industrial allowable land uses are employment land uses that are similar to the currently allowable business park uses within the Specific Plan area. In addition, neither the proposed Specific Plan Amendment,

nor the proposed industrial development would include new infrastructure (such as roadways) that would physically divide an established community. Therefore, consistent with the findings of the Final EIR, no impact would occur. This topic will not be evaluated in the Subsequent EIR.

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Project includes a Specific Plan Amendment to provide a new light industrial land use designation and related development standards, change the Specific Plan land use designation of PA 2, 3, and the new PA 10 from Community Commercial to Light Industrial, and keep the Community Commercial designation on the reduced 2.86-acre PA 1. In addition, the Project includes development and operation of an approximately 485,000 square foot industrial warehousing building. These actions may have the potential to interfere with an applicable plan, policy, or regulation related to avoidance or mitigation of an environmental effect that could result in a new impact not identified in the Final EIR. Therefore, the Project's consistency with General Plan, zoning code, and other environmentally mitigating policies, and/or regulations will be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Land Use and Planning

As detailed previously, it is possible that new or substantially more severe land use and planning related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential land use and planning impacts in the Subsequent EIR. Thus, land use and planning will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that although the Specific Plan area is likely to contain aggregate materials, it is zoned for and surrounded by residential development on the western and southern sides that are incompatible with mineral extraction activities. Also, the EIR describes that the General Plan does not support expansion of surface mining activities in MRZ-2 areas. Therefore, the EIR determined that impacts regarding mineral resources were less than significant (Draft EIR page 6-25).

Impacts Related to the Proposed Project

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
Exhibit 2.7, Mineral Resource Zones, of the General Plan identifies that the Specific Plan area is located within an MRZ-2 Zone. As described by the Final EIR, the General Plan does not support expansion of surface mining activities in MRZ-2 areas. The Specific Plan area and proposed industrial development site have not historically been used for mining and are not identified as containing valuable mineral resources. Therefore, implementation of the proposed Specific Plan Amendment and development and operation of the proposed industrial development would not result in the loss of availability of a valuable known mineral resource. This topic will not be analyzed in the Subsequent EIR.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on the general plan, specific plan or other land use plan?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
As discussed in the previous response, no known valuable mineral resources exist on or near the Specific Plan area. The Specific Plan area is not designated for mineral recovery uses but is

designated for urban uses. In addition, the proposed Specific Plan Amendment and proposed industrial development would not cause loss of potential resources. Therefore, no impacts related to the loss of availability of a locally important mineral resource recovery site, as delineated on a local general plan, specific plan, or other land use plan, would occur as a result of Project implementation. This topic will not be further analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Mineral Resources

No new impacts nor substantially more severe mineral resource related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to mineral resources from implementation of the proposed Project would not occur. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate mineral resources in the Subsequent EIR. Thus, mineral resources will not be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR describes that construction activities associated with implementation of the Specific Plan would be conducted within the allowable hours specified in the City's Municipal Code, which would ensure that construction noise impacts are less than significant (Draft EIR page 4.G-15). The EIR determined that noise impacts on existing development from operational on-site stationary noise sources would be less than significant. Operational traffic would increase ambient noise levels at off-site noise-sensitive uses in the Specific Plan area; however, the increases would not exceed the established thresholds (Draft EIR page 4.G-15).

The EIR also describes that potential future residences could be exposed to traffic-related noise levels that would exceed thresholds. However, implementation of the Final EIR mitigation measure would ensure that impacts would be reduced to a less than significant level (Draft EIR page 4.G-18). Also, the EIR determined that noise impacts related to airports would not occur, as no airports are located near the Specific Plan Area (Draft EIR page 6-26).

Regarding vibration, the EIR determined that construction activities would result in sporadic, temporary vibration effects that would not exceed established thresholds. Thus, construction vibration impacts was determined to be less than significant (Draft EIR page 4.G-25). Likewise, the EIR determined that none of the proposed land uses would generate excessive vibration levels at sensitive receptor locations. Thus, operational vibration impacts were determined to be less than significant (Draft EIR page 4.G-25).

Impacts Related to the Proposed Project

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The proposed Specific Plan Amendment would result in new light industrial land uses that would have different noise levels and timing of operational activities than were evaluated in the Final EIR. The proposed light industrial uses involve use of machinery, onsite truck movement, and loading dock activities. In addition, the truck traffic that would occur with development of light industrial uses, including the proposed approximately 485,000 square foot industrial development, could result in a substantial increase in noise that was not identified in the Final EIR. Therefore, a noise study will be prepared, and potential noise impacts will be evaluated in the Subsequent EIR.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The volume of vibration that would occur from buildout of the proposed Specific Plan Amendment and development of the proposed industrial building is likely to be similar to that identified in the Final EIR. However, to ensure that construction activities, would not impact sensitive noise receptors with excessive groundborne vibration from the operation of heavy equipment, potential impacts will be evaluated in the Subsequent EIR. Additionally, the truck movements related to proposed industrial uses could have the potential to effect sensitive receptors. Therefore, this topic will be evaluated in the Subsequent EIR.

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

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Specific Plan area is not located within an airport land use plan and is not located within two miles of a private or public use airport. The Specific Plan area is located over 6 miles east of the San Bernardino International Airport. Therefore, implementation of the proposed Project would not expose people residing or working in the Specific Plan area or proposed industrial development site to excessive noise levels, and no impacts would occur. Thus, further analysis of this issue will not be included in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measure Noise-1: Prior to approval of design review permits for sensitive uses, to reduce and/or ensure exterior noise levels are at or below 65 CNEL at potential outdoor sensitive uses (i.e., residential courtyards, parks, and passive recreation areas) proposed by the Specific Plan, a combination of sound barrier walls, earthen berms, and landscaping shall be designed and

implemented by a qualified acoustical consultant, as necessary. Alternatively, outdoor uses shall be located behind buildings (not facing traffic corridors) in a manner that shields outdoor sensitive uses from roadway noise and reduces the exterior noise level to 65 CNEL or below. Also, an acoustical engineer shall submit evidence, along with the application for a building permit, any design plans or features of sound insulation sufficient to mitigate interior noise levels below a CNEL of 45 dBA in any habitable room.

Proposed Industrial Development Project Applicability: Mitigation Measure Noise-1 is not applicable to the proposed industrial development because the development does not include sensitive uses. However, Mitigation Measure Noise-1 is applicable to the proposed Specific Plan Amendment and will be included as part of the Subsequent EIR MMRP.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation NOI-1 is not applicable to future developments within PA 1 and PA 10, unless they result in construction of sensitive uses.

Conclusion for Noise

As detailed previously, it is possible that new or substantially more severe noise and/or vibration related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential noise and vibration impacts in the Subsequent EIR. Thus, noise and vibration will be analyzed in the Subsequent EIR.

	Potentially Significant New Impact	Less Than Significant New Impact with Mitigation Incorporated	Less Than Significant New Impact	No Impact / No New Impact
14. POPULATION AND HOUSING. Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Summary of Impacts Identified in the Final EIR

The EIR describes that the new residents generated by buildout of the Specific Plan would not result in a substantial increase in the local population; and the increase in population would be within the SCAG and City of Rialto General Plan population estimates for the City. Also, the EIR determined that implementation of the Specific Plan would not displace existing housing or people. Therefore, no construction of replacement housing would be necessary (Draft EIR page 6-26).

Impacts Related to the Proposed Project

a) Induce substantial unplanned population growth in an area, either directly or indirectly?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The proposed Specific Plan Amendment would change the existing buildout from 476,650 SF of Community Commercial uses to 735,185 SF of Light Industrial uses and 13,000 SF of commercial uses (including the proposed light industrial development of approximately 485,000). The Final EIR assumes a generation rate of 12.60 employees per acre (3,457.14 SF per employee) for the existing Community Commercial, which equates to a total of 138 employees for buildout of the 476,650 square foot area.

The Fiscal Analysis prepared for the proposed light industrial development identifies that the proposed land use is estimated to result in one employee per 1,200 SF, which is consistent with SCAG's Employment Density Study estimate of one employee per 1,195 SF. Based on the estimate of one employee per 1,200 SF, the proposed light industrial buildout of PAs 2, 3, and 10 would result in 612 employees. The proposed buildout of the reduced PA 1 would result in approximately 4 employees. This is an increase of 478 employees over the existing allowable buildout of these PAs. Of these employees, 404 would be employed at the proposed approximately 485,000 square foot industrial development.

SCAG's Growth Forecast by Jurisdiction estimates that employment within the City of Rialto would grow from 24,400 in 2020 to 30,500 in 2040. The increase of 478 employees that would result from the proposed Specific Plan Amendment would equate to 8 percent of the projected growth. Therefore, the growth that would result from the Project is within existing projections, and the additional jobs provided by the proposed Project would not result in substantial unplanned growth in the area.

Furthermore, the Specific Plan area is in an urbanized area and the Project does not propose to expand surrounding utility infrastructure (e.g., water, electricity, cell tower, gas, sanitary sewer, and stormwater drains). Thus, the proposed Project would result in a less than significant impact related to inducement of substantial unplanned population growth, which is consistent with the findings of the Final EIR, and this topic will not be analyzed further in the Subsequent EIR.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan area is generally undeveloped and does not contain any housing and has not been historically used for housing. The proposed industrial development site in PAs 2 and 3 is undeveloped and vacant. The site was historically used for agricultural; however, the orchard was removed in the mid-1980s and the site has remained vacant since. PA 2 includes a Residential Overlay that allows 275 residential units subject to a CUP. Homes could only be built in lieu of 116,000 SF of commercial uses and were not permitted by right, so they were not accounted for in the City's Housing Element. Because the proposed Project would keep the Residential Overlay on PA 3, which would continue to allow the potential development of 275 residential units subject to a CUP if industrial uses are not constructed, the Project would not displace any housing and would not necessitate the construction of replacement housing. As a result, no new impact would occur, and this topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Population and Housing

No new impacts nor substantially more severe population and housing related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to population and housing from implementation of the proposed Project would be less than significant. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate population and housing in the Subsequent EIR. Thus, population and housing will not be analyzed in the Subsequent EIR.

	Potentially Significant New Impact	Less Than Significant New Impact with Mitigation Incorporated	Less Than Significant New Impact	No Impact/ No New Impact
15. PUBLIC SERVICES.				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Summary of Impacts Identified in the Final EIR

Fire Services. The EIR describes that fire protection, prevention, and emergency medicals services within the City of Rialto are provided by the Rialto Fire Department and that the Specific Plan buildout would increase fire service needs. The Specific Plan design features include a construction management plan to be prepared for each development to minimize disruptions to through traffic flow and maintain emergency vehicle access (DF SERVICE-1) and payment of development impacts (DF SERVICE-2). The EIR determined that the growth from the Specific Plan would not be substantial enough to significantly impact fire and emergency services on a daily or annual basis, and no new fire protection facilities would be necessary. Thus, impacts were determined to be less than significant (Draft EIR page 6-26).

Police Services. The EIR describes that police protection services are provided by the Rialto Police Department and that the police department response times would not be substantially changed by implementation of the Specific Plan. Thus, the EIR determined that impacts regarding police services would less than significant. Nonetheless, to offset any incremental need for funding of capital improvements to maintain adequate police protection facilities and equipment, and/or personnel, the developments would be required to pay development impacts fees (DF SERVICE-3) (Draft EIR page 6-27).

Schools. The EIR determined that the Specific Plan area is served by the Rialto Unified School District (RUSD). Pursuant to Senate Bill (SB) 50 (Section 65995 of the Government Code) payment of fees to the RUSD is considered full mitigation for development impacts (DF SERVICE-4) (Draft EIR page 6-28).

Parks. The EIR also determined that to offset the Specific Plan's demand for funding of capital improvements to maintain adequate park facilities and equipment, the residential development projects would be responsible for meeting the parkland dedication and/or in-lieu fee requirements pursuant to the Quimby Act and Municipal Code Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, which would reduce impacts to a less than significant level (Draft EIR page 6-28).

Impacts Related to the Proposed Project

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for:

Fire protection?
Police protection?
Schools?
Parks?
Other public facilities?

***Fire Protection* – Less Than Significant New Impact.**

Specific Plan Amendment and Proposed Industrial Development
As described by the Final EIR, the City of Rialto Fire Department provides fire protection services to the Specific Plan area, in addition to the rest of the City. The Fire Department has 5 fire stations, the closest of which is 1.6 miles from the proposed industrial development. The location of the stations in relation to the proposed industrial development is listed below.

- Fire Station 201 located at 131 S. Willow Avenue, 3.4 miles from the proposed industrial development.
- Fire Station 202 located at 1700 N. Riverside Avenue, 1.6 miles from the proposed industrial development.
- Fire Station 203 located at 1550 N. Ayala Drive, 3.5 miles from the proposed industrial development.
- Fire Station 204 located at 3288 N Alder Avenue, 6 miles from the proposed industrial development.
- Fire Station 205 located at 1485 S. Willow Avenue, 5.1 miles from the proposed industrial development.

Implementation of the proposed developments pursuant to the proposed Specific Plan Amendment and the proposed industrial development would be required to adhere to the California Fire Code, as included in the City of Rialto Municipal Code Chapter 15.28. As part of project permitting, plans are reviewed City's Building and Safety Division to ensure that the project plans meet the fire protection requirements.

As detailed in Section 14, *Population and Housing*, the proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. The additional employees would result in an incremental increase in demand for fire protection and emergency medical services. However, the existing fire station is 1.6 miles from the proposed industrial development site that currently serve the Specific Plan area. The increase in

fire service demands from the additional 478 employees at buildout of the amended Specific Plan would not require construction of a new or physically altered fire station that could cause environmental impacts. Therefore, impacts related to fire protection services would be less than significant.

In addition, Design Feature DF SERVICE – 2, includes municipal code requires fees to provide funding for fire protection facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to fire services would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

***Police Protection* – Less Than Significant New Impact.**

Specific Plan Amendment and Proposed Industrial Development

The City of Rialto Police Department provides police protection to the City. The police station is located approximately 3.3 miles from the industrial development site at 128 N Willow Avenue. As described previously, proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. These additional employees and the additional goods that would be accommodated by the increase square footage provided by the Specific Plan Amendment could create the need for additional police services. Operation of the industrial uses generate a typical range of sheriff service calls, such as burglaries, thefts, and employee disturbances. However, to reduce the need for law enforcement services, security concerns are addressed by inclusion of low-intensity security lighting and security cameras. Pursuant to the City's existing permitting process, site plans are reviewed to ensure that crime prevention and emergency access measures are incorporated appropriately to provide a safe environment. Although an incremental increase could occur from implementation of the Specific Plan Amendment and proposed industrial development, the increased need for law enforcement services would not result in the need for new or physically altered police facilities. Thus, impacts related to police services would be less than significant, which is consistent with the findings of the Final EIR.

In addition, Design Feature DF SERVICE - 3 includes municipal code requires fees to provide funding for police facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to police services would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

***Schools* – Less Than Significant New Impact.**

Specific Plan Amendment and Proposed Industrial Development

As described previously, proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. The addition of employees would not directly generate new students. Thus, potential impacts related to school facilities would be less than significant, which is consistent with the findings of the Final EIR. In addition, Design Feature DF SERVICE - 4 requires fee payments to provide funding for school facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to schools would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

***Parks* – Less Than Significant New Impact.**

Specific Plan Amendment and Proposed Industrial Development

As described previously, proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. The addition of employees would not directly generate new residents that would use parks. Thus, potential impacts related to parks would be less than significant, which is consistent with the findings of the Final EIR. In addition, Design Feature DF SERVICE - 5 requires fee payments to provide funding for park facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to parks would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

***Other Services* – Less Than Significant New Impact.**

Specific Plan Amendment and Proposed Industrial Development
As described previously, proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. The addition of employees would not directly generate new residents that would need other services, such as libraries. Thus, potential impacts related to other services would be less than significant, which is consistent with the findings of the Final EIR. In addition, Design Feature DF SERVICE - 6 requires fee payments to provide funding for library facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to other facilities would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF SERVICE - 1: Construction Management Plan – A construction management plan shall be developed by the applicant or contractor of each future developments proposed within the Specific Plan area and approved by the City of Rialto Public Works Department prior to construction activities. The construction management plan shall include, at a minimum, the following:

- Identify the locations of the off-site truck staging and provide measures to ensure that trucks use the specified haul route, as applicable, and do not travel through nearby residential neighborhoods or schools;
- Schedule vehicle movements to ensure that there are no vehicles waiting off-site and impeding public traffic flow on surrounding streets;
- Establish requirements for loading/unloading and storage of materials on the Project Site;
- Coordinate with the City and emergency service providers to ensure adequate access is maintained to and around the Project Site; and
- During construction activities when construction worker parking cannot be accommodated on the Project Site, a Construction Worker Parking Plan shall be prepared which identifies alternate parking location(s) for construction workers and the method of transportation to and from the Project Site (if beyond walking distance) for approval by the City. The Construction Worker Parking Plan shall prohibit construction worker parking on residential streets and prohibit on-street parking, except as approved by the City.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 1 is applicable to the proposed industrial development and would be implemented prior to issuance of construction permits.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SERVICE - 2: Fire Fees – The applicant of each applicable future developments proposed within the Specific Plan shall be responsible for paying development impacts fees per Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.220 – Fire Protection Facilities Development Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 2 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-2 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SERVICE - 3: Police Fees – The applicant of each applicable future development proposed within the Project Site shall be responsible for paying development impacts fees per Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.210 – Law Enforcement Facilities Development Impact Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 3 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-3 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SERVICE - 4: Schools Fees – The applicant of each applicable future development proposed within the Project Site shall be responsible for paying development impacts fees to the Rialto Unified School District (RUSD) as full mitigation for potential impacts to schools pursuant to SB 50 (Section 65995 of the Government Code) and Title 17 – Subdivisions, Chapter 17.22 – School Facilities Fee, Section 17.22.120 – Facilities Fee and Section 17.22.140 – Dedication or Provision of Facilities in Lieu of Fees, of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 4 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-4 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SERVICE - 5: Parks – The applicant of each future residential development proposed within the Project Site shall be responsible for meeting the parkland dedication or fee requirements pursuant to the Quimby Act and Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.150 – Parks and Recreation Development Impact Fees and Title 17 – Subdivisions, Chapter 17.23 – Park and Recreational Facilities Dedication of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 5 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-5 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SERVICE - 6: Library Fees – The applicant of each applicable future development proposed within the Project Site shall be responsible for paying applicable

development impacts fees Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.200 – Library Facilities Development Impact Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 6 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-6 is applicable to future developments within PA 1 and PA 10.

Conclusion for Public Services

No new impacts nor substantially more severe public service related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to public services from implementation of the proposed Project would be less than significant with implementation of the design features that were included in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate public services in the Subsequent EIR. Thus, public services will not be analyzed in the Subsequent EIR. However, the Final EIR design features are applicable to the proposed Project and will be included in the Subsequent EIR MMRP.

	Potentially Significant New Impact	Less Than Significant New Impact with Mitigation Incorporated	Less Than Significant New Impact	No Impact / No New Impact
16. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Summary of Impacts Identified in the Final EIR

The EIR describes that the Specific Plan does not include recreational facilities, and that operation of the Specific Plan would increase demand for parks services. However, the EIR determined that due to the proximity of numerous parks and recreational facilities, the effect of any one park would be nominal and distributed over the local vicinity, resulting in no substantial increase in demand to any one recreational facility. Accordingly, impacts were determined to be less than significant (Draft EIR page 6-29). In addition, the Specific Plan includes a design measure to provide for funding for new park and recreation facilities (Draft EIR page 6-28).

Impacts Related to the Proposed Project

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that physical deterioration of the facility would be accelerated?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

As described previously, proposed Specific Plan Amendment, including proposed industrial development would result in an increase of increase of 478 employees at buildout. The addition of employees would not directly generate new residents that would use park and recreation facilities. Thus, potential impacts related to recreation would be less than significant, which is consistent with the findings of the Final EIR. In addition, Design Feature DF SERVICE - 5 requires fee payments to provide funding for park facilities necessary to address direct and cumulative service needs generated by new development. Because impacts related to recreation facilities would be less than significant, which is consistent with the findings of the Final EIR, this topic will not be analyzed in the Subsequent EIR.

b) Require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The proposed Specific Plan Amendment does not include changes to any recreation facilities. The open space areas and proposed pedestrian bridge included in the existing Specific Plan remain unchanged. Thus, no new recreation facilities are included in the proposed Project that, the construction of which could have an adverse physical effect on the environment. Therefore, consistent with the findings of the Final EIR, impacts related to recreation would be less than significant, and this topic will not be analyzed in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF SERVICE -5: Parks. – As listed previously in Section 15, *Public Services*.

Proposed Industrial Development Project Applicability: Design Feature DF SERVICE - 5 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SERVICE-5 is applicable to future developments within PA 1 and PA 10.

Conclusion for Recreation

No new impacts nor substantially more severe recreation related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to recreation from implementation of the proposed Project would be less than significant with implementation of the design features that were included in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate recreation in the Subsequent EIR. Thus, recreation will not be analyzed in the Subsequent EIR. However, the Final EIR Design Feature DF SERVICE-5 is applicable to the proposed Project and will be included in the Subsequent EIR MMRP.

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

Summary of Impacts Identified in the Final EIR

The EIR determined that with implementation of the prescribed mitigation measure and the Specific Plan design features, potentially significant traffic impacts would be reduced to a less than significant level under the Existing Plus Project, Opening Year, and Long Range (2035) conditions (Draft EIR page 4.H-22). The EIR includes Mitigation Measure TRAF-1 that requires development projects to participate in the City of Rialto DIF Program by paying applicable fees, supplemented by participation in additional fair share intersection improvement costs as needed (Draft EIR page 6-5). The EIR also determined that due to compliance with existing safety design standards, as verified through development permitting, the Specific Plan would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) (Draft EIR page 4.H-22).

Impacts Related to the Proposed Project

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The Specific Plan currently designates PA 1, PA 2, and PA 3 as Community Commercial with a maximum development potential for 476,650 SF of business park and retail uses. The proposed Specific Plan Amendment would change the designation of PA 2, PA 3, and the new PA 10 (11.56-acre portion of current PA 1) to Light Industrial and allow a maximum development of 735,185 SF. The proposed industrial development includes approximately 485,000 SF of this total. The Specific Plan Amendment would decrease the size of PA 1 to 2.86-acre, but leave PA 1 as Community Commercial, which would allow a maximum development of 13,000 SF of commercial uses. The

proposed Specific Plan Amendment would result in a change of use and a 271,535 square foot increase in buildout. The increased buildout and truck traffic related to the proposed industrial uses could result in a potentially significant impact new impact on area roadways, including the potential for conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system. A traffic impact analysis will be prepared to assess existing traffic conditions, forecast project-generated traffic volumes and distribution, and forecast traffic conditions in the Specific Plan buildout year with and without the proposed Specific Plan Amendment and with and without the proposed light industrial development. Also, description of the existing and planned bicycle, pedestrian, and transit in the Specific Plan area and by the proposed industrial development site will be provided and potential effects will be evaluated. Therefore, potential impacts related to conflicts with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities will be evaluated in the Subsequent EIR. The transportation related mitigation measures from the Final EIR will be included in the traffic impact analysis and the Subsequent EIR MMRP, as applicable.

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The CEQA Guidelines § 15064.3(b) provides criteria for analyzing transportation impacts. For land use projects, such as the proposed project, CEQA Guidelines § 15064.3(b) states that vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. In addition, it states that the analysis includes evaluation of factors such as the availability of transit, proximity to other destinations, etc. This section also provides guidance on setting thresholds for VMT and methodology for evaluating VMT. Per CEQA Guidelines Section 15064.3(C), the provisions of Section 15064.3 became applicable statewide beginning on July 1, 2020. Thus, at the time the Final EIR was prepared, in 2017, the requirements related to VMT analysis in EIRs did not exist. Due to the current VMT analysis requirements, the traffic impact analysis will include a VMT analysis that will be summarized in the Subsequent EIR, and mitigation measures will be included as necessary.

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

Less than Significant New Impact.

Specific Plan Amendment

The proposed Specific Plan Amendment does not include circulation features involving sharp curves, dangerous intersections, or other potentially hazardous geometric design features. Also, the proposed Specific Plan Amendment land use designation change from Community Commercial to Light Industrial does not create an incompatible use that could cause a hazard. The proposed Light Industrial designated areas are set aside on the east side of Pepper Avenue with separate driveway entrances. Thus, the proposed Specific Plan Amendment would result in less than significant impacts, which is consistent with the findings of the Final EIR. This topic will not be analyzed further in the Subsequent EIR.

Proposed Industrial Development

The proposed industrial development includes only a light industrial warehouse facility. There are no proposed uses that would be incompatible. The development would also not increase any hazards related to a design feature. Operation of the industrial development would involve trucks entering and exiting the site from Pepper Avenue for access to the loading bays and trailer parking via two 40-foot-wide driveways that are designed to accommodate trucks. Passenger vehicles would enter and exit the site using a separate driveway from Pepper Avenue. The onsite circulation design provides fire truck accessibility and turning ability throughout the site. Thus, no impacts related to vehicular circulation design features would occur from the proposed industrial development, and this topic will not be analyzed further in the Subsequent EIR.

d) Result in inadequate emergency access?

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

The proposed Specific Plan Amendment and proposed industrial development would not result in inadequate emergency access. Direct access to the proposed industrial development site would be provided by two driveway locations along Pepper Avenue, which is directly adjacent to the site. Construction activities would occur within the proposed industrial development site and would not restrict access of emergency vehicles to the site or adjacent areas. In addition, travel along Pepper Avenue would remain open and would not interfere with emergency access in the site vicinity. The proposed industrial development and all other Specific Plan development projects are required to design and construct internal access, and size and location of fire suppression facilities (e.g., hydrants and sprinklers) to conform to Rialto Fire Department standards. The Rialto Fire Department would review the development plans prior to approval to ensure adequate emergency access pursuant to the requirements in Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9). As such, the proposed Project would not result in inadequate access, and impacts would be less than significant, which is consistent with the findings of the Final EIR. This topic will not be analyzed further in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measure TRAF-1: Prior to issuance of building permits, future Project applicant(s) shall participate in the City of Rialto Development Impact Fee (DIF) Program by paying applicable fees, supplemented by participation in additional fair share intersection improvement costs as needed. Such fees shall be determined by additional and/or focused traffic impact studies, as determined necessary by the City of Rialto Traffic Engineering Division, prior to future development occurring within the Specific Plan Area. Payment of fees to these fee programs may be considered as mitigation for the Project's proportionate share of cumulative impacts. If the City finds that the payment of DIF fees alone do not adequately address the Project's proportionate share, a fair share contribution may be imposed in order to mitigate the Project's share of cumulative impacts. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City's discretion). The improvements identified below shall be funded by the Project's proportionate payment of fees, as determined necessary by the City of Rialto Traffic Engineering Division. The City shall ensure that the improvements will be constructed pursuant to the fee program at the point in time necessary to avoid identified significant traffic impacts.

Riverside Avenue/Easton Street (Intersection #3):

- Participate in the signal modification to provide separate right turn overlap signal phasing for the existing westbound right turn lane.

Eucalyptus Avenue/Baseline Road (Intersection #8):

- Northbound Approach: Provides separate left turn lane, in addition to the existing through lane.
- Southbound Approach: Provide separate left turn lane, in addition to the existing through lane.

Pepper Avenue/Highland Avenue (Intersection #9):

- Northbound Approach: Restripe through lane to shared through-right lane, in addition to the left turn lane and right turn lane.
- Eastbound Approach: Participate in the signal modification to provide separate right turn overlap signal phasing for the right turn lane.

Pepper Avenue/SR-210 Westbound Ramps (Intersection #10):

- Northbound Approach: Modify traffic signal to provide north/south split phase. restripe first through lane to provide a left-through lane, in addition to the left turn lane and second through lane.
- Westbound Approach: Provide additional (second) left turn lane.

Pepper Avenue/SR-210 Eastbound Ramps (Intersection #11):

- Northbound Approach: Provide separate right turn lane.
- Eastbound Approach: Provide additional (second) right turn lane.

Pepper Avenue/Winchester Drive (Intersection #12):

- Participate in construction of a traffic signal.
- Northbound Approach: Provide separate left turn lane and second through lane, eliminating defacto right turn lane.
- Southbound Approach: Provide separate left turn lane and second through lane, eliminating defacto right turn lane.

Pepper Avenue/Mariposa Drive (Intersection #13):

- Participate in construction of a traffic signal.
- Northbound Approach: Provide separate left turn lane and second through lane, eliminating defacto right turn lane.
- Southbound Approach: Provide separate left turn lane and second through lane, eliminating defacto right turn lane.

Pepper Avenue/Baseline Road (Intersection #14):

- SB Approach: Provide separate right turn lane.

Pepper Avenue/Etiwanda Avenue (Intersection #15):

- Participate in construction of a traffic signal.

Pepper Avenue/Foothill Boulevard (Intersection #16):

- Participate in the signal modification to provide separate right turn overlap signal phasing for the existing eastbound right turn lane.
- Southbound Approach: Provide separate right turn lane.
- Westbound Approach: Provide additional (third) through lane..

Proposed Industrial Development Project Applicability: Mitigation Measure TRAF-1 is applicable to the proposed industrial development a Traffic Impact Analysis, including fair share contributions will be prepared as part of the Subsequent EIR.

Specific Plan Amendment PA 1 & 10 Applicability: Mitigation Measure TRAF-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF TRAF-1: Pepper Avenue / Northerly Right-In/Right-Out (RIRO) Driveway – Install stop sign control on the EB approach, design the intersection to restrict left-in access to the Project driveway and left-out access from the Project driveway, and construct the intersection with the following geometrics:

- NB Approach: Provide two through lanes.
- SB Approach: Provide one through lane and one shared through-right turn lane.
- EB Approach: Provide a right turn lane.

Proposed Industrial Development Project Applicability: Design Feature DF TRAF-1 is not applicable to the proposed industrial development but is applicable to the proposed Specific Plan Amendment buildout and will be included as part of the Subsequent EIR MMRP.

Design Feature DF TRAF-2: Pepper Avenue / Main Driveway (intersection #23) – Install traffic signal control and construct the intersection with the following geometrics:

- NB Approach: Provide one left turn lane, one through lane, and one shared through right lane.
- SB Approach: Provide two left turn lanes, one through lane, and one shared through right lane.
- EB Approach: Provide one left turn lane and one shared through-right lane.
- WB Approach: Provide one left turn lane, one through lane, and one right turn lane.

Proposed Industrial Development Project Applicability: Design Feature DF TRAF-2 is included as part of the Project. As part of the Subsequent EIR a Traffic Impact Analysis will be prepared that will evaluate the function of the driveways of the proposed industrial development, and mitigation as needed will be included in the Subsequent EIR MMRP.

Design Feature DF TRAF-3: Pepper Avenue / Southerly RIRO Driveway – Install stop sign control on the EB approach, design the intersection to restrict left-in access to the Project driveway and left out access from the Project driveway, and construct the intersection with the following geometrics:

- NB Approach: Provide two through lanes.
- SB Approach: Provide one through lane and one shared through-right turn lane.
- EB Approach: Provide a right turn lane.

Proposed Industrial Development Project Applicability: Design Feature DF TRAF-3 is not applicable to the proposed industrial development but is applicable to the proposed Specific Plan Amendment buildout and will be included as part of the Subsequent EIR MMRP.

Design Feature DF TRAF-4: Pepper Avenue / South Driveway (intersection #24) – At complete build-out, or as otherwise determined by traffic needs, install traffic signal control and construct the intersection with the following geometrics:

- NB Approach: Provide one through lane and one shared through-right lane.
- SB Approach: Provide one left turn lane and two through lanes.
- WB Approach: Provide one left turn lane, and one right turn lane.

Proposed Industrial Development Project Applicability: Design Feature DF TRAF-4 is not applicable to the proposed industrial development but is applicable to the proposed Specific Plan Amendment buildout and will be included as part of the Subsequent EIR MMRP.

Conclusion for Transportation

As detailed previously, it is possible that new or substantially more severe transportation related impacts could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential transportation related impacts in the Subsequent EIR. Thus, transportation will be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

The EIR does not include a specific evaluation related to Tribal Cultural Resources; however, the EIR determined that ground disturbing construction activities within the Specific Plan area could have a significant impact on archaeological resources and protection related to tribal cultural resources was provided in the EIR mitigation measures that were included to reduce potential impacts to a less than significant level (Draft EIR page 4.D-16).

The EIR also describes that no known human remains, or Native American cultural resources have been identified within the Specific Plan area or within a one-half mile buffer. However, the Specific Plan area is located within close proximity to a major water source (Lyle Creek) which would have attracted prehistoric and historic period inhabitants to the area and several historic period water control/management resources have been identified nearby. As a result, the EIR determined that the Specific Plan area has a moderate to high potential to encounter human remains and mitigation was included to reduce potential impacts to a less than significant level (Draft EIR page 4.D-17). Mitigation Measures CUL-7 requires cessation of ground-disturbing activity and consultation with the County Coroner and Native American tribes in the event human remains are encountered during construction activities.

Impacts Related to the Proposed Project

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

No New Impact.

Specific Plan Amendment
As detailed in Section 5, *Cultural Resources*, the Final EIR determined that there are no historic resources within areas that are proposed for development by the Specific Plan. The Specific Plan Amendment does not change the areas proposed to be developed. Thus, no historic resources exist, and no impacts related to historic resources as defined in Public Resources Code section 5020.1(k) would occur from implementation of the Specific Plan Amendment.

Proposed Industrial Development
The proposed industrial development site is undeveloped land that was previously used as agricultural land (an orchard) since at least the 1930s. The Phase I Environmental Site Assessment (Appendix B) describes that the orchard was removed from the site by the mid-1980s and that it has remained vacant and undeveloped since then. There are no historic resources on the proposed industrial development site, and impacts would not occur. This topic will not be further evaluated in the Subsequent EIR.

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

Potentially Significant New Impact.

Specific Plan Amendment
Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources (Public Resources Code § 21074). The potential impacts related to tribal cultural resources that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same, and the same areas of ground disturbance would occur. Thus, the same potential for impacting an tribal cultural resources would occur under the amended Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures CUL-1 through CUL-8, which would reduce potential impacts to a less than significant level, consistent with the findings of the Final EIR.

Proposed Industrial Development
In order to determine whether any tribal cultural resources could be impacted by the proposed industrial development, California Native American tribes that are traditionally and culturally affiliated to the Specific Plan area will be contacted (Public Resources Code § 21080.3.1), and consultation undertaken with those Native American tribes that express an interest in engaging in consultation pursuant to Assembly Bill 52. In addition to tribal consultation, a cultural resources assessment will be prepared with a literature review and records search from the Native American Heritage Commission (NAHC) per Final EIR Mitigation Measure CUL-1. The Subsequent EIR will

evaluate potential impacts of the proposed Project on tribal cultural resources, and additional mitigation measures will be provided as needed.

Final EIR Mitigation Measure/Project Design Features

Mitigation Measures CUL-1 through CUL-8. As listed in Section 5, *Cultural Resources*.

Proposed Industrial Development Project Applicability: Mitigation Measures CUL-1, CUL-5, CUL-7, and CUL-8 are applicable to the proposed industrial development site and will be implemented as part of the Subsequent EIR or included in the Subsequent EIR MMRP. Mitigation Measures CUL-2, CUL-3, CUL-4, CUL-6 may be applicable to the proposed industrial development site. Applicability will be determined as part of the Phase I Archaeological Assessment that will be prepared pursuant to Mitigation Measure CUL-1.

Conclusion for Tribal Cultural Resources

As determined by the Final EIR, the area is sensitive for tribal cultural resources. Therefore, pursuant to the requirements of AB 52 and the Final EIR mitigation measures, tribal consultation and a site-specific study will be completed as part of the Subsequent EIR. Thus, tribal cultural resource related impacts will be analyzed in the Subsequent EIR. In addition, the applicable mitigation measures from the Final EIR will be included in the Subsequent EIR MMRP.

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

Summary of Impacts Identified in the Final EIR

The EIR determined that the Specific Plan includes utility and service systems improvements, such as water, sewer, and drainage infrastructure improvements. In addition, the EIR determined that the Specific Plan demand for water is within the demand projected by the Urban Water Management Plan that shows the water supplies with ability to meet projected demands in normal and multiple dry years. Thus, the EIR determined that impacts related to water supplies were less than significant (Draft EIR page 6-30). The EIR also determined that the solid waste generation from buildout of the Specific Plan would be accommodated at regional landfills, and impacts would be less than significant (Draft EIR page 6-33).

Impacts Related to the Proposed Project

a) Require or result in the relocation or construction of new or expanded water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant New Impact.

Specific Plan Amendment
The proposed Specific Plan Amendment would not change the planned infrastructure of the planning area. The proposed development areas would remain the same under the proposed Specific Plan Amendment and the infrastructure improvements described in the Final EIR are consistent with the needed infrastructure for buildout of the proposed Specific Plan Amendment. Thus, additional impacts from implementation of the proposed Specific Plan Amendment would not occur and impacts would be less than significant. This topic will not be further evaluated in the Subsequent EIR.

Proposed Industrial Development
The proposed industrial development would install new water and sewer infrastructure on the site and connect to the existing water and sewer infrastructure in the adjacent roadways. Existing 30-inch and 12-inch water lines and a 12-inch sewer line are located in Pepper Avenue. New or expanded off-site water and wastewater infrastructure would not be required be constructed to serve the proposed industrial development. Thus, impacts would be less than significant, which is consistent with the findings of the Final EIR, and this topic will not be further evaluated in the Subsequent EIR.

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

Less Than Significant New Impact.
Specific Plan Amendment and Proposed Industrial Development
The Specific Plan currently designates PA 1, PA 2, and PA 3 as Community Commercial with a maximum development potential for 476,650 SF of business park and retail uses. The proposed Specific Plan Amendment would change the designation of PA 2, PA 3, and the new PA 10 to Light Industrial and allow a maximum development of 735,185 SF. The remaining approximately 2.86-acre portion of PA 1 would remain Community Commercial to allow commercial development at up to 13,000 SF. The proposed Specific Plan Amendment would result in a change of use and a 271,535 square foot increase in buildout.

The West Valley Water District (WVWD) that supplies water to the Specific Plan area has 21 groundwater wells, 25 separate storage reservoirs across eight pressure zones, for a total storage over 72 million gallons (MG), and over 375 miles of transmission and distribution pipelines. The West Valley Water District 2020 Water Facilities Master Plan provides a water demand rate of 1,794 gallons per day per net acre for commercial land uses and 500 gallons per day per net acre for light industrial uses. Therefore, the change in proposed land use would reduce the water demand by 1,294 per net acre. The Final EIR assumes (Appendix A, Initial Study, pages B-61 and 62) that commercial land uses have a water demand of 2.43 gallons per minute per acre (3,499 gallons per day per acre). This analysis provides a comparison based on the WVWD demand rates to provide a more conservative analysis of water demand changes from the proposed Project.

Based on these demand rates, buildout of 476,650 SF of Community Commercial would generate a water demand of 19,554.6 gallons per day (21.9 acre-feet per year). Buildout of 735,185 SF of light industrial uses would generate a water demand of 8,439 gallons per day (9.5 acre-feet per year) and the buildout of 13,000 SF of commercial uses would generate a water demand of 535 gallons per day (0.60 acre-feet per year). As such, buildout based on the proposed Specific Plan Amendments would result in a water demand of 8,974 gallons per day (10.05 acre-feet per year). Therefore, the proposed Project would result in a reduction in water demand of approximately 10,580 gallons per day (11.9-acre feet annually). No new impacts related to water demand would result from the proposed Project. Impacts would be less than significant, and this

topic will not be further evaluated in the Subsequent EIR.

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

Less than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
As described in the previous response, the proposed Specific Plan Amendment would result in a change of use and a 271,535 square foot increase in non-residential development at buildout, including the proposed industrial development. The Final EIR (Appendix A, Initial Study, page B-57) describes that the City's Sewer Master Plan assumes a wastewater generation rate of 1,500 gallons per acre per day for non-residential land uses. Thus, the increase in wastewater that would be generated from the increase in buildout would be approximately 9,350 gallons per day.

The Final EIR (Appendix A, Initial Study, page B-58) describes that the City's Sewer Master Plan performance criteria considers sewers adequate if they convey peak flows without surcharging or exceeding the maximum depth over diameter criteria (d/D) of 0.8. The Final EIR Sewer System Analysis determined that the highest proposed d/D for the adopted Specific Plan would be 0.42. As such, the existing sewer system has capacity to accommodate the additional 9,350 gallons per day from the build out of the proposed Specific Plan Amendment and proposed industrial development.

The Final EIR (Appendix A, Initial Study, page B-59) also describes that the permitted capacity of the Rialto Wastewater Treatment Plant (WWTP) is 11.7 million gallons per day (mgd) with average sewage flows of 7 mgd. The increase of 9,350 gallons would be 0.2 percent of the available capacity of the Rialto WWTP. Thus, impacts would be less than significant, which is consistent with the findings of the Final EIR and this issue will not be evaluated further in the Subsequent EIR.

d) Generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development
The Final EIR (Appendix A, Initial Study, page B-67) estimates that both commercial and business park uses generate approximately 5 pounds of solid waste per day per 1,000 SF. Business park and light industrial uses have similar uses and generate similar volumes of solid waste. Thus the 271,535 square foot increase in non-residential development at buildout of the proposed Specific Plan, including the proposed industrial development, would result in approximately 1,357.7 pounds of additional solid waste per day. However, pursuant to AB 341, at least 75 percent of the solid waste is required to be recycled, which would reduce the volume of landfilled solid waste to approximately 339.4 pounds of solid waste per day.

In 2019, a majority (89 percent) of the solid waste from the City of Rialto that was disposed of in landfills, went to the Mid-Valley Sanitary Landfill. The Mid-Valley Sanitary Landfill is permitted to accept 7,500 tons per day of solid waste and is permitted to operate through April 2033. In September 2021, the facility received a peak tonnage of 4,105.26 tons. Thus, the facility had additional capacity of 3,394.75 tons per day. Therefore, the landfill would be able to

accommodate the addition of solid waste from buildout of the proposed Specific Plan Amendment, including proposed industrial development. Thus, impacts related to solid waste generation and landfill capacity would be less than significant, which is consistent with the findings of the Final EIR, and this topic would not be further analyzed in the Subsequent EIR.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No New Impact.

Specific Plan Amendment and Proposed Industrial Development
The proposed Specific Plan and industrial development would result in new development that would generate an increased amount of solid waste as described in the previous response. All solid waste-generating activities within the City is subject to the requirements set forth in Section 5.408.1 of the 2016 California Green Building Standards Code that requires demolition and construction activities to recycle or reuse a minimum of 65 percent of the nonhazardous construction and demolition waste, and AB 341 that requires diversion of a minimum of 75 percent of operational solid waste. Implementation of the proposed Specific Plan Amendment and industrial development would be consistent with all state regulations, as ensured through the City's development project permitting process. Therefore, the proposed Project would comply with all solid waste statute and regulations; and impacts would not occur. Impacts related to solid waste regulations will not be evaluated further in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

Design Feature DF WATER-1: Water Infrastructure – Future development within the Project Site shall provide connections to the water servicing line from both sides of Pepper Avenue. These future connections shall lie north of the WVWD Lord Ranch Facility and require either a direct connection to the existing 30-inch transmission line in Pepper Avenue or extending the 12-inch line to the connection points. The water system shall be designed to deliver the peak hour domestic demand to each service point with a residual pressure of 40 pounds per square inch (psi) and to deliver specified fire flow plus the peak day domestic demand with a minimum residual pressure of 20 psi. The fire flow requirement for the Project Site is 3,000 gallons per minute (gpm) for three hours (for commercial/office/high density residential areas). The maximum operating pressure in mains shall not exceed 130 psi with pressure reducers required on service connections having pressure greater than 80 psi. All water lines shall be looped where possible. All dead-end lines shall not exceed 660 feet in length or the current design requirements at the time of design.

Proposed Industrial Development Project Applicability: Design Feature DF WATER - 1 is applicable to the proposed industrial development that would connect to the water lines within Pepper Avenue.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF WATER-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF WATER-2: Water Fees - The applicant of each applicable future development proposed within the Project Site shall be responsible for paying development impacts fees per Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.260 – Domestic and Recycled Water Facilities Development Impact Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF WATER - 2 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF WATER-2 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SEWER-1: Sewer Infrastructure – The sewer system for the Project shall consist of two systems, the East and West systems. The East system shall gravity flow southerly within the future commercial development area (east of pepper Avenue) and then westerly to a proposed lift station on the east side of Pepper Avenue. The East system shall consist of 8-inch and 6-inch laterals. The West system (west of Pepper Avenue) shall gravity flow easterly towards Pepper Avenue and join an existing 12-inch VCP sewer line in Pepper Avenue.

An on-site sewer lift station on the east side of Pepper Avenue shall be required to pump sewage flows southerly via a force main into the gravity sewer system in Winchester Drive. The future lift station shall be sized to accommodate the peak sewer flows from the Project as well as any potential offsite future developments that may be tributary to the lift station, including the Caltrans-maintained area north of the 210 Freeway and south of Highland Area (which consists of 7.4 acres). Future development of this 7.4-acre area would likely add additional sewer flows of approximately 9 percent of the above peak flow to the lift station. Therefore, the proposed lift station shall be designed to accommodate the calculated peak flow plus 9 percent.

The on-site sewer system for the Specific Plan area may reach depths of 20-25 feet, therefore the future lift station shall be designed to have sufficient power to siphon sewer flows from these depths. Furthermore, there would be approximately 35-40 feet of vertical change and approximately 1,100 feet of horizontal length between the lift station and the point of connection into the existing sewer system in Winchester Drive. The final engineering and design specifications shall ensure the lift station can accommodate these constraints.

Proposed Industrial Development Project Applicability: Design Feature DF SEWER - 1 is not applicable to the proposed industrial development that would connect to the existing sewer line in Pepper Avenue.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SEWER-1 is applicable to future developments within PA 1 and PA 10.

Design Feature DF SEWER-2: Sewer Fees - The applicant of each applicable future development proposed within the Project Site shall be responsible for paying development impacts fees per Title 3 – Revenue and Finance, Chapter 3.33 – Development Impact Fees, Section 3.33.240 – Sewage Collection Facilities Development Impact Fee and Section 3.33.250 – Sewage Treatment Facilities Development Impact Fee of the Municipal Code.

Proposed Industrial Development Project Applicability: Design Feature DF SEWER - 2 is applicable to the proposed industrial development and would be implemented as part of City permitting.

Specific Plan Amendment PA 1 & 10 Applicability: Design Feature DF SEWER-2 is applicable to future developments within PA 1 and PA 10.

Conclusion for Utilities and Service Systems

No new impacts nor substantially more severe utility and service systems related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to utility and service systems from implementation of the proposed Project would be less than

significant with implementation of the design features that were included in the Final EIR. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate utility and service systems in the Subsequent EIR. Thus, utility and service systems will not be analyzed in the Subsequent EIR. However, the Final EIR design features are applicable to the proposed Project and will be included in the Subsequent EIR MMRP.

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

Summary of Impacts Identified in the Final EIR

Appendix A of the Final EIR, contains the Initial Study for the Pepper Avenue Specific Plan, which describes (Page B-20) that the Specific Plan area is not located in an area that has a significant amount of vegetation and is characterized by low sloping, gradual topography. The Initial Study states that according to Exhibit 4.7-2, *Wildfire Hazards Map*, in the 2010 General Plan Draft EIR, the site and immediate surrounding areas are not located within an area subject to wildfire hazards. Furthermore, future development on site would be subject to all applicable standards and regulations related to fire protection and prevention, and it was determined that impacts related to wildland fire hazards would be less than significant.

Impacts Related to the Proposed Project

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No New Impact. According to the CalFire Fire Hazard Severity Zone map, the Specific Plan area is not within an area identified as a Fire Hazard Area. In addition, the amended Specific Plan and proposed industrial development would not substantially impair an adopted emergency response plan or emergency evacuation plan. The Specific Plan area and proposed industrial development site are adjacent to roadways, and the site is not adjacent to or in the vicinity of wildlands.

Therefore, the proposed Project would not impair an adopted emergency response plan or emergency evacuation plan within or near a very high fire hazard severity zone. Wildfire risks will not be further evaluated in the Subsequent EIR.

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

No New Impact. As described in the previous response, the Specific Plan area is not within a High Fire Hazard Severity Zone. The Specific Plan area is flat and does not generally have prevailing winds or other factors that could exacerbate fire risks. The proposed Project would not result in exposure of persons to pollutant concentrations from a wildfire. Thus, impacts will not be further evaluated in the Subsequent EIR.

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

No New Impact. As described in the previous responses, the Specific Plan area is not within a High Fire Hazard Severity Zone, and the proposed Project does not include infrastructure that could exacerbate fire risks. The proposed industrial development would connect to the existing utility infrastructure that is adjacent to the site. Thus, no new impacts would result, and wildfire risks will not be further evaluated in the Subsequent EIR.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No New Impact. As described in the previous responses, the Specific Plan area is not within a High Fire Hazard Severity Zone. In addition, the Specific Plan area is generally flat area and does not contain or is adjacent to large slopes, and the proposed Project would not generate large slopes. Furthermore, the proposed industrial development includes installation of drainage facilities. Thus, the Project would not result in risks related to wildfires or risks related to downslope or downstream flooding or landslides after wildfires. Thus, wildfire risks will not be further evaluated in the Subsequent EIR.

Final EIR Mitigation Measure/Project Design Features

None.

Conclusion for Wildfires

No new impacts nor substantially more severe wildfire related impacts would result from the proposed Project. Consistent with the determination of the Final EIR, impacts related to wildfires from implementation of the proposed Project would not occur. Thus, no new or substantially greater impacts would occur with implementation of the proposed Project when compared to those identified in the Final EIR.

Based on the foregoing, none of the conditions identified in CEQA Guidelines Section 15162 that would trigger the need to evaluate wildfires in the Subsequent EIR. Thus, wildfires will not be analyzed in the Subsequent EIR.

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

Summary of Impacts Identified in the Final EIR

Impacts Related to the Proposed Project

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

Based on the discussion in Section 4, *Biological Resources*, potential impacts related to biological resources that would result from the proposed Specific Plan Amendment would be similar to those that were identified by the Final EIR because the areas of development would be the same and the same areas of disturbance would occur. Thus, the same potential for impacting biological resources would occur under the amended Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures BIO-1 through BIO-9, which would reduce potential impacts to a less than significant level consistent with the findings of the Final EIR. No further evaluation in the Subsequent EIR is required.

However, Section 5, *Cultural Resources*, and Section 18, *Tribal Cultural Resources*, describes that potential for impacting archeological and tribal cultural resources would occur under the amended

Specific Plan. Hence, implementing development projects pursuant to the amended Specific Plan would be required to implement Final EIR Mitigation Measures CUL-1 through CUL-8. Also, pursuant to Final EIR Mitigation Measure CUL-1, an archaeological resources assessment will be prepared for the proposed industrial project as part of the Subsequent EIR. Therefore, this topic will be evaluated in the Subsequent EIR, and additional mitigation measures will be identified if necessary.

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

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

Cumulative impacts are defined as two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the development when added to the impacts of other closely related past, present, and reasonably foreseeable or probable future developments. Cumulative impacts can result from individually minor, but collectively significant, developments taking place over a period. The CEQA Guidelines, Section 15130 (a) and (b), states:

a. Cumulative impacts shall be discussed when the project's incremental effect is cumulatively considerable.
b. The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the project. The discussion should be guided by the standards of practicality and reasonableness.

As described above, the proposed Specific Plan Amendment and proposed industrial development would change the type of land uses at buildout in a portion of the Specific Plan Area. In addition, the proposed Specific Plan Amendment, including proposed industrial development, would result in a 273,350 square foot increase in building area at buildout. The proposed Project would have the potential to result in cumulative impacts to aesthetic, air quality, cultural, energy, greenhouse gas, land use, noise, transportation, and tribal cultural resources. The extent and significance of potential cumulative impacts resulting from the combined effects of the proposed Project plus other past, present, and reasonably foreseeable future project will be evaluated in the Subsequent EIR.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant New Impact.

Specific Plan Amendment and Proposed Industrial Development

As detailed in the previous responses, the proposed Specific Plan Amendment and proposed industrial development could cause substantial adverse effects on human beings if not properly mitigated. The proposed Project could result in impacts to aesthetics, air quality, greenhouse gas, land use, noise, and transportation that could result in adverse effects on human beings. Therefore, these impacts will be addressed in the Subsequent EIR, and additional mitigation measures will be provided as needed.

Final EIR Mitigation Measure/Project Design Features

As listed in the previous responses.

Conclusion for Mandatory Findings of Significance

As detailed previously, it is possible that new or substantially more severe impacts related to these mandatory findings of significance could result from the proposed Project than were identified in the Final EIR. Thus, conditions identified in CEQA Guidelines Section 15162 related to changes to the Project that require major revisions of the previous adopted EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects would occur and would trigger the need to evaluate potential impacts in the Subsequent EIR. Thus, mandatory findings of significance will be analyzed in the Subsequent EIR.

5 REFERENCES

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6 DOCUMENT PREPARERS AND CONTRIBUTORS

Lead Agency:
City of Rialto
150 S. Palm Avenue
Rialto, CA 92376

CEQA Document Preparer:
EPD Solutions, Inc.
Konnie Dobreva, JD
Renee Escario

City of Rialto
Planning Division
150 S. Palm Avenue
Rialto, CA 92376

Notice of Preparation of a Draft Subsequent EIR and Scoping Meeting

Date: March 4, 2022

To: Public Agencies and Interested Parties

Subject: Notice of Preparation of a Draft Subsequent Environmental Impact Report and Scoping Meeting

Project Title: Pepper Avenue Specific Plan Amendment and Industrial Development Project

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The City of Rialto, as Lead Agency under the California Environmental Quality Act (CEQA), will prepare a Subsequent Environmental Impact Report (EIR) for the Pepper Avenue Specific Plan Amendment and Industrial Development Project (hereinafter "proposed Project"). In accordance with Section 15082 of the CEQA Guidelines, the City has issued this Notice of Preparation (NOP) to provide responsible agencies, trustee agencies, and other interested parties with information describing the proposed Project and its potential environmental effects.

Due to time limits mandated by State law your response must be sent at the earliest possible date but no later than 30 days after the date of this notice.

Notice of Preparation Review Period: March 4, 2022 to April 4, 2022

Scoping Meeting: March 16, 2022 at 5:00pm

Project Location

The 101.7-acre Specific Plan area is located east of Eucalyptus Avenue, south of State Route 210 (SR 210), west of Meridian Avenue and north of Walnut Avenue (see Figure 1, *Regional Location*). Pepper Avenue bisects the Specific Plan area into two east and west halves of the site. The 23.83-acre industrial development site is located within the Specific Plan area, on the eastern side of Pepper Avenue, as shown on Figure 2, *Local Vicinity*. The center point latitude and longitude for the proposed industrial development site are 34.13153802° North and 117.35110039 West. Regional access is provided via SR 210 and the Pepper Avenue interchange to the north of the Specific Plan area. Local access is provided by Pepper Avenue.

Project Description

The California Environmental Quality Act (CEQA) defines a project as "the whole of an action" that has the potential to result in a direct or reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378(a)). The proposed Project includes two distinct components:

(1) a Specific Plan Amendment ("proposed Specific Plan Amendment") to add a new Light Industrial land use designation to PAs 1, 2, 3 and create a new PA10; and

(2) a development application for the construction and operation of a 485,000 square foot cross dock industrial warehousing building on PAs 2 and 3 ("proposed industrial development").

Proposed Specific Plan Amendment

The proposed Specific Plan Amendment includes the following changes to the Pepper Avenue Specific Plan:

Light Industrial Land Use Designation. The Draft Specific Plan Amendment states that the Light Industrial land use designation is intended to accommodate a variety of industrial-serving commercial, low-intensity office, technology, light manufacturing, and warehouse/distribution uses that are compatible with the site's location near the SR 210. The land use designation accommodates storage and warehousing uses, such as e-commerce, high cube warehouses, or distribution, and a wide range of manufacturing and assembly uses are also permitted. The development standards for the new Light Industrial Land Use designation includes building and landscape setbacks, building height limits, and signage requirements.

Light Industrial Development Standards. The development standards for the new Light Industrial land use designation include building and landscape setbacks, building height limits, and signage requirements.

Changes to Planning Areas 1, 2, and 3. The proposed Specific Plan Amendment would split PA 1 into two separate PAs – PA 1, encompassing approximately 2.86 acres, and the new PA 10, encompassing approximately 11.56 acres. The reduced PA 1 would remain as Community Commercial and no land use designation changes would occur. The proposed Specific Plan Amendment applies the new Light Industrial land use designation to PA 10. The Light Industrial land use designation is also applied to PAs 2 and 3, which encompass the northeastern portion of the Specific Plan area adjacent to SR-210.

The proposed Specific Plan Amendment identifies the maximum buildout of PAs 2, 3, and 10 to be 735,185 square feet of industrial uses. The reduced PA 1 would have a maximum buildout of 13,000 square feet of commercial retail uses. The potential buildout of PAs 1, 2, 3 and 10 would result in a total development potential of 748,185 SF, or an increase of 271,535 SF of Light Industrial and Community Commercial development over the existing Specific Plan development maximum of 476,650 SF of Community Commercial. Proposed land uses are shown in Figure 3, *Proposed Specific Plan Amendment Land Uses*.

Proposed Industrial Development

Light Industrial Warehousing Uses. The proposed industrial development would develop a 23.83-acre site, comprised on PAs 2 and 3, with one approximately 485,000 square foot cross dock industrial warehousing building, that would be 46-feet in height and include up to 10,000 SF of office space and a 5,000 square foot mezzanine. The building would have 62 loading docks on the north side of the building and 54 loading docks on the south side of the building. The building would also have 4 drive through doors; two on each side of the building, as shown in Figure 4, *Proposed Industrial Development Conceptual Site Plan*. The building would be used for sorting, warehousing, distribution, and office space.

Access, Circulation, and Parking. The proposed industrial development would be accessible via two driveways: a 40-foot-wide access from Pepper Avenue at the southwest corner of the industrial development site for truck access to the gated loading bays and trailer parking, and a 40-foot-wide driveway from Pepper Avenue at the northwest corner of the industrial development site for passenger car access. Internal vehicular circulation would be provided around the building. Within the industrial development site, truck and trailer parking and loading would be located in the northern and southern portions and passenger car parking would be within the western portion and would be provided pursuant to the City of Rialto Municipal Code.

Landscaping and Fencing. The proposed industrial development would install approximately 69,925 SF of new ornamental landscaping throughout the site that would include a variety of trees, shrubs, accent species, and ground covers and water efficient irrigation that is compliant with California Title 24.

The Project includes installation of 9-foot-high walls along Pepper Avenue and along approximately 157 feet of the northern site boundary and along approximately 738 feet of the southern site boundary. The remainder of the site boundary would be lined with 8-foot-high tubular steel fencing.

Infrastructure Improvements. The industrial development site is located within an area that contains existing infrastructure within the adjacent right-of-way. The proposed industrial development would install onsite infrastructure that would connect to the existing infrastructure that is adjacent to the site.

EIR Scope

The City of Rialto has determined that a Subsequent EIR will be prepared for the proposed Project based on the proposed changes to the existing Pepper Avenue Specific Plan and the potential to cause significant environmental effects. Based on the information presented in the Initial Study prepared for the Project, the following topics will be evaluated in detail in the Subsequent EIR:

- Aesthetics
- Air Quality
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Land Use and Planning
- Noise
- Transportation
- Tribal Cultural Resources

The EIR will assess the effects of the Project on the environment, identify potentially significant impacts, identify feasible mitigation measures to reduce or eliminate potentially significant environmental impacts, and discuss potentially feasible alternatives to the Project that may accomplish basic objectives while lessening or eliminating any potentially significant project impacts.

Opportunity for Public Review and Comment

This Notice and the Initial Study prepared for the Project are available for review on the City's website at:
https://www.yourrialto.com/314/Current-Projects

The City of Rialto invites written comments regarding the scope of the information and analysis to be included in the Subsequent EIR. In accordance with the time limits established by CEQA, responses should be sent at the earliest possible date, but no later than 30 days after publication of this notice. Please submit your comments by 6:00 p.m. on April 4, 2022 to:

Daniel Casey, Senior Planner
City of Rialto
Community Development Department – Planning Division
150 S. Palm Avenue
Rialto, CA 92376
Phone: (909) 820-2535
Email: dcasey@rialtoca.gov

Scoping Meeting

Pursuant to California Public Resources Code Section 21083.9(a)(2) of the CEQA Statute and CEQA Guidelines Section 15082(c), the City of Rialto will hold a public scoping meeting, where agencies, organizations, and members of the public will receive a brief presentation on the Project, the scope of environmental review, and the overall

EIR process. The meeting will be held on:

Date and Time: March 16, 2022 at 5:00pm

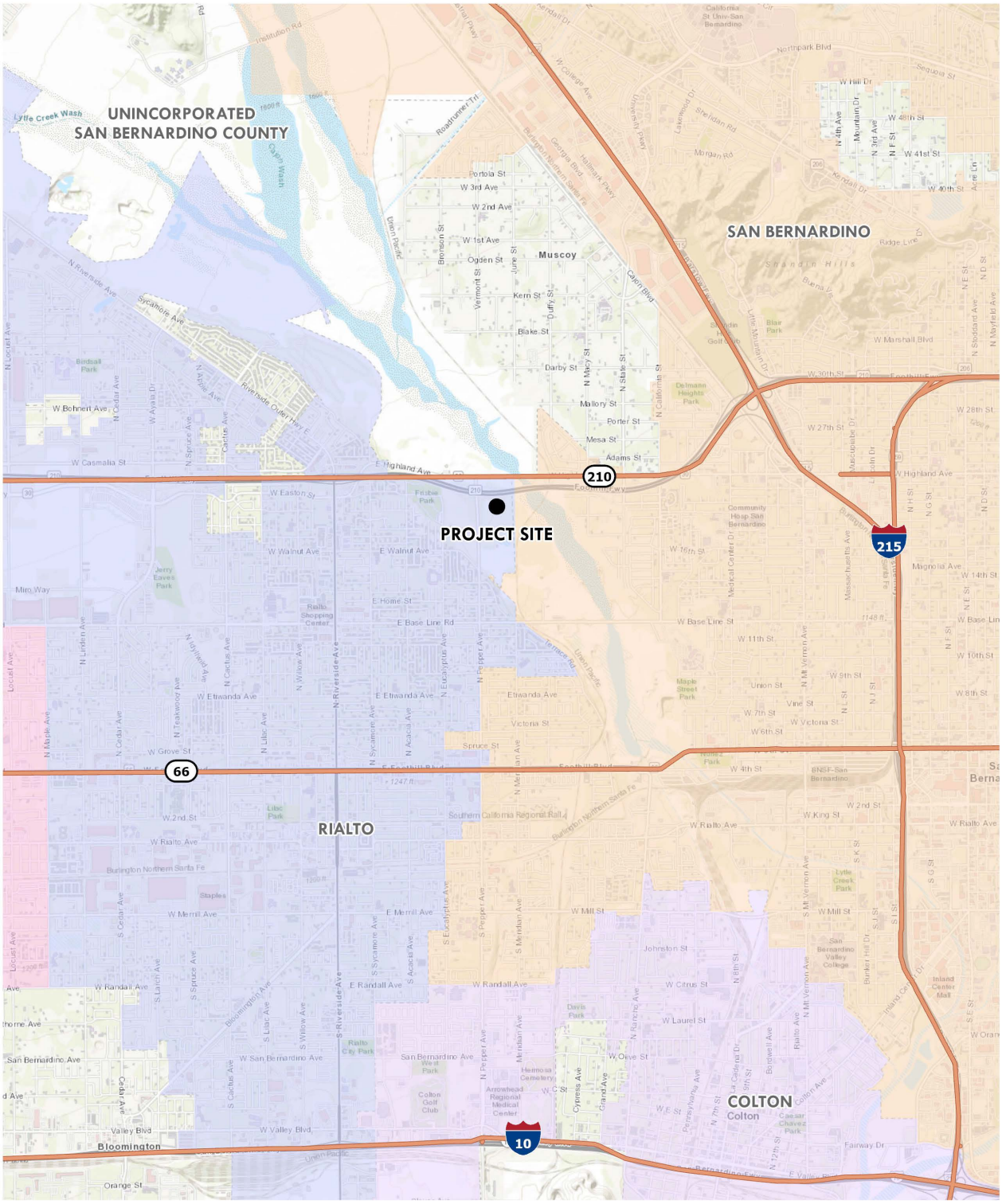
Place: Frisbee Park, Shelter 4
1901 N Acacia Ave, Rialto, CA 92376

Should you require special accommodations at the public scoping meeting, such as for the hearing impaired or an English translator, please contact the City of Rialto no later than Friday, March 11, 2022.

Please see the location of Shelter 4 below:



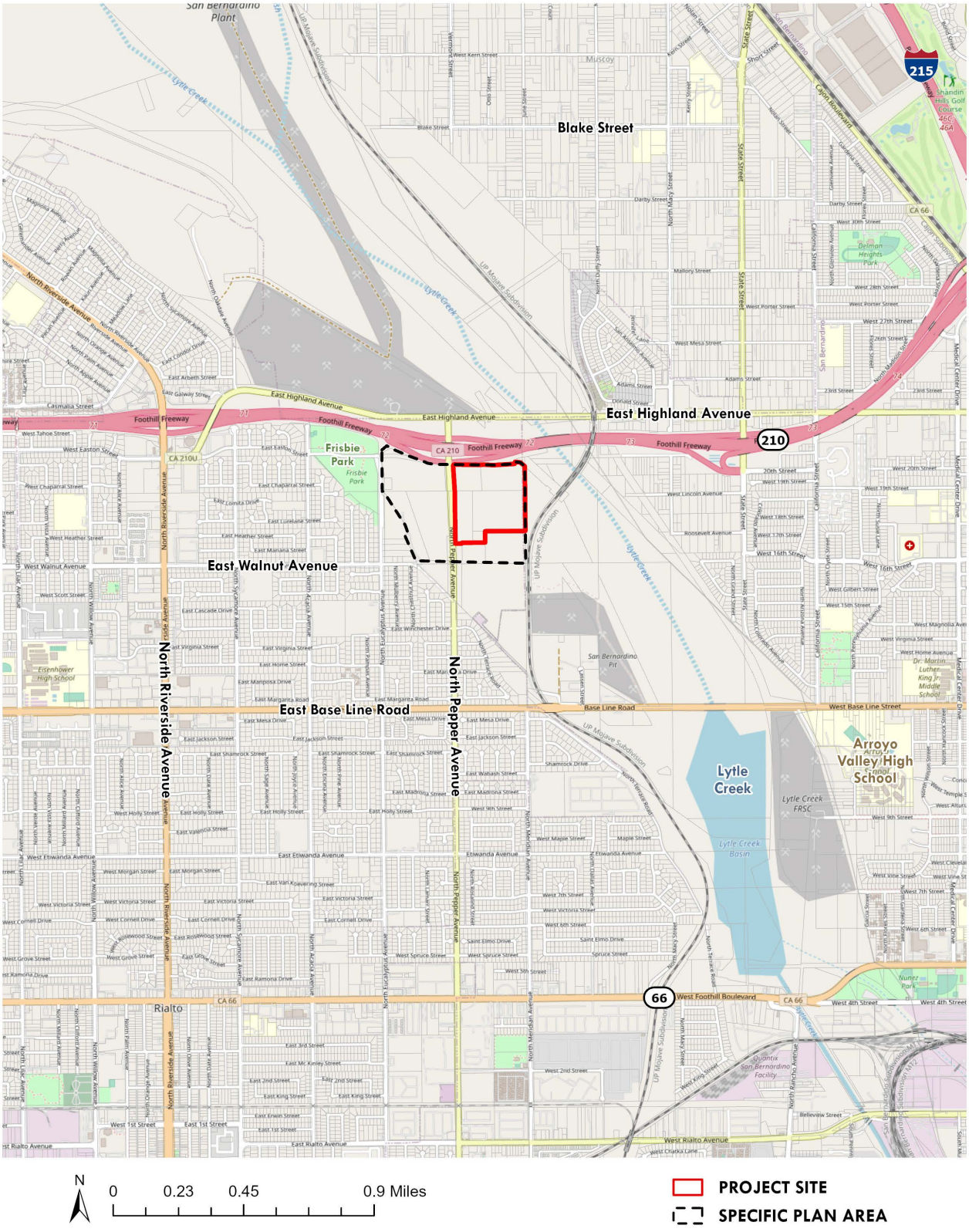
Regional Location



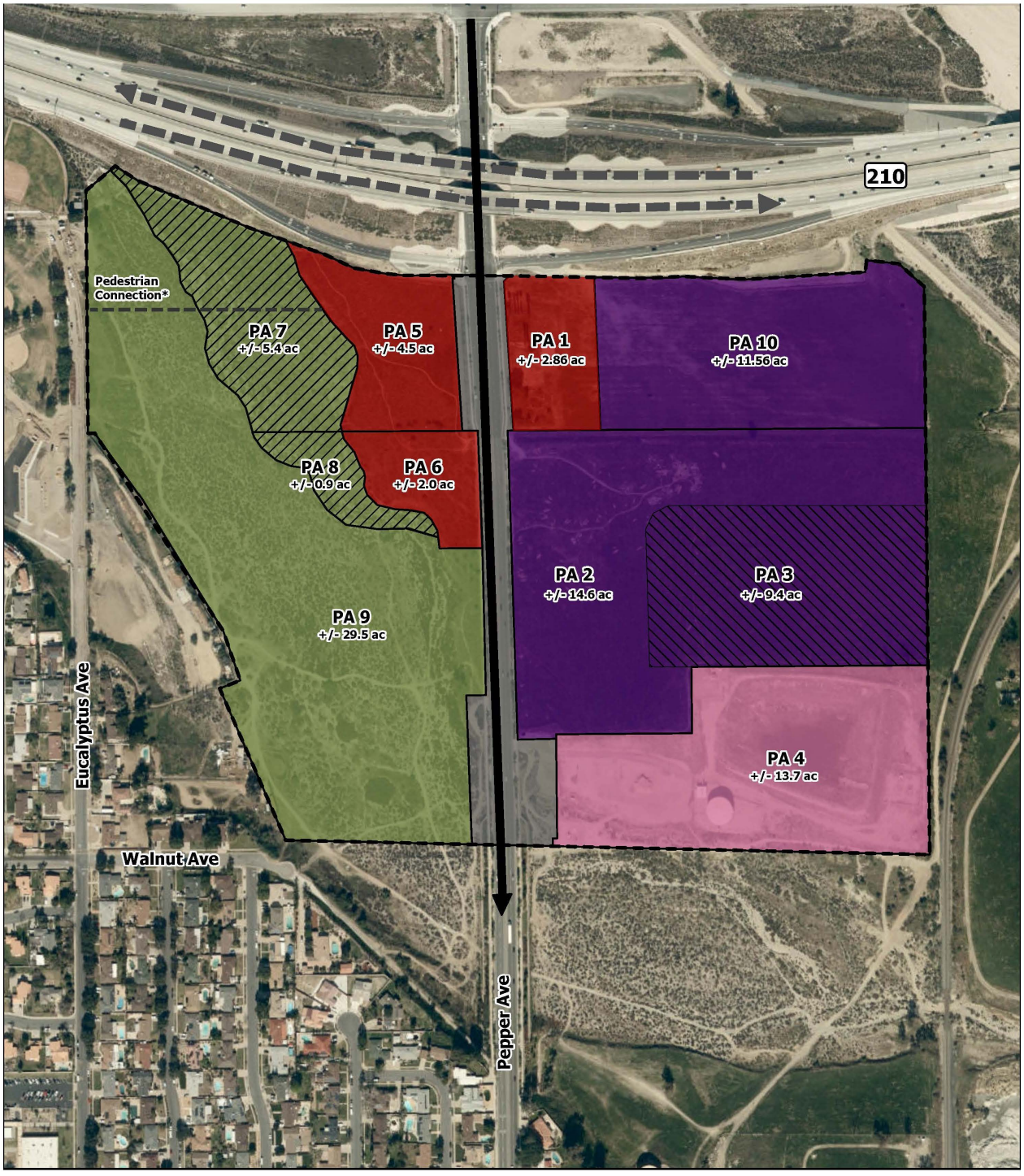
Pepper Avenue Specific Plan Amendment/Industrial Development Project Notice of Preparation

Figure 1

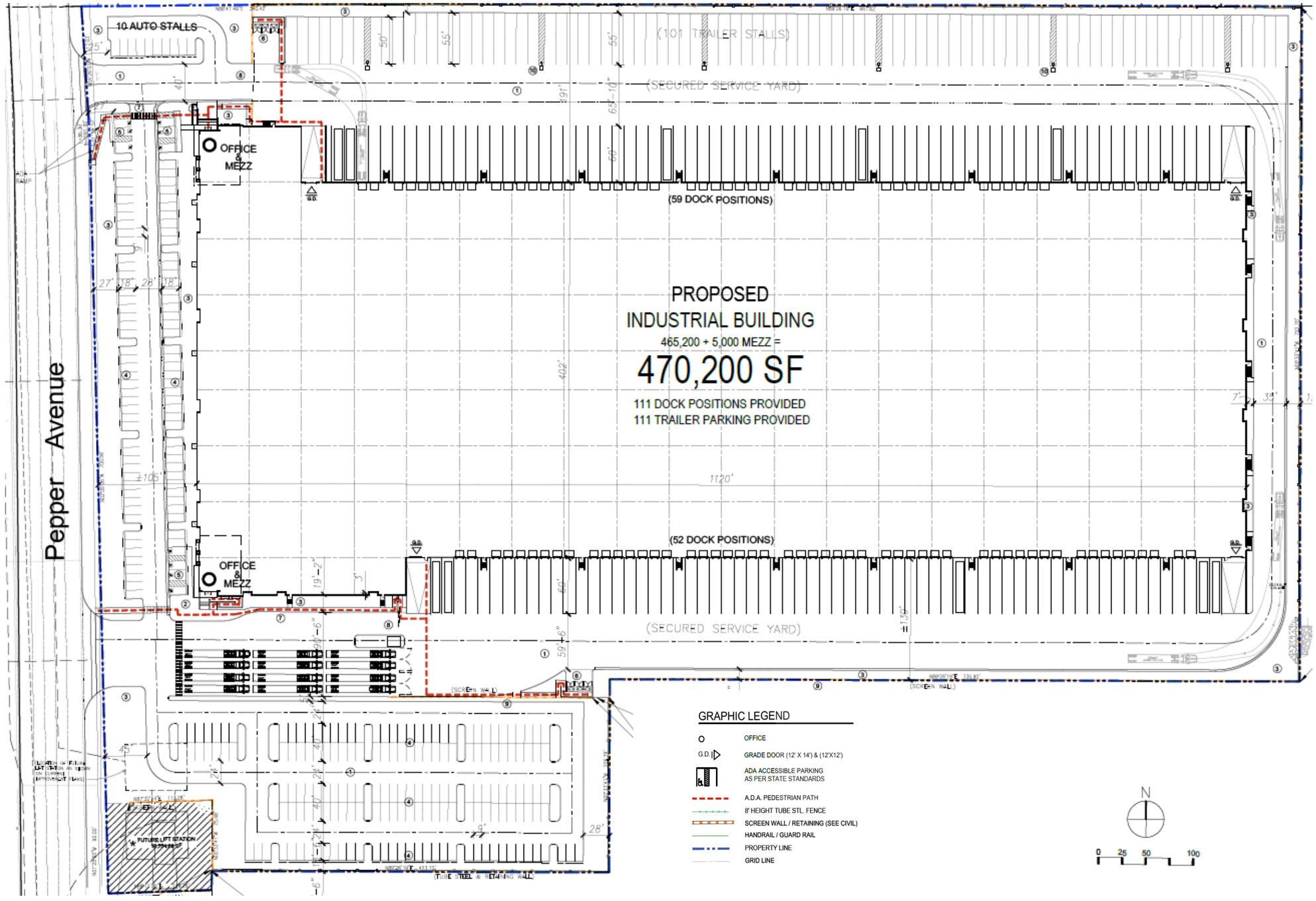
Local Vicinity



Proposed Pepper Avenue Specific Plan Amendment Land Uses



Proposed Industrial Development Conceptual Site Plan



NATIVE AMERICAN HERITAGE COMMISSION

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COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

March 7, 2022

Daniel Casey
City of Rialto
150 S. Palm Avenue
Rialto, CA 92376

Re: 2022030161, Pepper Avenue Specific Plan Amendment and Industrial Development Project, San Bernardino County

Dear Mr. Casey:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.

b. The lead agency contact information.

c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).

d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.

b. Recommended mitigation measures.

c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.

b. Significance of the tribal cultural resources.

c. Significance of the project's impacts on tribal cultural resources.

d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.

b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

April 7, 2022

Daniel Casey
Senior Planner
Community Development Department
City of Rialto
150 S. Palm Avenue
Rialto, California 92376
dcasey@rialtoca.gov

Dear Daniel Casey:

Thank you for providing the California Air Resources Board (CARB) with the opportunity to comment on the Notice of Preparation (NOP) for the Pepper Avenue Specific Plan Amendment and Industrial Development Project (Project) Draft Subsequent Environmental Impact Report (DSEIR), State Clearinghouse No. 2022030161. The Project proposes the development of a 485,000 square foot industrial warehouse building. The Project site is located within the City of Rialto (City), California, which is the lead agency for California Environmental Quality Act (CEQA) purposes.

Industrial development, such as the proposed Project, can result in high daily volumes of heavy-duty diesel truck traffic and operation of on-site equipment (e.g., forklifts and yard tractors) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change.[1] The Project will expose nearby communities to elevated levels of air pollution. Residences are located south, east and west of the Project with the closest residences located approximately 860 feet from the Project's western boundary. In addition to residences, the Howard Inghram Elementary School, Myers Elementary School, Morgan Elementary School and Dunn Elementary School are located within two miles of the Project. According to the California Communities Environmental Health Screening Tool Version 4.0 (CalEnviroScreen),[2] these communities are located in census tracts that score within the top 15 percent of State's most impacted from air pollution from an environmental hazard and socioeconomic standpoint. Based on this CalEnviroScreen score, the area surrounding the Project is home to some of the most vulnerable neighborhoods in the State. Due to the Project's proximity to residences and schools already burdened by multiple sources of air pollution, CARB is concerned with the potential cumulative health impacts associated with the construction and operation of the Project.

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1. With regard to greenhouse gas emissions from this project, CARB has been clear that local governments and project proponents have a responsibility to properly mitigate these impacts. CARB's guidance, set out in detail in the Scoping Plan issued in 2017, makes clear that in CARB's expert view, local mitigation is critical to achieving climate goals and reducing greenhouse gases below levels of significance.
2. "CalEnviroScreen 4.0." Oehha.ca.gov, California Office of Environmental Health Hazard Assessment, October 2021, *https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40*

Due to the Project's proximity to residences and schools, CARB is concerned with the potential cumulative health impacts associated with the construction and operation of the Project. CARB has reviewed the NOP and is concerned about the air pollution and health risk impacts that would result from the proposed Project.

The DSEIR Should Quantify and Discuss the Potential Cancer Risks from Project Operation

Since the Project is near residences and a school, the City and applicant must prepare a health risk assessment (HRA) for the Project. The HRA should account for all potential operational health risks from Project-related diesel PM emission sources, including, but not limited to, back-up generators, on-site diesel-powered equipment, and heavy-duty trucks. The HRA should also determine if the operation of the Project in conjunction with past, present, and reasonably foreseeable future projects or activities would result in a cumulative cancer risk impact on nearby residences. To reduce diesel PM exposure and associated cancer risks, the City and applicant should include all applicable air pollution reduction measures listed in Attachment A of this letter.

Since the Project description provided in the NOP does not explicitly state that the proposed industrial land would not be used for cold storage, there is a possibility that trucks and trailers visiting the Project-site would be equipped with Transport Refrigeration Units (TRUs.)[3] TRUs on trucks and trailers can emit large quantities of diesel exhaust while operating within the Project-site. Residences and other sensitive receptors (e.g., daycare facilities, senior care facilities, and schools) located near where these TRUs could be operating would be exposed to diesel exhaust emissions that would result in a significant cancer risk impact to the nearby community. If the Project would be used for cold storage, the City must model air pollutant emissions from on-site TRUs in the DSEIR, as well as include potential cancer risks from on-site TRUs in the Project's HRA. If the Project will not be used for cold storage, the City and applicant should include one of the following design measures in the DSEIR:

- A Project design measure requiring contractual language in tenant lease agreements that prohibits tenants from operating TRUs within the Project-site; or
- A condition requiring a restrictive covenant over the parcel that prohibits the applicant's use of TRUs on the property unless the applicant seeks and receives an amendment to its conditional use permit allowing such use.

The HRA prepared in support of the Project should be based on the latest Office of Environmental Health Hazard Assessment's (OEHHA) guidance (2015 Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments),[4] and CARB's Hot

3. TRUs are refrigeration systems powered by integral diesel engines that protect perishable goods during transport in an insulated truck and trailer vans, rail cars, and domestic shipping containers.
4. Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February 2015. Accessed at: *https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf*.

Spots Analysis and Reporting Program (HARP2 model). The Project's mobile diesel PM emissions used to estimate the Project's cancer risk impacts should be based on CARB's latest 2021 Emission Factors model (EMFAC2021). Mobile emission factors can be easily obtained by running the EMFAC2021 Web Database: *https://arb.ca.gov/emfac/.*

The HRA should evaluate and present the existing baseline (current conditions), future baseline (full build-out year, without the Project), and future year with the Project. The health risks modeled under both the existing and the future baselines should reflect all applicable federal, state, and local rules and regulations. By evaluating health risks using both baselines, the public and planners will have a complete understanding of the potential health impacts that would result from the Project.

The DSEIR Should Quantify and Discuss the Potential Cancer Risks from Project Construction

In addition to the health risks associated with operational diesel PM emissions, health risks associated with construction diesel PM emissions should also be included in the air quality section of the DSEIR and the Project's HRA. Construction of the Project would result in short-term diesel PM emissions from the use of both on-road and off-road diesel equipment. The OEHHA guidance recommends assessing cancer risks for construction projects lasting longer than two months. Since construction would very likely occur over a period lasting longer than two months, the HRA prepared for the Project should include health risks for existing residences near the Project-site during construction.

The HRA should account for all diesel PM emission sources related to Project construction, including, but not limited to, off-road mobile equipment, diesel generators, and on-road heavy-duty trucks. As previously stated in Section I of this letter, the cancer risks evaluated in the construction HRA should be based on the latest OEHHA guidance, and CARB's HARP2 model. The cancer risks reported in the HRA should be calculated using the latest emission factors obtained from CARB's latest EMFAC (currently EMFAC 2021) and off-road models.

Conclusion

To reduce the exposure of toxic diesel PM emissions in disadvantaged communities already impacted by air pollution, the final design of the Project should include all existing and emerging zero-emission technologies to minimize diesel PM and NO_x emissions, as well as the greenhouse gases that contribute to climate change. CARB encourages the City and applicant to implement the applicable measures listed in Attachment A of this letter.

Given the breadth and scope of projects subject to CEQA review throughout California that have air quality and greenhouse gas impacts, coupled with CARB's limited staff resources to substantively respond to all issues associated with a project, CARB must prioritize its substantive comments here based on staff time, resources, and its assessment of impacts. CARB's deliberate decision to substantively comment on some issues does not constitute an

admission or concession that it substantively agrees with the lead agency's findings and conclusions on any issues on which CARB does not substantively submit comments.

CARB appreciates the opportunity to comment on the NOP for the Project and can provide assistance on zero-emission technologies and emission reduction strategies, as needed. Please include CARB on your State Clearinghouse list of selected State agencies that will receive the DSEIR as part of the comment period. If you have questions, please contact Stanley Armstrong, Air Pollution Specialist via email at *stanley.armstrong@arb.ca.gov*.

Sincerely,



Robert Krieger, Branch Chief, Risk Reduction Branch

Attachment

cc: State Clearinghouse
state.clearinghouse@opr.ca.gov

Carlo De La Cruz, Senior Campaign Representative, Sierra Club
carlo.delacruz@sierraclub.org

Lijin Sun, Program Supervisor, CEQA Intergovernmental Review, South Coast Air Quality Management District
lsun@aqmd.gov

Morgan Capilla, NEPA Reviewer, U.S. Environmental Protection Agency, Air Division, Region 9
capilla.morgan@epa.gov

Taylor Thomas, Research and Policy Analyst, East Yard Communities for Environmental Justice
tbthomas@eycej.org

Stanley Armstrong, Air Pollution Specialist, Risk Reduction Branch

Attachment A
Recommended Air Pollution Emission Reduction Measures for Warehouses and Distribution Centers

The California Air Resources Board (CARB) recommends developers and government planners use all existing and emerging zero to near-zero emission technologies during project construction and operation to minimize public exposure to air pollution. Below are some measures, currently recommended by CARB, specific to warehouse and distribution center projects. These recommendations are subject to change as new zero-emission technologies become available.

Recommended Construction Measures

1. Ensure the cleanest possible construction practices and equipment are used. This includes eliminating the idling of diesel-powered equipment and providing the necessary infrastructure (e.g., electrical hookups) to support zero and near-zero equipment and tools.
2. Implement, and plan accordingly for, the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating on site. Necessary infrastructure may include the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, on-site vehicles and equipment, and medium-heavy and heavy-heavy duty trucks.
3. In construction contracts, include language that requires all off-road diesel-powered equipment used during construction to be equipped with Tier 4 or cleaner engines, except for specialized construction equipment in which Tier 4 engines are not available. In place of Tier 4 engines, off-road equipment can incorporate retrofits, such that, emission reductions achieved are equal to or exceed that of a Tier 4 engine.
4. In construction contracts, include language that requires all off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers) used during project construction be battery powered.
5. In construction contracts, include language that requires all heavy-duty trucks entering the construction site during the grading and building construction phases be model

year 2014 or later. All heavy-duty haul trucks should also meet CARB's lowest optional low-oxides of nitrogen (NO_x) standard starting in the year 2022.[1]

6. In construction contracts, include language that requires all construction equipment and fleets to be in compliance with all current air quality regulations. CARB is available to assist in implementing this recommendation.

Recommended Operation Measures

1. Include contractual language in tenant lease agreements that requires tenants to use the cleanest technologies available, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating on site.
2. Include contractual language in tenant lease agreements that requires all loading/unloading docks and trailer spaces be equipped with electrical hookups for trucks with transport refrigeration units (TRUs) or auxiliary power units. This requirement will substantially decrease the amount of time that a TRU powered by a fossil-fueled internal combustion engine can operate at the project site. Use of zero-emission all-electric plug-in TRUs, hydrogen fuel cell transport refrigeration, and cryogenic transport refrigeration are encouraged and can also be included in lease agreements.[2]
3. Include contractual language in tenant lease agreements that requires all TRUs entering the project-site be plug-in capable.
4. Include contractual language in tenant lease agreements that requires future tenants to exclusively use zero-emission light and medium-duty delivery trucks and vans.
5. Include contractual language in tenant lease agreements that requires all service equipment (e.g., yard hostlers, yard equipment, forklifts, and pallet jacks) used within the project site to be zero-emission. This equipment is widely available and can be purchased using incentive funding from CARB's Clean Off-Road Equipment Voucher Incentive Project (CORE).[3]
6. Include contractual language in tenant lease agreements that requires all heavy-duty trucks entering or on the project site to be model year 2014 or later, expedite a transition to zero-emission vehicles, and be fully zero-emission beginning in 2023. A list of commercially available zero-emission trucks can be obtained from the Hybrid

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1. In 2013, CARB adopted optional low-NOx emission standards for on-road heavy-duty engines. CARB encourages engine manufacturers to introduce new technologies to reduce NOx emissions below the current mandatory on-road heavy-duty diesel engine emission standards for model-year 2010 and later. CARB's optional low-NOx emission standard is available at: *https://ww2.arb.ca.gov/our-work/programs/optional-reduced-nox-standards*

2. CARB's technology assessment for transport refrigerators provides information on the current and projected development of TRUs, including current and anticipated costs. The assessment is available at: *https://www.arb.ca.gov/msprog/tech/techreport/tru_07292015.pdf*

3. Clean Off-Road Equipment Voucher Incentive Project. Accessible at: *https://californiacore.org/how-to-participate/*

and Zero-emission Truck and Bus Voucher Incentive Project (HVIP).[4] Additional incentive funds can be obtained from the Carl Moyer Program and Voucher Incentive Program.[5]

7. Include contractual language in tenant lease agreements that requires the tenant to be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation,[6] Advanced Clean Trucks Regulation,[7] Periodic Smoke Inspection Program (PSIP),[8] and the Statewide Truck and Bus Regulation.[9]
8. Include contractual language in tenant lease agreements restricting trucks and support equipment from idling longer than two minutes while on site.
9. Include rooftop solar panels for each proposed warehouse to the extent feasible, with a capacity that matches the maximum allowed for distributed solar connections to the grid.
10. Include contractual language in tenant lease agreements, requiring the installing of vegetative walls[10] or other effective barriers that separate loading docks and people living or working nearby.
11. Include contractual language in tenant lease agreements, requiring all emergency generators to be powered by a non-diesel fuel.
12. The project should be constructed to meet CalGreen Tier 2 green building standards, including all provisions related to designated parking for clean air vehicles, electric vehicle charging, and bicycle parking, and achieve a certification of compliance with LEED green building standards.

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4. Zero-Emission Truck and Bus Voucher Incentive Project. Accessible at: *https://californiahvip.org/*
5. Carl Moyer Program and Voucher Incentive Program. *https://ww2.arb.ca.gov/carl-moyer-program-apply*
6. In December 2008, CARB adopted a regulation to reduce greenhouse gas emissions by improving the fuel efficiency of heavy-duty tractors that pull 53-foot or longer box-type trailers. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation is available at: *https://ww2.arb.ca.gov/our-work/programs/ttghg*
7. On June 25, 2020, CARB approved the Advanced Clean Trucks Regulation. The regulation requires manufacturers to start the transition from diesel trucks and vans to zero-emission trucks beginning in 2024. The rule is expected to result in about 100,000 electric trucks in California by the end of 2030 and about 300,000 by 2035. CARB is expected to consider a fleet regulation in 2021 that would be compatible with the Advanced Clean Trucks regulation, requiring fleets to purchase a certain percentage of zero-emission trucks and vans for their fleet operations. *https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks*
8. The PSIP program requires that diesel and bus fleet owners conduct annual smoke opacity inspections of their vehicles and repair those with excessive smoke emissions to ensure compliance. CARB's PSIP program is available at: *https://www.arb.ca.gov/enf/hdvip/hdvip.htm*
9. The regulation requires that newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model-year engines or equivalent. CARB's Statewide Truck and Bus Regulation is available at: *https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm*
10. Effectiveness of Sound Wall-Vegetation Combination Barriers as Near-Roadway Pollutant Mitigation Strategies (2017) is available at: *https://ww2.arb.ca.gov/sites/default/files/classic//research/apr/past/13-306.pdf*

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL: March 22, 2022

dcasey@rialtoca.gov
Daniel Casey, Senior Planner
City of Rialto, Community Development Department
150 South Palm Avenue
Rialto, California 92376

Notice of Preparation of a Draft Subsequent Environmental Impact Report for the Proposed Pepper Avenue Specific Plan Amendment and Industrial Development Project (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. Our comments are recommendations on the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Subsequent Environmental Impact Report (EIR). Please send a copy of the Draft Subsequent EIR upon its completion and public release directly to South Coast AQMD as copies of the Draft Subsequent EIR submitted to the State Clearinghouse are not forwarded. **In addition, please send all appendices and technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all emission calculation spreadsheets, and air quality modeling and health risk assessment input and output files (not PDF files). Any delays in providing all supporting documentation for our review will require additional review time beyond the end of the comment period.**

CEQA Air Quality Analysis

Staff recommends that the Lead Agency use South Coast AQMD's CEQA Air Quality Handbook and website[1] as guidance when preparing the air quality and greenhouse gas analyses. It is also recommended that the Lead Agency use the CalEEMod[2] land use emissions software, which can estimate pollutant emissions from typical land use development and is the only software model maintained by the California Air Pollution Control Officers Association.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds[3] and localized significance thresholds (LSTs)[4] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated.

[1] South Coast AQMD's CEQA Handbook and other resources for preparing air quality analyses can be found at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.
[2] CalEEMod is available free of charge at: www.caleemod.com.
[3] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.
[4] South Coast AQMD's guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers and air pollution control devices), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA ***operational*** thresholds to determine the level of significance.

If the Proposed Project generates diesel emissions from long-term construction or attracts diesel-fueled vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[5].

In the event that implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the Draft Subsequent EIR. The assumptions in the air quality analysis in the Subsequent EIR will be the basis for evaluating the permit under CEQA and imposing permit conditions and limits. Questions on permits should be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

The California Air Resources Board's (CARB) *Air Quality and Land Use Handbook: A Community Health Perspective*[6] is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process with additional guidance on strategies to reduce air pollution exposure near high-volume roadways available in CARB's technical advisory[7].

South Coast AQMD staff is concerned about potential public health impacts of siting warehouses within close proximity of sensitive land uses, especially in communities that are already heavily affected by the existing warehouse and truck activities. The South Coast AQMD's Multiple Air Toxics Exposure Study (MATES V), completed in August 2021, concluded that the largest contributor to cancer risk from air pollution is diesel particulate matter (DPM) emissions[8]. According to the MATES V Carcinogenic Risk interactive Map, the area surrounding the Proposed Project has an estimated cancer risk over 455 in one million[9]. Operation of warehouses generates and attracts heavy-duty diesel-fueled trucks that emit DPM. When the health impacts from the Proposed Project are added to those existing impacts, residents living in the communities surrounding the Proposed Project will possibly face an even greater exposure to air pollution and bear a disproportionate burden of increasing health risks.

Mitigation Measures

In the event that the Proposed Project results in significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized to minimize these impacts. Any impacts resulting from mitigation measures must also be analyzed. Several resources to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project include

[5] South Coast AQMD's guidance for performing a mobile source health risk assessment can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.
[6] CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* can be found at: http://www.arb.ca.gov/ch/handbook.pdf.
[7] CARB's technical advisory can be found at: https://www.arb.ca.gov/ch/landuse.htm.
[8] South Coast AQMD. August 2021. *Multiple Air Toxics Exposure Study in the South Coast Air Basin V.* Available at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v.
[9] South Coast AQMD. MATES V Data Visualization Tool. Accessed at: MATES Data Visualization (arcgis.com).

South Coast AQMD's CEQA Air Quality Handbook[1], South Coast AQMD's Mitigation Monitoring and Reporting Plan for the 2016 Air Quality Management Plan[10], and Southern California Association of Government's Mitigation Monitoring and Reporting Plan for the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy[11].

Mitigation measures for operational air quality impacts from mobile sources that the Lead Agency should consider in the Draft Subsequent EIR may include the following:

- Require zero-emissions (ZE) or near-zero emission (NZE) on-road haul trucks such as heavy-duty trucks with natural gas engines that meet the CARB's adopted optional NOx emissions standard at 0.02 grams per brake horsepower-hour (g/bhp-hr), if and when feasible. Given the state's clean truck rules and regulations aiming to accelerate the utilization and market penetration of ZE and NZE trucks such as the Advanced Clean Trucks Rule[12] and the Heavy-Duty Low NOx Omnibus Regulation[13], ZE and NZE trucks will become increasingly more available to use. The Lead Agency should require a phase-in schedule to incentive the use of these cleaner operating trucks to reduce any significant adverse air quality impacts. South Coast AQMD staff is available to discuss the availability of current and upcoming truck technologies and incentive programs with the Lead Agency. At a minimum, require the use of 2010 model year[14] that meet CARB's 2010 engine emissions standards at 0.01 g/bhp-hr of particulate matter (PM) and 0.20 g/bhp-hr of NOx emissions or newer, cleaner trucks. Include environmental analyses to evaluate and identify sufficient electricity and supportive infrastructures in the Energy and Utilities and Service Systems Sections in the CEQA document, where appropriate. Include the requirement in applicable bid documents, purchase orders, and contracts. Operators shall maintain records of all trucks associated with project construction to document that each truck used meets these emission standards, and make the records available for inspection. The Lead Agency should conduct regular inspections to the maximum extent feasible to ensure compliance.
- Limit the daily number of trucks allowed at the Proposed Project to levels analyzed in the Final CEQA document. If higher daily truck volumes are anticipated to visit the site, the Lead Agency should commit to re-evaluating the Proposed Project through CEQA prior to allowing this higher activity level.
- Provide electric vehicle (EV) charging stations or at a minimum, provide the electrical infrastructure and electrical panels should be appropriately sized. Electrical hookups should be provided for truckers to plug in any onboard auxiliary equipment.

[10] South Coast AQMD's 2016 Air Quality Management Plan can be found at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf (starting on page 86).
[11] Southern California Association of Governments' 2020-2045 RTP/SCS can be found at: https://www.connectsocal.org/Documents/PEIR/certified/Exhibit-A_ConnectSoCal_PEIR.pdf.
[12] CARB. June 25, 2020. *Advanced Clean Trucks Rule.* Accessed at: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.
[13] CARB has recently passed a variety of new regulations that require new, cleaner heavy-duty truck technology to be sold and used in state. For example, on August 27, 2020, CARB approved the Heavy-Duty Low NOx Omnibus Regulation, which will require all trucks to meet the adopted emission standard of 0.05 g/hp-hr starting with engine model year 2024. Accessed at: https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox.
[14] CARB adopted the statewide Truck and Bus Regulation in 2010. The Regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. More information on the CARB's Truck and Bus Regulation is available at: https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

Mitigation measures for operational air quality impacts from other area sources that the Lead Agency should consider in the Draft Subsequent EIR may include the following:

- Maximize use of solar energy by installing solar energy arrays.
- Use light colored paving and roofing materials.
- Utilize only Energy Star heating, cooling, and lighting devices, and appliances.
- Use of water-based or low VOC cleaning products that go beyond the requirements of South Coast AQMD Rule 1113.

Design considerations for the Proposed Project that the Lead Agency should consider to further reduce air quality and health risk impacts include the following:

- Clearly mark truck routes with trailblazer signs, so that trucks will not travel next to or near sensitive land uses (e.g., residences, schools, day care centers, etc.).
- Design the Proposed Project such that truck entrances and exits are not facing sensitive receptors and trucks will not travel past sensitive land uses to enter or leave the Proposed Project site.
- Design the Proposed Project such that any check-in point for trucks is inside the Proposed Project site to ensure that there are no trucks queuing outside.
- Design the Proposed Project to ensure that truck traffic inside the Proposed Project site is as far away as feasible from sensitive receptors.
- Restrict overnight truck parking in sensitive land uses by providing overnight truck parking inside the Proposed Project site.

On May 7, 2021, South Coast AQMD's Governing Board adopted Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, and Rule 316 – Fees for Rule 2305. Rules 2305 and 316 are new rules that will reduce regional and local emissions of nitrogen oxides (NOx) and particulate matter (PM), including diesel PM. These emission reductions will reduce public health impacts for communities located near warehouses from mobile sources that are associated with warehouse activities. Also, the emission reductions will help the region attain federal and state ambient air quality standards. Rule 2305 applies to owners and operators of warehouses greater than or equal to 100,000 square feet. Under Rule 2305, operators are subject to an annual WAIRE Points Compliance Obligation that is calculated based on the annual number of truck trips to the warehouse. WAIRE Points can be earned by implementing actions in a prescribed menu in Rule 2305, implementing a site-specific custom plan, or paying a mitigation fee. Warehouse owners are only required to submit limited information reports, but they can opt in to earn Points on behalf of their tenants if they so choose because certain actions to reduce emissions may be better achieved at the warehouse development phase, for instance the installation of solar and charging infrastructure. Rule 316 is a companion fee rule for Rule 2305 to allow South Coast AQMD to recover costs associated with Rule 2305 compliance activities. Since the Proposed Project consists of the development of a 485,000-square-foot warehouse, the Proposed Project's warehouse owners and operators will be required to comply with Rule 2305 once the warehouse is occupied. Therefore, South Coast AQMD staff recommends that the Lead Agency review South Coast AQMD Rule 2305 to determine the potential WAIRE Points Compliance Obligation for future operators and explore whether additional project requirements and CEQA mitigation measures can be identified and implemented at the Proposed Project that may help future warehouse operators meet their compliance obligation[15]. South Coast AQMD staff is available to answer questions concerning Rule 2305 implementation and compliance by phone or email at (909) 396-3140 or waire-program@aqmd.gov. For

[15] South Coast AQMD Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program. Accessed at: http://www.aqmd.gov/docs/default-source/rule-book/reg-xxiii/r2305.pdf.

implementation guidance documents and compliance and reporting tools, please visit South Coast AQMD's WAIRE Program webpage[16].

South Coast AQMD staff is available to work with the Lead Agency to ensure that air quality, greenhouse gas, and health risk impacts from the Proposed Project are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

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Control Number

[16] South Coast AQMD WAIRE Program. Accessed at: http://www.aqmd.gov/waire.

RIALTO
UNIFIED SCHOOL DISTRICT
BRIDGING FUTURES THROUGH INNOVATION

BODY SOUL SPIRIT

April 4, 2022

Daniel Casey, Senior Planner
City of Rialto
Community Development Services Department, Planning Division
150 South Palm Avenue
Rialto, CA 92376

Via E-mail: dcasey@rialtoca.gov

Subject: Response to Notice of Preparation of a Draft Subsequent Environmental Impact Report for Proposed Pepper Avenue Specific Plan Amendment and Industrial Development Project, City of Rialto

Dear Mr. Casey:

Rialto Unified School District (District) appreciates the opportunity to respond to the Notice of Preparation (NOP) of a Draft Subsequent Environmental Impact Report (SEIR) for the proposed Pepper Avenue Specific Plan Amendment and Industrial Development Project (Project). Our comments provided herein should be considered in preparation of the Draft SEIR.

The City of Rialto approved the Pepper Avenue Specific Plan and certified its Final Environmental Impact Report (FEIR) in 2017. It is now considering amending the Specific Plan and approving a development application within the Specific Plan. The Project includes two main components:

1. A Specific Plan Amendment to add a new Light Industrial land use designation to Planning Areas (PAs) 1, 2, 3, and at a new PA 10, which is within the boundaries of the previously approved Specific Plan.

2. A development application for the construction and operation of a 485,000-square-foot industrial warehouse building on PAs 2 and 3.

The Project is located east of Eucalyptus Avenue, south of State Route 210, west of Meridian Avenue, and north of Walnut Avenue. It is also within one mile of the following five schools and the District administrative office:

Board of Education
Mr. Edgar Montes, President | **Mrs. Stephanie E. Lewis**, Vice President | **Ms. Dina Walker**, Clerk | **Mr. Joseph W. Martinez**, Member
Dr. Cuauhtémoc Avila, RUSD Superintendent | **Mrs. Diane Romo**, Lead Business Services Agent

Schools and District Office	Address	Distance to Specific Plan Area
1. Frisbie Middle School	1442 N Eucalyptus Ave, Rialto	960 feet to the southwest
2. Morgan Elementary School	1571 N Sycamore Ave, Rialto	0.5 mile to the west
3. Myers Elementary School	975 N Meridian Ave, Rialto	0.7 mile to the south
4. District Administrative Office	182 E Walnut Ave, Rialto	0.7 mile to the west
5. Bemis Elementary School	774 E Etiwanda Ave, Rialto	0.9 mile to the south
6. Henry Elementary School	470 E Etiwanda Ave, Rialto	1.0 mile to the southwest

Project Description

The NOP and Initial Study (NOP/IS) state that the Project would result in an increase of 217,535 SF of Light Industrial and Community Commercial development over that of the approved Specific Plan.[1,2] This statement should be clarified, and the analysis in the Draft SEIR must reflect the clarification, as detailed below.

- Table 1, *Planning Area Land Use Summary*, of the Initial Study prepared for the Project provides that the Project would result in 13,000 SF of retail development and up to 735,185 SF of light industrial, which is a new land use category proposed in the Specific Plan Amendment.[3]
- Table 2-1, *Planning Area Land Use Summary*, of the certified 2017 FEIR shows the approved land uses as including Community Commercial, Community Commercial with Residential Overlay, Public Facility, Open Space, Open Space with Community Commercial Overlay, and Right-of-Way. The development types in the approved Specific Plan are further summarized in Table 2-2, *Development Scenarios Summary,* as Retail, Business Park, and Residential.[4] The approved Specific Plan and certified 2017 FEIR do not identify a Light Industrial land use.

Table A, *Comparison of Proposed Changes to the Pepper Avenue Specific Plan*, below, compares the approved and proposed land-use changes in the PAs that are affected by the Project. As shown, the Project would result in the reduction of 338,650 SF of Retail (13,000 SF – 351, 650 SF), the reduction of 125,000 SF of Business Park, and the addition of 735,185 SF of Light Industrial. The Project Description in the Draft SEIR must accurately reflect the proposed changes. The corresponding technical analysis in the Draft SEIR must also reflect the proposed changes, including the addition of 735,185 SF of Light Industrial use for the Specific Plan Amendment and 485,000 SF of logistics warehouse development for the Development Application. The analysis should not be analyzing the overall change in 217,535 SF of Light Industrial and Community Commercial development as stated in the NOP/IS, as this does not appear accurate.

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[1] City of Rialto. Notice of Preparation of a Draft Subsequent EIR and Scoping Meeting. 2022, March 4.
[2] City of Rialto. Pepper Avenue Specific Plan Amendment and Industrial Development Project Initial Study. 2022, February 23.
[3] Ibid.
[4] City of Rialto. Pepper Avenue Specific Plan, Draft Environmental Impact Report, State Clearinghouse Number 2016021047. 2017, March.

TABLE A
COMPARISON OF PROPOSED CHANGES TO THE PEPPER AVENUE SPECIFIC PLAN

	Approved Pepper Avenue Specific Plan[1]		Proposed Pepper Avenue Specific Plan[2]	
	Retail (SF)	Business Park (SF)	Retail	Light Industrial
PA 1	108,650	95,000	13,000	--
PA 2	127,000	30,000	--	295,000
PA 3	116,000	--	--	190,000
PA 10	--	--	--	250,185
Total	**351,650**	**125,000**	**13,000**	**735,185**

1. City of Rialto. Pepper Avenue Specific Plan, Draft Environmental Impact Report, State Clearinghouse Number 2016021047. 2017, March.
2. City of Rialto. Pepper Avenue Specific Plan Amendment and Industrial Development Project Initial Study. 2022, February 23.

Design Considerations

The City should consider incorporating into the Specific Plan Amendment and design of the proposed warehouse/logistics development the recommendations provided in the California Department of Justice's Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act.[5]

Related to the proposed Development Application, the District requests the City consider the below design changes to reduce emissions associated with the Project impacting sensitive receptors to the south and west of the Project site:

1. Relocate the trailer truck ingress and egress access from the currently proposed southern driveway to the northern driveway. Emissions from idling trailer trucks would be moved farther from the dense residential and school uses to the west and south.
2. To the extent feasible, eliminate trailer truck parking and docking on the south side of the warehouse building. Consider relocating these activities currently on the south side of the building to the eastern side of the building.
3. Locate potential operation of transport refrigeration units (TRUs) to the northeast corner of the property, away from sensitive receptors to the west and south.

Air Quality

Health-Protective Thresholds. Due to the poor air quality that exists in Rialto and the adjacent San Bernardino Muscoy community (which is an AB 617 / Environmental Justice Community) and the proximity of the Project to sensitive receptors, the District suggests the City consider whether use of the South Coast Air Quality Management District (SCAQMD) thresholds is appropriate or if health-protective thresholds should be used instead. Table B shows the suggested health-protective thresholds that should be considered. Use of health-protective thresholds would ensure that adequate mitigation is developed should the Project result in potentially significant impacts to air quality and cause health risks.

[5] California Department of Justice. Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act https://oag.ca.gov/sites/all/files/agweb/pdfs/environment/warehouse-best-practices.pdf

TABLE B
HEALTH-PROTECTIVE SIGNIFICANCE THRESHOLDS AS COMPARED TO SCAQMD CEQA SIGNIFICANCE THRESHOLDS

Pollutant	Scenario/ Time Period	SCAQMD Air Quality Significance Thresholds	Health-Protective Thresholds
Toxic Air Contaminants (TACs) Thresholds			
DPM	Construction	Maximum Incremental Cancer Risk ≥ 10 in 1 million	Maximum Incremental Cancer Risk ≥ 1 in 1 million
	Operations		Maximum Incremental Cancer Risk ≥ 10 in 1 million
Ambient Air Quality Standards for Criteria Pollutants			
NO2	1-hour average	0.18 ppm (state) (Equivalent to 339 µg/m^3)	20 µg/m^3
	Annual arithmetic mean	0.03 ppm (state) (Equivalent to 56.4 µg/m^3) and 0.0534 ppm (federal) (Equivalent to 100 µg/m^3)	1.0 µg/m^3
PM10	24-hour average	10.4 µg/m^3 (construction)	5.0 µg/m^3
		2.5 µg/m^3 (operation)	2.5 µg/m^3
	Annual average	1.0 µg/m^3	1.0 µg/m^3
PM2.5	24-hour average	10.4 µg/m^3 (construction)	1.2 µg/m^3
		2.5 µg/m^3 (operation)	1.2 µg/m^3
	Annual average	(no standard)	0.3 µg/m^3

Cumulative Impacts. The environmental analysis prepared for the Project must consider not only project-related emissions but also cumulative project emissions, i.e., the Project's emissions in combination with approved and planned developments' emissions. As cumulative air quality impacts are regional in nature, we request that related projects include those approved and planned within a three-mile radius. The cumulative emissions must then be added to the existing (baseline) air quality conditions in order to fully capture the Project's cumulative impacts and develop adequate mitigation.

Potential Mitigation Measure. If air quality impacts are significant at District facilities, the District requests the City consider creative mitigation to help reduce poor air quality at impacted schools and District facilities, such as conditioning Project approval to comply with SCAQMD Rule 2305, *Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program.* Specifically, the District requests the City to require proposed industrial uses and development in the Specific Plan to work with the SCAQMD and District to create a Custom WAIRE Plan (SCAQMD Rule 2305(d)(4)) to mitigate potential exposure to toxic air contaminants to children at indoor instructional spaces.

Transportation

Conformance with Adopted City Circulation Plans. Trip generation rates used for the traffic study to determine whether the Project conforms with City Circulation Plans should be based on industry-standard rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*.

Vehicle and Pedestrian Conflicts. To limit potential vehicle and pedestrian conflicts, we suggest the City require all construction and operational truck trips to access the Project site via only the I-210 Freeway, Pepper Avenue on/off-ramp. The District also suggests prohibiting trailer truck traffic from traveling south of the Specific Plan on Pepper Avenue. This would ensure that trailer truck traffic will not access residential streets and avoid potential conflicts during morning and afternoon student drop-off and pick-up activities.

Conclusion

The District appreciates the opportunity to comment on the Project. Please contact the undersigned at 909-421-7555 or alopez@rialtousd.org if you would like to further discuss the comments provided herein. We look forward to reviewing the forthcoming Draft SEIR.

Sincerely,

Angie Lopez
Director, Facilities Planning Services

P: (626) 381-9248
F: (626) 389-5414
E: info@mitchtsailaw.com

Mitchell M. Tsai
Attorney At Law

139 South Hudson Avenue
Suite 200
Pasadena, California 91101

VIA E-MAIL

March 16, 2022

Daniel Casey
Senior Planner
City of Rialto
150 South Palm Avenue
Rialto, CA 92376
Em: dcasey@rialtoca.gov

RE: City of Rialto Pepper Avenue Specific Plan Amendment and Industrial Development Project.

Dear Daniel Casey,

On behalf of the Southwest Regional Council of Carpenters ("**SWRCC**" or "**Southwest Carpenters**"), my Office is submitting these comments on the City of Rialto's ("City" or "**Lead Agency**") Notice of Preparation of an Environmental Impact Report ("**NOP**") for Pepper Avenue Specific Plan Amendment and Industrial Development Project ("**Project**").

The Southwest Carpenters is a labor union representing more than 50,000 union carpenters in six states, including California, and has a strong interest in well-ordered land use planning, addressing the environmental impacts of development projects and equitable economic development.

Individual members of the Southwest live, work and recreate in the City and surrounding communities and would be directly affected by the Project's environmental impacts.

The Southwest Carpenters expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearings and proceedings related to this Project. Cal. Gov. Code § 65009(b); Cal. Pub. Res. Code § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal. App. 4th 1184, 1199-1203; see *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.

SWRCC incorporates by reference all comments raising issues regarding the environmental impact report ("**EIR**") submitted prior to certification of the EIR for the Project. *Citizens for Clean Energy v City of Woodland* (2014) 225 Cal. App. 4th 173, 191 (finding that any party who has objected to the Project's environmental documentation may assert any issue timely raised by other parties).

Moreover, SWRCC requests that the Lead Agency provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act ("**CEQA**"), Cal Public Resources Code ("**PRC**") § 21000 *et seq*, and the California Planning and Zoning Law ("**Planning and Zoning Law**"), Cal. Gov't Code §§ 65000–65010. California Public Resources Code Sections 21092.2, and 21167(f) and Government Code Section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

The City should require the Applicant to provide additional community benefits such as requiring local hire and use of a skilled and trained workforce to build the Project. The City should require the use of workers who have graduated from a Joint Labor Management apprenticeship training program approved by the State of California, or have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a state approved apprenticeship training program or who are registered apprentices in an apprenticeship training program approved by the State of California.

Community benefits such as local hire and skilled and trained workforce requirements can also be helpful to reduce environmental impacts and improve the positive economic impact of the Project. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project Site can reduce the length of vendor trips, reduce greenhouse gas emissions and providing localized economic benefits. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note:

> [A]ny local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the

> reduction would vary based on the location and urbanization level of the project site.

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling.

Skilled and trained workforce requirements promote the development of skilled trades that yield sustainable economic development. As the California Workforce Development Board and the UC Berkeley Center for Labor Research and Education concluded:

> . . . labor should be considered an investment rather than a cost – and investments in growing, diversifying, and upskilling California's workforce can positively affect returns on climate mitigation efforts. In other words, well trained workers are key to delivering emissions reductions and moving California closer to its climate targets. [1]

Recently, on May 7, 2021, the South Coast Air Quality Management District found that the "[u]se of a local state-certified apprenticeship program or a skilled and trained workforce with a local hire component" can result in air pollutant reductions.[2]

Cities are increasingly adopting local skilled and trained workforce policies and requirements into general plans and municipal codes. For example, the City of Hayward 2040 General Plan requires the City to "promote local hiring . . . to help achieve a more positive jobs-housing balance, and reduce regional commuting, gas consumption, and greenhouse gas emissions." [3]

In fact, the City of Hayward has gone as far as to adopt a Skilled Labor Force policy into its Downtown Specific Plan and municipal code, requiring developments in its

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[1] California Workforce Development Board (2020) Putting California on the High Road: A Jobs and Climate Action Plan for 2030 at p. ii, *available at* https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf.

[2] South Coast Air Quality Management District (May 7, 2021) Certify Final Environmental Assessment and Adopt Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions Program, and Proposed Rule 316 – Fees for Rule 2305, Submit Rule 2305 for Inclusion Into the SIP, and Approve Supporting Budget Actions, *available at* http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10

[3] City of Hayward (2014) Hayward 2040 General Plan Policy Document at p. 3-99, *available at* https://www.hayward-ca.gov/sites/default/files/documents/General_Plan_FINAL.pdf.

Downtown area to requiring that the City "[c]ontribute to the stabilization of regional construction markets by spurring applicants of housing and nonresidential developments to require contractors to utilize apprentices from state-approved, joint labor-management training programs, . . ."[4] In addition, the City of Hayward requires all projects 30,000 square feet or larger to "utilize apprentices from state-approved, joint labor-management training programs." [5]

Locating jobs closer to residential areas can have significant environmental benefits. As the California Planning Roundtable noted in 2008:

> People who live and work in the same jurisdiction would be more likely to take transit, walk, or bicycle to work than residents of less balanced communities and their vehicle trips would be shorter. Benefits would include potential reductions in both vehicle miles traveled and vehicle hours traveled.[6]

In addition, local hire mandates as well as skill training are critical facets of a strategy to reduce vehicle miles traveled. As planning experts Robert Cervero and Michael Duncan noted, simply placing jobs near housing stock is insufficient to achieve VMT reductions since the skill requirements of available local jobs must be matched to those held by local residents.[7] Some municipalities have tied local hire and skilled and trained workforce policies to local development permits to address transportation issues. As Cervero and Duncan note:

> In nearly built-out Berkeley, CA, the approach to balancing jobs and housing is to create local jobs rather than to develop new housing." The city's First Source program encourages businesses to hire local residents, especially for entry- and intermediate-level jobs, and sponsors vocational training to ensure residents are employment-ready. While the program is

[4] City of Hayward (2019) Hayward Downtown Specific Plan at p. 5-24, *available at* https://www.hayward-ca.gov/sites/default/files/Hayward%20Downtown%20Specific%20Plan.pdf.
[5] City of Hayward Municipal Code, Chapter 10, § 28.5.3.020(C).
[6] California Planning Roundtable (2008) Deconstructing Jobs-Housing Balance at p. 6, *available at* https://cproundtable.org/static/media/uploads/publications/cpr-jobs-housing.pdf
[7] Cervero, Robert and Duncan, Michael (2006) Which Reduces Vehicle Travel More: Jobs-Housing Balance or Retail-Housing Mixing? Journal of the American Planning Association 72 (4), 475-490, 482, *available at* http://reconnectingamerica.org/assets/Uploads/UTCT-825.pdf.

> voluntary, some 300 businesses have used it to date, placing more than 3,000 city residents in local jobs since it was launched in 1986. When needed, these carrots are matched by sticks, since the city is not shy about negotiating corporate participation in First Source as a condition of approval for development permits.

The City should consider utilizing skilled and trained workforce policies and requirements to benefit the local area economically and mitigate greenhouse gas, air quality and transportation impacts.

If the City has any questions or concerns, feel free to contact my Office.

Sincerely,

Mitchell M. Tsai
Attorneys for Southwest Regional
Council of Carpenters

Attached:

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling (Exhibit A);

Air Quality and GHG Expert Paul Rosenfeld CV (Exhibit B); and

Air Quality and GHG Expert Matt Hagemann CV (Exhibit C).

EXHIBIT A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G, C.Hg.
(949) 887-9013
mhagemann@swape.com

Paul E. Rosenfeld, PhD
(310) 795-2335
prosenfeld@swape.com

March 8, 2021

Mitchell M. Tsai
155 South El Molino, Suite 104
Pasadena, CA 91101

Subject: Local Hire Requirements and Considerations for Greenhouse Gas Modeling

Dear Mr. Tsai,

Soil Water Air Protection Enterprise ("SWAPE") is pleased to provide the following draft technical report explaining the significance of worker trips required for construction of land use development projects with respect to the estimation of greenhouse gas ("GHG") emissions. The report will also discuss the potential for local hire requirements to reduce the length of worker trips, and consequently, reduced or mitigate the potential GHG impacts.

Worker Trips and Greenhouse Gas Calculations

The California Emissions Estimator Model ("CalEEMod") is a "statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects."[1] CalEEMod quantifies construction-related emissions associated with land use projects resulting from off-road construction equipment; on-road mobile equipment associated with workers, vendors, and hauling; fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and architectural coating activities; and paving.[2]

The number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[3]

[1] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[2] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.

Specifically, the number and length of vehicle trips is utilized to estimate the vehicle miles travelled ("VMT") associated with construction. Then, utilizing vehicle-class specific EMFAC 2014 emission factors, CalEEMod calculates the vehicle exhaust, evaporative, and dust emissions resulting from construction-related VMT, including personal vehicles for worker commuting.[4]

Specifically, in order to calculate VMT, CalEEMod multiplies the average daily trip rate by the average overall trip length (see excerpt below):

> "$VMT_d = \Sigma(\text{Average Daily Trip Rate}_i * \text{Average Overall Trip Length}_i)_n$
>
> Where:
>
> n = Number of land uses being modeled."[5]

Furthermore, to calculate the on-road emissions associated with worker trips, CalEEMod utilizes the following equation (see excerpt below):

> "$\text{Emissions}_{pollutant} = VMT * EF_{running,pollutant}$
>
> Where:
>
> $\text{Emissions}_{pollutant}$ = emissions from vehicle running for each pollutant
>
> VMT = vehicle miles traveled
>
> $EF_{running,pollutant}$ = emission factor for running emissions."[6]

Thus, there is a direct relationship between trip length and VMT, as well as a direct relationship between VMT and vehicle running emissions. In other words, when the trip length is increased, the VMT and vehicle running emissions increase as a result. Thus, vehicle running emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise.

Default Worker Trip Parameters and Potential Local Hire Requirements

As previously discussed, the number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[7] In order to understand how local hire requirements and associated worker trip length reductions impact GHG emissions calculations, it is important to consider the CalEEMod default worker trip parameters. CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence.[8] The default number of construction-related worker trips is calculated by multiplying the

[4] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14-15.
[5] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 23.
[6] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 1, 9.

number of pieces of equipment for all phases by 1.25, with the exception of worker trips required for the building construction and architectural coating phases.[9] Furthermore, the worker trip vehicle class is a 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2, respectively."[10] Finally, the default worker trip length is consistent with the length of the operational home-to-work vehicle trips.[11] The operational home-to-work vehicle trip lengths are:

> "[B]ased on the *location* and *urbanization* selected on the project characteristic screen. These values were *supplied by the air districts or use a default average for the state*. Each district (or county) also assigns trip lengths for urban and rural settings" (emphasis added). [12]

Thus, the default worker trip length is based on the location and urbanization level selected by the User when modeling emissions. The below table shows the CalEEMod default rural and urban worker trip lengths by air basin (see excerpt below and Attachment A).[13]

Worker Trip Length by Air Basin		
Air Basin	**Rural (miles)**	**Urban (miles)**
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
Mountain Counties	16.8	10.8
North Central Coast	17.1	12.3
North Coast	16.8	10.8
Northeast Plateau	16.8	10.8
Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Minimum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[10] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[11] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14.
[12] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 21.
[13] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-84 – D-86.

As demonstrated above, default rural worker trip lengths for air basins in California vary from 10.8- to 19.8-miles, with an average of 16.47 miles. Furthermore, default urban worker trip lengths vary from 10.8- to 14.7-miles, with an average of 11.17 miles. Thus, while default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. Based on these trends evident in the CalEEMod default worker trip lengths, we can reasonably assume that the efficacy of a local hire requirement is especially dependent upon the urbanization of the project site, as well as the project location.

Practical Application of a Local Hire Requirement and Associated Impact

To provide an example of the potential impact of a local hire provision on construction-related GHG emissions, we estimated the significance of a local hire provision for the Village South Specific Plan ("Project") located in the City of Claremont ("City"). The Project proposed to construct 1,000 residential units, 100,000-SF of retail space, 45,000-SF of office space, as well as a 50-room hotel, on the 24-acre site. The Project location is classified as Urban and lies within the Los Angeles-South Coast County. As a result, the Project has a default worker trip length of 14.7 miles.[14] In an effort to evaluate the potential for a local hire provision to reduce the Project's construction-related GHG emissions, we prepared an updated model, reducing all worker trip lengths to 10 miles (see Attachment B). Our analysis estimates that if a local hire provision with a 10-mile radius were to be implemented, the GHG emissions associated with Project construction would decrease by approximately 17% (see table below and Attachment C).

Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO_2e)	3,623
Amortized Construction GHG Emissions (MT CO_2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized Construction GHG Emissions (MT CO_2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

As demonstrated above, by implementing a local hire provision requiring 10 mile worker trip lengths, the Project could reduce potential GHG emissions associated with construction worker trips. More broadly, any local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

This serves as an example of the potential impacts of local hire requirements on estimated project-level GHG emissions, though it does not indicate that local hire requirements would result in reduced construction-related GHG emission for all projects. As previously described, the significance of a local hire requirement depends on the worker trip length enforced and the default worker trip length for the project's urbanization level and location.

[14] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-85.

Disclaimer

SWAPE has received limited discovery. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,



Matt Hagemann, P.G., C.Hg.



Paul E. Rosenfeld, Ph.D.

Location Type	Location Name	Rural H-W (miles)	Urban H-W (miles)
Air Basin	Great Basin	16.8	10.8
Air Basin	Lake County	16.8	10.8
Air Basin	Lake Tahoe	16.8	10.8
Air Basin	Mojave Desert	16.8	10.8
Air Basin	Mountain	16.8	10.8
Air Basin	North Central	17.1	12.3
Air Basin	North Coast	16.8	10.8
Air Basin	Northeast	16.8	10.8
Air Basin	Sacramento	16.8	10.8
Air Basin	Salton Sea	14.6	11
Air Basin	San Diego	16.8	10.8
Air Basin	San Francisco	10.8	10.8
Air Basin	San Joaquin	16.8	10.8
Air Basin	South Central	16.8	10.8
Air Basin	South Coast	19.8	14.7
Air District	Amador County	16.8	10.8
Air District	Antelope Valley	16.8	10.8
Air District	Bay Area AQMD	10.8	10.8
Air District	Butte County	12.54	12.54
Air District	Calaveras	16.8	10.8
Air District	Colusa County	16.8	10.8
Air District	El Dorado	16.8	10.8
Air District	Feather River	16.8	10.8
Air District	Glenn County	16.8	10.8
Air District	Great Basin	16.8	10.8
Air District	Imperial County	10.2	7.3
Air District	Kern County	16.8	10.8
Air District	Lake County	16.8	10.8
Air District	Lassen County	16.8	10.8
Air District	Mariposa	16.8	10.8
Air District	Mendocino	16.8	10.8
Air District	Modoc County	16.8	10.8
Air District	Mojave Desert	16.8	10.8
Air District	Monterey Bay	16.8	10.8
Air District	North Coast	16.8	10.8
Air District	Northern Sierra	16.8	10.8
Air District	Northern	16.8	10.8
Air District	Placer County	16.8	10.8
Air District	Sacramento	15	10

Air District	San Diego	16.8	10.8
Air District	San Joaquin	16.8	10.8
Air District	San Luis Obispo	13	13
Air District	Santa Barbara	8.3	8.3
Air District	Shasta County	16.8	10.8
Air District	Siskiyou County	16.8	10.8
Air District	South Coast	19.8	14.7
Air District	Tehama County	16.8	10.8
Air District	Tuolumne	16.8	10.8
Air District	Ventura County	16.8	10.8
Air District	Yolo/Solano	15	10
County	Alameda	10.8	10.8
County	Alpine	16.8	10.8
County	Amador	16.8	10.8
County	Butte	12.54	12.54
County	Calaveras	16.8	10.8
County	Colusa	16.8	10.8
County	Contra Costa	10.8	10.8
County	Del Norte	16.8	10.8
County	El Dorado-Lake	16.8	10.8
County	El Dorado-	16.8	10.8
County	Fresno	16.8	10.8
County	Glenn	16.8	10.8
County	Humboldt	16.8	10.8
County	Imperial	10.2	7.3
County	Inyo	16.8	10.8
County	Kern-Mojave	16.8	10.8
County	Kern-San	16.8	10.8
County	Kings	16.8	10.8
County	Lake	16.8	10.8
County	Lassen	16.8	10.8
County	Los Angeles-	16.8	10.8
County	Los Angeles-	19.8	14.7
County	Madera	16.8	10.8
County	Marin	10.8	10.8
County	Mariposa	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Merced	16.8	10.8
County	Modoc	16.8	10.8
County	Mono	16.8	10.8
County	Monterey	16.8	10.8
County	Napa	10.8	10.8

County	Nevada	16.8	10.8
County	Orange	19.8	14.7
County	Placer-Lake	16.8	10.8
County	Placer-Mountain	16.8	10.8
County	Placer-	16.8	10.8
County	Plumas	16.8	10.8
County	Riverside-	16.8	10.8
County	Riverside-	19.8	14.7
County	Riverside-Salton	14.6	11
County	Riverside-South	19.8	14.7
County	Sacramento	15	10
County	San Benito	16.8	10.8
County	San Bernardino-	16.8	10.8
County	San Bernardino-	19.8	14.7
County	San Diego	16.8	10.8
County	San Francisco	10.8	10.8
County	San Joaquin	16.8	10.8
County	San Luis Obispo	13	13
County	San Mateo	10.8	10.8
County	Santa Barbara-	8.3	8.3
County	Santa Barbara-	8.3	8.3
County	Santa Clara	10.8	10.8
County	Santa Cruz	16.8	10.8
County	Shasta	16.8	10.8
County	Sierra	16.8	10.8
County	Siskiyou	16.8	10.8
County	Solano-	15	10
County	Solano-San	16.8	10.8
County	Sonoma-North	16.8	10.8
County	Sonoma-San	10.8	10.8
County	Stanislaus	16.8	10.8
County	Sutter	16.8	10.8
County	Tehama	16.8	10.8
County	Trinity	16.8	10.8
County	Tulare	16.8	10.8
County	Tuolumne	16.8	10.8
County	Ventura	16.8	10.8
County	Yolo	15	10
County	Yuba	16.8	10.8
Statewide	Statewide	16.8	10.8

Worker Trip Length by Air Basin		
Air Basin	**Rural (miles)**	**Urban (miles)**
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
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North Coast	16.8	10.8
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Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Mininum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1969	213.1969	0.0601	0.0000	214.6993
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.6826	1,721.6826	0.1294	0.0000	1,724.9187
2023	0.6148	3.3649	5.6747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.5295	1,627.5295	0.1185	0.0000	1,630.4925
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9078	52.9078	8.0200e-003	0.0000	53.1082
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.6826**	**1,721.6826**	**0.1294**	**0.0000**	**1,724.9187**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1967	213.1967	0.0601	0.0000	214.6991
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.6823	1,721.6823	0.1294	0.0000	1,724.9183
2023	0.6148	3.3648	5.6747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.5291	1,627.5291	0.1185	0.0000	1,630.4921
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9077	52.9077	8.0200e-003	0.0000	53.1082
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.6823**	**1,721.6823**	**0.1294**	**0.0000**	**1,724.9183**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2021**	**11-30-2021**	1.4103	1.4103
2	**12-1-2021**	**2-28-2022**	1.3613	1.3613
3	**3-1-2022**	**5-31-2022**	1.1985	1.1985
4	**6-1-2022**	**8-31-2022**	1.1921	1.1921
5	**9-1-2022**	**11-30-2022**	1.1918	1.1918
6	**12-1-2022**	**2-28-2023**	1.0774	1.0774
7	**3-1-2023**	**5-31-2023**	1.0320	1.0320
8	**6-1-2023**	**8-31-2023**	1.0260	1.0260

9	**9-1-2023**	**11-30-2023**	1.0265	1.0265
10	**12-1-2023**	**2-29-2024**	2.8857	2.8857
11	**3-1-2024**	**5-31-2024**	1.6207	1.6207
		Highest	2.8857	2.8857

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	7.5000e-004	8.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	7.5000e-004	8.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4088	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4088	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4916**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9558
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9558**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9558
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9558**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.7974	6,234.7974	1.9495	0.0000	6,283.5352
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.5674	15,251.5674	1.9503	0.0000	15,278.5288
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.5269	14,807.5269	1.0250	0.0000	14,833.1521
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,361.3989	2,361.3989	0.7177	0.0000	2,379.3421
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.5674**	**15,251.5674**	**1.9503**	**0.0000**	**15,278.5288**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.7974	6,234.7974	1.9495	0.0000	6,283.5352
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.5674	15,251.5674	1.9503	0.0000	15,278.5288
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.5269	14,807.5269	1.0250	0.0000	14,833.1520
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,361.3989	2,361.3989	0.7177	0.0000	2,379.3421
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.5674**	**15,251.5674**	**1.9503**	**0.0000**	**15,278.5288**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.0568**	**1,463.0568**	**0.0927**		**1,465.3750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.0568**	**1,463.0568**	**0.0927**		**1,465.3750**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.6857	8,800.6857	0.2429		8,806.7582
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.2339**	**12,697.2339**	**0.4665**		**12,708.8966**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.6857	8,800.6857	0.2429		8,806.7582
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.2339**	**12,697.2339**	**0.4665**		**12,708.8966**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		8,478.4408	8,478.4408	0.2190		8,483.9160
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.3170**	**12,252.3170**	**0.4172**		**12,262.7460**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		8,478.4408	8,478.4408	0.2190		8,483.9160
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.3170**	**12,252.3170**	**0.4172**		**12,262.7460**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.0852	1,641.0852	0.0401		1,642.0886
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.0852**	**1,641.0852**	**0.0401**		**1,642.0886**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.0852	1,641.0852	0.0401		1,642.0886
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.0852**	**1,641.0852**	**0.0401**		**1,642.0886**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.4937	6,221.4937	1.9491	0.0000	6,270.2214
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.3099	14,630.3099	1.9499	0.0000	14,657.2663
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.3424	14,210.3424	1.0230	0.0000	14,235.9160
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,352.4178	2,352.4178	0.7175	0.0000	2,370.3550
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.3099**	**14,630.3099**	**1.9499**	**0.0000**	**14,657.2663**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.4937	6,221.4937	1.9491	0.0000	6,270.2214
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.3099	14,630.3099	1.9499	0.0000	14,657.2663
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.3424	14,210.3424	1.0230	0.0000	14,235.9160
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,352.4178	2,352.4178	0.7175	0.0000	2,370.3550
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.3099**	**14,630.3099**	**1.9499**	**0.0000**	**14,657.2663**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.2019**	**4.1943**	**1.5706**	**0.0133**	**0.4346**	**0.0141**	**0.4487**	**0.1176**	**0.0135**	**0.1311**		**1,430.6932**	**1,430.6932**	**0.0955**		**1,433.0812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.2019**	**4.1943**	**1.5706**	**0.0133**	**0.4346**	**0.0141**	**0.4487**	**0.1176**	**0.0135**	**0.1311**		**1,430.6932**	**1,430.6932**	**0.0955**		**1,433.0812**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.9013	8,286.9013	0.2282		8,292.6058
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.9763**	**12,075.9763**	**0.4663**		**12,087.6341**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.9013	8,286.9013	0.2282		8,292.6058
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.9763**	**12,075.9763**	**0.4663**		**12,087.6341**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.7318	7,983.7318	0.2055		7,988.8683
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.1325**	**11,655.1325**	**0.4151**		**11,665.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.7318	7,983.7318	0.2055		7,988.8683
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.1325**	**11,655.1325**	**0.4151**		**11,665.5099**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.2860	1,545.2860	0.0376		1,546.2262
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.2860**	**1,545.2860**	**0.0376**		**1,546.2262**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.2860	1,545.2860	0.0376		1,546.2262
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.2860**	**1,545.2860**	**0.0376**		**1,546.2262**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1788	0.0754	0.2542	0.0000	210.7654	210.7654	0.0600	0.0000	212.2661
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0683	0.2518	0.1103	0.3621	0.0000	1,418.6554	1,418.6554	0.1215	0.0000	1,421.6925
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.4412	1,342.4412	0.1115	0.0000	1,345.2291
2024	4.1592	0.1313	0.2557	5.0000e-004	0.0221	6.3900e-003	0.0285	5.8700e-003	5.9700e-003	0.0118	0.0000	44.6355	44.6355	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.6554**	**1,418.6554**	**0.1215**	**0.0000**	**1,421.6925**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1788	0.0754	0.2542	0.0000	210.7651	210.7651	0.0600	0.0000	212.2658
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0683	0.2518	0.1103	0.3621	0.0000	1,418.6550	1,418.6550	0.1215	0.0000	1,421.6921
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.4409	1,342.4409	0.1115	0.0000	1,345.2287
2024	4.1592	0.1313	0.2557	5.0000e-004	0.0221	6.3900e-003	0.0285	5.8700e-003	5.9700e-003	0.0118	0.0000	44.6354	44.6354	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.6550**	**1,418.6550**	**0.1215**	**0.0000**	**1,421.6921**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2021**	**11-30-2021**	1.4091	1.4091
2	**12-1-2021**	**2-28-2022**	1.3329	1.3329
3	**3-1-2022**	**5-31-2022**	1.1499	1.1499
4	**6-1-2022**	**8-31-2022**	1.1457	1.1457
5	**9-1-2022**	**11-30-2022**	1.1415	1.1415
6	**12-1-2022**	**2-28-2023**	1.0278	1.0278
7	**3-1-2023**	**5-31-2023**	0.9868	0.9868
8	**6-1-2023**	**8-31-2023**	0.9831	0.9831

9	**9-1-2023**	**11-30-2023**	0.9798	0.9798
10	**12-1-2023**	**2-29-2024**	2.8757	2.8757
11	**3-1-2024**	**5-31-2024**	1.6188	1.6188
		Highest	2.8757	2.8757

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.9771**	**1,105.9771**	**0.0451**	**0.0000**	**1,107.1039**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.9771**	**1,105.9771**	**0.0451**	**0.0000**	**1,107.1039**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.4166	6,163.4166	1.9475	0.0000	6,212.1039
2022	4.5441	38.8811	40.8776	0.1240	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.4403	12,493.4403	1.9485	0.0000	12,518.5707
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.4890	12,150.4890	0.9589	0.0000	12,174.4615
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.1808	2,313.1808	0.7166	0.0000	2,331.0956
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.4403**	**12,493.4403**	**1.9485**	**0.0000**	**12,518.5707**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.4166	6,163.4166	1.9475	0.0000	6,212.1039
2022	4.5441	38.8811	40.8776	0.1240	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.4403	12,493.4403	1.9485	0.0000	12,518.5707
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.4890	12,150.4890	0.9589	0.0000	12,174.4615
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.1808	2,313.1808	0.7166	0.0000	2,331.0955
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.4403**	**12,493.4403**	**1.9485**	**0.0000**	**12,518.5707**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0487	0.0313	0.4282	1.1800e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3678
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.5212**	**1,409.5212**	**0.0912**		**1,411.8015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0487	0.0313	0.4282	1.1800e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3678
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.5212**	**1,409.5212**	**0.0912**		**1,411.8015**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.5585	6,042.5585	0.1697		6,046.8000
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.1067**	**9,939.1067**	**0.3933**		**9,948.9384**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.5585	6,042.5585	0.1697		6,046.8000
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.1067**	**9,939.1067**	**0.3933**		**9,948.9384**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.4028	5,821.4028	0.1529		5,825.2254
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.2790**	**9,595.2790**	**0.3511**		**9,604.0554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.4028	5,821.4028	0.1529		5,825.2254
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.2790**	**9,595.2790**	**0.3511**		**9,604.0554**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4583
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4583
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.3377	6,154.3377	1.9472	0.0000	6,203.0186
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.3440	12,035.3440	1.9482	0.0000	12,060.6013
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.4080	11,710.4080	0.9617	0.0000	11,734.4497
2024	237.0656	9.5503	14.9372	0.0238	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.0517	2,307.0517	0.7164	0.0000	2,324.9627
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.3440**	**12,035.3440**	**1.9482**	**0.0000**	**12,060.6013**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.3377	6,154.3377	1.9472	0.0000	6,203.0186
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.3440	12,035.3440	1.9482	0.0000	12,060.6013
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.4080	11,710.4080	0.9617	0.0000	11,734.4497
2024	237.0656	9.5503	14.9372	0.0238	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.0517	2,307.0517	0.7164	0.0000	2,324.9627
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.3440**	**12,035.3440**	**1.9482**	**0.0000**	**12,060.6013**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0532	0.0346	0.3963	1.1100e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.3262**	**1,380.3262**	**0.0941**		**1,382.6791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0532	0.0346	0.3963	1.1100e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.3262**	**1,380.3262**	**0.0941**		**1,382.6791**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	2.6620	1.6677	19.4699	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.9354	5,691.9354	0.1602		5,695.9408
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.0104**	**9,481.0104**	**0.3984**		**9,490.9691**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	2.6620	1.6677	19.4699	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.9354	5,691.9354	0.1602		5,695.9408
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.0104**	**9,481.0104**	**0.3984**		**9,490.9691**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	2.5029	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.7974	5,483.7974	0.1442		5,487.4020
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.1981**	**9,155.1981**	**0.3538**		**9,164.0437**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	2.5029	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.7974	5,483.7974	0.1442		5,487.4020
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.1981**	**9,155.1981**	**0.3538**		**9,164.0437**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.3818	1,061.3818	0.0264		1,062.0410
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.3818**	**1,061.3818**	**0.0264**		**1,062.0410**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.3818	1,061.3818	0.0264		1,062.0410
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.3818**	**1,061.3818**	**0.0264**		**1,062.0410**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment C

Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,623
Amortized (MT CO2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized (MT CO2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

EXHIBIT B

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE
2656 29th Street, Suite 201
Santa Monica, California 90405
Attn: Paul Rosenfeld, Ph.D.
Mobil: (310) 795-2335
Office: (310) 452-5555
Fax: (310) 452-5550
Email: prosenfeld@swape.com

Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

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Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

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Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

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Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

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Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

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Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

EXHIBIT C

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

1640 5th St.., Suite 204 Santa
Santa Monica, California 90401
Tel: (949) 887-9013
Email: mhagemann@swape.com

Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

P: (626) 381-9248
F: (626) 389-5414
E: info@mitchtsailaw.com

Mitchell M. Tsai
Attorney At Law

139 South Hudson Avenue
Suite 200
Pasadena, California 91101

VIA E-MAIL

March 29, 2022

Daniel Casey, Senior Planner
City of Rialto
150 South Palm Avenue
Rialto, CA 92376
Em: dcasey@rialtoca.gov

RE: Pepper Avenue Specific Plan Amendment and Industrial Development Project

Dear Mr. Casey,

On behalf of the Southwest Regional Council of Carpenters ("**Southwest Carpenters**" or "**SWRCC**"), my Office is submitting these comments on the City of Rialto's ("**City**" or "**Lead Agency**") Notice of Preparation of an Environmental Impact Report ("**NOP**") for the Pepper Avenue Specific Plan Amendment and Industrial Development Project ("**Project**").

The Southwest Carpenters would like to express their support for this Project and withdraw its prior March 16, 2022 comment letter. After receiving clarification and further information about this Project, SWRCC believes that this Project will benefit the environment and the local economy by utilizing a local skilled and trained workforce and will be built utilizing protocols that will protect worker health and safety.

If the City has any questions or concerns, feel free to contact my Office.

Sincerely,

Mitchell M. Tsai
Attorneys for Southwest Regional Council of Carpenters

04/04/2022

VIA EMAIL ONLY

Daniel Casey, Senior Planner
City of Rialto
Community Development Department – Planning Division
150 S. Palm Avenue
Rialto, CA 92376
Email: dcasey@rialtoca.gov

RE: NOP Comments for Pepper Avenue Specific Plan Amendment and Industrial Development Project

Dear Mr. Casey,

On behalf of Californians Allied for a Responsible Economy ("CARE CA") thank you for the opportunity to provide comments on the Notice of Preparation ("NOP") for environmental review of the Pepper Avenue Specific Plan Amendment and Industrial Development Project (the "Project"). The Project is proposed by Howard Industrial.

The proposed Project includes two distinct components: (1) a Specific Plan Amendment ("proposed Specific Plan Amendment") to add a new Light Industrial land use designation to PAs 1, 2, 3 and create a new PA10; and (2) a development application for the construction and operation of a 485,000 square foot cross dock industrial warehousing building on PAs 2 and 3 ("proposed industrial development").

The NOP identifies the Project's potentially significant impacts under CEQA to include aesthetics, air quality, cultural resources, energy, greenhouse gas emissions, land use and planning, noise, transportation, and tribal cultural resources. CARE CA respectfully requests, under CEQA complete analysis of these impacts, imposition of all feasible mitigation and study of a reasonable range of alternatives to the Project, including construction of affordable housing.

I. Background on CEQA EIRs

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. 14 Cal. Code Regs. ("Guidelines") § 15002(a)(1). "Its purpose is to inform the public and its responsible officials of

the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'" *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring implementation of "environmentally superior" alternatives and all feasible mitigation measures. Guidelines § 15002(a)(2) and (3); *Citizens of Goleta Valley*, 52 Cal.3d at 564. If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns." Pub. Res. Code § 21081; Guidelines § 15092(b)(2)(A) and (B).

Although the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position.' A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs*. (2001) 91 Cal.App.4th 1344, 1355 (quoting *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal*., 47 Cal.3d 376, 409 n. 12 (1988)). Substantial evidence in the record must support any foundational assumptions used for the impact analyses in the EIR. *Citizens of Goleta Valley*, 52 Cal.3d at 568 (EIR must contain facts and analysis, not just bare conclusions); *Laurel Heights*, 47 Cal.3d at 392-93 (agency's conclusions must be supported with substantial evidence).

II. <u>General Comments</u>

i) <u>Air Quality & Public Health</u>: CARE CA has a particular interest in air quality and public health. Estimates of the significance of air quality impacts must be consistent with current epidemiological studies regarding the effects of pollution and various kinds of environmental stress on public health. Given that the proposed industrial uses are located in the vicinity of residential uses, the SEIR must include a detailed Health Risk Assessment. Industrial projects such as the proposed industrial development, which would probably be exclusively truck-served and operate 24-hours a day, 365 days a year in day and night shifts, typically result in exposure to toxic air contaminants (TACs) including carbon dioxide emissions caused by storage and material handling processes in warehouses. We must not ignore the unjust consequences of toxic pollution on surrounding communities and workers. A project that jeopardies the health and safety of the people must not be allowed to proceed.

The City should also reconsider the conclusion that impacts related to operational activity odors would be less than significant (Initial Study p. 38). The SEIR should consider the odor impact of the diesel-fueled trucks that will constantly drive in and out of the industrial facility.

ii) <u>Transportation Analysis</u>: In order to reflect a good faith effort at full disclosure, the transportation analysis must consider all reasonably foreseeable uses for the Project. Since the Project is a "speculative building" with no specific identified tenant, the SEIR analysis should include higher intensity uses. The analysis must also include heavy truck traffic in its VMT analysis.

iii) Unspecified Industrial Use: Since the specific type of warehouse is not specified, the SEIR should include an analysis of the impacts of construction and operation of cold storage warehouse space and the potential use of transportation refrigeration units (TRUs) during Project operation.

iv) Mitigation Measures: Mitigation measures must be effective and enforceable. Every effort must be made to incorporate modern technology in the mitigation measures and MMRP. For example, a requirement that all off-road equipment and trucks using the site during construction and operations be zero emission, near-zero emissions or alternative-fueled vehicle would both reduce and/or eliminate air pollution impacts and CO2 emissions. Mitigation measures can also include a requirement to install cool roofs to reduce operational energy demand and solar canopies on the parking lot.

v) Full Disclosure: Provide all sources and referenced materials when the SEIR is made available.

III. Conclusion

Thank you for the opportunity to submit NOP comments. Again, CARE CA respectfully requests under CEQA full analysis of the environmental impacts, feasible mitigation, and reasonable alternatives to the Project.

We look forward to reviewing and commenting on the SEIR.

Sincerely,



Jeff Modrzejewski
Executive Director

April 4, 2022

City of Rialto, Community Development Department – Planning Division
Attn: Daniel Casey, Senior Planner
150 S. Palm Avenue
Rialto, Ca 92376

Submitted via email to dcasey@rialtoca.gov.

Re: Pepper Avenue Specific Plan Amendment and Industrial Development Project (SCH 2022030161)

Dear Mr. Casey,

On behalf of the Center for Community Action and Environmental Justice (CCAEJ), I would like to submit these comments. We remain opposed to the proposed Pepper Avenue Specific Plan Amendment and Industrial Development Project which would strip away the dream of neighborhood-accessible retail establishments for the Rialto community. Nevertheless, we understand that the purpose of the Environmental Impact Report ("EIR") is merely to document foreseen issues and mitigations to provide decisionmakers with the information they need to proceed. Therefore, after reviewing the notice of preparation documents, we have several areas of concern about the proposal which we would like to ensure are addressed as part of the EIR process. We have a number of concerns with what has been proposed including the zoning change, truck routes and traffic safety, and the impact that the Project would have on air quality and GHGs. We remain opposed to the Project, but if it is to move forward, those issues must be fully studied and mitigation identified.

Change of zoning
Currently, the area where the Project is proposed to be built is zoned for commercial uses, envisioned as a place for shops serving the nearby neighborhood as well as the region. Under the proposal, a significant portion of the site would be rezoned to accommodate warehouse uses instead. That would be a loss for the community, particularly considering the fact that there are no shopping centers within close proximity to the portion of the Rialto community near the Project site. Development of retail in the location would provide residents with a convenient option for obtaining goods and services close to their homes. Therefore, we call for the EIR to identify how this loss to the community would be remedied and those retail needs would continue to be met.

Truck traffic
The close proximity of the Project site to SR-210 provides the opportunity to ensure that truck traffic only accesses the Project from the freeway via Pepper Ave. and does **not** continue south of the Project to other areas of the city, sparing the community of the noise and pollution that comes with truck traffic. We would like to ensure that this is studied as part of the EIR, including via the use of hardscape design of the driveways to ensure that trucks would only be able to access or leave the site from the north.

Mailing Address
P.O. Box 33124
Jurupa Valley CA 92519

Physical Address
3840 Sunnyhill Drive, Suite A
Jurupa Valley CA 92509

Tel: **951-360-8451**
Fax: 951-360-5950
www.ccaej.org

Air quality & GHGs
We would like to ensure that the EIR includes study on full mitigation of any air quality or greenhouse gas emissions impacts that would be caused by the Project. Unfortunately, a substantial number of projects of similar size have been proposed and approved in various jurisdictions around the Inland region which were known to exceed the limits set by the South Coast Air Quality Management District's Air Quality Management Plan. Thus, we would like to ensure that if it is determined that this Project would exceed those limits, that mitigations would be identified to ensure that this Project is **not** out-of-compliance with the AQMP in both the construction phase as well as operations. Such mitigations should also surpass token measures such as a handful of car chargers in the parking lots and instead include readiness for service by zero-emissions trucks.

Biological
We lament the loss of open space directly adjacent the Lytle Creek Wash channel which is critical as both being adjacent a riparian habitat as well as because the drastic increase in impervious surface will lead to additional contaminated runoff into the waterway. We would like to ensure that the EIR identifies mitigation for this issue such as providing pervious pavement in parking lots, swales for infiltration and habitat, and other remedies beyond just sticking a detention basin in the corner. This is critical for a diverse array of benefits ranging from maintaining an environment usable by wildlife, including species facing distress or even extinction such as the kangaroo rat, to mitigating impacts of extreme heat, a goal of the City's Climate Adaptation Plan[1].

Summary
In summary, we are dismayed to see that the Project is being proposed and want to reiterate our opposition to its development. As the EIR phase moves forward, it is imperative that the concerns which we have raised are studied and thorough mitigation is undertaken to ensure that the community, including the natural environment which currently comprises the Project site, is not negatively harmed by its development.

Sincerely,

Ana Gonzalez

Ana Gonzalez
Interim Executive Director

CCAEJ is a long-standing community based organization with over 40 years of experience advocating for stronger regulations through strategic campaigns and building a base of community power. Most notably, CCAEJ's founder Penny Newman won a landmark federal case against Stringfellow Construction which resulted in the `Stringfellow Acid Pits' being declared one of the first Superfund sites in the nation. ***CCAEJ*** prioritizes community voices as we continue our grassroots efforts to bring lasting environmental justice to the Inland Valley Region.

[1] City of Rialto (2021). City of Rialto Climate Adaption Plan. Retrieved from https://www.yourrialto.com/DocumentCenter/View/2248/Final-Rialto-Climate-Adaptation-Plan.

March 16, 2022

Comment Card

Pepper Avenue Specific Plan Amendment and Industrial Development Project
Scoping Meeting

Interested in not having this planning/execution of developer's buildings to proceed (warehouses, etc.)
Email address → sandsevelia@live.com home # 909-875-6491 cell # 909-658-5621
Richard Goldson cell 909-855-9108 home 909-875-6447
Very concerned about plans currently & need continued connection hereafter from this 3/16/22 meeting @ Frisbie Park Shelter 4 in Rialto @ 5pm.

Name: Evelia Sands + Richard Goldson Address: 970 E. Margarita Rd. Rialto, CA 92376

March 16, 2022

Comment Card

Pepper Avenue Specific Plan Amendment and Industrial Development Project
Scoping Meeting

WE OBJECT. THERE IS NO NEED FOR MORE WAREHOUSES OR STRIP MALLS IN RIALTO. THERE ARE SO MANY SITTING EMPTY. ALL THESE PLANS ARE NOT FOR THE GOOD OF THE PEOPLE WHO LIVE HERE. THE AREA IS A GREAT PLACE FOR THE PEOPLE TO WALK THEIR DOGS, RUN (JOG) ON GROUND RATHER THAN ASPHALT, RIDE THEIR HOURSES, KIDS RIDE THEIR DIRT BIKES (NOT GETTING IN TROUBLE AT THE SHOPS OR BREAKING INTO HOUSES.

Name: MR&MRS NORTON Address: 770 E. WALNUT AVE

THINK ABOUT US RATHER THAN DEVELOPERS FROM LA OR OUT OF STATE. IS OUR ONLY OPION TO SELL?

March 16, 2022

Comment Card

Pepper Avenue Specific Plan Amendment and Industrial Development Project
Scoping Meeting

THIS IS MY CONCERNS
CARS ARE DRIVING THROUGH MY LITTLE STREET RIGHT NOW @ 50 MILES+/HR TO GET TO PEPPER AVE.
THE NOISE IS TOO MUCH ALSO COMING FROM 210 & PEPPER IT DOESNOT STOP TILL LIKE 3 AM WE ARE UNABLE TO SLEEP.
ANOTHER POINT POLLUTION IS SPREADING TOO MUCH & WE HAVE RESPIRATORY PROBLEMS & NOW WITH THIS INDUSTRIAL PROJECT IS GOING TO BE WORSE. THE KIDS FROM SCHOOL ARE ALSO IN DANGER; THEY ALREADY HAD SOMEONE HIT A KID BY A CAR

Name: Ana Vargas-Aguirre

Address: 1507 N. Mulberry Ave
Rialto CA 92376

California Environmental Quality Act

SCOPING MEETING COMMENT CARD

Pepper Avenue Specific Plan Amendment and Industrial Development Project

The City of Rialto Invites Your Comments on Environmental Issues.

A Notice of Preparation (NOP) pursuant to the California Environmental Quality Act (CEQA) has been released for a 30-day comment period, from **Friday, March 4, 2022 through Monday, April 4, 2022**. The purpose of the NOP and this Scoping Meeting is to solicit input from individuals, organizations, and public agencies on environmental issues that should be addressed in the Subsequent Environmental Impact Report (EIR) being prepared for the proposed project.

The NOP identified the following potentially significant environmental issues to be addressed in the Subsequent EIR:

- Aesthetics
- Air Quality
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Land Use and Planning
- Noise
- Transportation
- Tribal Cultural Resources
- Mandatory Findings of Significance

Please use the space below to record your comments related to environmental issues of concern relevant to the proposed project, adding additional sheets if necessary. **Comments should be submitted in writing by 5 p.m. on Monday, April 4, 2022 to**:

Daniel Casey, Senior Planner
City of Rialto
Community Development Department – Planning Division
150 S. Palm Avenue
Rialto, CA 92376
Phone: (909) 820-2535
Email: dcasey@rialtoca.gov

Name: PASTOR ZACH

Address: _____

Email: PASTORZACH@CARECA.ORG

CARE CALIFORNIA HAS A PARTICULAR INTEREST IN CONSTRUCTION-RELATED ENVIRONMENTAL ISSUES INCLUDING AIR POLLUTION, NOISE, GREEN HOUSE GAS EMISSIONS, AND ONSITE SOIL CONTAMINATION AND HAZARDOUS MATERIALS. WE HOPE THAT THE EIR WILL COMPREHENSIVELY ADDRESS THESE ISSUES.

California Environmental Quality Act

SCOPING MEETING COMMENT CARD

Pepper Avenue Specific Plan Amendment and Industrial Development Project
The City of Rialto Invites Your Comments on Environmental Issues.

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Daniel Casey, Senior Planner
City of Rialto
Community Development Department – Planning Division
150 S. Palm Avenue
Rialto, CA 92376
Phone: (909) 820-2535
Email: dcasey@rialtoca.gov

Name: Marilyn Lee
Address: 1534 N. ENCINA Ave.
Rialto, CA 92376
Email: MDMELEE@live.com

Dear Mr. Casey
As a fairly new resident of Rialto for 7 years now, I have great Concerns about this newly proposed project. I take Great pride in being a home owner and would like for my property to keep its value. If I choose to sell in the future or even stay the remaning of my life. Warehouses in the Community would not keep my property for Families, Children

and home felt. It would then become an industrial area. our Families Need, Markets, shopping for our Children, we need family oriented facilities for us to attend. Some Seniors need future housing, there is certainly not enough housing for Seniors in this Community.

what happen to the orginal proposal of Housing, shopping and etc?

I am Concerned about noise, and dust and heavy trucks, our streets here in Rialto are really already in very poor Condition and I have been sure I moved out here in 2015.

The City doesn't seem to care a lot about our City streets, the appearance of our Community.

I'm sure 400 think this second proposal is something that will probably bring more money for you but, a Shopping Center and perhaps a Grocery Store would bring good revenue to the City.
More Funds need to be put into the appearance of the city, my Complaints are that the Developments that are already in place are very bad, they're not Bad, they're run down.
Where is the City of Rialto putting the Money?

From: Brian Mortensen
Sent: Thursday, March 17, 2022 6:16 AM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: Pepper Ave Specific Plan Amendment and Industrial Development Project Concerns

I want to commend Connie and the other Environmental consultants for their patience in last night's meeting.

1. The Environmental Impact study should cover two options and pointing out the delta between the plans.
    a. Option A: What's the impact of the originally approved commercial zoning plan.
    b. Option B: The new amendment proposal for Industrial zoning

2. As an industrial zone, the environmental impact of noise, vibration, pollution, congestion, hazardous materials, and aesthetics are a concern.
   It's bad enough that there is no wall blocking the 210 freeway from Frisbie Park. Developing an Industrial park seems one step closer to ghetto for the neighborhoods close by.

3. Traffic creating noise/vibration issues all through the night is a concern, not to mention safety issues.

4. Other cities have implemented similar developments near existing neighborhoods and the crime rate has soared.

5. Transparency is key. The council should publish "who owns that land now" and any purchases pending. If the Land Developer has already bought the land, then that's extremely important to know.

6. Will the city council put restrictions on the companies that will use the area?
    a. Stopping large semi's from going to and from baseline (or even from/to further south) up and down pepper avenue through the neighborhoods?
    b. Stopping the storage of hazardous and dangerous materials, prohibited?
    c. That is, Industrial warehouse large semi-truck vehicles only using Pepper Ave between the facility and the 210.

7. The concern is the area if developed as industrial, this does not benefit the community enough. What alternatives are being considered to light industrial? Will the community be able to utilize what will be there in the future – other than a gas station with a mini-mart?

8. What has the council done to attract other commercial developers?

9. Concern that the city council's first attempt to notify those in the neighborhoods by the excuse of notifying those 1,000 feet of the proposed development site was showing disrespect to the homeowners immediately surrounding the development

site and needs to be immediately rectified. The perception is the council is already in bed with the developers, not being a voice for the community.

While I do not live near the proposed development site, I do visit friends in the neighborhood, frequent Frisbie Park, and am a parishioner of St. John XXIII Catholic Church.

Thank you for listening.

Brian Mortensen
18068 Pokeroot Ln
San Bernardino, CA 92407

-----Original Message-----
From: Doris Hernandez
Sent: Friday, March 18, 2022 8:22 PM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: Pepper Ave/210 fwy

Good afternoon,

I am writing this email as a Rialto/Muscoy homeowner the best plan for this project would be stores that benefit the community both of the communities within the pepper/210 freeway are in need of grocery stores not an industrial site that further affects our air quality . This is an opportunity to become more than a row of warehouses to change the future of our city by creating opportunities for citizens to grow the economy within our city instead of having to travel outside of it . From experience most of the local youth soccer teams often have to travel to fontana for tournaments, Fontana or Riverside for team celebrations, Upland for indoor soccer.There is a high demand for indoor soccer fields and this would be the perfect site for one alongside family friendly entertainment, small business restaurants , walking trails, community Art programs. Please include me in emails for future meetings.

Thank you,
Doris Hernandez

Sent: Monday, March 21, 2022 8:05 AM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: Objection to the Pepper Wharehouse

I object to any installation of warehouses in the Pepper Extension.

Linda Chapman

From: Danielle Delgado
Sent: Thursday, March 24, 2022 9:54 PM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: No on the proposed industrial site on pepper!

Hello,

I am writing to inform you of my strong disagreement for the proposed zoning of this industrial buildings on Pepper Ave!

Rialto does not need any more ugly industrial buildings that don't give back to the community. Rialto needs a multitude businesses to stimulate our economy and jobs—not this eye sore that will bring pollutants, traffic, and more road damage by huge trucks.

I hope you will consider the voice of the people in this matter.

Thanks,

Danielle Delgado

Sent: Tuesday, March 29, 2022 10:40 PM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: Pepper Ave. Specific Plan & proposed zoning change

I'm in opposition to the zoning changes.

The original plan to improve the area with retail business and housing would enhance the value of the local area and the attractiveness for other business to come to Rialto.

The area in general has endured the proliferation of concrete buildings changing the Inland area for the worse. The quality of life for residents has suffered. Increased work traffic rushing through the city at high speeds, running stop signs and red lights on surface streets has raised the incidence of accidents. Truck traffic has damaged the streets to the point where some roads are almost undrivable. Pepper ave is a major off-ramp through fare now and a warehouse at that point would mimic the traffic/truck problems on Linden west of the Renaissance Marketplace. The noise from the 210 freeway has become nonstop without a sound wall as was promised to the residents early on. The warehouse owners are nothing more than absentee landlords. The affect on surrounding residents is not their concern.

This proposal would take us down the road to become more like the City of Industry. The 2010 census had it over 3,000 businesses employing 67,000 people but, it recorded its resident population at 219.

Maurice Black
845 E. Mariposa Dr.
Rialto

Sent: Thursday, March 31, 2022 11:57 AM
To: Daniel Casey <dcasey@rialtoca.gov>
Subject: Pepper Ave Specific Plan

Good morning,

I would like to formally express my opposition to the proposed zoning changes to the Pepper Ave Specific Plan that would ultimately change the zoning to industrial. With that being said industrial zoning would allow for construction of over 700,000 square feet of warehouse operations with over 100 truck docks. I currently reside in the East 900 block of Pepper Ave and this would have a profound affect on myself, my family and my neighbor's quality of life. Specifically, Pepper Ave is already a truck route and with the previous Pepper Ave Extension to the 210 Freeway, my neighborhood has already suffered an increase in traffic, noise and pollution. Not to mention the influx of traffic collisions resulting in deaths in the very short time this extension has been in existence. Moreover, there is Frisbee Middle School and the recently renovated Frisbee Park, that is in close proximity to this proposed industrial project. Frisbee Park is a hub for girls softball and on any given day there are hundred's of people many children enjoying the park. The industrial project would have a negative environmental impact on this community, in terms of exposure to diesel truck exhaust, noise pollution and pedestrian safety.

In addition to the health risks of this proposed industrial project, there is also financial ramifications in terms of property values being reduced. When I purchased my home in 2000, they were practically giving away homes. Many homes were in foreclosure, owned by banks and abandoned. I made an investment in this city when I could have easily sold and relocated. I have watched my neighborhood go from being predominantly renters to owners, who like me are making an investment in the future of this city. We are not a marginalized group of people, we are professionals, we are educated, and we care about our community. Look at the success of the Renaissance Development. That is unequivacal proof of the yearning for appropriae commerce and development in this city. City of Rialto I implore you to make the right decision and work with the community in stopping the development of warehouses on Pepper Ave.

Thank you

Respectfully,

Clifton Davis
Concerned resident

Comment Card

Pepper Avenue Specific Plan Amendment and Industrial Development Project

I oppose the zoning change proposal for the Pepper Ave./210 fwy property. I support the existing Pepper Ave. Specific Plan which has been approved & which prohibits industrial development of this land.

Name: Anita Peukert Address: 1550 Shirley Bright Rd. Rialto

More information on reverse.

RECEIVED
APR 04 2022
BY:

Scoping Meeting at Frisbee Park, 3/16/2022

- Time and place of meeting – not conducive to community input.

In 2016, and adopted by the City Council in 2017, the Pepper Avenue Specific Plan was approved, at a cost of over half a million dollars. It creates a viable and comprehensive Gateway to Rialto.

- It helps address housing needs of the city which is currently short over 8000 homes
- It addresses additional funding for the city through retail development
- It helps service the Lytle Creek Development
- It creates a town center
- It calls for a pedestrian Bridge to connect Frisbee Park to the development and welcome plaza
- It provides:
  - Open space
  - Business Park
  - Climate change and air quality
  - Get-away features
  - Protects residential, school, and parks
- It prohibits uses such as truck terminals and warehouses
- Transportation improvement

Since this is a scoping meeting, it is my recommendation -- as a resident of Rialto for 44 years -- that the Pepper Avenue Specific Plan stay intact and not be replaced with a 735,000 square foot warehouse development generating additional traffic, noise and pollution, lower home values, road congestion and deterioration.

John Peukert
1550 Shirley Bright Rd., Rialto
951-323-5750



Mr. Daniel Casey, Senior Planner

Please consider this letter a summary of required mitigation for the requested EIR change for the Pepper Ave. Specific Plan.

- City of Rialto Resolution #7258, approved December 12, 2017, must be completed prior to the beginning of any construction.
- Noise measurements shall be taken at peak times both day and night. Measurement shall be taken every 500 ft. on truck route and in neighborhoods surrounding project, including Frisbee Park.
- Pollution must meet AQMD standards. Trees and landscaping must be done prior to construction to meet these standards.
- Trucks cannot park, travel, idle or stage in or around project area.
- All truck routes on Pepper Ave. – to and from the 210 fwy and 10 fwy – shall be engineered and repaired. Access to neighborhoods shall be maintained.
- Safe routes to schools – Bemis, Frisbee, and Morgan – shall be maintained by crossing guards funded by developer.
- Light pollution shall not be permitted after dark, i.e. traffic, headlights, street lights, building lights that affect residences.
- Hours of operation shall be restricted.

John Peukert
1550 Shirley Bright Rd., Rialto
951-323-5750



GENERAL BIOLOGICAL ASSESSMENT
FOR THE
PEPPER INDUSTRIAL BUILDING

Accessor's Parcel Numbers
0264-201-05, 0264-201-06, and 0264-201-26

CITY OF RIALTO
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

EPD Solutions, Inc.
2 Park Plaza Suite 1120
Irvine, CA 92614

Prepared by:

Hernandez Environmental Services
17037 Lakeshore Drive
Lake Elsinore, CA 92530

AUGUST 2021

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APPENDICES

Appendix A – Species Observed
Appendix B – Species Presence/Absence List
Appendix C – Site Photographs
Appendix D – Soils
Appendix E – Botanical Survey
Appendix F – Focused Burrowing Owl Survey Report

1.0 Introduction

Hernandez Environmental Services (HES) was contracted to prepare a general biological assessment (GBA) for the Pepper Industrial Building Project site. The approximate 24.6-acre project site consists of Assessor's Parcel Numbers (APNs) 0264-201-05, 0264-201-06, and 0264-201-26. The project site is located south of the Interstate 210 and east of North Pepper Avenue in the City of Rialto, San Bernardino County, California.

1.1 Project Site Location

The project site is located south of the Interstate 210 and east of North Pepper Avenue in the city of Rialto. The project site consists of San Bernardino County APNs 0264-201-05, 0264-201-06, and 0264-201-26. Specifically, the project site is located within the Muscupiabe land grant in the *San Bernardino North* United States Geological Survey (USGS) 7.5' topographic quadrangle. The center point latitude and longitude for the project site are 34.13153802° North and 117.35110039 West (Figures 1 and 2).

1.2 Project Description

The project proposes the development of an approximate 432,000 SF industrial building in the Pepper Avenue Specific Plan area. In addition, the proposed project includes associated site access improvements, parking, trailer parking stalls, landscaping, and related infrastructure and utilities. Refer to Figure 3. The proposed project will impact the entire 24.6-acre project site.

2.0 Methodology

2.1 Literature Review

HES conducted a literature review and reviewed aerial photographs and topographic maps of the project site and surrounding areas. HES conducted a literature review and reviewed aerial photographs and topographic maps of the project site and surrounding areas. The *San Bernardino North* 7.5' USGS topographic quadrangle and eight surrounding quadrangles were used to identify sensitive species with the California Natural Diversity Data Base (CNDDB), the U.S. Fish and Wildlife Service (USFWS) Endangered Species Lists, and the California Native Plant Society (CNPS) rare plant lists to obtain species information for the project area. The CNDDB and USFWS critical habitat databases were utilized, together with Geographic Information System (GIS) software, to locate the previously recorded locations of sensitive plant and wildlife occurrences and designated critical habitat and determine the distance from the project site.

2.2 Field Survey

On April 5, 2021, HES conducted a field survey of the project site. The ambient temperature at 7:15 a.m. was 52 degrees Fahrenheit, sunny, with winds ranging from zero to four miles per hour from the northeast. The purpose of the field survey was to document the existing habitat

conditions, obtain plant and animal species information, view the surrounding land uses, assess the potential for state and federal waters, assess the potential for wildlife movement corridors, and assess the presence of constituent elements for critical habitat, if present.

Linear transects spaced approximately 50 to 100 feet apart were walked across the project site for 100 percent coverage. All species observed were recorded. Global Positioning System (GPS) waypoints were taken to delineate specific habitat types, species locations, state or federal waters, and any other information that would be useful for the assessment of the project site. A comprehensive list of all plant and wildlife species that were detected during the field survey within the project site is included in Appendix A. Sensitive plant and wildlife species with the potential to occur within the project area are listed in Appendix B. Representative site photographs were taken and are included within Appendix C.

3.0 Existing Conditions and Results

3.1 Environmental Setting

The project site is located within the City of Rialto, San Bernardino County, California. The project site consists of disturbed land historically used for agricultural use. The site appears to be continually disturbed for weed abatement purposes. The site is bordered by vacant lands and Interstate 210 to the north, North Pepper Avenue to the west, vacant land and railroad tracks to the east, and ruderal habitat to the south. The site is relatively flat with onsite elevations ranging from 1,256 feet above mean sea-level (AMSL) to 1,287 feet AMSL.

3.2 Soils

According to the USDA Web Soil Survey, soils at the project site are classified as Grangeville fine sandy loam (Gr), warm MAAT, MLRA 19 and Tujunga loamy sand (TuB), 0 to 5 percent slopes (Appendix D).

3.3 Plant and Habitat Communities

The project site contains approximately 24.6 acres of ruderal habitat. The onsite ruderal habitat is heavily disturbed areas. This habitat type is dominated by non-native plant species with very few native species. Portions of these areas appear to have been reseeded with native annual flowers. Plant species observed within this habitat type include slender oats (*Avena barbata*), wild oats (*Avena fatua*), horehound weed (*Marrubium vulgare*), short pod mustard (*Hirschfedfia incana*), rip gut brome (*Bromus diandrus*), red-stemmed filaree (*Erodium cicutarium*), foxtail barley (*Hordeum jubatum*), wall barley (*Hordeum murinum*), yellow starthistle (*Centaurea melitensis*), common fiddleneck (*Amsinckia intermedia*), and London rocket (*Sisymbrium irio*).

3.4 Wildlife

General wildlife species documented on the project site or within the vicinity of the site include Savannah sparrow (*Passerculus sandwichensis),* red-tailed hawk (*Buteo jamaicensis),* desert cottontail (*Sylvilagus audubonii*), pocket gopher (*Thomomys talpoides*), ground squirrel (*Otospermophilus beecheyi*), house finch (*Haemorhous mexicanus*), mourning dove (*Zenaida macroura*), white crowned sparrow (*Zonotrichia leucophrys*), and Anna's hummingbird (*Calypte anna*). The complete list of species observed is included in Appendix A.

3.5 Regional Connectivity/Wildlife Movement

Wildlife movement corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species present. Wildlife corridors represent areas where wildlife movement is concentrated due to natural or anthropogenic constraints. Local corridors provide access to resources such as food, water, and shelter. Animals use these corridors, which are often hillsides or riparian areas, to move between different habitats. Regional corridors provide these functions and link two or more large habitat areas. They provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

The project site is not located within a designated wildlife corridor or linkage. The project area was evaluated for its function as a wildlife corridor that species use to move between wildlife habitat zones. The project site consists of flat, disturbed land characterized by ruderal areas historically utilized for agricultural use. Further, the project site is surrounded by residential uses to the north, water facilities to the south, Interstate 210 to the north, the railroad to the east, and Pepper Avenue to the east. No wildlife movement corridors were found to be present on the project site.

3.6 Sensitive Biological Resources

According to the CNDDB, a total of 59 sensitive species of plants and 66 sensitive species of animals have the potential to occur on or within the vicinity of the project area. These include those species listed or candidates for listing by the U. S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) and California Native Plant Society (CNPS). All habitats with the potential to be used by sensitive species were evaluated during the site visit and a determination has been made for the presence or probability of presence within this report. This section will address those species listed as Candidate, Rare, Threatened, or Endangered under the state and federal endangered species laws. Sensitive species which have a potential to occur will also be discussed in this section. Other special status species are addressed within Appendix B.

3.6.1 Sensitive Plant Resources

A total of 13 plant species are listed as state and/or federal Threatened, Endangered, or Candidate species; are 1B.1 listed plants on the CNPS Rare Plan Inventory; or have been found to have a potential to exist on the project site. Below are descriptions of these species:

Marsh sandwort
Marsh sandwort (*Arenaria paludicola*) is a federally and state listed Endangered species and is ranked 1B.1 in the CNPS Rare Plant Inventory. It is found in freshwater marsh, wetland, and marsh and swamp habitats. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No freshwater marsh, wetland, or marsh and swamp habitats occur on the site. No habitat for this species is present on the project site. **This species is not present.**

Horn's milk-vetch
Horn's milk-vetch is ranked 1B.1 in the CNPS Rare Plant inventory. Its habitats include alkali playa meadows, seeps, and wetlands. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No alkali playa meadows, seeps, or wetlands occur on the site. No habitat for this species is present on the project site. **This species is not present.**

Nevin's barberry
Nevin's barberry (*Berberis nevinii*) is a federally and state Endangered species and is ranked 1B.1 in the CNPS Rare Plant inventory. It is typically found on steep, north facing slopes or in low grade sandy washes. Its habitat includes chaparral, cismontane woodland, coastal scrub, and riparian scrub. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No chaparral, cismontane woodland, coastal scrub, or riparian scrub occur on the site. No habitat for this species is present on the project site. **This species is not present.**

Thread-leaved brodiaea
The thread-leaved brodiaea (*brodiaea filifolia*) is a federally Threatened, state Endangered and is ranked 1B.1 in the CNPS Rare Plant inventory. It is found in chaparral, cismontane woodlands, coastal sage scrub, valley and foothill grasslands, vernal pools and wetland. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No chaparral, cismontane woodland, coastal scrub, valley and foothill grasslands, vernal pools or wetlands occur on the site. No habitat for this species is present on the project site. **This species is not present.**

Smooth tarplant
Smooth tarplant (*Centromadia pungens ssp. laevis*) is ranked 1B.1 in the CNPS Rare Plant inventory. The species occurs in habitats that include alkali playa, chenopod scrub, meadows and seeps, riparian woodlands, wetlands, and valley and foothill grasslands. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No alkali playa, chenopod scrub, meadows and seeps, riparian woodlands, wetlands, or valley and foothill

grasslands occur on the site. Although suitable habitat occurs on the project site, this species was not observed during focused surveys (Appendix E). **This species is not present.**

Salt marsh bird's-beak

Salt marsh bird's beak (*Chloropyron maritimum ssp. maritimum*) is a federally and state listed Endangered species and is ranked 1B.2 in the CNPS Rare Plant inventory. This species is limited to the higher zones of salt marsh habitat at elevations of less than ten meters. Its habitat includes coastal dunes, marsh and swamp, salt marsh, and wetland. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No coastal dunes, marsh and swamp, salt marsh, or wetlands occur on the site. No habitat for this species is present on the project site. Focused surveys found that this species is absent from the project site (Appendix E). **This species is not present.**

Parry's spineflower

Parry's spineflower (*Chorizanthe parryi var. parryi*) is ranked 1B.1 in the CNPS Rare Plant inventory. The species occurs in dry, sandy soils on dry slopes and flats, sometimes at the interface of two vegetations types, such as chaparral and oak woodland. Its habitat includes coastal scrub, chaparral, cismontane woodland, valley and foothill grassland. Although suitable habitat occurs on the project site, this species was not observed during focused surveys (Appendix E). **This species is not present.**

Mojave tarplant

Mojave tarplant (*Deinandra mohavensis*) is a state listed Endangered species and is ranked 1B.3 in the CNPS Rare Plant inventory. This species is typically found in low sand bars in river beds and most commonly in riparian or ephemeral grassy areas. Its habitat includes chaparral, coastal scrub, and riparian scrub. No habitat for this species is present on the project site. **This species is not present.**

Slender-horned spineflower

Slender - horned spineflower (*Dodecahema leptoceras*) is a federally and state listed Endangered species and is ranked 1B.1 in the CNPS Rare Plant inventory. Its habitat includes chaparral, cismontane woodland, and coastal scrub (alluvial fan sage scrub). The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No chaparral, cismontane woodland, or coastal scrub occur on the site. No habitat for this species exists on the project site. Further, focused surveys found that this species is absent from the project site (Appendix E). **This species is not present.**

Santa Ana River woollystar

Santa Ana River woollystar (*Eriastrum densifolium ssp. sanctorum*) is a federally and state listed Endangered species and is ranked 1B.1 in the CNPS Rare Plant inventory. It is typically found

in sandy soils on river floodplains or terraced fluvial deposits. Its habitat includes chaparral and coastal scrub. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No chaparral or coastal scrub occur on the site. No habitat for this species is present on the project site. Further, focused surveys found that this species is absent from the project site (Appendix E). **This species is not present.**

Parish's daisy
Parish's daisy (*Erigeron parishii*) is a is a federally Threatened species and is ranked 1B.1 in the CNPS Rare Plant Inventory. This species is typically found on carbonate; limestone mountain slopes; often associated with drainages and sometimes on granite. Its habitat includes Mojavean desert scrub, pinyon and juniper woodland. No habitat for this species exists on the project site. **This species is not present.**

Mesa horkelia
Mesa horkelia (*Horkelia cuneate var. puberula*) is ranked 1B.1 in the CNPS Rare Plant inventory. It is typically found in sandy or gravelly sites. Its habitat includes chaparral, cismontane woodland, and coastal scrub. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No chaparral, cismontane woodland, or coastal scrub occur on the site. No habitat for this species is present on the project site. Further, focused surveys found that this species is absent from the project site (Appendix E). **This species is not present.**

Gambel's water cress
Gambel's water cress (*Nasturtium gambelii*) is federally listed endangered species, a state listed threatened species, and is ranked 1B.1 in the CNPS Rare Plant inventory. It is found in freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. Its habitat includes brackish marsh, freshwater marsh, marsh and swamp, and wetland. The project site consists of ruderal habitat, ornamental vegetation, and disturbed areas. No brackish marsh, freshwater marsh, marsh and swamp, or wetlands occur on the site. No habitat for this species is present on the project site. **This species is not present.**

3.6.2 Sensitive Animal Resources

A total of 21 animal species are listed as state and/or federal Threatened, Endangered, Candidate will be reviewed in this section. Sensitive species which have a potential to occur will also be discussed in this section. All sensitive species within a 5-mile radius of project area were reviewed and a complete list of those species are discussed within Appendix B. Below are descriptions of these species:

Tricolored blackbird

Tricolored blackbird (*Agelaius tricolor)* is state listed as candidate Endangered and listed by the CDFW as a species of special concern. The species occupies freshwater marshes with canopies of willows and other riparian trees. This species requires open accessible water and suitable foraging space. There is no habitat for this species on the project site. **The species is not present.**

Arroyo Toad

Arroyo Toad (*Anaxyrus californicus*) is a federally listed Endangered species and a CDFW Species of Special Concern. The most favorable breeding habitat for this species consists of slow-moving shallow pools, nearby sandbars, and adjacent stream terraces. Its habitat includes desert wash, riparian scrub, riparian woodland, south coast flowing waters, and south coast standing waters. There is no habitat for this species on the project site. **This species is not present.**

Crotch bumble bee

Crotch bumble bee (*Bombus crotchii*) is a state listed candidate Endangered species. This species typically lives in coastal California east to the Sierra Cascade crest and south into Mexico. Its food plant includes *Antirrhinum sp.*, *Clarkia sp*., *Dendromecon sp.*, *Eschscholzia sp.*, and *Erigonum sp*. No habit for this species is present on the project site. **This species is not present.**

Swainson's hawk

Swainson's hawk (*Buteo swainsoni*) is a state listed Threatened species. This species favors open grasslands for foraging but also occurs in agricultural settings. It relies on scattered stands of trees near agricultural fields and grasslands for nesting sites. Its habitats include great basin grassland, riparian forest, riparian woodland, and valley and foothill grassland. The project site does not contain suitable habitat for this species. **This species is not present.**

Santa Ana sucker

Santa Ana sucker (*Catostomus santaanae*) is a federally listed Threatened species. Its habitat includes aquatic and south coast flowing waters. This species prefers sand-rubble-boulder bottoms, cool and clear water, and algae. It is endemic to Los Angeles Basin south coastal streams. The project site does not contain suitable habitat for this species. **This species is not present.**

Southern rubber boa
Southern-rubber boa (*Charina umbratical*) is a state listed Threatened species. Its habitat includes meadow and seep, riparian forest, riparian woodland, upper montane coniferous forest, and wetland. This species is typically found near streams or wet meadows, and requires loose, moist soil for burrowing. It seeks cover in rotting logs, rock outcrops, and under surface litter. The project site does not contain suitable habitat for this species. **This species is not present.**

Western yellow-billed cuckoo
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is federally listed Threatened, and state listed endangered species. This species typically nests in riparian jungles of willows, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape. It is found in riparian forest habitat. The project site does not contain suitable habitat for this species. **This species is not present.**

San Bernardino kangaroo rat
San Bernardino kangaroo rat (*Dipodomys merriami parvus*) is a federally listed Endangered species and a candidate state listed Endangered species. It is found in coastal scrub habitat. This species is found in alluvial scrub vegetation on sandy loam substrates, characteristic of alluvial fans and flood plains. It needs early to intermediate seral stages. The project site is located within federally designated critical habitat for this species. Further, this species has been observed within the wash area to the west of Pepper Avenue.

The site is heavily disturbed and dominated by non-native plant species. San Bernardino kangaroo rat prefers sparse scrub habitats such as alluvial scrub and coastal sage scrub habitats on gravelly and sandy soils adjoining river and stream terraces and on alluvial fans. No native scrub habitats are present on the site. Furthermore, busy roads and disturbed lands separate the project site from suitable habitat. The project site does not contain suitable habitat for this species. **This species is not present.**

Stephen's kangaroo rat
Stephens' kangaroo rat (*Dipodomys stephensi*) is a federally listed Endangered and state listed Threatened species. This species is found in coastal sage scrub with sparse vegetation cover, and in valley and foothill grasslands. This species prefers buckwheat, chamise, brome grass, and filaree and will burrow into firm soil. The project site does not contain suitable habitat for this species. **This species is not present.**

Southwestern willow flycatcher
Southwestern willow flycatcher (*Empidonax traillii extimus*) is on both the federal and state Endangered list. It is commonly found in riparian woodland habitats in southern California. The project site does not contain suitable habitat for this species. **This species is not present.**

Quino checkerspot butterfly
Quino checkerspot butterfly (*Euphydryas editha quino*) is a federally listed Endangered species. It is found in chaparral and coastal sage scrub. This species requires high densities of food plants, including *Plantago erecta*, *P. insularis*, and *Orthocarpus purpurescens*. The project site does not contain suitable habitat for this species. **This species is not present.**

Bald eagle
Bald eagle (*Haliaeetus leucocephalus*) is a state listed Endangered and CDFW fully protected species. This species is found in lower montane coniferous forest and old-growth. They nest in large old-growth or tress with open branches, especially ponderosa pine. The project site does not contain suitable habitat for this species. **This species is not present.**

California black rail
California black rail (*Laterallus jamaicensis coturniculus*) is a state listed Threatened species and is a CDFW Fully Protected Species. It inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. This species needs water depths of about one inch that do not fluctuate throughout the year and dense vegetation for nesting habitat. Its habitat includes brackish marsh, freshwater marsh, marsh and swamp, salt marsh, and wetland. The project site does not have suitable habitat for this species. **This species is not present.**

Steelhead-southern California DPS
Steelhead-southern California DPS (*Oncorhynchus mykiss irideus pop. 10*) is a federally listed Endangered species. This species is likely to have greater physiological tolerances to warmer water and more variable conditions. Its habitats include aquatic and south coast flowing waters. The project site does not have suitable habitat for this species. **This species is not present.**

Coastal California gnatcatcher
Coastal California gnatcatcher (*Polioptila californica californica*) is a federally listed Threatened species and CDFW Species of Special Concern. This species is found in coastal bluff scrub and coastal scrub habitat. This species is typically found in low, coastal sage scrub in arid washes, on mesas and slopes. The project site does not contain suitable habitat for this species. **This species is not present.**

California red-legged frog
California red-legged frog (*Rana draytonii*) is a federally listed Threatened species and a CDFW Species of Special Concern. Its habitat includes aquatic, artificial flowing waters, artificial standing waters, freshwater marsh, marsh and swamp, riparian forest, riparian scrub, riparian woodland, Sacramento and San Juaquin flowing and standing waters, and south coast. It requires 11 to 20 weeks for larval development and must have access to estivation habitat. It is

most commonly found in lowlands and foothills, in or near permanent sources of deep water, with dense, shrubby, or emergent riparian vegetation. The project site does not contain suitable habitat for this species. **This species is not present.**

Southern mountain yellow-legged frog

Southern mountain yellow-legged frog (*Rana muscosa*) is a federally and state listed Endangered species. It is found in aquatic habitat. This species is always encountered within a few feet of water. Tadpoles may require two to four years to complete their aquatic development. The project site does not contain suitable habitat for this species. **This species is not present.**

Delhi Sands flower-loving fly

Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*) is a federally listed Endangered species. It requires fine, sandy soils, often with wholly or partly consolidated dunes and sparse vegetation. It is found only in areas of the Delhi Sands formation in southwestern San Bernardino and northwestern Riverside counties. This species is found in interior dune habitat. The project site does not have suitable habitat for this species. **This species is not present.**

Mohave Tui Chub

The Mohave tui chub (Siphateles bicolor mohavensis) is a federal and state listed Endangered species. It is found in aquatic, and artificial standing and flowing waters. This species is endemic to the Mojave River basin, adapted to alkline mineralized water. It needs deep pools, ponds, or slough-like areas and vegetation for spawning. There is no habitat for this species on the project site. **This species is not present.**

Least Bell's vireo

Least Bell's vireo (*Vireo bellii pusillus)* is a federal and state listed Endangered species. This species is found in riparian forest, riparian scrub, and riparian woodland. Nesting habitat of this species is restricted to willow and/or mulefat dominated riparian scrub along permanent or nearly permanent streams. No suitable habitat for this species is present on the project site. **This species is not present.**

Burrowing owl

Burrowing owl (*Athene cunicularia*) is a CDFW Species of Special Concern. Its habitat includes coastal prairie, coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, and valley and foothill grassland. This species is typically found in open and dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. It is a subterranean nester and is dependent upon burrowing mammals, most notably the California ground squirrel. Potential habitat for this species is present on the project site. Therefore, focused surveys for this species were conducted (Appendix F). Although suitable habitat occurs on the project site, this species was not observed during focused surveys. **This species is not present.**

3.7 Nesting Birds

Migratory non-game native bird species are protected under the federal Migratory Bird Treaty Act. Additionally, Sections 3503, 3503.5, and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests. The project site contains trees and shrubs that can be utilized by nesting birds and raptors during the nesting bird season of February 1 through September 15.

3.8 Jurisdictional Waters

The project site does not contain any drainage, riparian, or riverine features. There are no CDFW, United States Army Corps of Engineers (USACE), or Regional Water Quality Control Board (RWQCB) jurisdictional waters within the project site boundaries.

4.0 Project Impacts

4.1 Impacts to Habitats

The project proposes the development of an approximate 432,000 SF industrial building, associated site access improvements, parking, trailer parking stalls, landscaping, and related infrastructure and utilities. Implementation of the proposed project will impact the entire 24.6-acre site comprised of ruderal habitat.

4.2 Impacts to Sensitive Species

No sensitive species have the potential to occur on the project site. No impacts to sensitive species are expected.

4.3 Impacts to Nesting Birds

Potential impacts to nesting birds may occur if ground disturbing activities or vegetation removal occur during the bird nesting season of February 1 through September 15. Implementation of the measures identified in the Recommendations section of this report will ensure that potential impacts to nesting birds are less than significant.

4.4 Impacts to Critical Habitat

The project site is located within designated federal critical habitat for San Bernardino kangaroo rat. No suitable habitat for this species occurs on the project site. Therefore, impacts to San Bernardino kangaroo rat critical habitat are not anticipated to be significant.

4.5 Impacts to Wildlife Movement Corridors

No wildlife movement corridors were found to be present on the project site. No impacts are expected.

4.6 Conflict with Local Policies or Ordinances Protecting Biological Resources

Should the proposed project result in the removal of trees, it will be required to comply with the County of San Bernardino's Plant Protection and Management Ordinances.

4.7 Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan

The Project would not be anticipated to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.8 State and Federal Drainages

The project site does not contain any state or federal drainages, therefore no impacts to any jurisdictional drainages are expected.

5.0 Recommendations

Based upon the findings of this report, it is recommended that the following studies or surveys be performed as part of the project.

Nesting Birds

- It is recommended that vegetation removal be conducted outside of the nesting season for migratory birds to avoid direct impacts.
- If vegetation removal will occur during the migratory bird nesting season, between February 1 and September 15, pre-construction nesting bird surveys shall be performed within three days prior to vegetation removal.
- If active nests are found during nesting bird surveys, they shall be flagged. A 250-foot buffer shall be fenced around song bird nests and a 500-foot buffer shall be fenced around raptor nests.

6.0 Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



Date 08/19/2021 Signed _____

PROJECT MANAGER

Fieldwork Performed By:

Elizabeth Gonzalez

Associate Biologist

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FIGURES

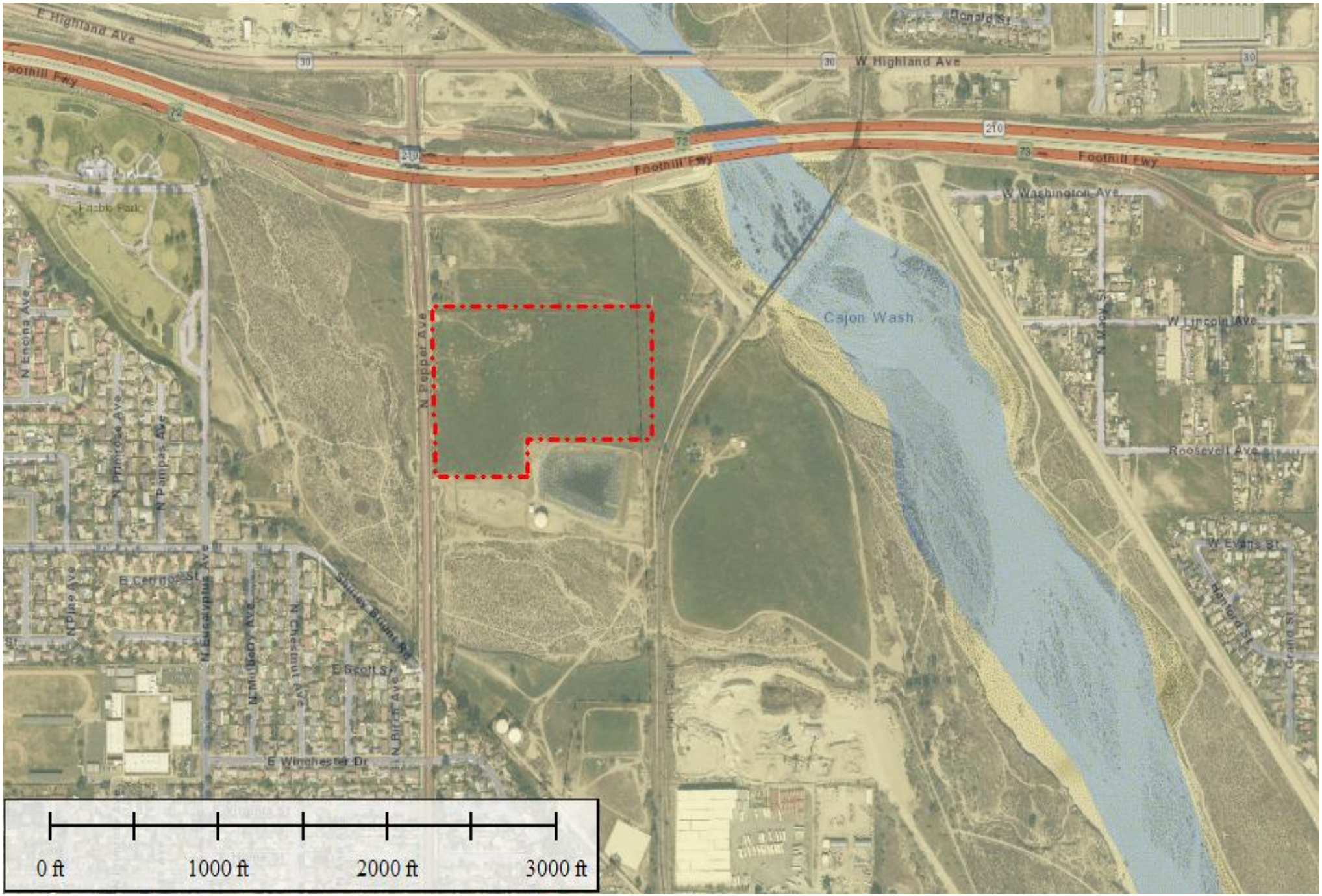


Figure 1
Location Map
Pepper Industrial Building
San Bernardino County, California

Legend

Project Site Boundary

N

Hernandez Environmental Services

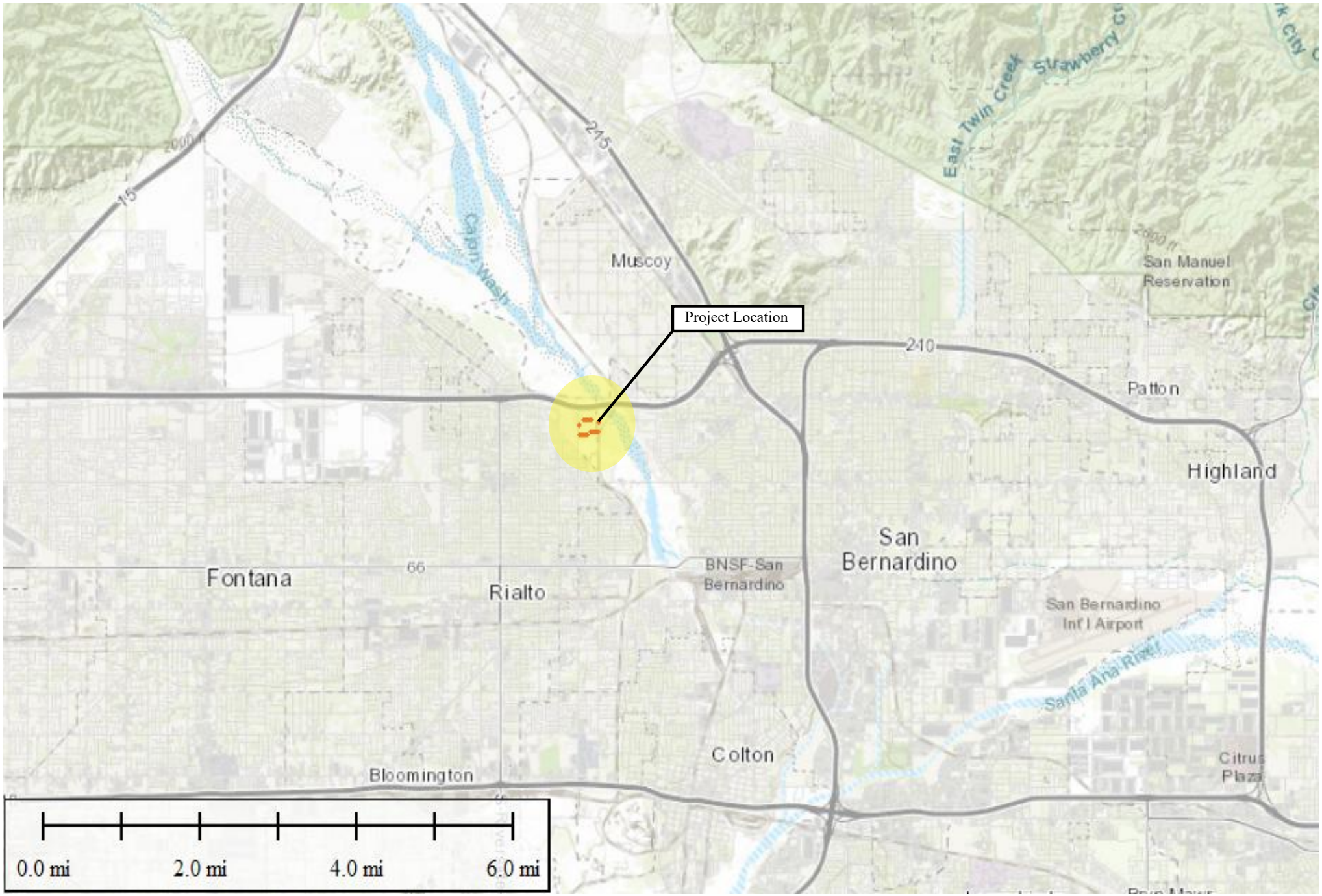


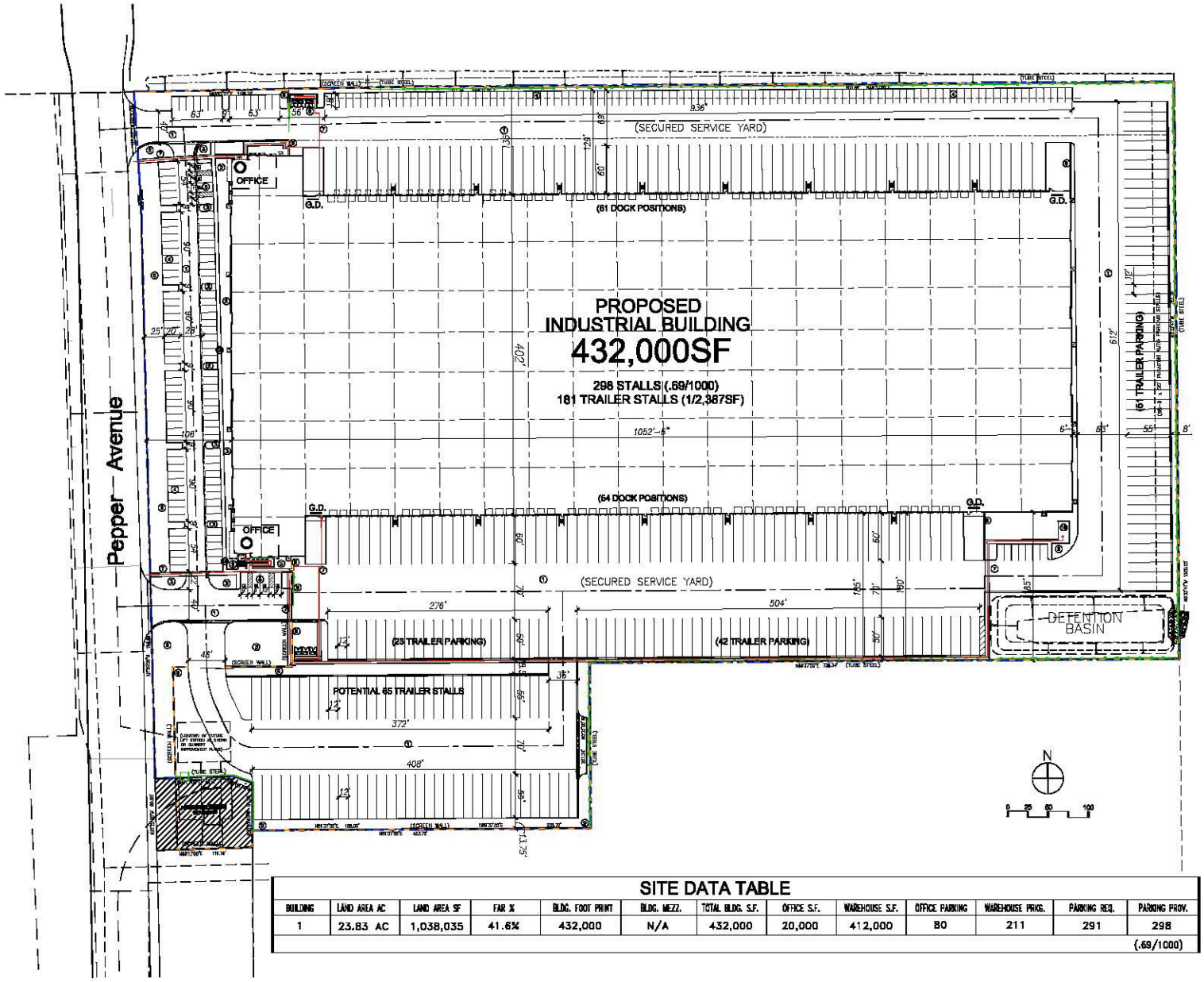
Figure 2
Vicinity Map
Pepper Industrial Building
San Bernardino County, California

Legend

Project Site Boundary

N

Hernandez Environmental Services



LEGAL DESCRIPTION

ASSESSOR'S PARCEL NUMBER

PARCEL NUMBER AS SHOWN PER COUNTY ASSESSOR	APN
PARCEL 1	[illegible]
PARCEL 2	[illegible]

PARKING STALL SIZES:

STANDARD PARKING STALL – 9' X 20' WIDTH (9' CLR.)
A.D.A. STANDARD STALL – 9' X 18' WIDTH (9' CLR.) WITH 8' X 18' WIDTH (8' CLR.) ACCESS AISLE

PARKING REQUIREMENTS

OFFICE:	1/250
WAREHOUSE:	0-10,000SF = 1/1000 10K> =1/2000

GRAPHIC LEGEND

- O — OFFICE
- G.D. — GRADE DOOR (12' X 14') & (12'X12')
- ADA ACCESSIBLE PARKING AS PER STATE STANDARDS
- A.D.A. PEDESTRIAN PATH
- 6' HEIGHT TUBE STL. FENCE
- SCREEN WALL / RETAINING (SEE CIVIL)
- HANDRAIL / GUARD RAIL

SHEET DESCRIPTION:

A1	CONCEPTUAL SITE PLAN
A2	CONCEPTUAL FLOOR PLAN
A3	CONCEPTUAL ROOF PLAN
A4	CONCEPTUAL ELEVATIONS
A5	COLOR ELEVATIONS
A6	COLOR AND MATERIAL BOARD
C1	CONCEPTUAL GRADING PLAN
C2	CONCEPTUAL SITE SECTIONS
L1	CONCEPTUAL LANDSCAPE PLAN
P1	PHOTOMETRICS LIGHTING PLAN

LAND ZONING & LAND USE:

CURRENT ZONING:	[illegible]
PROPOSED ZONING:	[illegible]

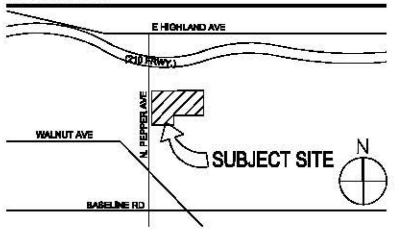
PROJECT TEAM:

[illegible]

KEY NOTES:

1. ASPHALT PAVING
2. CONCRETE PAVING
3. LANDSCAPE AREA
4. PER CITY STD. PARKING STALL 9'X20'
5. A.D.A. PARKING 9' X 18' & 12' X 16'- STATE STD.
6. TRASH ENCLOSURE
7. A.D.A. PEDESTRIAN PATH OF TRAVEL
8. TUBE STEEL TELESCOPING GATE
9. 9' HEIGHT CONCRETE SCREEN WALL
10. OUT DOOR PATIO WITH SEATING

VICINITY MAP



SITE DATA TABLE

BUILDING	LAND AREA AC	LAND AREA SF	FAR %	BLDG. FOOT PRINT	BLDG. MEZZ.	TOTAL BLDG. S.F.	OFFICE S.F.	WAREHOUSE S.F.	OFFICE PARKING	WAREHOUSE PRKG.	PARKING REQ.	PARKING PROV.
1	23.83 AC	1,038,035	41.6%	432,000	N/A	432,000	20,000	412,000	80	211	291	298
												(.69/1000)

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PEPPER INDUSTRIAL BUILDING RIALTO, CA

CONCEPTUAL SITE PLAN 08-10-2021

SHEET A1

Howard | Industrial Partners

Architects Orange
144 North Orange Street, Orange, California 92868
714 / 935-0900
aoarchitects.com

Scale: 1" = 120'-0"
Job No. 2020-106-00
Date 08-10-2021

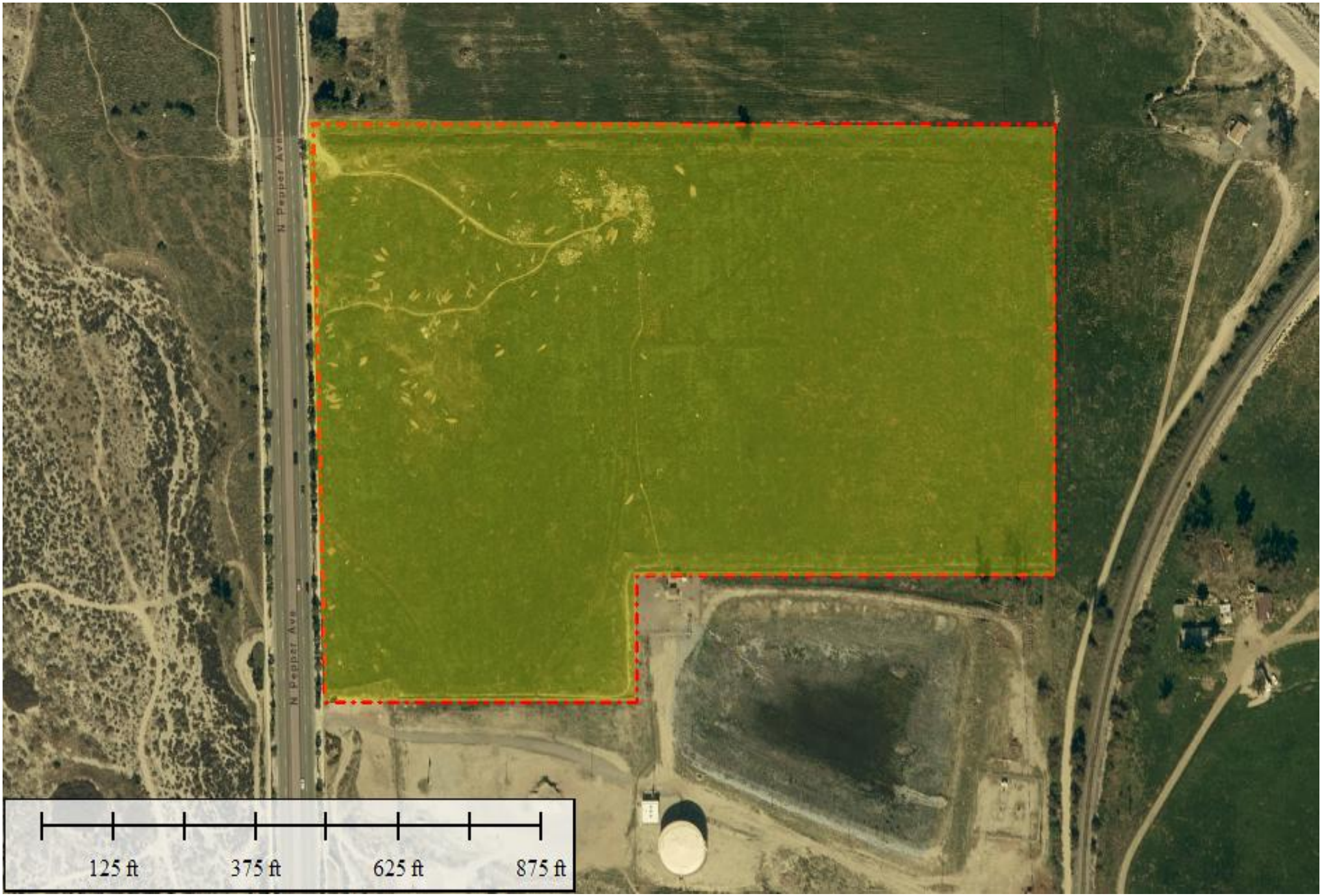


Figure 4
Habitat Map
Pepper Industrial Building
San Bernardino County, California

Legend

Project Site Boundary

Ruderal Habitat (24.6 Acres)

N

Hernandez Environmental Services

APPENDIX A

Species List

Plant List

Acmispon glaber	Deerweed
Ailanthus altissima	Tree of heaven
Ambrosia psilostachya	Western ragweed
Amsinckia menziesii	Menzies' fiddleneck
Avena barbata	Slender oats
Avena fatua	Wild oats
Brassica juncea	Savanna mustard
Bromus diandrus	Rip gut brome
Bromus madritensis rubens	Red brome
Centaurea melitensis	Yellow starthistle
Cryptantha intermedia	Common cryptanth
Datura stramonium	Jimson weed
Erigeron canadensis	Canada horseweed
Erodium cicutarium	Common stork's-bill
Erodium cicutarium	Red-stemmed filaree
Eucalyptus sp.	Eucalyptus
Helianthus annus	Common sunflower
Heterotheca grandiflora	Telegraph weed

Hirschfedfia incana	Short pod mustard
Hordeum jubatum	Foxtail barley
Hordeum murinum	Wall barley
Malva parviflora	Cheeseweed
Marrubium vulgare	Horehound
Pinus	Pine tree
Ricinus communis	Castor bean
Sambucus	Elderberry
Sisymbrium irio	London rocket
Washingtonia robusta	Mexican fan palm

Animal List

Buteo jamaicensis	Red-tailed hawk
Calypte anna.	Anna's Hummingbird
Charadrius vociferus	Killdeer
Eremophila alpestris	Horned lark
Euphagus cyanocephalus	Brewer's blackbird
Haemorhous mexicanus	House finch
Icterus cucullatus	Hooded oriole
Melospiza melodia	Song sparrow
Otospermophilus beecheyi	Ground squirrel
Passerculus sandwichensis	Savannah sparrow
Petrochelidon pyrrhonota	Cliff swallow
Spinus psaltria	Lesser goldfinch
Sturnella neglecta	Western meadowlark
Sylvilagus audubonii	Desert cottontail
Thomomys talpoides	Pocket gopher
Trochilidae sp.	Hummingbird sp.
Zenaida macroura	Mourning dove
Zonotrichia leucophrys	White crowned sparrow

APPENDIX B

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Allium howellii var. clokeyi	Mt. Pinos onion	Monocots	None	None	1B.3	Great Basin scrub | Meadow & seep | Pinon & juniper woodlands	Great Basin scrub, pinyon and juniper woodland, meadows and seeps (edges).	1385-1800 m.	No suitable habitat is present on site. **This species is not present.**
Ambrosia monogyra	singlewhorl burrobrush	Dicots	None	None	2B.2	Chaparral | Sonoran desert scrub	Chaparral, Sonoran desert scrub.	Sandy soils. 5-475 m.	No suitable habitat is present on site. **This species is not present.**
Arenaria paludicola	marsh sandwort	Dicots	Endangered	Endangered	1B.1	Freshwater marsh | Marsh & swamp | Wetland	Marshes and swamps.	Growing up through dense mats of Typha, Juncus, Scirpus, etc. in freshwater marsh. Sandy soil. 3-170 m.	No suitable habitat is present on site. **This species is not present.**
Asclepias nyctaginifolia	Mojave milkweed	Dicots	None	None	2B.1	Mojavean desert scrub | Pinon & juniper woodlands	Mojavean desert scrub, pinyon and juniper woodland.	775-1605 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Astragalus hornii var. hornii	Horn's milk-vetch	Dicots	None	None	1B.1	Alkali playa | Meadow & seep | Wetland	Meadows and seeps, playas.	Lake margins, alkaline sites. 75-350 m.	No suitable habitat is present on site. **This species is not present.**
Berberis nevinii	Nevin's barberry	Dicots	Endangered	Endangered	1B.1	Chaparral | Cismontane woodland | Coastal scrub | Riparian scrub	Chaparral, cismontane woodland, coastal scrub, riparian scrub.	On steep, N-facing slopes or in low grade sandy washes. 90-1590 m.	No suitable habitat is present on site. **This species is not present.**
Brodiaea filifolia	thread-leaved brodiaea	Monocots	Threatened	Endangered	1B.1	Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland | Vernal pool | Wetland	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools.	Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m.	No suitable habitat is present on site. **This species is not present.**
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	Monocots	None	None	1B.2	Chaparral | Lower montane coniferous forest | Meadow & seep	Meadows and seeps, chaparral, lower montane coniferous forest.	Vernally moist places in yellow-pine forest, chaparral. 195-2530 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Calochortus plummerae	Plummer's mariposa-lily	Monocots	None	None	4.2	Chaparral | Cismontane woodland | Coastal scrub | Lower montane coniferous forest | Valley & foothill grassland	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.	Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	No suitable habitat is present on site. **This species is not present.**
Canbya candida	white pygmy-poppy	Dicots	None	None	4.2	Joshua tree woodland | Mojavean desert scrub | Pinon & juniper woodlands	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	Gravelly, sandy, granitic places. 600-1460 m.	No suitable habitat is present on site. **This species is not present.**
Carex comosa	bristly sedge	Monocots	None	None	2B.1	Coastal prairie | Freshwater marsh | Marsh & swamp | Valley & foothill grassland | Wetland	Marshes and swamps, coastal prairie, valley and foothill grassland.	Lake margins, wet places; site below sea level is on a Delta island. -5-1010 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Castilleja lasiorhyncha	San Bernardino Mountains owl's-clover	Dicots	None	None	1B.2	Chaparral | Meadow & seep | Pavement plain | Riparian woodland | Upper montane coniferous forest | Wetland	Meadows and seeps, pebble plain, upper montane coniferous forest, chaparral, riparian woodland.	Mesic to drying soils in open areas of stream and meadow margins or in vernally wet areas. 1140-2320 m.	No suitable habitat is present on site. **This species is not present.**
Centromadia pungens ssp. laevis	smooth tarplant	Dicots	None	None	1B.1	Alkali playa | Chenopod scrub | Meadow & seep | Riparian woodland | Valley & foothill grassland | Wetland	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland.	Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m.	No suitable habitat is present on site. **This species is not present.**
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Dicots	Endangered	Endangered	1B.2	Coastal dunes | Marsh & swamp | Salt marsh | Wetland	Marshes and swamps, coastal dunes.	Limited to the higher zones of salt marsh habitat. 0-10 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Chorizanthe parryi var. parryi	Parry's spineflower	Dicots	None	None	1B.1	Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland.	Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m.	No suitable habitat is present on site. **This species is not present.**
Chorizanthe xanti var. leucotheca	white-bracted spineflower	Dicots	None	None	1B.2	Coastal scrub | Mojavean desert scrub | Pinon & juniper woodlands	Mojavean desert scrub, pinyon and juniper woodland, coastal scrub (alluvial fans).	Sandy or gravelly places. 365-1830 m.	No suitable habitat is present on site. **This species is not present.**
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Dicots	None	None	2B.2	Marsh & swamp | Wetland	Marshes and swamps (freshwater).	Freshwater marsh. 15-280 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Deinandra mohavensis	Mojave tarplant	Dicots	None	Endangered	1B.3	Chaparral | Coastal scrub | Riparian scrub	Riparian scrub, coastal scrub, chaparral.	Low sand bars in river bed; mostly in riparian areas or in ephemeral grassy areas. 640-1645 m.	No suitable habitat is present on site. **This species is not present.**
Dodecahema leptoceras	slender-horned spineflower	Dicots	Endangered	Endangered	1B.1	Chaparral | Cismontane woodland | Coastal scrub	Chaparral, cismontane woodland, coastal scrub (alluvial fan sage scrub).	Flood deposited terraces and washes; associates include Encelia, Dalea, Lepidospartum, etc. Sandy soils. 200-765 m.	No suitable habitat is present on site. **This species is not present.**
Dudleya abramsii ssp. affinis	San Bernardino Mountains dudleya	Dicots	None	None	1B.2	Limestone | Pavement plain | Pinon & juniper woodlands | Upper montane coniferous forest	Pebble (pavement) plain, upper montane coniferous forest, pinyon and juniper woodland.	Outcrops, granite or quartzite, rarely limestone. 1200-2425 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Eremothera boothii ssp. boothii	Booth's evening-primrose	Dicots	None	None	2B.3	Joshua tree woodland | Pinon & juniper woodlands	Joshua tree woodland, pinyon and juniper woodland.	285-2290 m.	No suitable habitat is present on site. **This species is not present.**
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Dicots	Endangered	Endangered	1B.1	Chaparral | Coastal scrub	Coastal scrub, chaparral.	In sandy soils on river floodplains or terraced fluvial deposits. 180-705 m.	No suitable habitat is present on site. **This species is not present.**
Erigeron parishii	Parish's daisy	Dicots	Threatened	None	1B.1	Limestone | Mojavean desert scrub | Pinon & juniper woodlands	Mojavean desert scrub, pinyon and juniper woodland.	Often on carbonate; limestone mountain slopes; often associated with drainages. Sometimes on grainite. 1050-2245 m.	No suitable habitat is present on site. **This species is not present.**
Fimbristylis thermalis	hot springs fimbristylis	Monocots	None	None	2B.2	Meadow & seep | Wetland	Meadows and seeps (alkaline).	Near hot springs. 115-1585 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Galium californicum ssp. primum	Alvin Meadow bedstraw	Dicots	None	None	1B.2	Chaparral | Lower montane coniferous forest	Chaparral, lower montane coniferous forest.	Grows in shade of trees and shrubs at the lower edge of the pine belt, in pine forest-chaparral ecotone. Granitic, sandy soils. 1460-1830 m.	No suitable habitat is present on site. **This species is not present.**
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Dicots	None	None	1A	Freshwater marsh | Marsh & swamp | Salt marsh | Wetland	Marshes and swamps (coastal salt and freshwater).	35-1525 m.	No suitable habitat is present on site. **This species is not present.**
Heuchera parishii	Parish's alumroot	Dicots	None	None	1B.3	Alpine boulder & rock field | Limestone | Lower montane coniferous forest | Subalpine coniferous forest | Upper montane coniferous forest	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest, alpine boulder and rock field.	Rocky places. Sometimes on carbonate. 1340-3505 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Horkelia cuneata var. puberula	mesa horkelia	Dicots	None	None	1B.1	Chaparral | Cismontane woodland | Coastal scrub	Chaparral, cismontane woodland, coastal scrub.	Sandy or gravelly sites. 15-1645 m.	No suitable habitat is present on site. **This species is not present.**
Imperata brevifolia	California satintail	Monocots	None	None	2B.1	Chaparral | Coastal scrub | Meadow & seep | Mojavean desert scrub | Riparian scrub | Wetland	Coastal scrub, chaparral, riparian scrub, mojavean desert scrub, meadows and seeps (alkali), riparian scrub.	Mesic sites, alkali seeps, riparian areas. 3-1495 m.	No suitable habitat is present on site. **This species is not present.**
Ivesia argyrocoma var. argyrocoma	silver-haired ivesia	Dicots	None	None	1B.2	Meadow & seep | Pavement plain | Upper montane coniferous forest	Meadows and seeps, pebble plains, upper montane coniferous forest.	In pebble plains and meadows with other rare plants. 1490-2960 m.	No suitable habitat is present on site. **This species is not present.**
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Dicots	None	None	4.3	Chaparral | Coastal scrub	Chaparral, coastal scrub.	Dry soils, shrubland. 4-1435 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Lilium parryi	lemon lily	Monocots	None	None	1B.2	Lower montane coniferous forest | Meadow & seep | Riparian forest | Upper montane coniferous forest | Wetland	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest.	Wet, mountainous terrain; generally in forested areas; on shady edges of streams, in open boggy meadows & seeps. 625-2930 m.	No suitable habitat is present on site. **This species is not present.**
Lycium parishii	Parish's desert-thorn	Dicots	None	None	2B.3	Coastal scrub | Sonoran desert scrub	Coastal scrub, Sonoran desert scrub.	-3-570 m.	No suitable habitat is present on site. **This species is not present.**
Malacothamnus parishii	Parish's bush-mallow	Dicots	None	None	1A	Chaparral | Coastal scrub	Chaparral, coastal sage scrub.	In a wash. 305-455 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Monardella macrantha ssp. hallii	Hall's monardella	Dicots	None	None	1B.3	Broadleaved upland forest | Chaparral | Cismontane woodland | Lower montane coniferous forest | Valley & foothill grassland	Broadleafed upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland.	Dry slopes and ridges in openings. 700-1800 m.	No suitable habitat is present on site. **This species is not present.**
Monardella pringlei	Pringle's monardella	Dicots	None	None	1A	Coastal scrub	Coastal scrub.	Sandy hills. 300-400 m.	No suitable habitat is present on site. **This species is not present.**
Nasturtium gambelii	Gambel's water cress	Dicots	Endangered	Threatened	1B.1	Brackish marsh | Freshwater marsh | Marsh & swamp | Wetland	Marshes and swamps.	Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. 5-305 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Opuntia basilaris var. brachyclada	short-joint beavertail	Dicots	None	None	1B.2	Chaparral | Joshua tree woodland | Mojavean desert scrub | Pinon & juniper woodlands	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	Sandy soil or coarse, granitic loam. 425-2015 m.	No suitable habitat is present on site. **This species is not present.**
Pediomelum castoreum	Beaver Dam breadroot	Dicots	None	None	1B.2	Desert wash | Joshua tree woodland | Mojavean desert scrub	Joshua tree woodland, Mojavean desert scrub.	Sandy soils; washes and roadcuts. 605-1485 m.	No suitable habitat is present on site. **This species is not present.**
Perideridia parishii ssp. parishii	Parish's yampah	Dicots	None	None	2B.2	Lower montane coniferous forest | Meadow & seep | Upper montane coniferous forest	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest.	Damp meadows or along streambeds- prefers an open pine canopy. 1470-2530 m.	No suitable habitat is present on site. **This species is not present.**
Ribes divaricatum var. parishii	Parish's gooseberry	Dicots	None	None	1A	Riparian woodland	Riparian woodland.	Salix swales in riparian habitats. 65-300 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Riversidian Alluvial Fan Sage Scrub	Riversidian Alluvial Fan Sage Scrub	Scrub	None	None		Coastal scrub			**Not present**.
Schoenus nigricans	black bog-rush	Monocots	None	None	2B.2	Marsh & swamp | Wetland	Marshes and swamps.	Often in alkaline marshes. 120-1525 m.	No suitable habitat is present on site. **This species is not present.**
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	Dicots	None	None	1B.2	Chaparral | Cismontane woodland | Lower montane coniferous forest	Chaparral, cismontane woodland, lower montane coniferous forest.	In gravelly soils on streambanks or in mesic sites in oak or pine woodland. 425-2000 m.	No suitable habitat is present on site. **This species is not present.**
Senecio aphanactis	chaparral ragwort	Dicots	None	None	2B.2	Chaparral | Cismontane woodland | Coastal scrub	Chaparral, cismontane woodland, coastal scrub.	Drying alkaline flats. 20-1020 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Sidalcea malviflora ssp. dolosa	Bear Valley checkerbloom	Dicots	None	None	1B.2	Lower montane coniferous forest | Meadow & seep | Riparian woodland | Upper montane coniferous forest | Wetland	Meadows and seeps, riparian woodland, lower montane coniferous forest, upper montane coniferous forest.	Known from wet areas within forested habitats. Affected by hydrological changes. 1575-2590 m.	No suitable habitat is present on site. **This species is not present.**
Sidalcea neomexicana	salt spring checkerbloom	Dicots	None	None	2B.2	Alkali playa | Chaparral | Coastal scrub | Lower montane coniferous forest | Mojavean desert scrub | Wetland	Playas, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub.	Alkali springs and marshes. 3-2380 m.	No suitable habitat is present on site. **This species is not present.**
Southern Coast Live Oak Riparian Forest	Southern Coast Live Oak Riparian Forest	Riparian	None	None		Riparian forest			**Not present.**
Southern Cottonwood Willow Riparian Forest	Southern Cottonwood Willow Riparian Forest	Riparian	None	None		Riparian forest			**Not present.**
Southern Mixed Riparian Forest	Southern Mixed Riparian Forest	Riparian	None	None		Riparian forest			**Not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Southern Riparian Forest	Southern Riparian Forest	Riparian	None	None		Riparian forest			**Not present.**
Southern Riparian Scrub	Southern Riparian Scrub	Riparian	None	None		Riparian scrub			**Not present.**
Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	Riparian	None	None		Riparian woodland			**Not present.**
Sphenopholis obtusata	prairie wedge grass	Monocots	None	None	2B.2	Cismontane woodland | Meadow & seep | Wetland	Cismontane woodland, meadows and seeps.	Open moist sites, along rivers and springs, alkaline desert seeps. 15-2625 m.	No suitable habitat is present on site. **This species is not present.**
Streptanthus bernardinus	Laguna Mountains jewelflower	Dicots	None	None	4.3	Chaparral | Lower montane coniferous forest | Upper montane coniferous forest	Chaparral, lower montane coniferous forest.	Clay or decomposed granite soils; sometimes in disturbed areas such as streamsides or roadcuts. 1440-2500 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Streptanthus campestris	southern jewelflower	Dicots	None	None	1B.3	Chaparral | Lower montane coniferous forest | Pinon & juniper woodlands	Chaparral, lower montane coniferous forest, pinyon and juniper woodland.	Open, rocky areas. 605-2590 m.	No suitable habitat is present on site. **This species is not present.**
Symphyotrichum defoliatum	San Bernardino aster	Dicots	None	None	1B.2	Cismontane woodland | Coastal scrub | Lower montane coniferous forest | Marsh & swamp | Meadow & seep | Valley & foothill grassland	Meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland.	Vernally mesic grassland or near ditches, streams and springs; disturbed areas. 3-2045 m.	No suitable habitat is present on site. **This species is not present.**
Symphyotrichum greatae	Greata's aster	Dicots	None	None	1B.3	Broadleaved upland forest | Chaparral | Cismontane woodland | Lower montane coniferous forest | Riparian woodland	Chaparral, cismontane woodland, broadleafed upland forest, lower montane coniferous forest, riparian woodland.	Mesic canyons. 335-2015 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Rare Plant Rank	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Thelypteris puberula var. sonorensis	Sonoran maiden fern	Ferns	None	None	2B.2	Meadow & seep | Wetland	Meadows and seeps.	Along streams, seepage areas. 60-930 m.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Accipiter cooperii	Cooper's hawk	Birds	None	None	CDFW_WL-Watch List | IUCN_LC-Least Concern	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No suitable habitat is present on site. **This species is not present.**
Agelaius tricolor	tricolored blackbird	Birds	None	Threatened	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	No suitable habitat is present on site. **This species is not present.**
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	Birds	None	None	CDFW_WL-Watch List	Chaparral | Coastal scrub	Resident in Southern California coastal sage scrub and sparse mixed chaparral.	Frequents relatively steep, often rocky hillsides with grass and forb patches.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Anaxyrus californicus	arroyo toad	Amphibians	Endangered	None	CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered	Desert wash | Riparian scrub | Riparian woodland | South coast flowing waters | South coast standing waters	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc.	Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	No suitable habitat is present on site. **This species is not present.**
Anniella stebbinsi	Southern California legless lizard	Reptiles	None	None	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Broadleaved upland forest | Chaparral | Coastal dunes | Coastal scrub	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County.	Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Antrozous pallidus	pallid bat	Mammals	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	No suitable habitat is present on site. **This species is not present.**
Arizona elegans occidentalis	California glossy snake	Reptiles	None	None	CDFW_SSC-Species of Special Concern		Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California.	Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Artemisiospiza belli belli	Bell's sage sparrow	Birds	None	None	CDFW_WL-Watch List | USFWS_BCC-Birds of Conservation Concern	Chaparral | Coastal scrub	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range.	Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	No suitable habitat is present on site. **This species is not present.**
Asio otus	long-eared owl	Birds	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Cismontane woodland | Great Basin scrub | Riparian forest | Riparian woodland | Upper montane coniferous forest	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses.	Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	No suitable habitat is present on site. **This species is not present.**
Aspidoscelis hyperythra	orange-throated whiptail	Reptiles	None	None	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFS_S-Sensitive	Chaparral | Cismontane woodland | Coastal scrub	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats.	Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Aspidoscelis tigris stejnegeri	coastal whiptail	Reptiles	None	None	CDFW_SSC-Species of Special Concern		Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas.	Ground may be firm soil, sandy, or rocky.	No suitable habitat is present on site. **This species is not present.**
Athene cunicularia	burrowing owl	Birds	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Suitable habitat is present on site. Focused burrowing owl surveys determined **this species is not present**.
Batrachoseps gabrieli	San Gabriel slender salamander	Amphibians	None	None	IUCN_DD-Data Deficient | USFS_S-Sensitive	Talus slope	Known only from the San Gabriel Mtns. Found under rocks, wood, and fern fronds, and on soil at the base of talus slopes.	Most active on the surface in winter and early spring.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Bombus crotchii	Crotch bumble bee	Insects	None	Candidate Endangered			Coastal California east to the Sierra-Cascade crest and south into Mexico.	Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	No suitable habitat is present on site. **This species is not present.**
Bombus morrisoni	Morrison bumble bee	Insects	None	None	IUCN_VU-Vulnerable		From the Sierra-Cascade ranges eastward across the intermountain west.	Food plant genera include Cirsium, Cleome, Helianthus, Lupinus, Chrysothamnus, and Melilotus.	No suitable habitat is present on site. **This species is not present.**
Buteo swainsoni	Swainson's hawk	Birds	None	Threatened	BLM_S-Sensitive | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees.	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Catostomus santaanae	Santa Ana sucker	Fish	Threatened	None	AFS_TH-Threatened | IUCN_VU-Vulnerable	Aquatic | South coast flowing waters	Endemic to Los Angeles Basin south coastal streams.	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	No suitable habitat is present on site. **This species is not present.**
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	Mammals	None	None	CDFW_SSC-Species of Special Concern	Chaparral | Coastal scrub	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County.	Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable habitat is present on site. **This species is not present.**
Chaetodipus fallax pallidus	pallid San Diego pocket mouse	Mammals	None	None	CDFW_SSC-Species of Special Concern	Desert wash | Pinon & juniper woodlands | Sonoran desert scrub	Desert border areas in eastern San Diego County in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc.	Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Charina umbratica	southern rubber boa	Reptiles	None	Threatened	USFS_S-Sensitive	Meadow & seep | Riparian forest | Riparian woodland | Upper montane coniferous forest | Wetland	Known from the San Bernardino and San Jacinto mtns; found in a variety of montane forest habitats. Snakes resembling C. umbratica reported from Mt. Pinos and Tehachapi mtns group with C. bottae based on mtDNA. Further research needed.	Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs, rock outcrops, and under surface litter.	No suitable habitat is present on site. **This species is not present.**
Cicindela tranquebarica viridissima	greenest tiger beetle	Insects	None	None		Riparian woodland	Inhabits the woodlands adjacent to the Santa Ana River basin.	Usually found in open spots between trees.	No suitable habitat is present on site. **This species is not present.**
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Birds	Threatened	Endangered	BLM_S-Sensitive | NABCI_RWL-Red Watch List | USFS_S-Sensitive | USFWS_BCC-Birds of Conservation Concern	Riparian forest	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Coleonyx variegatus abbotti	San Diego banded gecko	Reptiles	None	None	CDFW_SSC-Species of Special Concern	Chaparral | Coastal scrub	Coastal & cismontane Southern California.	Found in granite or rocky outcrops in coastal scrub and chaparral habitats.	No suitable habitat is present on site. **This species is not present.**
Crotalus ruber	red-diamond rattlesnake	Reptiles	None	None	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Chaparral | Mojavean desert scrub | Sonoran desert scrub	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains.	Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	No suitable habitat is present on site. **This species is not present.**
Diadophis punctatus modestus	San Bernardino ringneck snake	Reptiles	None	None	USFS_S-Sensitive		Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams.	Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Dipodomys merriami parvus	San Bernardino kangaroo rat	Mammals	Endangered	Candidate Endangered	CDFW_SSC-Species of Special Concern	Coastal scrub	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.	Needs early to intermediate seral stages.	No suitable habitat is present on site. **This species is not present.**
Dipodomys stephensi	Stephens' kangaroo rat	Mammals	Endangered	Threatened	IUCN_EN-Endangered	Coastal scrub | Valley & foothill grassland	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover.	Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	No suitable habitat is present on site. **This species is not present.**
Empidonax traillii extimus	southwestern willow flycatcher	Birds	Endangered	Endangered	NABCI_RWL-Red Watch List	Riparian woodland	Riparian woodlands in Southern California.		No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Emys marmorata	western pond turtle	Reptiles	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable | USFS_S-Sensitive	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	No suitable habitat is present on site. **This species is not present.**
Eremophila alpestris actia	California horned lark	Birds	None	None	CDFW_WL-Watch List | IUCN_LC-Least Concern	Marine intertidal & splash zone communities | Meadow & seep	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills.	Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Euchloe hyantis andrewsi	Andrew's marble butterfly	Insects	None	None		Lower montane coniferous forest	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino Mtns, San Bernardino Co, 5000-6000 ft.	Hostplants are Streptanthus bernardinus & Arabis holboellii var pinetorum; larval foodplant is Descurainia richardsonii.	No suitable habitat is present on site. **This species is not present.**
Eugnosta busckana	Busck's gallmoth	Insects	None	None		Coastal dunes | Coastal scrub			No suitable habitat is present on site. **This species is not present.**
Eumops perotis californicus	western mastiff bat	Mammals	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | WBWG_H-High Priority	Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc.	Roosts in crevices in cliff faces, high buildings, trees and tunnels.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Euphydryas editha quino	quino checkerspot butterfly	Insects	Endangered	None		Chaparral | Coastal scrub	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside & San Diego counties.	Hills and mesas near the coast. Need high densities of food plants Plantago erecta, P. insularis, and Orthocarpus purpurescens.	No suitable habitat is present on site. **This species is not present.**
Falco columbarius	merlin	Birds	None	None	CDFW_WL-Watch List | IUCN_LC-Least Concern	Estuary | Great Basin grassland | Valley & foothill grassland	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches.	Clumps of trees or windbreaks are required for roosting in open country.	No suitable habitat is present on site. **This species is not present.**
Gila orcuttii	arroyo chub	Fish	None	None	AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Aquatic | South coast flowing waters	Native to streams from Malibu Creek to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mojave & San Diego river basins.	Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Glaucomys oregonensis californicus	San Bernardino flying squirrel	Mammals	None	None	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Broadleaved upland forest | Lower montane coniferous forest	Known from black oak or white fir dominated woodlands between 5200 - 8500 ft in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range.	Needs cavities in trees/snags for nests and cover. Needs nearby water.	No suitable habitat is present on site. **This species is not present.**
Haliaeetus leucocephalus	bald eagle	Birds	Delisted	Endangered	BLM_S-Sensitive | CDF_S-Sensitive | CDFW_FP-Fully Protected | IUCN_LC-Least Concern | USFS_S-Sensitive | USFWS_BCC-Birds of Conservation Concern	Lower montane coniferous forest | Oldgrowth	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	No suitable habitat is present on site. **This species is not present.**
Helminthoglypta taylori	westfork shoulderband	Mollusks	None	None		Riparian woodland	Vicinity of the Mojave River.	Under logs and leaves.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Icteria virens	yellow-breasted chat	Birds	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Riparian forest | Riparian scrub | Riparian woodland	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses.	Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	No suitable habitat is present on site. **This species is not present.**
Lanius ludovicianus	loggerhead shrike	Birds	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest | Desert wash | Joshua tree woodland | Mojavean desert scrub | Pinon & juniper woodlands | Riparian woodland | Sonoran desert scrub	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes.	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	No suitable habitat is present on site. **This species is not present.**
Lasiurus xanthinus	western yellow bat	Mammals	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | WBWG_H-High Priority	Desert wash	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats.	Roosts in trees, particularly palms. Forages over water and among trees.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Laterallus jamaicensis coturniculus	California black rail	Birds	None	Threatened	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Brackish marsh | Freshwater marsh | Marsh & swamp | Salt marsh | Wetland	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays.	Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	No suitable habitat is present on site. **This species is not present.**
Lepus californicus bennettii	San Diego black-tailed jackrabbit	Mammals	None	None	CDFW_SSC-Species of Special Concern	Coastal scrub	Intermediate canopy stages of shrub habitats & open shrub / herbaceous & tree / herbaceous edges.	Coastal sage scrub habitats in Southern California.	No suitable habitat is present on site. **This species is not present.**
Neolarra alba	white cuckoo bee	Insects	None	None			Known only from localities in Southern California.	Cleptoparasitic in the nests of perdita bees.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Neotamias speciosus speciosus	lodgepole chipmunk	Mammals	None	None		Chaparral | Upper montane coniferous forest	Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests.	Habitat is usually lodgepole pine forests in the San Bernardino Mts & chinquapin slopes in the San Jacinto Mts.	No suitable habitat is present on site. **This species is not present.**
Neotoma lepida intermedia	San Diego desert woodrat	Mammals	None	None	CDFW_SSC-Species of Special Concern	Coastal scrub	Coastal scrub of Southern California from San Diego County to San Luis Obispo County.	Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	No suitable habitat is present on site. **This species is not present.**
Nyctinomops femorosaccus	pocketed free-tailed bat	Mammals	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | WBWG_M-Medium Priority	Joshua tree woodland | Pinon & juniper woodlands | Riparian scrub | Sonoran desert scrub	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc.	Rocky areas with high cliffs.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Oncorhynchus mykiss irideus pop. 10	steelhead - southern California DPS	Fish	Endangered	None	AFS_EN-Endangered	Aquatic | South coast flowing waters	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County).	Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	No suitable habitat is present on site. **This species is not present.**
Onychomys torridus ramona	southern grasshopper mouse	Mammals	None	None	CDFW_SSC-Species of Special Concern	Chenopod scrub	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.	Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	No suitable habitat is present on site. **This species is not present.**
Palaeoxenus dohrni	Dohrn's elegant eucnemid beetle	Insects	None	None					No suitable habitat is present on site. **This species is not present.**
Pandion haliaetus	osprey	Birds	None	None	CDF_S-Sensitive | CDFW_WL-Watch List | IUCN_LC-Least Concern	Riparian forest	Ocean shore, bays, freshwater lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Perognathus alticola alticola	white-eared pocket mouse	Mammals	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | USFS_S-Sensitive	Lower montane coniferous forest | Mojavean desert scrub | Pinon & juniper woodlands	Ponderosa and Jeffrey pine habitats; also in mixed chaparral and sagebrush habitats in the San Bernardino Mountains.	Burrows are constructed in loose soil.	No suitable habitat is present on site. **This species is not present.**
Perognathus longimembris brevinasus	Los Angeles pocket mouse	Mammals	None	None	CDFW_SSC-Species of Special Concern	Coastal scrub	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin.	Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	No suitable habitat is present on site. **This species is not present.**
Phrynosoma blainvillii	coast horned lizard	Reptiles	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Chaparral | Cismontane woodland | Coastal bluff scrub | Coastal scrub | Desert wash | Pinon & juniper woodlands | Riparian scrub | Riparian woodland | Valley & foothill grassland	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Polioptila californica californica	coastal California gnatcatcher	Birds	Threatened	None	CDFW_SSC-Species of Special Concern | NABCI_YWL-Yellow Watch List	Coastal bluff scrub | Coastal scrub	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California.	Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	No suitable habitat is present on site. **This species is not present.**
Rana draytonii	California red-legged frog	Amphibians	Threatened	None	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Rana muscosa	southern mountain yellow-legged frog	Amphibians	Endangered	Endangered	CDFW_WL-Watch List | IUCN_EN-Endangered | USFS_S-Sensitive	Aquatic	Federal listing refers to populations in the San Gabriel, San Jacinto and San Bernardino mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014.	Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs to complete their aquatic development.	No suitable habitat is present on site. **This species is not present.**
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	Insects	Endangered	None		Interior dunes	Found only in areas of the Delhi Sands formation in southwestern San Bernardino & northwestern Riverside counties.	Requires fine, sandy soils, often with wholly or partly consolidated dunes & sparse vegetation. Oviposition req. shade.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Rhinichthys osculus ssp. 8	Santa Ana speckled dace	Fish	None	None	AFS_TH-Threatened | CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Aquatic | South coast flowing waters	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system.	Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	No suitable habitat is present on site. **This species is not present.**
Setophaga petechia	yellow warbler	Birds	None	None	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Riparian forest | Riparian scrub | Riparian woodland	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada.	Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	No suitable habitat is present on site. **This species is not present.**
Siphateles bicolor mohavensis	Mohave tui chub	Fish	Endangered	Endangered	AFS_EN-Endangered | CDFW_FP-Fully Protected	Aquatic | Artificial flowing waters | Artificial standing waters	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters.	Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Spea hammondii	western spadefoot	Amphibians	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened	Cismontane woodland | Coastal scrub | Valley & foothill grassland | Vernal pool | Wetland	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Taxidea taxus	American badger	Mammals	None	None	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Alkali marsh | Alkali playa | Alpine | Alpine dwarf scrub | Bog & fen | Brackish marsh | Broadleaved upland forest | Chaparral | Chenopod scrub | Cismontane woodland | Closed-cone coniferous forest | Coastal bluff scrub | Coastal dunes | Coastal prairie | Coastal scrub | Desert dunes | Desert wash | Freshwater marsh | Great Basin grassland | Great Basin scrub | Interior dunes | Ione formation | Joshua tree woodland |	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	No suitable habitat is present on site. **This species is not present.**

Scientific Name	Common Name	Taxon Group	Federal List	State List	Other Status	Habitats	General Habitat	Micro Habitat	Presenc/ Absence
Thamnophis hammondii	two-striped gartersnake	Reptiles	None	None	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive	Marsh & swamp | Riparian scrub | Riparian woodland | Wetland	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation.	Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	No suitable habitat is present on site. **This species is not present.**
Vireo bellii pusillus	least Bell's vireo	Birds	Endangered	Endangered	IUCN_NT-Near Threatened | NABCI_YWL-Yellow Watch List	Riparian forest | Riparian scrub | Riparian woodland	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft.	Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	No suitable habitat is present on site. **This species is not present.**

APPENDIX C



View of ruderal habitat on the western portion of the site.



View of ruderal habitat on eastern portion of the project site.



View of ruderal habitat from southeast portion of the project site.

Hernandez Environmental Services



View of ruderal habitat on site that was reseeded. View from the western border of site facing east.



View of ruderal habitat from the northern border of the site facing south.

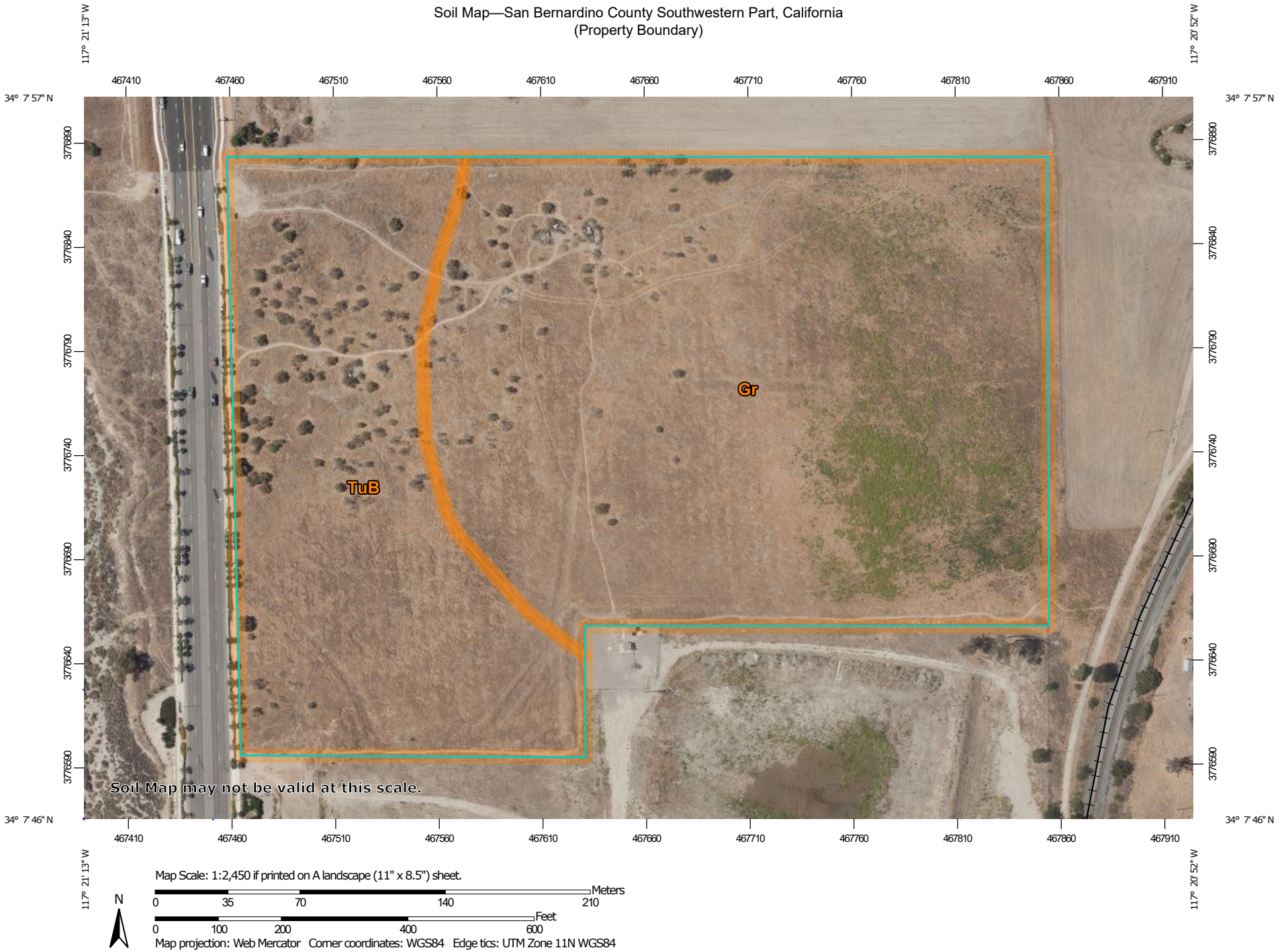


View of litter located in ruderal habitat on site.

Hernandez Environmental Services

APPENDIX D

Soil Map—San Bernardino County Southwestern Part, California
(Property Boundary)



Map Scale: 1:2,450 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	16.2	65.8%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	8.4	34.2%
Totals for Area of Interest		**24.6**	**100.0%**

APPENDIX E

Botanical Survey
for a Property in Rialto, California

San Bernardino County Assessor's Parcel Numbers 026-420-105, 026-420-126, and 026-420-106



Prepared for

Hernandez Environmental Services
17037 Lakeshore Drive
Lake Elsinore, CA 92530

Prepared by

Ricardo Montijo
926 South Prospero Drive
Glendora, CA 91740

August 2021

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Appendices

Appendix A. Flora Observed

Appendix B. Site Photographs

CERTIFICATION

I hereby certify that the statements furnished below and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



Ricardo Montijo

August 6, 2021
Date

1 INTRODUCTION

Hernandez Environmental Services (HES) was retained to conduct biological surveys and studies that support permitting for a development project in Rialto, San Bernardino County, California. The approximately 23.5-, 16-, and 1-acre (total of 40.5 acres) properties are designated San Bernardino County Assessor's Parcel Numbers (APNs) 026-420-105, 026-420-126, and 026-420-106. The properties occur in the southwest quarter of Section 36, Township 1 South, Range 5 West of the USGS 7.5-minute Devore Quadrangle (Figures 1 and 2).

The following report summarizes the results of botanical surveys on the approximately 45-acre property in the spring and summer of 2021.

1.1 Property Description

1.1.1 Geography, Geology, Hydrology, Soils and Climate

The property (project site or site) consists of three parcels, designated San Bernardino County APNs 026-420-105, 026-420-126, and 026-420-106 (Figure 2). The project site is on flat ground in historically farmed lands of Rialto/San Bernardino.

The properties are located west of Lytle Creek in a channelized and inactive portion of the stream. The deposited in the natural alluvium of the site is conducive to farming and have been farmed since at least 1938. Soils are described in Table 1 and illustrated in Figure 4.

1.2 Adjacent Lands

Adjacent lands consist of open space and a reservoir to the southeast (see Figure 2 and Photograph 1). The 210 Freeway is located north of the properties.

Figure 1. Location and Vicinity Map

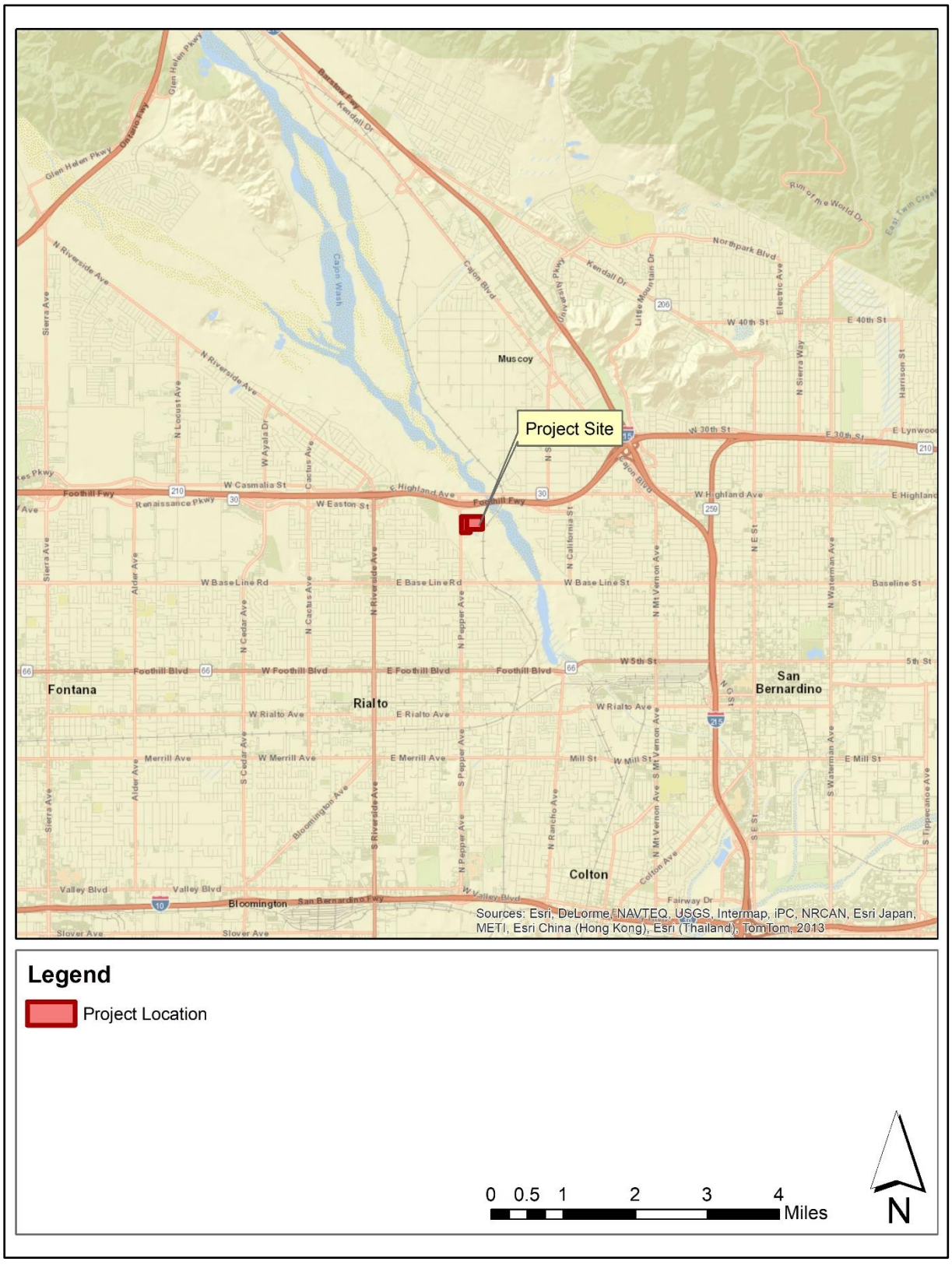


Figure 2. Aerial Image



Figure 3. Topography and Geographic Features

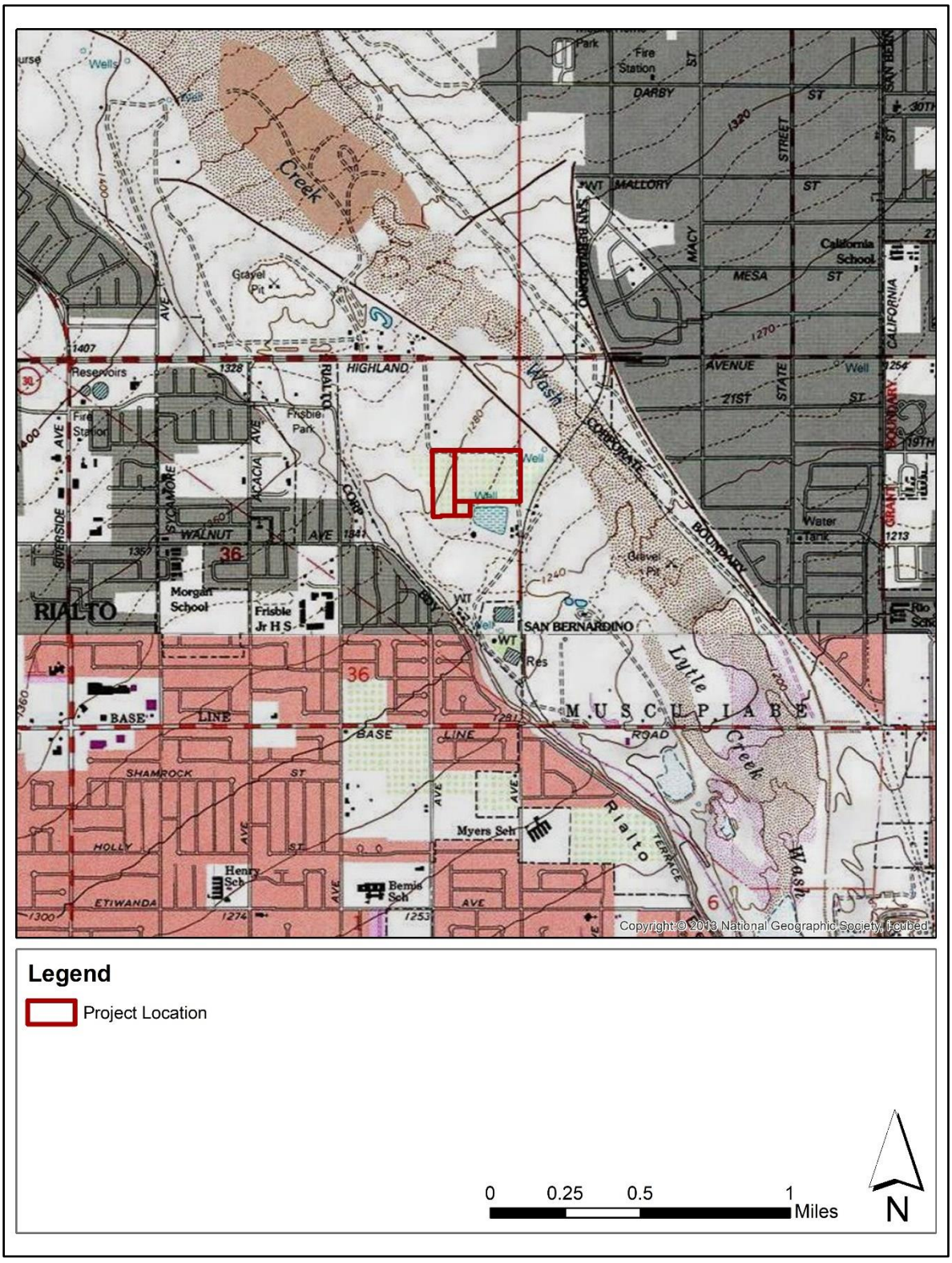


Figure 4. Soils

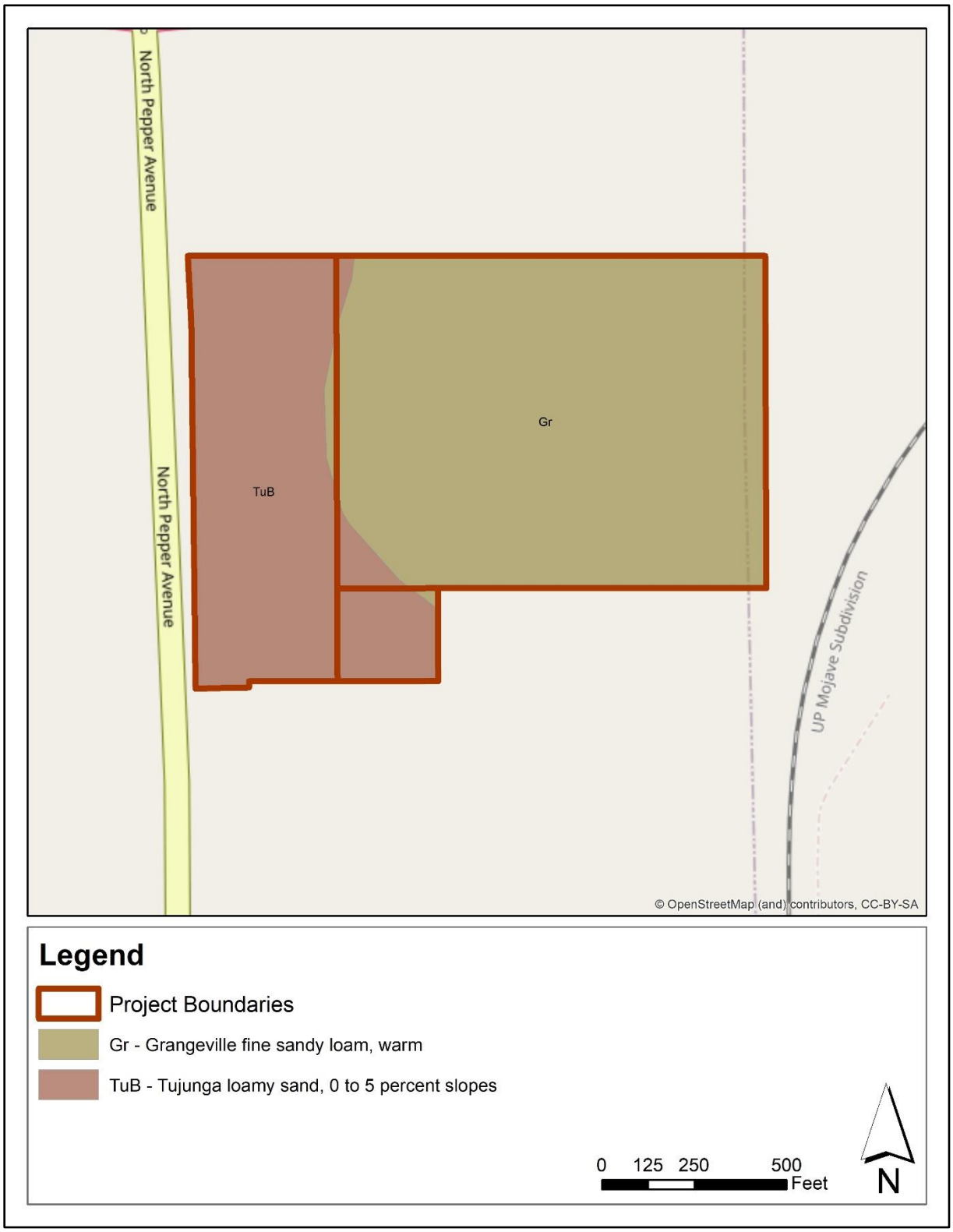


Table 1. Soil Types in the Survey Area Described

Map Unit Symbol	Map Unit Name	Description
TuB	Tujunga Loamy Sand	The Tujunga series consists of very deep, somewhat excessively drained soils that formed in granitic alluvium Tujunga soils occur on alluvial fans and floodplains, including urban areas.
Gr	Grangeville Fine Sandy Loam	The Grangeville series consists of very deep, somewhat poorly drained soils that formed in moderate coarse textured alluvium dominantly from granitic rock sources. Grangeville soils are on alluvial fans and floodplains and have slopes ranging from 0 to 2 percent.

This region gets approximately3.29 inches of rain per year and the number of days with any measurable precipitation is 22, which is generally consistent with comparable areas in Southern California. There are 276 sunny days per year. The August high is around 94 degrees. The January low is 40.

2 METHODS

2.1 Background Analysis

Pertinent plant occurrence records were reviewed prior to undertaking field surveys. The analysis included a review of records from the following sources:

- A review of collection records from participating herbaria in California available through the Consortium of California Herbaria, 2021;
- Documented rare plant occurrences compiled in the California Natural Diversity Data Base (CNDDB) by the California Department of Fish and Wildlife, 2021;
- A review of documented occurrences of common and rare plants for California in Calflora, 2021;
- Species descriptions from the Jepson Online Interchange, 2021;
- Soils data from the Natural Resources Conservation Service and available from the Web Soil Survey, 2021; and,

- Aerial photographs from Historic Aerials, Google Earth, ESRI, Digital Globe, GeoEye, US Department of Agriculture, US Geological Survey, i-cubed, Aerogrid and Getmapping.

The background analysis yielded data that were compiled in a Geographic Information System (GIS) using ArcMap 10.8 and ArcGIS Pro 2.8. These data were modified and uploaded to ArcGIS online for use with Collector in the field as geographic reference and for collecting field data. Several paper maps were also made from the data, which were printed for use during the surveys.

2.2 Field Surveys

Biologist Ricardo Montijo conducted botanical surveys on three non-consecutive days during the 2021 growing season. The initial survey was conducted on 16 April 2021, under clear skies with ambient temperature reaching the mid-70s. Subsequent surveys were conducted on 8 and 19 July 2021. Reference populations were checked on 24 March, 19 and 25 April 2021, and 19 July 2021. Table 3 summarizes the average temperature during each survey.

Table 2. Average Temperatures on Survey Dates

Date	Temperature in Degrees Fahrenheit
16 April	77
8 July	104
19 July	102

Rainfall has been far below normal for the period from November 2020 to June 2021 (Table 3).

Table 3. Rainfall average (in inches) for the period of October 2020 to June 2021 and known average rainfall for the same months from 1981 to 2010 compared.[1]

	October	November	December	January	February	March	April	May	June
2020-2021	0.00	0.01	0.91	0.68	0.00	0.51	0.00	0.00	0.00
1981-2010	0.46	0.81	1.37	2.33	2.42	1.69	0.68	0.20	0.09

The surveyor noted weather and site conditions and recorded plants detected. Plants not readily identified in the field were collected and pressed and keyed out later. The property was systematically surveyed by walking transects, spaced approximately10 to 12 meters.

A complete list of plants observed is included as Appendix A of this report. All plant nomenclature in this report follows Baldwin *et al.* (2012).

3 RESULTS

3.1 Preliminary Analysis

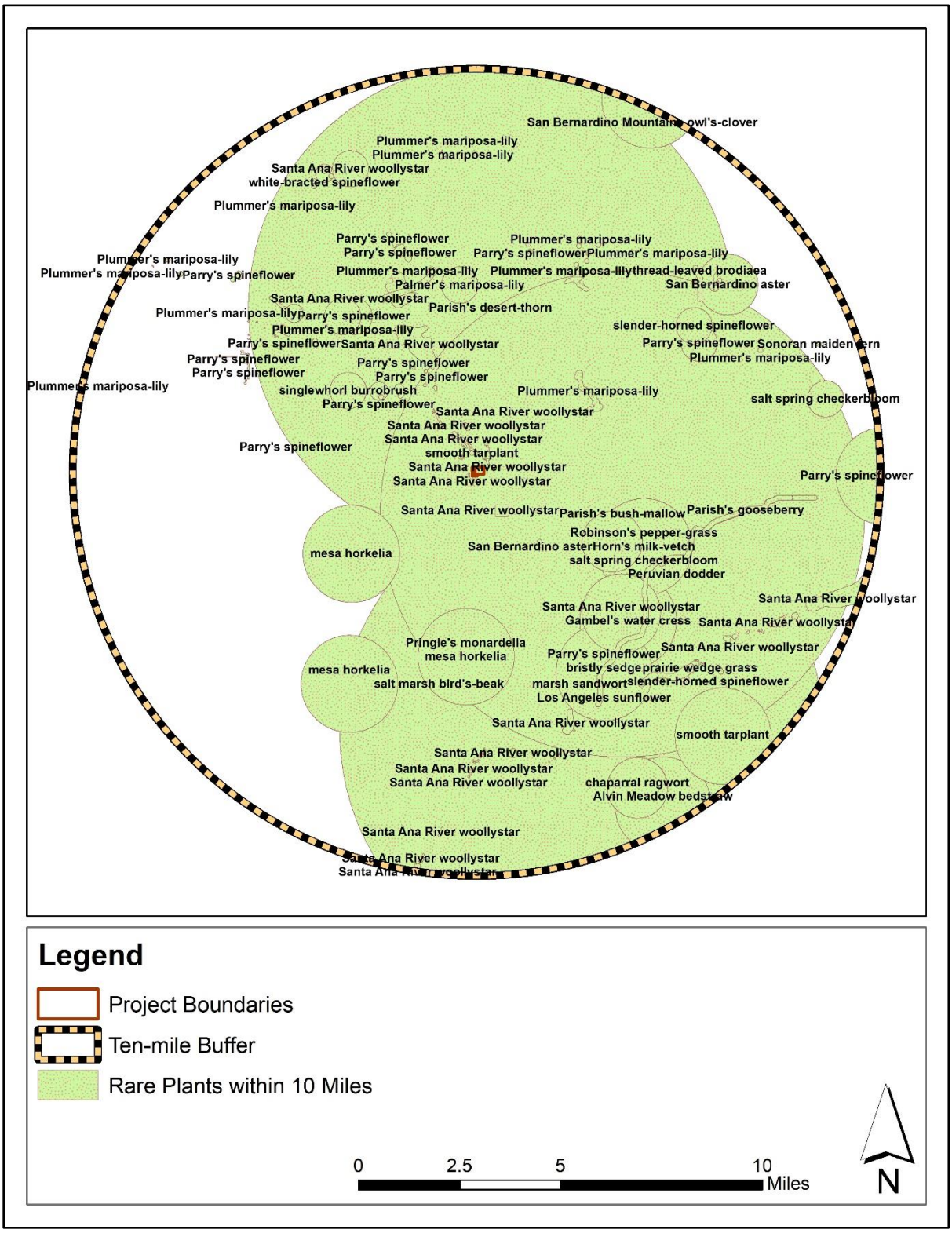
The following are descriptions of plants compiled from distribution and biological data that were used to evaluate the potential presence of the species during the preliminary analysis. Table 5 summarizes the results of this analysis and Figure 5 shows rare plants near the project site.

3.1.1 Smooth Tarplant

Smooth tarplant (*Centromadia pungens* ssp. *laevis*) is an annual herb that occurs in shadscale scrub, valley grasslands and vernal pools and playas with alkaline soils. It occurs from the central valley down to Baja California at elevation ranges from 90 to 500 meters (270 to 1640 feet). It blooms from April through September. It is not listed by the USFWS or the CDFW. It is

[1] https://www.usclimatedata.com/climate/riverside/california/united-states/usca1695

Figure 5. Special Status Plants within the Site's Vicinity



designated a List 1B.1 (rare, threatened, or endangered in California and elsewhere) species according to the CNPS Inventory.

The closest mapped populations are within one mile north of the subject parcels (Figure 5). Reference populations in Riverside were visited during the appropriate flowering season.

3.1.2 Salt Marsh Bird's Beak

Salt marsh bird's beak is native to the Southwestern United States and northern Baja California. It grows in areas of high salt concentrations, including coastal salt marshes and the inland salt flats. It is hemiparasitic, such that it is greenish and has chlorophyll but also parasitizes other plants by tapping their roots to obtain their nutrients. No salt marsh birds beak was detected during the surveys,

3.1.3 Parry's Spineflower

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is a diminutive annual herb that grows in openings within chaparral and coastal sage scrub. It has been collected at elevations from 900 to 3,600 feet in dry sandy soils. This species occurs in a wide variety of conditions in chaparral and coastal sage scrub. It has been previously reported and collected from sites approximately three miles northwest of the site. This CNPS List 1B.1 species was not detected during the surveys.

3.1.4 Slender Horned Spineflower

Slender-horned spineflower is a diminutive annual plant of the buckwheat family found in areas prone to drought. It often occurs in isolated patches of large floodplain habitats categorized as alluvial scrub. Onset of germination is likely related to rainfall and occurs by late February with flowers emerging from April to May. This species has been affected by development, surface mining, off-road vehicle use, and altered flood regimes prompting listing under the California and federal Endangered Species Acts.

Although the survey overlapped the flowering season of this species, no individuals were found. Flood control devices have effectively cutoff regular flows to the site and farming has severely altered the substrates on the property. This species was not detected during the surveys.

3.1.5 Santa Ana River Woolly Star

The Santa Ana River woolly-star is a short-lived subshrub of phlox family (Polemoniaceae). It has a basally branched, generally erect or spreading form. The entire plant, including the blue to violet-blue inflorescence, is covered with woolly pubescence, giving it a silvery-white appearance. Each inflorescence is dense and spiny-bracted with about 20 flowers (Patterson 1993, p. 826). The subspecies is endemic to the Santa Ana River watershed and its 21 known occurrences are dispersed across private (CNDDB 2021). *Eriastrum densifolium* subsp. *sanctorum* was listed as endangered under the California Endangered Species Act (CESA) in 1987. The subspecies was listed as endangered under the Act in 1987.

The site is located in the historic range of the species. Reference populations on Institution Road were visited in 2021 (Photograph 1), but although those were in flower, they were not found on the project parcels.

3.1.6 Mesa Horkelia

Mesa horkelia (*Horkelia cuneata ssp. puberula*) is a perennial herb that blooms from February to July. It is found on sandy or gravelly substrate within chaparral (including maritime chaparral), cismontane woodland and coastal scrub habitats at elevations between 140 and 860 meters (CalFlora 2021). The Project area is within the historic distribution range of the species, but historic land use has likely precluded this plant from occurring in the project area. No mesa horkelia was found on the project parcels.

3.1.7 California Satintail

California satintail is a perennial grass growing from a hard rhizome to heights near four feet. The flat leaves are up to 20 centimeters long and 0.5 inches wide. The inflorescence is a narrow, cylindrical white plume to 12 inches. It is filled thickly with silky white hairs and dotted with dark speckles that are the orange-brown anthers and purplish-brown stigmas of the spikelets. No perennial tall grasses were found on the properties.

3.1.8 Robinson’s Peppergrass

Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*) is an annual herb with densely hairy stems that grows from three to six feet tall. This species occurs in dry soils in chaparral and coastal sage scrub below 1,600 feet in elevation. This plant occurs on dry soils in open areas, and sometimes on coarse alluvium and rocky slopes. Near the project site, Robinson’s peppergrass has been found within 2.5 miles in Lytle Creek and within 10 miles in portions of the Santa Ana River. It was not found during the surveys.

3.1.9 San Bernardino Aster

San Bernardino aster is an annual that grows on interior sand dunes and sandy soils near Colton and within Riverside and San Bernardino counties at elevations from 1,000 to 1,400 feet. It is endemic to Southern California where it grows in grasslands and meadows. The nearest documented occurrences of this species are eight miles northeast of the project parcels. It blooms from June to November producing lavender colored flowers. The final surveys overlapped the typical flowering season for this species; however, it was not detected.

Table 4. Preliminary Analysis Results Summary

Species Name Common Name	Status	Preferences	Status on the Site
Ambrosia monogyra Singlewhorl Burrobush	Fed: - State: - CNPS: 2B.2	Perennial shrub found in chaparral and Sonoran desert scrub in sandy soils. Occurs from 10–500 m and blooming period is August–November. It has been documented previously upstream in Cajon Wash.	No singlewhorl burrobush was found on the site.
Arenaria paludicola Marsh Sandwort	Fed: E State: E CNPS: 1B.1	This plant grows in marshes and freshwater wetlands, from near sea level to approximately 600 feet. This species flowers from May to August.	The site lacks suitable growing conditions and, therefore, is unlikely to occur on the project site.
Astragalus hornii var. *hornii* Horn's Milkvetch	Fed: - State: - CNPS: 1B.1	Annual herb found in meadows, seeps, and playas, in lake margins, and alkaline soils. Occurs from 60–850 m and blooming period is May–October.	The site lacks suitable growing conditions and, therefore, is unlikely to occur on the project site.
Brodiaea filifolia Thread-leaved Brodiaea	Fed: T State: E CNPS: 1B.1	Perennial bulbiferous herb found in cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools. Usually associated with annual grassland and vernal pools often surrounded by shrubland habitats. Clay soils and at elevations of 25–860 m. Blooming period is from March–June.	The site lacks suitable growing conditions and, therefore, is unlikely to occur on the project site.
Calochortus palmeri var. *palmeri* Palmer's Mariposa Lily	Fed: - State: - CNPS: 4.1	This species is a perennial from a bulb, that is often associated with chamise - California scrub oak chaparral (*Adenostoma*	The site lacks suitable growing conditions and, therefore, is unlikely to occur on the project site.

		fasciculatum - Quercus berberidifolia) and buckwheat grassland/scrub (*Eriogonum fasciculatum*).Also found in creek beds. Occurs at elevations above 4000 feet, much higher than those found on the project site.	
Calochortus plummerae Plummer's Mariposa Lily	Fed: - State: - CNPS: 4.1	Perennial from bulb that occurs in granitic, rocky substrate in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grasslands. Occurs at elevations below 5,600 feet.	The site has been disturbed at least as far back 1938 (Historic Aerials 2021). No bulbiferous plants were found on the project site.
Carex comosa Bristly Sedge	Fed: - State: - CNPS: 2B.1	Perennial rhizomatous herb found in coastal prairie, marshes, and swamps (lake margins), and valley and foothill grasslands. Occurs from 0–625 m and blooming period is May–September.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Castilleja lasiorhyncha San Bernardino Mountains Owl's Clover	Fed: - State: - CNPS: 2B.2	An annual that occurs in Meadows, flats, and open forest at elevations higher than 3,280 feet.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Centromadia pungens ssp. *laevis* Smooth Tarplant	Fed: - State: - CNPS: 1B.1	Annual herb associated with valley and foothill grasslands, chenopod scrub, meadows, playas, and riparian woodlands from 0–640 m. Blooming period is from April–September.	**May occur** in the property's wetter portions.
Chloropyron maritimum ssp. *maritimum* Salt Marsh Bird's Beak	Fed: E State: E CNPS: 2B.2	Occurs in near wet areas like saltmarshes, dunes, the coastal strand, and coastal wetland-riparian areas.	**May occur;** suitable growing conditions occur on the site.
Chorizanthe parryi var. *parryi* Parry's Spineflower	Fed: - State: - CNPS: 1B.2	This plant grows in sandy or rocky substrate in chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands.	**May occur;** suitable growing conditions occur on the site
Chorizanthe xanti var. *leucotheca* White-bracted Spineflower	Fed: - State: -	Annual herb found in coastal scrub (alluvial fans), Mojavean desert scrub, and pinyon	The site lacks suitable growing conditions, and the plant is unlikely

	CNPS: 1B.2	and juniper woodlands at 1,000 to 4,000 elevation. Blooming period is April to June.	to occur on the project site.
Cuscuta obtusiflora var. *glandulosa* Peruvian Dodder	Fed: - State: - CNPS: 2B.2	Annual vine found in freshwater marshes and swamps. Occurs from 15–280 m in elevation and blooms from July–October.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Dodecahema leptoceras Slender -horned Spineflower	Fed: E State: E CNPS: 1B.1	Annual that occurs in sandy and gravelly places, often alluvial benches.	**May occur;** suitable growing conditions occur on the site
Eriastrum densifolium ssp*. sanctorum* Santa Ana River Woolly Star	Fed: E State: E CNPS: 1B.1	Grows in sandy or gravelly soils in chaparral and coastal scrub at elevations from 300 to 2,000 feet.	**May occur;** suitable growing conditions occur on the site
Fimbristylis thermalis Hot Springs Fimbristylis	Fed: - State: - CNPS: 2B.2	This fimbry grows in moist or wet place where water, usually groundwater, reaches the earth's surface from an underground aquifer. This species grows in alkaline mud or sand at elevations of 300 to 4,400 feet. It blooms from July to September.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Galium californicum ssp*. primum* California Bedstraw	Fed: - State: - CNPS: 1B.2	California bedstraw is a high elevation (over 4,400 feet) montane species that grows in shade.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Helianthus nuttallii ssp*. parishii* Los Angeles Sunflower	Fed: - State: - CNPS: 1A	Perennial rhizomatous herb occurs in coastal salt and freshwater marshes and swamps. Blooming period is August–October and it occurs at 40 to 5,500 ft elevation.	Presumed extinct and The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Horkelia cuneata var*. puberula* Mesa Horkelia	Fed: - State: - CNPS: 1B.1	Perennial found on sandy or gravelly substrates within chaparral (including maritime chaparral), cismontane woodland and coastal scrub below 2,825 feet.	**May occur;** suitable growing conditions occur on the site
Imperata brevifolia California Satintail	Fed: - State: - CNPS: 2B.1	Perennial rhizomatous herb found in wet springs, meadows, streambanks, and floodplains in chaparral, coastal scrub, meadows, seeps, Mojavean desert scrub,	**May occur;** suitable growing conditions occur on the site

		riparian scrub from 0 to 4,000 elevation. Blooming period is September to May.	
Lepidium virginicum var. *robinsonii* Robinson's Peppergrass	Fed: - State: - CNPS: 4.3	Annual that grows in coastal sage scrub and chaparral from near sea level to 2,900 feet. It occurs in dry, disturbed areas, bottomland, riverbanks, meadows, fields, pastures, cliffs, and scrub	**May occur;** suitable growing conditions occur on the site
Lycium parishii Parish's Desert-thorn	Fed: - State: - CNPS: 2B.3	This perennial plant occurs in coastal scrub and Sonoran desert scrub. Found at elevations ranging from 425 to 3,300 feet.	No plants of the Genus *Lycium* were observed on the project site.
Malacothamnus parishii Parish's Bush Mallow	Fed: - State: - CNPS: 1A	Perennial deciduous shrub found in chaparral and coastal scrub habitats. Plant is presumed extinct based on best available information (CNPS 2021, CNDDB 2021).	No plants of the Genus *Malacothamnus* were observed on the project site.
Monardella pringlei Pringle's Monardella	Fed: - State: - CNPS: 1A	Annual herb found in coastal scrub in sandy soils. Occurs from 300–400 m and blooming period is May–June.	No plants of the Genus *Monardella* were observed on the project site.
Nasturtium gambelii Gambel's Watercress	Fed: E State: T CNPS: 1B.1	Perennial rhizomatous herb found in marshes and swamps (freshwater or brackish). Blooming period is April–October; found at elevations of 5–330 m.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Ribes divaricatum var. *parishii* Parish's Gooseberry	Fed: - State: - CNPS: 1A	Perennial deciduous shrub found in riparian woodland at 65–300 m elevation. This species blooms from February to April.	No plants of the Genus *Ribes* were observed on the project site.
Schoenus nigricans Black Bog-Rush	Fed: - State: - CNPS: 1A	Occurs in wetlands and other perennial water sources.	No plants of the Genus *Schoenus* were observed on the project site.
Senecio aphanactis Chaparral Ragwort	Fed: - State: - CNPS: 2B.2	Chaparral ragwort blooms from January to April. It occurs in alkaline flats and dry open rocky areas in cismontane woodlands, coastal scrub, and coastal sage scrub at elevations between 425 and 2,200 feet.	The site lacks suitable growing conditions (alkaline flats), and the plant is unlikely to occur on the project site.

Sidalcea neomexicana Salt Spring Checkerbloom	Fed: - State: - CNPS: 2B.2	Perennial herb. Alkaline, usually wet places. Coastal sage scrub, chaparral, creosote bush scrub. Los Angeles, Orange, San Bernardino, Riverside Counties.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Sphenopholis obtusata Prairie Wedge Grass	Fed: - State: - CNPS: 2B.2	Perennial grass that grows from 750 feet to over 9,500 feet in wet meadows, streambanks, and ponds.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.
Symphyotrichum defoliatum San Bernardino Aster	Fed: — State: — CNPS: 1B.2	Annual that grows on interior sand dunes and sandy soils near Colton and within Riverside and San Bernardino counties at elevations from 1,000 to 1,400 feet.	**May occur;** suitable growing conditions occur on the site
Thelypteris puberula var. *sonorensis* Sonoran Maiden Fern	Fed: — State: — CNPS: 2B.2	Occasional in wet shaded canyons below 3000 feet; chaparral, creosote bush scrub. Lower slopes of Peninsular and Transverse mountains to Baja California.	The site lacks suitable growing conditions, and the plant is unlikely to occur on the project site.

3.1.10 Vegetation

Vegetation on the property has an extensive history of agricultural use dating and generally conforms to agricultural areas mapped as agricultural lands.

3.1.10.1 Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance

Wild Oats and Annual Brome Grasslands occur in disturbed and formerly farmed areas. They are principally comprised of non-native grasses such as slender oats (*Avena barbata*), wild oats (*Avena fatua*), cheat grass (*Bromus diandrus*), or wall barley (*Hordeum murinum*). Other weedy plants and emergent trees and shrubs may be present at low cover.

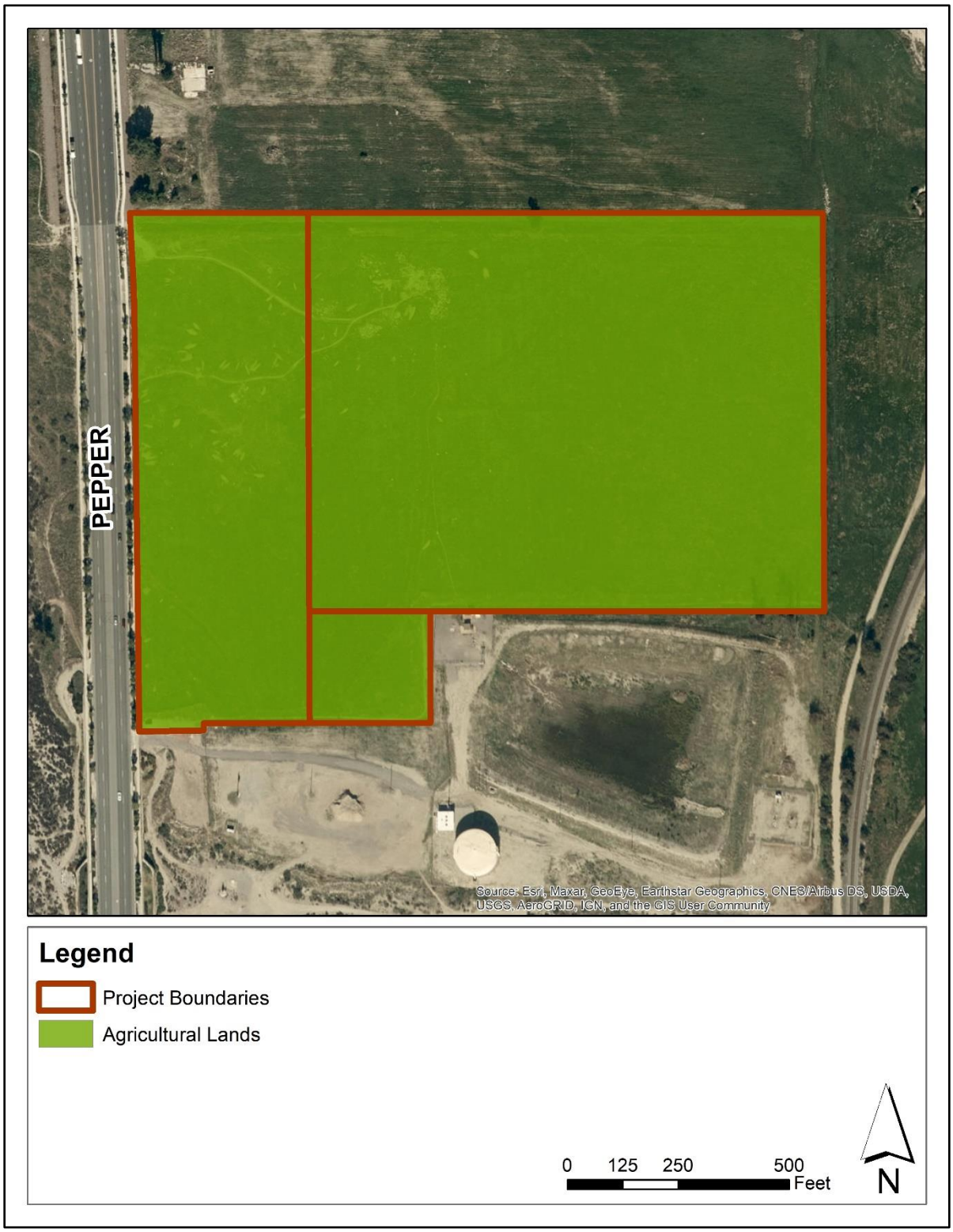
3.1.10.2 Brassica Hirschfeldia Centaurea Semi-natural Alliance

This is the common vegetation type found on fallow fields, grasslands, roadsides, disturbed coastal scrub, riparian areas, cleared roadsides, and waste places (Sawyer et al. 2009). This association is comprised of upland mustards (*Brassica, Hirschfeldia,* etc.) and other ruderal forbs like yellow starthistle (*Centaurea melitensis*) and cheeseweed (*Malva parviflora*) (Photographs 2).

3.1.10.3 Disturbed/Developed

Disturbed/Developed areas include those areas within the property which were cleared previously for projects. They include the very few barren or nearly barren dirt roads within property boundaries. Many invasive annuals and native herbs grow in these areas, including the non-native red brome (*Bromus madritensis rubens*), red-stemmed filaree (*Erodium cicutarium*) and mustard (*Hirschfeldia incana*) and the native common fiddleneck (*Amsinckia intermedia*), and common cryptanth (*Cryptantha intermedia*).

Figure 6. Vegetation types overlapping the site mapped during the surveys.



A portion of the disturbed area near the properties' center has been hydroseeded with a drought-tolerant seed mix. The seed mix is comprised of both native and non-native annuals

- *Calendula officinalis* (calendula)
- *Dianthus barbatus* (sweet William, pinks)
- *Dimorphotheca sinuata* (African daisy)
- *Eschscholzia caespitosa* (dwarf California poppy)
- *Eschscholzia californica* (California poppy)
- *Gazania splendens* (gazania)
- *Lasthenia californica* (dwarf goldfields)
- *Layia platyglossa* (Tidy tips)
- *Lobularia maritima* Carpet of Snow (sweet alyssum)
- *Lotus corniculatus* (birds-foot trefoil)
- *Lupinus microcarpus densiflorus* (dense flowered lupine)
- *Nemophilia menziesii* (baby blue eyes)
- *Phacelia campanularia* (california blue bell)
- *Silene armeria* (catchfly)

3.1.11 Rare Plants

The surveys were conducted in a below rainfall year (see Table 1). No sensitive species was detected during the 2021 survey. Features of interest were mapped using GPS and a Glonass-enabled receivers with ESRI collector. Survey results for sensitive plants with a potential for occurrence on the site are summarized in Table 7.

Table 5. Field Survey Results Summary

Species	**Likelihood of Occurrence**
Smooth Tarplant	Not Found
Salt Marsh Bird's Beak	Not Found/Presumed Absent
Parry's Spineflower	Not Found
Slender Horned Spineflower	Not Found/Presumed Absent
Santa Ana River Woolly Star	Not Found/Presumed Absent
Mesa Horkelia	Not Found/Presumed Absent
California Satintail	Not Found/Presumed Absent
Robinson's Peppergrass	Not Found
San Bernardino Aster	Not Found

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APPENDIX A

Flora Observed

DICOTYLEDONS	TWO COTYLEDON PLANTS
Adoxaceae	**Moschatel Family**
Amsinckia intermedia Fisch. & C. A. Mey.	Elderberry
Amaranthaceae	**Amaranthus Family**
Amaranthus albus L. *	Tumbleweed
Asteraceae	**Sunflower Family**
Ambrosia acanthicarpa Hook	Annual Burweed
Centaurea melitensis L. *	Yellow Starthistle
Heterotheca grandiflora	Telegraphweed
Brassicaceae	**Mustard Family**
Descurainia pinnata (Walter) Britton *	Tansy Mustard
Hirschfeldia incana (L.) Lagr.-Fossat *	Short-pod Mustard
Sisymbrium irio L. *	London Rocket
Bignoniaceae	**Borage Family**
Jacaranda mimosifolia D. Don *	Blue Jacaranda
Boraginaceae	**Borage Family**
Amsinckia intermedia Fisch. & C. A. Mey.	Common Fiddleneck
Cryptantha muricata (Hook. & Arn.) A. Nelson & J. F. Macbr.	Prickly Cryptantha
Euphorbiaceae	**Euphorb Family**
Croton californicus Müll. Arg.	California Croton
Croton setiger Hook	Turkey Mullein
Fabaceae	**Pea Family**
Acmispon glaber (Vogel) Brouillet	Deerweed
Lobularia maritima (L.) Desv. **	Sweet alyssum
Lotus corniculatus L. *	Birdsfoot Trefoil
Melilotus indica L. *	Indian Sweetclover
Geraniaceae	**Geranium Family**
Erodium cicutarium (L.) L'Hér. ex Aiton *	Red-stemmed Filaree
Erodium moschatum (L.) L'Hér. ex Aiton *	Whitestem Filaree
Lamiaceae	**Mint Family**
Marrubium vulgare L. *	Horehound
Rosamarinus officinalis L. *	Rosemary
Salvia apiana Jeps.	White Sage
Malvaceae	**Mallow Family**
Malva parviflora L. *	Cheeseweed
Myrtaceae	**Myrtle Family**

Eucalyptus camaldulensis Dehnh. *	Red River Gum
Melaleuca viminalis (Sol. ex Gaertn.) Bymes *	Weeping Bottlebrush
Pappaveraceae	**Poppy Family**
Eschscholzia californica Cham. +	California Poppy
Platanaceae	**Plane Tree Family**
Platanus racemosa Nutt.	California Sycamore
Solanaceae	**Nightshade Family**
Datura wrightii Regel.	Datura
Nicotiana glauca Graham *	Tree Tobacco
MONOCOTYLEDONS	**SINGLE COTYLEDON PLANTS**
Arecaceae	**Palm Family**
Bromus diandrus Roth. *	Ripgut Brome
Poaceae	**Grass Family**
Bromus diandrus Roth. *	Ripgut Brome
Cynodon dactylon (L.) Pers. *	Bermuda Grass
Hordeum murinum L. cf. ssp. *glaucum* (Steud.) Tzvelev *	Foxtail
* Non-native	
** Planted or Seeded Non-native	
*+ Planted or Seeded Non-native	

APPENDIX B

Site Photographs



Photograph 1. This photograph from a nearby reference population shows Santa Ana River Woolly Star (date: June 2021).



Photograph 2. This photograph faces north along Pepper Avenue and shows the typical plant composition of the project site. Dominant plants include invasive species such as wall barley (*Hordeum murinum*), wild oats (*Avena* spp.), and mustards.



Photograph 3. A view looking south from the western limits of the project site. Invasive plants are pervasive.



Photograph 4. This southeast facing view shows lantana (*Lantana camera*) and wall barley (*Hordeum murinum*) in the northwestern limits of the project site.

APPENDIX F

Memorandum

Date: August 20, 2021

To: Jeremy Krout, EPD Solutions, Inc.

From: Juan J. Hernandez, Principal Biologist

Subject: Focused Burrowing Owl Survey Report for Assessor's Parcel Numbers 0264-201-05, 0264-201-06, and 0264-201-26 located in the city of Rialto, San Bernardino County, California.

This memorandum provides the methods and results of focused burrowing owl (*Athene cunicularia*; BUOW) survey for Assessor's Parcel Numbers (APNs) 0264-201-05, 0264-201-06, and 0264-201-26 located in the city of Rialto, San Bernardino County, California.

Project Location

The approximate 24.6-acre project site is located south of the Interstate 210 and east of North Pepper Avenue in the city of Rialto. The project site consists of San Bernardino County APNs 0264-201-05, 0264-201-06, and 0264-201-26. Specifically, the project site is located within the Muscupiabe land grant in the San Bernardino North United States Geological Survey (USGS) 7.5' topographic quadrangle. The center point latitude and longitude for the project site are 34.13153802° North and 117.35110039 West (Figures 1 and 2).

The Study Area included APNs 0264-201-05, 0264-201-06, and 0264-201-2 and a 150-meter (500-foot) buffer around the site (Figure 3), where accessible.

Project Contact Information

Owner/Applicant: EPD Solutions, Inc.
2 Park Plaza Suite 1120
Irvine, CA 92614

Principal Investigator: Juan J. Hernandez
Hernandez Environmental Services
17037 Lakeshore Drive
Lake Elsinore, CA 92530
(909) 772-9009

Field Survey Methods

In accordance with the *California Department of Fish and Wildlife (CDFW) Staff Report on Burrowing Owl Mitigation (CDFW, 2012)*, protocol surveys consisted of four site visits conducted on four separate days as follows: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Survey times, weather, and sunrise/sunset information is described in Table 1 below.

Table 1. Survey Information

Survey	Date	Survey Start Time	Survey End Time	Sunrise	Weather
1	April 5, 2021	0715 hours	0845 hours	0629 hours	52 degrees Fahrenheit, clear, winds 0-4 miles per hour from the northeast
2	May 12, 2021	0730 hours	0830 hours	0545 hours	61 degrees Fahrenheit, 100% cloud cover, winds 0-4 miles per hour from the southeast
3	June 15, 2021	0630 hours	0712 hours	0537 hours	70 degrees Fahrenheit, 10% cloud cover, winds 0-2 miles per hour from the northeast
4	July 9, 2021	0700 hours	0740 hours	0546 hours	72 degrees Fahrenheit, 10% cloud cover, winds 0-3 miles per hour from the southwest.

Surveys were conducted from one hour before sunrise to two hours after sunrise or two hours before sunset to one hour after sunset and during weather that was conducive to observing owls outside their burrows and detecting BUOW sign. The surveys were not conducted during rain, high winds (> 20 miles per hour), dense fog, or temperatures above 90 degrees Fahrenheit. Surveys involved walking through potentially suitable habitat within the survey area. The pedestrian survey transects were spaced approximately 30 to 50 feet apart to allow 100 percent visual coverage of the ground surface. Special attention was paid to those habitat areas that appeared to provide suitable habitat for BUOW. Where permission to access the buffer areas could not be obtained, the biologist visually inspects adjacent habitats with binoculars.

All encountered burrows or structure entrances were checked for the presence of BUOW, molted feathers, cast pellets, prey remains, eggshell fragments, tracks, or excrement. Natural or man-made structures and debris piles that could support BUOW were also

surveyed. The locations of all suitable BUOW habitat, potential burrows, BUOW sign, and any BUOW observed was recorded and mapped with a handheld Global Positioning System (GPS) unit.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Binoculars were used to aid in the identification of observed wildlife. Photographs were taken to document existing conditions within the survey area.

Results

The project site contains approximately 24.6 acres of ruderal habitat. The onsite ruderal habitat is heavily disturbed areas. This habitat type is dominated by non-native plant species with very few native species. Portions of these areas appear to have been reseeded with native annual flowers. The project site consists of disturbed land historically used for agricultural use. The site appears to be continually disturbed for weed abatement purposes. The site is bordered by vacant lands and Interstate 210 to the north, North Pepper Avenue to the west, vacant land and railroad tracks to the east, and ruderal habitat to the south. The site is relatively flat with onsite elevations ranging from 1,256 feet above mean sea-level (AMSL) to 1,287 feet AMSL. According to the USDA Web Soil Survey, soils at the project site are classified as Grangeville fine sandy loam (Gr), warm MAAT, MLRA 19 and Tujunga loamy sand (TuB), 0 to 5 percent slopes.

The Study Area provides suitable burrows/nesting opportunities for BUOW. A total of 47 suitable burrow measuring four inches or greater in diameter were checked and recorded within the Study Area; 12 of the burrows were located within the project site boundaries (Figure 4). Evidence of ground squirrels and ground squirrel activities were observed throughout the Study Area. Although the Study Area supports fossorial mammal burrows and non-natural substrates capable of supporting BUOW, no BUOW or BUOW sign was observed at the entrance or adjacent to these burrows within the Study Area.

Despite systematic searches of the Study Area, no BUOW or evidence (i.e., including scat, pellets, feathers, tracks, and prey remains) were found which suggest recent or historical use by BUOW. Therefore, it can be concluded that BUOW are not currently present within the Study Area.

Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: August 21, 2019



Juan J. Hernandez
Principal Biologist

Enclosures:

Figure 1: Project Location Map
Figure 2: Project Vicinity Map
Figure 3: Survey Area Map
Figure 4: Survey Results Map
Appendix A: Site Photographs

FIGURES

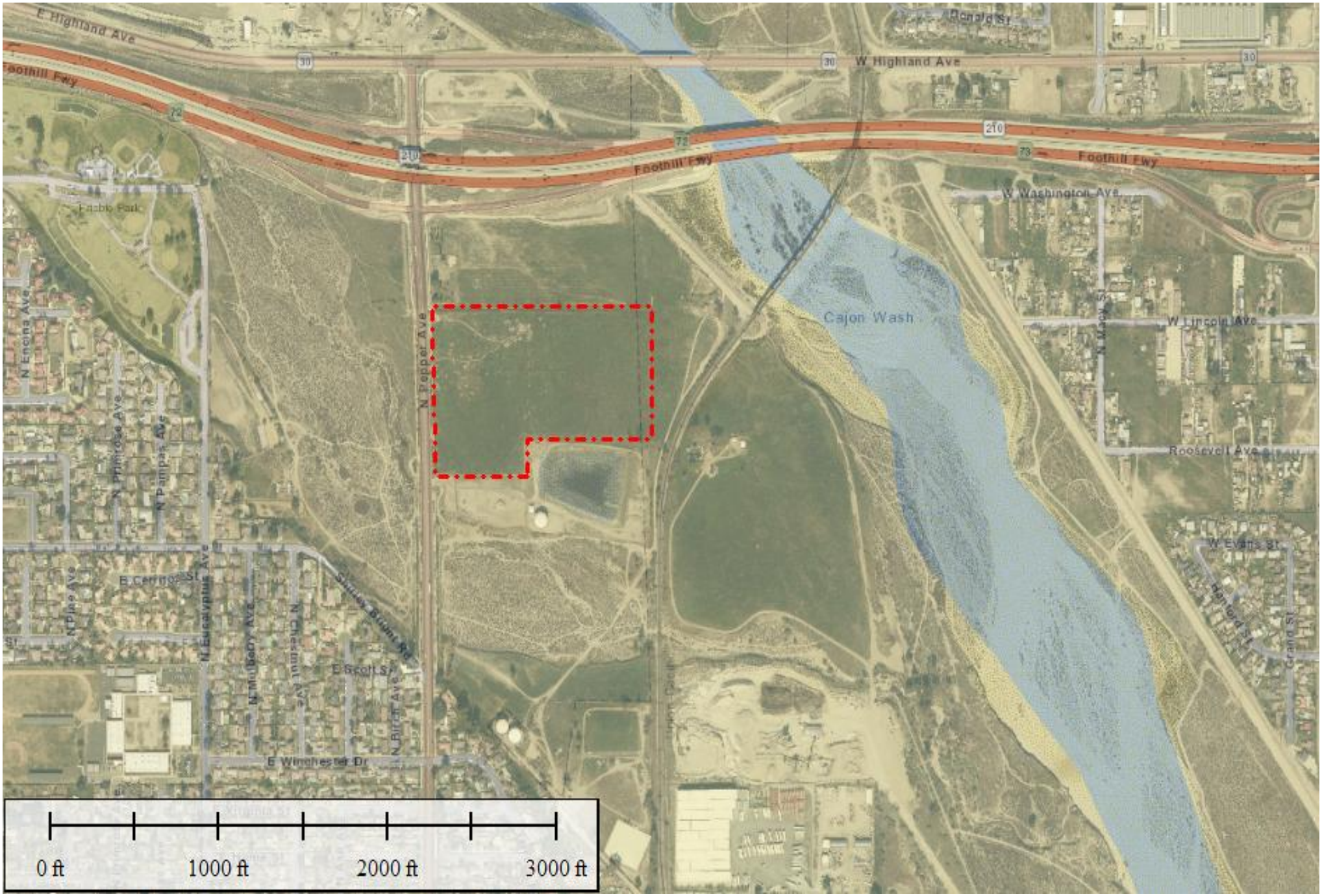


Figure 1
Location Map
Pepper Industrial Building
San Bernardino County, California

Legend

Project Site Boundary

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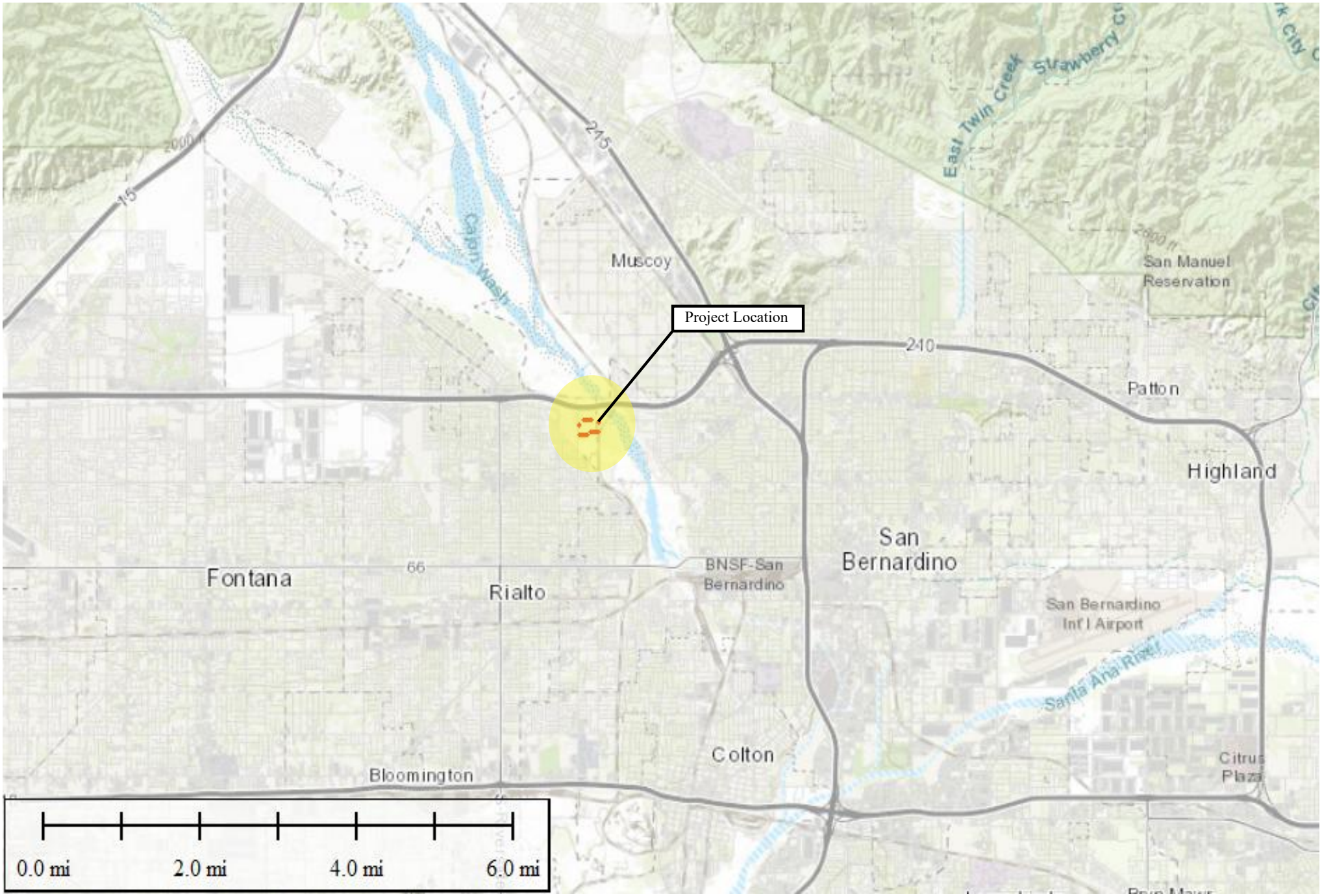


Figure 2
Vicinity Map
Pepper Industrial Building
San Bernardino County, California

Legend

Project Site Boundary

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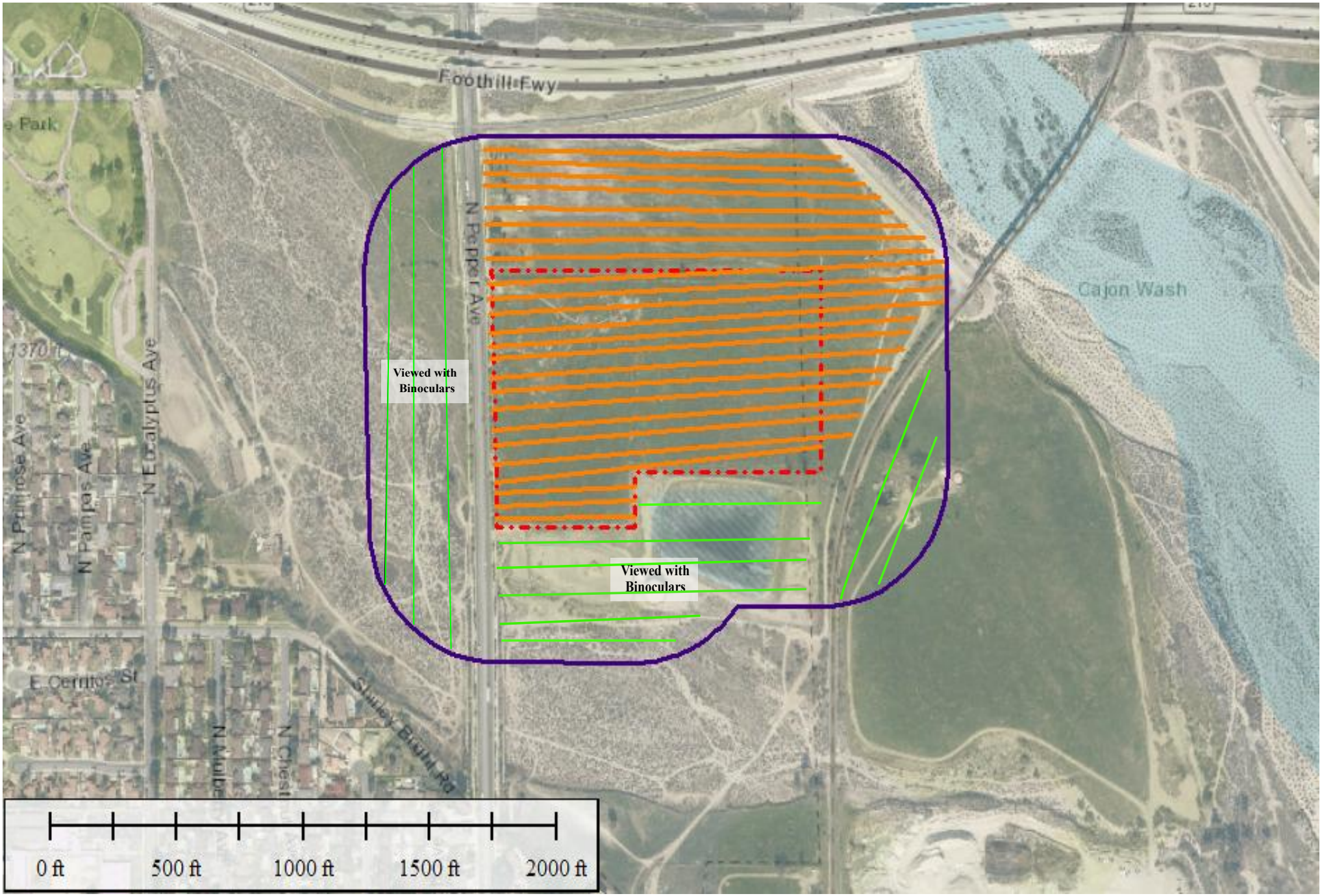


Figure 3
BUOW Survey Area Map
Pepper Industrial Building
San Bernardino County, California

Legend

- Project Site Boundary
- 150 Meter (500 Foot) Buffer Area
- Transect Locations
- Binocular Surveyed Locations

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Hernandez Environmental Services

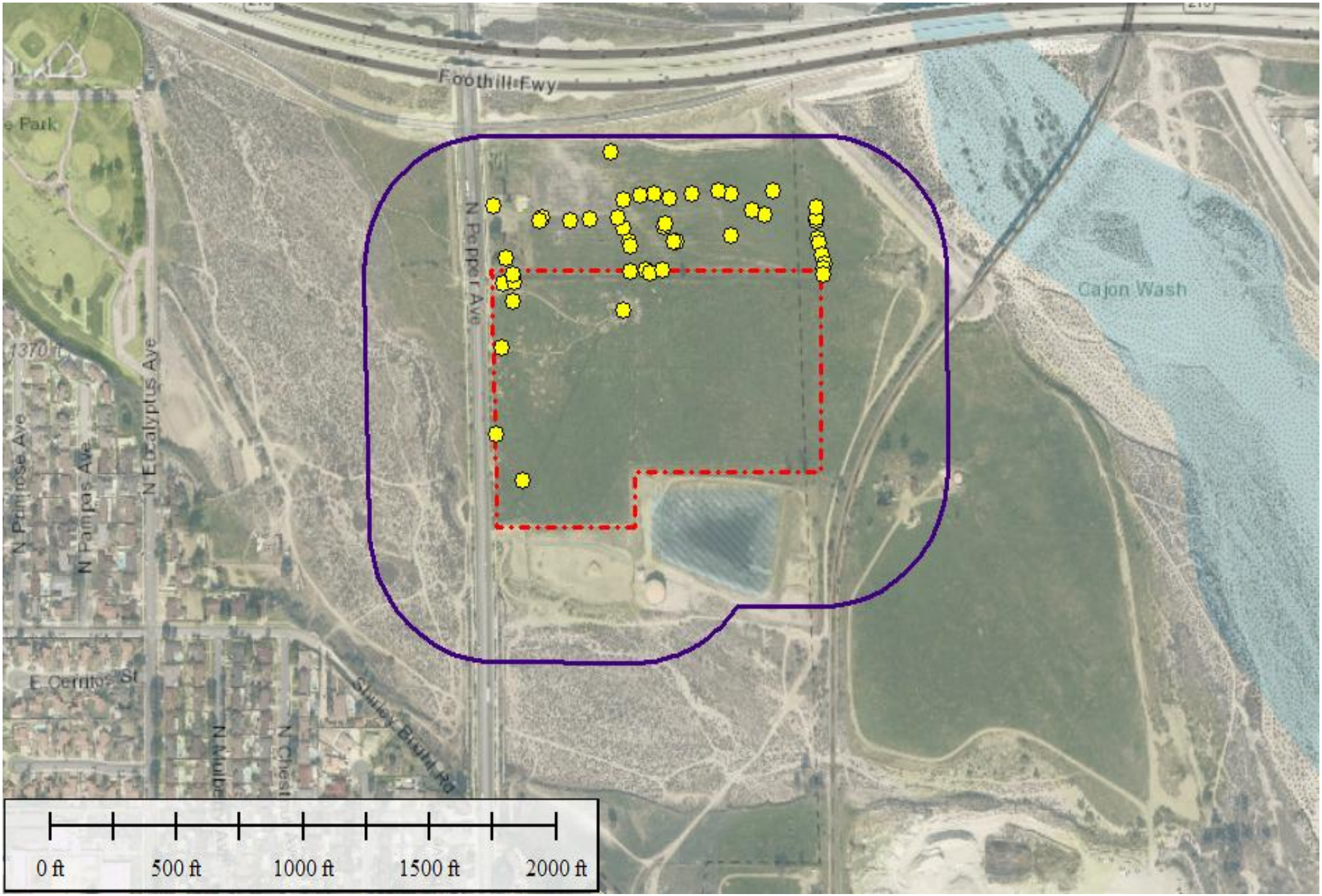


Figure 4
BUOW Results Map
Pepper Industrial Building
San Bernardino County, California

Legend
Project Site Boundary
150-Meter (500 Foot) Buffer Area
Suitable Burrows

N

Hernandez Environmental Services

APPENDIX A



View of suitable burrow without sign on site.



View of ruderal habitat from the northern border of the site facing south.



View of ruderal habitat on site with piles of liter.

Hernandez Environmental Services

Phase I Environmental Site Assessment

24.07-Acre Vacant Parcel
Pepper Avenue South of the 210 Freeway
Rialto, California 92376
Assessor's Parcel Numbers (APNs): 0264-201-05-0000, 0264-201-06-0000, and a 7.07-Acre Portion of 0264-201-26-0000
East of Pepper Drive

Howard Industrial Partners
1944 North Tustin Street, Suite 122
Orange, California 92865

SCS ENGINEERS

Project No. 01219123.00 | May 2019

3900 Kilroy Airport Way, Suite 100
Long Beach, California 90806
(562) 426-9544

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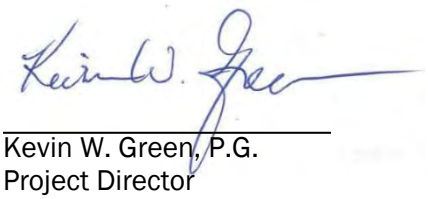
Appendix A Figures 1 and 2
Appendix B Aerial Image and Site Photographs
Appendix C Historical Site Use Information
Appendix D Regulatory Agency Review Information
Appendix E EDR Database Report
Appendix F Resumes of Project Personnel

This Phase I Environmental Site Assessment Report for the 24.07-Acre Parcel Vacant Parcel located at Pepper Avenue South of the I-210 Freeway in Rialto, California, dated May 2019, was prepared by Edward de Souza and Justin Rauzon and reviewed by Kevin Green.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. The resumes for the individuals below are included in **Appendix F**. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



Justin Rauzon, R.E.P.A.
Project Manager
SCS ENGINEERS



Kevin W. Green, P.G.
Project Director
SCS ENGINEERS

EXECUTIVE SUMMARY

SCS Engineers (SCS) was retained by Howard Industrial Partners to prepare a Phase I Environmental Site Assessment (Phase I ESA) of 24.07-Acre Vacant Parcel located at North Pepper Avenue south of I-210 Freeway in Rialto, California (the "Property"). This assessment was performed in conformance with 40 CFR 312, Standards for Conducting All Appropriate Inquiries, and in general conformance with ASTM E1527-13. Based on the scope of work performed, SCS finds the following:

- The Property, which is not currently associated with an assigned address, is located to the south of the I-210 Freeway and to the east of Pepper Avenue in Rialto, CA. The Property comprised of 24.04 acres of undeveloped land covered with grasses and trees. A small homeless encampment is present on the north-central portion of the Property. A few concrete pipes were observed on the western portion of the Property, likely associated with historical flood irrigation.
- The Property has been undeveloped or agricultural land (an orchard) since the late 1800s. By 1930, the Property was occupied by an orchard. There was an unimproved road along the northern boundary of the Property in 1942, which was gone by the late 1940s. The Property was cleared of the orchard and vegetation by the mid-1980s and has been a vacant lot since then.
- An aboveground fuel storage tank situated inside a low concrete block containment wall was observed immediately outside the southern fence dividing the Property from the West Valley Water District site. The containment wall was observed to be in poor condition, with cracks. A small area of stained soil was observed near the base of the containment wall. Some of the staining crossed the fence line onto the Property. The affected area was only a few square feet in size and is considered *de minimis* in nature.
- Regulatory database information identified few known and suspected contamination sites in the area surrounding the Property. Based on available information, it is unlikely that any of these sites have negatively impacted the environmental condition of the Property.

Conclusions

In summary, SCS performed a Phase I Environmental Site Assessment of the 24.07-acre vacant parcel located on North Pepper Avenue in Rialto, California, in conformance with the scope and limitations of 40 CFR 312 and ASTM E1527-13. Any exceptions to, or deletions from, this practice are described in Section 5 of this report. In the opinion of the Environmental Professionals, this assessment has revealed no evidence of conditions indicative of recognized environmental conditions. Further investigation is not recommended.

Data Gap

The following data gaps were identified:

- Owner and User Questionnaires were not returned to SCS. Based on information from other sources, these data gaps are not considered significant, and the findings and opinions expressed in this report would not be expected to change with information from the questionnaires.

1 INTRODUCTION

SCS Engineers (SCS) was retained by Howard Industrial Partners (the "User") to prepare a Phase I Environmental Site Assessment (Phase I ESA) of the 24.07-Acre Vacant Parcel located at Pepper Avenue South of the I-210 Freeway in Rialto, California (the "Property"). A location map for the Property is presented as **Figure 1** in **Appendix A**. This assessment was performed in conformance with 40 CFR 312, Standards for Conducting All Appropriate Inquiries (AAI), and in general conformance with ASTM E1527-13.

2 PURPOSE

This Phase I ESA is intended to constitute appropriate inquiry into the previous ownership and uses of the Property, as required to support the assertion of the innocent landowner, contiguous property owner, and/or bona fide prospective purchaser defenses to liability (collectively the landowner liability protections, or LLPs) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA a.k.a. Superfund), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

The purpose of this investigation was to identify conditions indicative of releases or threatened releases of hazardous substances as defined in CERCLA Section 101, and petroleum products, on, at, in, or to the Property.

If known or suspected contamination is identified, Users seeking to maintain LLPs have responsibilities in addition to completion of an AAI-compliant Phase I ESA. These "continuing obligations" include taking "appropriate care" and "reasonable steps" with respect to known or suspected releases of hazardous substances during the term of property ownership. In addition to these requirements under federal law, there are different requirements under state law with respect to liability protections. On request, SCS can provide support for clients with continuing obligations, as appropriate.

3 SCOPE OF SERVICES

This Phase I ESA is based on:

- Interviews with past and/or present owners, operators, and/or occupants of the Property.
- Reviews of federal, tribal, state, and local government records.
- Visual inspections of the Property and adjoining properties performed on May 2, 2019.
- Review of historical Property use information (topographic maps, aerial photographs, fire insurance maps, existing reports, etc.).
- Commonly known or reasonably ascertainable information about the Property (e.g., interviews with appropriate regulatory agency personnel and review of agency files review of available documents, interviews with other knowledgeable persons).
- Degree of obviousness of the presence or likely presence of contamination at the Property, and the ability to detect the contamination by appropriate investigation.
- Information provided as a result of the additional inquiries conducted by the User.

4 SPECIAL TERMS AND CONDITIONS

This Phase I ESA for the 24.07-Acre Vacant Parcel, located in Rialto, California, has been prepared specifically for Howard Industrial Partners. The report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. No other warranty, express or implied, is made as to the professional opinions presented herein.

No other party, known or unknown to SCS, is intended as a beneficiary of this work product, its content, or information embedded therein. Third parties use this report at their own risk. Third party reliance letters may be issued on request to SCS subject to approval of Howard Industrial Partners and payment to SCS of a fee for such letters.

5 LIMITATIONS AND ASSUMPTIONS

The investigation focuses on releases and threatened releases of hazardous substances or petroleum products that could be considered a recognized environmental condition (REC) and/or a liability due to their possible presence in significant concentrations (e.g., above acceptable limits set by the federal or state government) or due to the potential for contaminant migration through exposure pathways (e.g., soil vapor migration or groundwater ingestion). Materials that may contain substances which are not currently deemed hazardous by the U.S. Environmental Protection Agency (EPA) or California Environmental Protection Agency (CalEPA) were not considered as part of this study.

Unless specifically included in our scope of services, formal surveys for asbestos-containing materials, lead-based paints, fire safety, vapor intrusion, indoor air quality, mold, and similar matters were not part of this assessment. The Property was not evaluated for compliance with land use, zoning, wetlands, or similar laws. This report is not intended to be an environmental compliance audit.

Hazardous substances naturally occurring in plants, soils, and rocks (e.g., heavy metals, naturally occurring asbestos, or radon) are not typically considered in these investigations. Similarly, construction debris (e.g., discarded concrete, asphalt, etc.) is not considered to be of concern unless observations suggest that hazardous substances are likely to be present in significant concentrations.

Unless otherwise noted, sampling and laboratory analyses of soil, water, air, building materials, or other media, were not performed as part of this investigation. Positive identification of hazardous substances can only be accomplished through sampling and appropriate laboratory analysis.

SCS Engineers assumes no responsibility for the accuracy of information obtained from, compiled by, or provided by third-party sources, such as regulatory agency listings. Unless obviously inaccurate or if information exists to the contrary, SCS Engineers assumes that information collected during this environmental site assessment is accurate and correct. Unless warranted, information collected has not been independently validated as part of this assessment.

The following information is the responsibility of the User (40 CFR 312.22) and is not included in this Phase I ESA:

- Specialized knowledge or experience of the User.

- The relationship of the purchase price to the fair market value of the Property. The purchaser of a Property is required to consider whether any differential between the purchase price and the fair market value of the Property is due to the presence of releases or potential releases of hazardous substances at the Property.

Certain other limitations could affect the accuracy and completeness of this report, as follows:

- Site Access Limitations – None.
- Physical Obstructions to Observations – None.
- Outstanding Information Requests – None
- Historical Data Sources Failure – None
- Other Limitations – None.

6 GENERAL SITE CHARACTERISTICS

SITE LOCATION

The Property, which is not currently associated with an assigned address, is located to the south of the I-210 Freeway and to the east of Pepper Avenue in Rialto, California. It consists of portions of San Bernardino County assessor's parcel numbers (APNs) 0264-201-05-0000, -06-0000, -26-0000. An APN map is provided as **Figure 2** in **Appendix A**.

GENERAL SITE DESCRIPTION

The Property comprises of 24.07 acres of undeveloped land covered with grasses and trees.

ADJOINING PROPERTY USE

- North – Approximately 15 acres of undeveloped, vacant land adjoins the Property to the north. A square concrete pad is located in the western portion of vacant land indicative of an old building foundation. Signs for a high pressure gas pipeline were observed offsite to the north of the Property.
- South – A groundwater pump and treatment station adjoins the Property to the south. There is also a large water tank belonging to the West Valley Water District and vacant land located further to the south.
- East – A railroad track and vacant land adjoins the Property to the east. There is a fenced single-story building operated by the Riverside Highland Water Company located on the adjoining vacant land northeast of the Property. Signs for a high pressure gas pipeline were observed offsite to the east of the Property.
- West – North Pepper Avenue adjoins the Property to the west. Most of the area across the street to the west is undeveloped, vacant land.

7 PHYSICAL SETTING

PHYSIOGRAPHIC SETTING

The Property is located in the northern portion of the Upper Santa Ana River Valley at elevations between approximately 1,288 and 1,264 feet above mean sea level. The Property is situated approximately 5 miles south of the San Bernardino Mountains. Site topography slopes southeasterly towards Cajon Wash, approximately 0.25 miles to the east.

GEOLOGY AND SOILS

According to the Dibblee Geologic Map of the Devore Quadrangle (2003), the Property is underlain by Quaternary alluvial gravel sand. These surficial sediments consist of alluvial fan deposits composed of boulder gravel near the mountains, with finer gravel and sand grading outward.

GROUNDWATER

The Property is located on the eastern margins of the Rialto-Colton Sub-basin in the Upper Santa Ana River Valley Basin. Information reviewed on the California Department of Water Resources website indicates that groundwater was measured at approximately 418 feet below ground surface (bgs) based on data collected on April 18, 2019 from a residential groundwater well located approximately 780 feet southeast of the Property. Groundwater flow was to the southwest. Based on proximity, groundwater is anticipated at a similar depth at the Property. There are no known regional groundwater contamination plumes beneath the Property.

RADON

According to the California Department of Public Health's February 2016 Radon Program report, screening in the area of the Property (92376 zip code) found no locations (out of 13) where buildings had radon levels greater than or equal to 4 picocuries per liter (pCi/L), the EPA action level. The maximum radon result for the Property's zip code was 1.9 pCi/L. Note that elevated radon levels may also be attributed to other radon sources such as leaking natural gas or numerous building products such as drywall, cinderblock, concrete floors, brick, or stone products. Typically, radon would not be anticipated in an area of deep alluvial geology such as in the Property area. Consequently, there is a low risk of exposure to radon gas at the Property.

8 SITE INSPECTION

Justin Rauzon of SCS conducted an inspection of the Property and surrounding area on May 2, 2019. An aerial photo and photographs of the Property are provided in **Appendix B**.

The Property is undeveloped land covered with grasses and trees. A small homeless encampment is present on the north-central portion of the Property. According to one of the homeless individuals interviewed during the site inspection, people have been living in this area for at least five years. A few concrete pipes were observed on the western portion of the Property, likely associated with historical flood irrigation.

HAZARDOUS SUBSTANCES

No hazardous substances or hazardous wastes were observed on the Property. An aboveground fuel storage tank situated inside a low concrete block containment wall was observed immediately

outside the southern fence dividing the Property from the West Valley Water District site. The containment wall was observed to be in poor condition, with cracks. A small area of stained soil was observed near the base of the containment wall. A small area of the staining crossed the fence line onto the Property. The affected area was only a few square feet in size and is considered *de minimis* in nature.

NATURAL DRAINAGE

Natural waterways are not currently located on the Property. Runoff from the Property infiltrates into the ground onsite or flows overland to the surrounding undeveloped areas or the adjoining street to the west.

DISTURBED AREAS

No obvious disturbed areas were noted. There was no evidence of landfilled materials. Homeless individuals have discarded clothes, shopping carts, mattresses, bicycles, paper, plastic, etc. at a few areas on the surface, particularly on the northwestern portion of the Property. No potentially hazardous materials such as chemical drums or containers were noted among the trash.

ELEVATORS AND OTHER HYDRAULIC EQUIPMENT

No elevators or other hydraulic equipment was observed at the Property.

WELLS

No groundwater supply or monitoring wells were observed on the Property during the site inspection. One municipal groundwater supply well was observed on the adjoining site to the south. It belongs to the West Valley Water District.

ELECTRICAL EQUIPMENT

No oil-cooled electrical transformers or other potentially polychlorinated biphenyl (PCB)-containing equipment was observed during the site inspection.

WASTEWATER

Sanitary and industrial wastewaters are not currently generated at the Property.

DRINKING WATER

Drinking water is not currently supplied to the Property.

STORAGE TANKS

No evidence (fill ports, vent lines, or dispensers) of underground storage tanks (USTs) was observed on the Property. No aboveground storage tanks (ASTs) were observed on the Property.

VISUAL INSPECTION OF ADJOINING SITES

No obvious evidence of a REC or indications of contamination (e.g. remediation equipment, staining, underground storage tanks, etc.), were observed on adjoining sites during the site inspection.

As noted above, an aboveground fuel storage tank situated inside a low concrete block containment wall was observed immediately outside the southern fence dividing the Property from the West Valley Water District site. The containment wall was observed to be in poor condition, with cracks. A small area of stained soil was observed near the base of the containment wall. A small area of the staining crossed the fence line onto the Property. The affected area was only a few square feet in size and is considered *de minimis* in nature.

9 INTERVIEWS

SCS interviewed one of the homeless individuals who has lived on the Property for the past five years. He considered himself a sort of informal caretaker of the Property, but noted that he had been told by the Sherriff's Department that he and the other individuals would have to leave. He was not aware of any unauthorized dumping of hazardous materials/waste.

10 SITE HISTORY

Site history was evaluated from the following sources:

- Historical U.S. Geological Survey (USGS) topographic maps provided by Environmental Data Resources (EDR) (April 25, 2019).
- Historical aerial photographs provided by EDR (April 29, 2019).
- A search was made of EDR-Sanborn collection and no maps of the Property were found (April 25, 2019).
- A City Directory review report provided by EDR (May 1, 2019).

Copies of topographic maps, historical aerial photographs, and city directories, are included in **Appendix C**.

Year	Description	Source
1896	The Property was undeveloped land. Lytle Creek is shown running across the east side of the Property, although that may be a mapping error and appears unlikely based on topography (the creek channel is lower than the Property). The area around the Property was shown to be sparsely developed, with a few roads and a railroad track shown.	Topographic Map
1898	The Property and surrounding area appeared essentially the same as on the 1896 topographic map.	Topographic Map
1901	The Property and surrounding area appeared essentially the same as on the 1898 topographic map.	Topographic Map

Year	Description	Source
1930	The entire Property and areas to the north and southwest appeared to be occupied by linear row of dots, possibly orchard trees. Lytle Creek Wash is located to the south of the Property and runs southeast. Areas directly to the south, east, and west remain mostly undeveloped and naturally vegetated with one road to the east of the Property.	Aerial Photograph
1938	The Property and surrounding areas appeared essentially the same as in the 1930 photograph. An area to the north appears developed with a small structure, and additional dirt roads are present to the southeast of the Property.	Topographic Map and Aerial Photograph
1941	The Property and surrounding area appeared essentially the same as on the 1938 topographic map.	Topographic Map
1942	An unimproved road runs along the northern border of the Property. The area to the southwest contains more land occupied by orchards. Roads have been developed surrounding areas to the northeast and southwest.	Topographic Map
1949	The Property remains essentially the same as the 1930 aerial photograph. The adjacent land to the north is occupied by orchards. The surrounding areas to the south and east of the Property no longer appear vegetated. A paved roadway is located approximately 0.25 miles north of the Property.	Aerial Photograph
1953	The Property and surrounding areas remain essentially the same as the 1949 aerial photograph. A few small structures appear to the southeast of the Property.	Aerial Photograph
1954	The Property remains occupied by linear rows of trees. A reservoir adjoins the Property to the south (and remains to the present). The surrounding areas to the north, west, and south are also occupied by orchards	Topographic Map
1959	The Property and surrounding areas remain essentially the same as on the 1953 aerial photograph. Several small buildings are located southeast of the Property.	Aerial Photograph

Year	Description	Source
1966	The Property remains occupied by an orchard. The surrounding land appears similar to the 1959 photo. Areas to the southwest have been developed into residential neighborhoods, and areas to the southeast appear to be used as a quarry.	Aerial Photograph
1967	The Property appeared essentially the same as on the 1954 topographic map. Most of the areas to the east and southwest have been cleared of vegetation and developed with roads, schools, and urban development.	Topographic Map
1973	The Property and surrounding area appeared essentially the same as on the 1967 topographic map.	Topographic Map
1975	The Property and surrounding areas appeared essentially the same as on the 1973 topographic map. The railroad track has been constructed east of the Property.	Topographic Map and Aerial Photograph
1980	The Property and surrounding areas appeared essentially the same as the 1973 topographic map.	Topographic Map
1985	The Property has been cleared of orchards and is mostly vacant land. The surrounding areas to the northwest and southeast have been mostly cleared of vegetation and are also vacant land.	Aerial Photograph
1988	The Property and surrounding areas appeared essentially the same as the 1980 topographic map.	Topographic Map
1989	The Property and surrounding areas appeared essentially the same as the 1985 aerial photograph. More of the area approximately 700 feet southwest of the Property has been developed with roads and residential housing.	Aerial Photograph
1995	The Property and surrounding areas appeared essentially the same as the 1989 aerial photograph.	Aerial Photograph
1996	The Property and surrounding areas appeared essentially the same as the 1988 topographic map.	Topographic Map

Year	Description	Source
2006	The Property is covered in green vegetation including grass and small tree shrubs. The surrounding area to the east is also covered in green vegetation. A majority of the surrounding area to the north is cleared of vegetation is vacant land with a few small structures to the northwest.	Aerial Photograph
2009	The Property is vacant land with sparse vegetation. The surrounding areas are similar to present conditions. The I-210 freeway is under constructed approximately 500 feet north of the Property.	Aerial Photograph
2012	The Property and surrounding areas appeared essentially the same as in the 2009 aerial photograph.	Topographic Map and Aerial Photograph
2016	The Property and surrounding areas appeared essentially the same as in the 2012 aerial photograph with the exception that North Pepper Avenue was constructed immediately west of the Property.	Aerial Photograph

HISTORICAL USE SUMMARY

The Property has been undeveloped or agricultural land (an orchard) since the late 1800s. By 1930, the Property was occupied by an orchard. There was an unimproved road along the northern boundary of the Property in 1942 which was gone by the late 1940s. The Property was cleared of the orchard and vegetation by the mid-1980s and has been a vacant lot since then.

The existence of past agricultural activities on the Property and in adjacent areas indicates a potential for pesticide and/or heavy metal (associated with dusting powders) contamination. In SCS's experience, it is not uncommon to find trace levels of pesticides in soils at former agricultural areas in Southern California. However, these trace concentrations are rarely cause for environmental concern. It is our opinion that, without specific evidence of pesticide storage or mismanagement on the Property, past use for agricultural purposes is considered to be a *de minimis condition* and collection and analysis of soil samples for pesticides is unwarranted.

HISTORICAL USE OF ADJOINING SITES

With the exception of a few roads, the area surrounding the Property was undeveloped or agricultural land in the later 1800s and early 1900s. By 1930, the surrounding area was largely developed with orchards, with a few small structures associated with farming to the east of the Property. The current reservoir on the adjacent parcel to the south was constructed by 1954. By the mid-1960s and 1980s, the areas to the southwest and northeast of the Property had been cleared of orchards and developed into residential neighborhoods and roads. A railroad track was constructed east of the Property by 1975. The I-210 freeway located north of the Property was constructed by the late 2000s. North Pepper Avenue was constructed between 2012 and 2016 .

11 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

In order to identify commonly known or reasonably ascertainable information about the Property, SCS attempted to review previous environmental reports and various regulatory agency files and interviewed regulatory agency personnel. The following information was identified.

PREVIOUS ENVIRONMENTAL REPORTS

No previous environmental reports were provided to SCS for review.

REGULATORY AGENCY RECORDS

Local regulatory agencies and other sources were contacted in an effort to identify any known or suspected contamination sites or incidents of hazardous waste storage or disposal which might have resulted in soil and/or groundwater contamination, or VOC (volatile organic compound) vapor migration to the Property. Generally, this includes records for the Property and adjacent parcels, although relevant information for other sites of possible interest in the area (up to one mile) may also be included. Within the City of Rialto, the San Bernardino County Fire Department (Hazardous Materials Division) generally acts as the lead enforcement agency for UST compliance. If a tank has leaked and groundwater contamination is suspected, the Santa Ana Regional Water Quality Control Board (SARWQCB) generally becomes the lead agency in supervising contaminant characterization and cleanup.

Since the Property has been undeveloped or agricultural land without a historical address and no issues of potential environmental concern were identified from other sources, review of San Bernardino County Fire Department or SARWQCB files was not warranted.

California Environmental Protection Agency Files

The Property is not a listed site on the California Environmental Protection Agency (CalEPA) Regulated Site Portal website (**Appendix D**).

Santa Ana Regional Water Quality Control Board Files

The Property does not appear in the State Water Resources Control Board's GeoTracker website. Recent SARWQCB case files, if any, would be listed on this website (**Appendix D**).

Department of Toxic Substances Control Files

The Property does not appear in the California Department of Toxic Substances Control (DTSC) EnviroStor website. Recent DTSC case files, if any, would be listed on this website (**Appendix D**).

South Coast Air Quality Management District Files

SCS reviewed South Coast Air Quality Management District (AQMD) files through the online Facility INformation Detail (FIND) website. The Property does not have an assigned address, the FIND website was searched for sites on Pepper Avenue in Rialto, CA. No likely addresses for the Property were identified on the FIND website (see list in **Appendix D**).

12 REVIEW OF FEDERAL, STATE, TRIBAL, AND LOCAL GOVERNMENT DATABASES

A database search for sites listed on various federal, state, tribal, and local databases in the area around the Property was obtained from EDR (April 25, 2019). A description of each of the databases searched is included in the report, which is attached as **Appendix E**. Among the databases included in the EDR report are NPL (federal, tribal, and state-equivalent), proposed and delisted NPL, CORRACTS (RCRA facilities subject to corrective actions), hazardous waste sites identified for investigation or remediation (SEMS [Superfund Enterprise Management System, formerly known as CERCLIS], State CERCLIS, VCP, Brownfields Calsites, etc.), LUST, sites with engineering controls, former CERCLIS (NFRAP), RCRA and state hazardous waste generators, ERNS, SWLF, USTs, and Toxic Pits.

Review of these records satisfies all requirements as set forth in 40 CFR Section 312.26 (b) and (c) with regard to the review of federal, tribal, and state government records of databases of such government records and local government records and databases of such records pertaining to both the Property and the nearby or adjoining properties. Further, the search distances for each particular database are as specified in 40 CFR 312.26 and ASTM E1527-13.

Any known or suspected contaminated sites included on these lists within 0.25 miles of the Property are discussed in the following text. As a general rule, sites beyond 0.25 miles are not anticipated to impact a site significantly. Any sites beyond 0.25 miles with a high potential to impact the Property are also discussed. (Please note: the distances and directions listed in this report have been field verified and might not always match those in the EDR report.)

Sites such as TSD facilities, hazardous waste generators, HAZNET, FINDS, SQGs, LQGs, USTs, HIST UST, RCRA violations, and TRIS facilities with toxic chemical releases (generally in accordance with permitting requirements - into the air, water, or land as reported under SARA Title III) use or store hazardous materials and thus may pose a potential problem in the event of a spill or leak. However, unless these sites also appear in an agency list of contaminated sites, there is no evidence of any problems at this time. Therefore, sites on these lists will not be discussed unless on or in close proximity to the Property.

Please refer to **Appendix E** for further information on these sites.

PROPERTY LISTINGS

The Property is not listed in any of the databases searched by EDR.

ADJACENT SITE LISTINGS

None of the adjacent properties were identified in any of the standard environmental records sources within the EDR regulatory database report.

Pepper Avenue Extension Project, between Winchester Drive and I-210 freeway (adjacent to the west) – NPDES and CIWQS – The EDR report indicated a storm water permit was obtained in 2012 for the extension of North Pepper Avenue to the west of the Property. The permit was terminated in 2014 when construction activities ceased and the extension of the road was completed. These listings do not indicate the presence of a release and based on the available information, no environmental impact to the Property is anticipated.

Other Database Sites

The EDR report provides a summary table of regulatory database sites within specified distances of the Property, including standard environmental records, additional environmental records, high risk historical records, and recovered governmental records. This summary table is provided beginning on Page 4 of the EDR report (**Appendix E**). In addition to the Property and adjacent site listings discussed above, SCS identified the following sites of concern within 0.25 miles of the Property:

- **HUD Intown Properties**, 1487 North Birch Avenue (approximately 1,130 feet south-southwest) – HAZNET – In 1999, approximately 0.0075 tons of household waste was transferred offsite for disposal. Based on the nature and amount of waste, and distance, this site has not affected the environmental condition of the Property.
- **HUD Intown Properties**, 1475 North Pepper Avenue (approximately 2,000 feet south) – CHMIRS – In 2006, the Rialto Fire Department reported three gallons of paint was spilled on North Pepper Avenue. The EDR report states the spilled paint was contained, and the road was cleaned by the Rialto Fire Department. Based on the nature and quantity of the release, there would be no negative environmental impact to the Property from this release.
- **James Jordan**, 1532 North Chestnut Avenue (approximately 1,200 feet southwest) – HAZNET – In 2010, approximately 0.3 tons of inorganic solid waste was transferred offsite for disposal. Based on the nature and amount of waste, no environmental impact to the Property is anticipated from this material.

In addition to the Property listings discussed above, the database report includes other sites within 0.25 miles that do not have known releases such as RCRA-SQG, HAZNET, FINDS, ECHO, AST, SWEEPS UST, CA FID UST, EMI, HIST UST, and UST sites. None are known to have any contamination at this time; therefore, none are anticipated to have impacted the Property. Similarly, none of the sites situated beyond 0.25 miles are anticipated to have impacted the Property.

Unmappable or Orphan Sites

Four unmappable sites were identified in the EDR report. Unmappable sites cannot be plotted due to inaccurate or incomplete addresses. Based on review of the provided data, including the estimated locations of the unmappable sites in relation to the Property, it appears unlikely that the unmappable sites have adversely affected the environmental condition of the Property.

LANDFILLS

According to the EDR-provided review of the California Department of Resources Recycling and Recovery (CalRecycle) Solid Waste Information System, no active or inactive landfills were identified within 0.5 miles of the Property. Based on the available information, it is unlikely that landfills have adversely affected the environmental condition of the Property.

OIL AND GAS WELLS

Available oil and gas well maps from the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) were reviewed to identify oil and gas wells on the Property or in the nearby area. According to the DOGGR Well Finder online database, the Property is not located within the boundaries of a delineated oil and gas field.

A map showing the location of the Property relative to nearby oil and gas wells is provided in Appendix D. No wells were identified within one mile of the Property. Therefore, no significant environmental impacts to the Property are anticipated from oil and gas exploration and production.

NATIONAL PIPELINE MAPPING SYSTEM

SCS reviewed the National Pipeline Mapping System (NPMS) website for the Property and surrounding area to identify any hazardous materials pipelines. The NPMS is a geographic information system (GIS) created by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), and Office of Pipeline Safety (OPS) in cooperation with other federal and state governmental agencies and the pipeline industry. The NPMS consists of geospatial data, attribute data, public contact information, and metadata pertaining to the interstate and intrastate hazardous liquid trunklines and hazardous liquid low-stress lines as well as gas transmission pipelines, liquefied natural gas (LNG) plants, and hazardous liquid breakout tanks (tanks that receive and store liquids transported by pipeline) jurisdictional to PHMSA. The nominal accuracy of geospatial data in the NPMS is +/-500 feet. The NPMS does not contain information on interconnects, pump and compressor stations, valves, direction of flow, capacity, throughput, or operating pressure. In addition, distribution and gathering pipelines are not included in the NPMS.

The NPMS is built from data submitted by pipeline, LNG plant, and breakout tank facility operators. Since 2002, transmission pipeline and LNG plant facility operators are required to submit mapping information to the NPMS and to update their submissions annually. Breakout tank operators are able to submit data to the NPMS on a voluntary basis.

A map showing the location of the Property relative to nearby pipelines is provided in Appendix D. Based on review of the NPMS website, an active hazardous liquid pipeline is located along the railroad tracks that are located approximately 125 feet east of the southeast corner of the Property. The pipeline operator is CALNEV Pipeline Co. and the commodity is non-highly volatile liquid (HLV) product. The NPMS website does not contain information about releases from these pipelines. Based on the available information, no negative environmental impacts to the Property are anticipated from this pipeline. No other pipelines, gas incidents, liquid accidents, LNG plants, or breakout tanks were identified within one mile of the Property.

13 USER PROVIDED INFORMATION

A User Questionnaire was not returned to SCS for inclusion in the report. Howard Industrial Partners provided no information beyond what is discussed above.

TITLE RECORDS

No title report was provided to SCS for review.

ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

No information regarding environmental liens or activity and use limitations was provided to SCS. No environmental liens or activity/use limitations were identified by SCS during the course of this assessment.

SPECIALIZED KNOWLEDGE

No specialized knowledge regarding the Property was provided to SCS by the User.

VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

The purchase price being paid for the Property reasonable reflects the fair market value.

14 DEGREE OF OBVIOUSNESS OF THE PRESENCE/LIKELY PRESENCE OF CONTAMINATION ON THE PROPERTY

The Property has been undeveloped or agricultural land (an orchard) since the late 1800s. By 1930, the Property was occupied by an orchard. There was an unimproved road along the northern boundary of the Property in 1942, which was gone by the late 1940s. The Property was cleared of the orchard and vegetation by the mid-1980s and has been a vacant lot since then.

Historical and regulatory information did not identify any issues of potential environmental concern on the Property or immediately surrounding sites. In summary, SCS identified no indications of the presence or likely presence of contamination on the Property.

15 DATA GAPS

A data gap represents an inability on the part of the environmental professional to obtain information required by the standards and practices of 40 CFR 312 to fully identify conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the Property. The following data gaps were identified:

- Owner and User Questionnaires were not returned to SCS. Based on information from other sources, these data gaps are not considered significant, and the findings and opinions expressed in this report would not be expected to change with information from the questionnaires.

16 FINDINGS AND OPINIONS

Based on the scope of work performed, SCS finds the following:

- The Property, which is not currently associated with an assigned address, is located to the south of the I-210 Freeway and to the east of Pepper Avenue in Rialto, CA. The Property comprised of 24.04 acres of undeveloped land covered with grasses and trees. A small homeless encampment is present on the north-central portion of the Property. A few concrete pipes were observed on the western portion of the Property, likely associated with historical flood irrigation.
- The Property has been undeveloped or agricultural land (an orchard) since the late 1800s. By 1930, the Property was occupied by an orchard. There was an unimproved road along the northern boundary of the Property in 1942, which was gone by the late 1940s. The Property was cleared of the orchard and vegetation by the mid-1980s and has been a vacant lot since then.
- An aboveground fuel storage tank situated inside a low concrete block containment wall was observed immediately outside the southern fence dividing the Property from the West Valley Water District site. The containment wall was observed to be in poor condition, with cracks. A small area of stained soil was observed near the base of the containment wall. Some of the staining crossed the fence line onto the Property. The affected area was only a few square feet in size and is considered *de minimis* in nature.

- Regulatory database information identified few known and suspected contamination sites in the area surrounding the Property. Based on available information, it is unlikely that any of these sites have negatively impacted the environmental condition of the Property.

In summary, SCS performed a Phase I Environmental Site Assessment of the 24.07-acre vacant parcel located on North Pepper Avenue in Rialto, California, in conformance with the scope and limitations of 40 CFR 312 and ASTM E1527-13. Any exceptions to, or deletions from, this practice are described in Section 5 of this report. In the opinion of the Environmental Professionals, this assessment has revealed no evidence of conditions indicative of recognized environmental conditions. Further investigation is not recommended.

17 REFERENCES

ASTM International, November 1, 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation: E1527-13.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) Website: http://www.conservation.ca.gov/dog/Pages/Index.aspx.

California Department of Health Services (CDHS), Updated February 2016. *California Indoor Radon Test Results*: https://www.cdph.ca.gov/Programs/CEH/DRSEM/CDPH%20Document%20Library/EMB/Radon/Radon%20Test%20Results.pdf

California Department of Toxic Substance Control (DTSC) EnviroStor Website: https://www.envirostor.dtsc.ca.gov/public/.

California Department of Water Resources Website: http://wdl.water.ca.gov/waterdatalibrary/.

California Environmental Protection Agency (CalEPA), Site Portal Website: https://siteportal.calepa.ca.gov/nsite/.

California Environmental Protection Agency, State Water Resources Control Board (SWRCB), GeoTracker Website: http://geotracker.waterboards.ca.gov/.

Dibblee, T.W., October 2003. *Geologic Map of the Devore Quadrangle*.

Environmental Data Resources, Inc. (EDR), www.edrnet.com, (800) 352-0050.

Federal Register, The Daily Journal of the United States Government, November 1, 2005. Part III, Environmental Protection Agency, 40 CFR Part 312, Standards and Practices for All Appropriate Inquiry. Volume 70, No. 210. Amended December 30, 2013, Volume 78, No. 250.

National Pipeline Mapping System (NPMS) Website: https://www.npms.phmsa.dot.gov/PublicViewer/.

South Coast Air Quality Management District (AQMD), Facility INformation Detail (FIND) website: http://www3.aqmd.gov/webappl/fim/prog/search.aspx.

United States Geological Survey (USGS), 1967. San Bernardino North, CA 7.5 Minute Topographic Map.

Upper Santa Ana River Watershed Integrated Regional Water Management Plan. January 2015.

18 GLOSSARY/DEFINITIONS

AAI -- All Appropriate Inquiry

AUL -- Activity and Use Limitations

BTEX -- Benzene, toluene, ethylbenzene, and total xylenes

CERCLA -- Comprehensive, Environmental Response, Compensation, and Liability Act

CERCLIS -- Comprehensive Environmental Response, Compensation, and Liability Information System

CFR -- Code of Federal Regulations

CORRACTS -- Corrective Action Against Responsible Parties at a RCRA site

CREC -- A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, AULs, or institutional or engineering controls).

DOGGR -- Department of Oil, Gas, and Geothermal Resources

De Minimis Condition -- A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis conditions* are not RECs or CRECs.

DTSC -- California EPA Department of Toxic Substances Control

EDR -- Environmental Data Resources, Inc.

EPA -- Environmental Protection Agency

ERNS -- Emergency Response Notification System

ESA -- Environmental Site Assessment

FINDS -- Facility Index System

HAZNET -- California EPA Hazardous Waste Facility and Manifest Data

HREC -- Historical Recognized Environmental Condition: A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls

LQG -- Large Quantity Hazardous Waste Generator

LUST -- Leaking Underground Storage Tank

MCL -- Maximum contaminant level

MTBE -- Methyl-tert-butyl-ether

NFA -- No Further Action determination

NFRAP -- No Further Remedial Action Planned

NPL -- National Priority List (Superfund)

PAHs -- Polynuclear aromatic hydrocarbons

PCBs -- Polychlorinated biphenyls

RCRA -- Resource Conservation and Recovery Act

RCRIS -- Resource Conservation and Recovery Information System

REC -- R*ecognized environmental condition* is defined by ASTM E 1527-13 as: "The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis conditions* are not *recognized environmental conditions*."

ROD -- Record of Decision

RBSLs -- Risk-based Screening Levels

RSLs – Regional Screening Levels

RWQCB -- Regional Water Quality Control Board

SARA -- Superfund Amendments and Reauthorization Act

SLIC -- Spills, Leaks, Investigations, and Cleanups database

SQG -- Small Quantity Hazardous Waste Generator

SWIS -- Solid Waste Information System

SWLF -- Solid Waste Facility/Landfills

TPH -- Total Petroleum Hydrocarbons

TRIS -- Toxic Release Inventory System

TSD -- Treatment, Storage, and/or Disposal Facility

User -- The person or persons seeking to establish the innocent landowner defense, bona fide prospective purchaser liability protection, and/or contiguous property owner liability protection pursuant to CERCLA sections 101 and 107.

USGS -- United States Geologic Survey

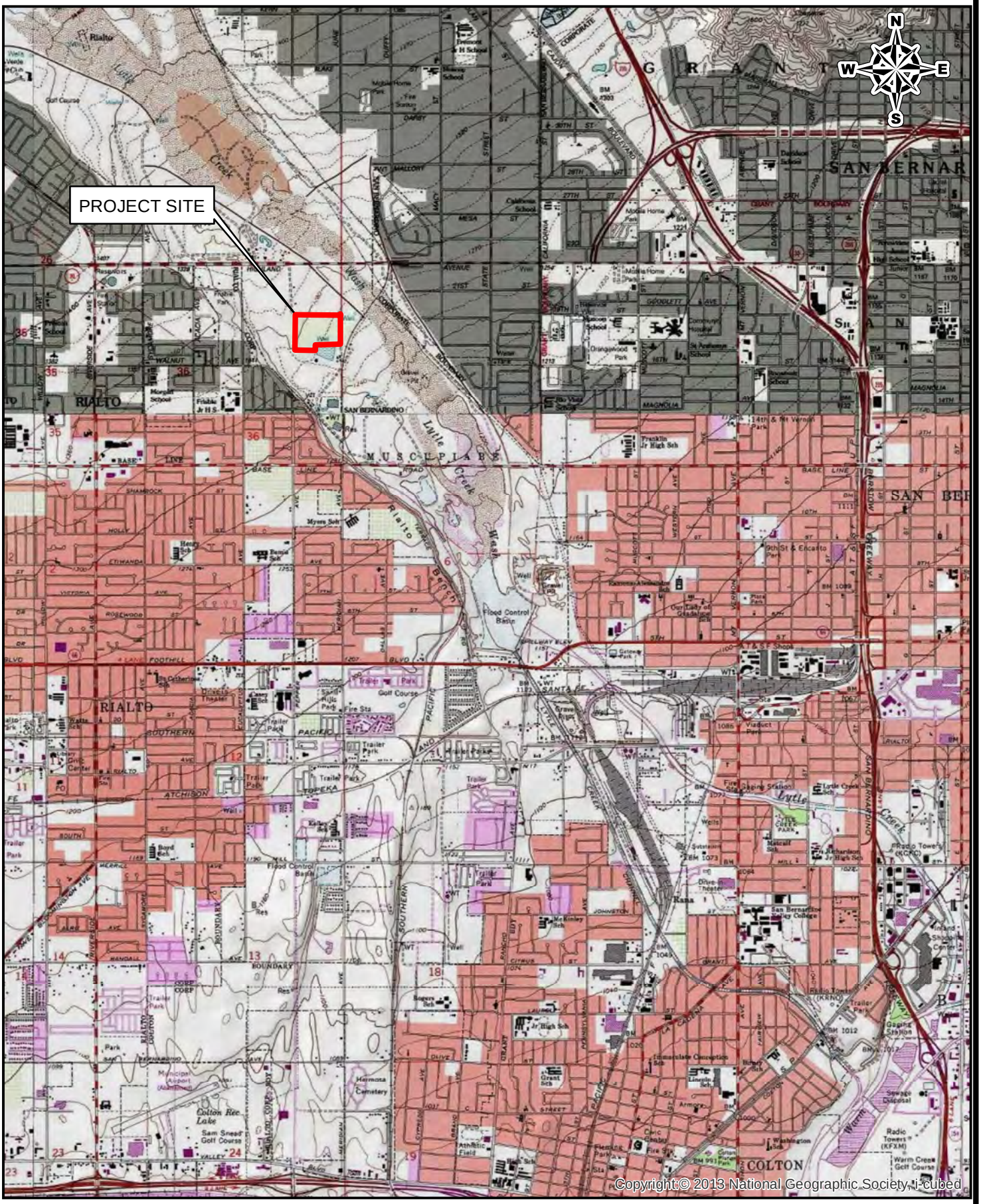
UST -- Underground Storage Tank

VCP -- Voluntary Cleanup Program

VOCs -- Volatile organic compounds

Appendix A

Figures 1 and 2



0 1,000 2,000 4,000 Feet

SCS ENGINEERS 3900 KILROY AIRPORT WAY, STE 100 LONG BEACH, CALIFORNIA 90806-6816	SITE: Pepper Industry Parcels Pepper Avenue and 210 Freeway Rialto, CA 92376	Job No.: 01219123.00 Title: SITE LOCATION MAP	FIGURE 1

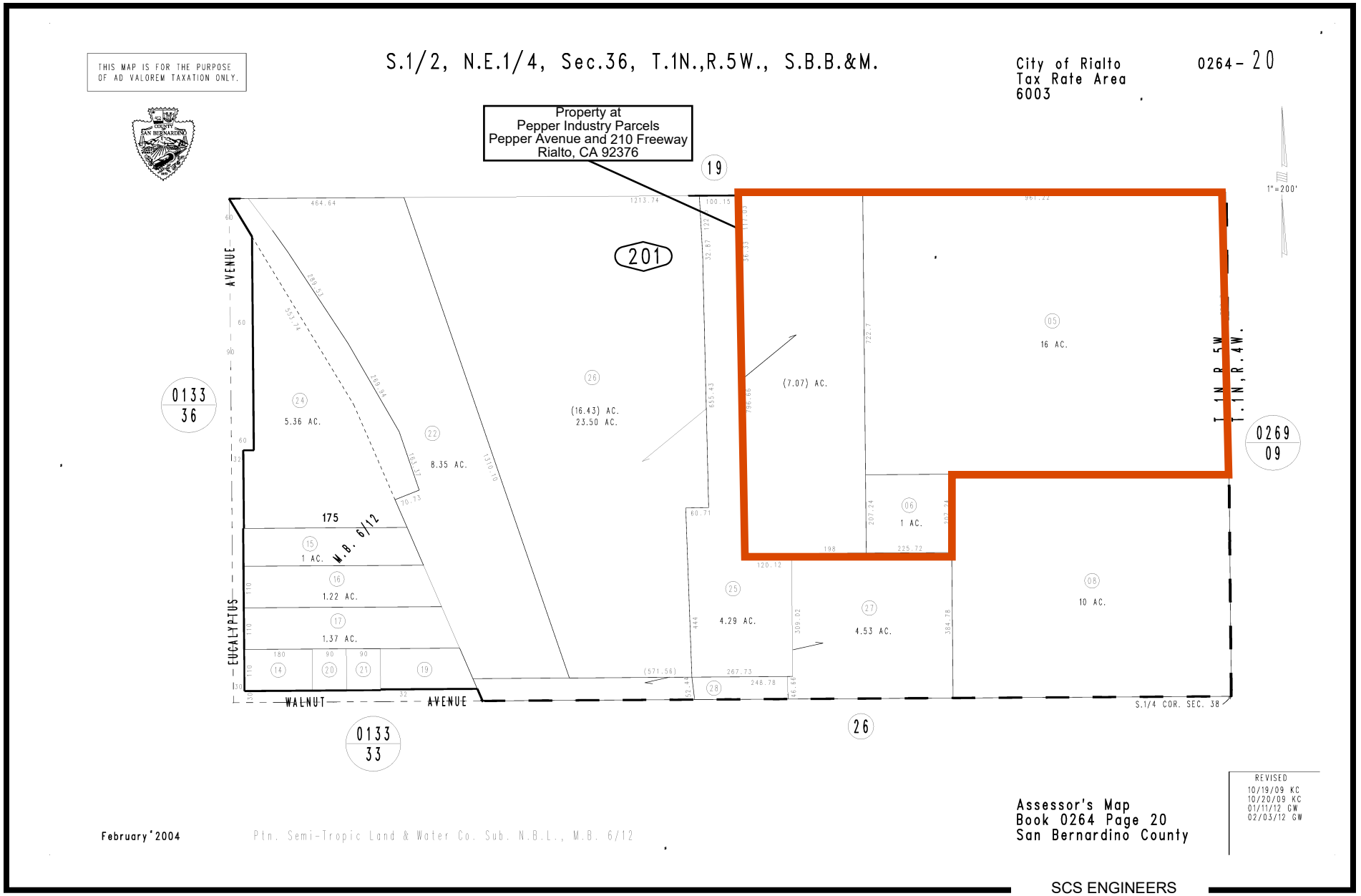
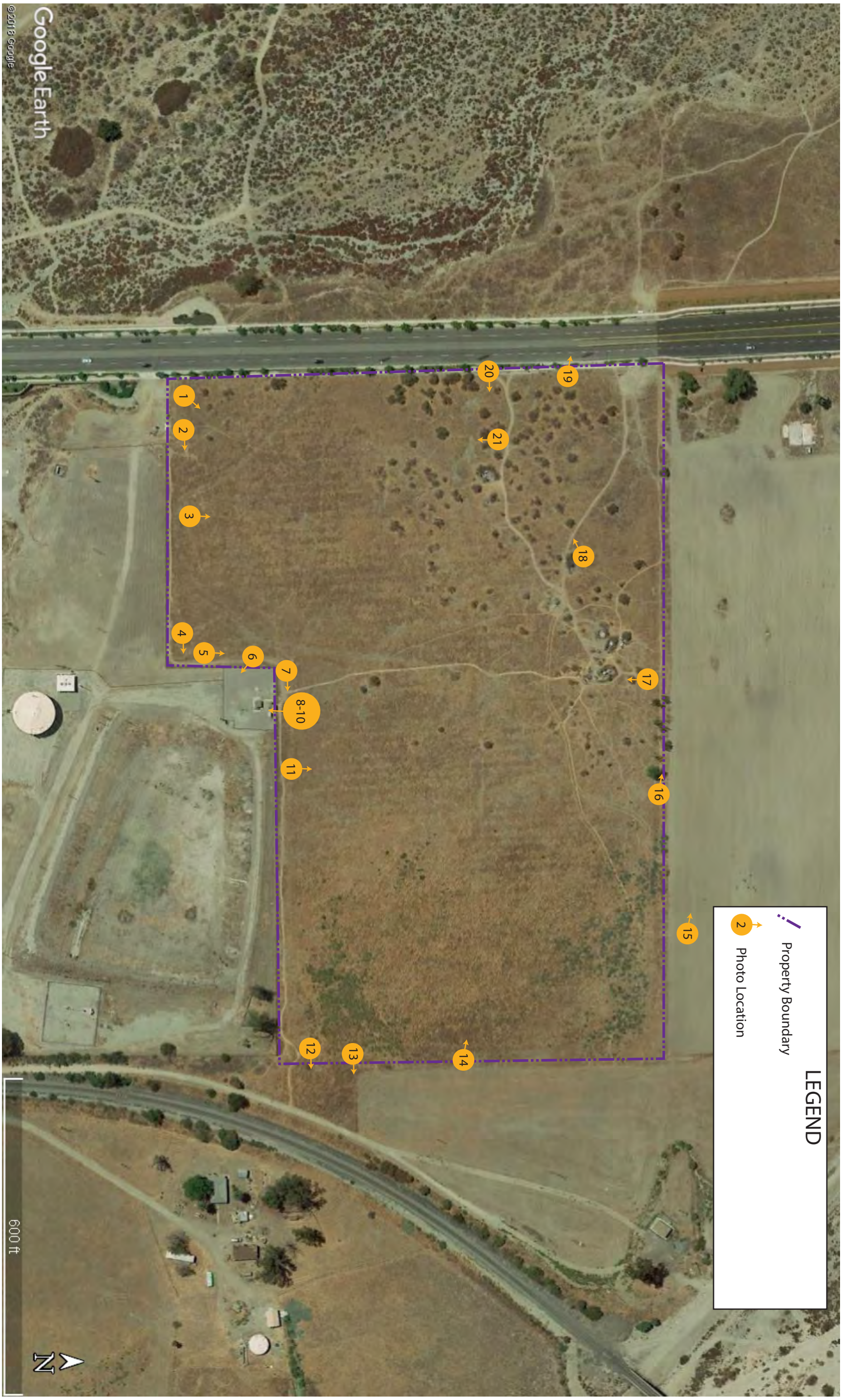


Figure 2. Assessor's Parcel Map (APN#s: 0264-201-05, 06 & 26)

Appendix B

Aerial Image and Site Photographs



SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
3900 KILROY AIRPORT WAY, SUITE 100
LONG BEACH, CA 90806
PH. (562) 426-9544 FAX. (562) 427-0805

PROJ. NO.: 01219123.00
DWN. BY: J. Rauzon
APP. BY: K. Green

CLIENT:
Howard Industrial Partners
1944 North Tustin Street, #122
Orange, California 92865

SHEET TITLE:
Google Earth Aerial Image Showing Photo Locations

PROJECT TITLE:
24.07-Acre Vacant Parcel
Pepper Avenue South of the 210 Freeway
Rialto, California 92376

DATE: May 2019
SCALE: See Figure
FIGURE NO.: AERIAL 1



Photo 1 – View showing vegetation on the southwestern portion of the Property.



Photo 2 – View from the southwestern portion of the Property looking towards the east.



Photo 3 – View from the southwestern portion of the Property to the north.



Photo 4 – Trash on the south-central portion of the Property.



Photo 5 – View to the north from the south-central portion of the Property.



Photo 6 – West Valley Water District facilities to the south of the Property.



Photo 7 – View to the east along the southeastern portion of the Property.



Photo 8 – Aboveground fuel storage tank located across the fence line to the south of the Property.



Photo 9 – The concrete containment wall was observed to be in poor condition, with some stained soil along the Property line. However, the staining is considered *de minimis* in nature.



Photo 10 – Water supply well offsite to the south of the Property.



Photo 11 – Vegetation on the eastern portion of the Property.



Photo 12 – Undeveloped land and railroad right-of-way to the east of the Property.



Photo 13 – A sign for a high pressure gas pipeline offsite to the east of the Property.



Photo 14 – View from the eastern side of the Property to the west.



Photo 15 – High pressure gas pipeline sign offsite to the north of the Property.



Photo 16 – Undeveloped land to the north of the Property.



Photo 17 – Homeless encampment on the north-central portion of the Property.



Photo 18 – Surface trash on the Property.



Photo 19 – Undeveloped land is located across the street to the west of the Property.



Photo 20 – Sign on the western side of the Property.



Photo 21 – Former flood irrigation concrete piping on the western side of the Property.

Appendix C

Historical Site Use Information

Pepper Industry Parcels

Pepper Avenue and 210 Freeway

Rialto, CA 92376

Inquiry Number: 5633595.4

April 25, 2019

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

04/25/19

Site Name:	Client Name:
Pepper Industry Parcels	SCS Engineers
Pepper Avenue and 210 Freew	3900 Kilroy Airport Way
Rialto, CA 92376	Long Beach, CA 90806
EDR Inquiry # 5633595.4	Contact: Kim Braun

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by SCS Engineers were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: 01219123.00

Coordinates:

Latitude:	34.131269 34° 7' 53" North
Longitude:	-117.351335 -117° 21' 5" West
UTM Zone:	Zone 11 North
UTM X Meters:	467604.89
UTM Y Meters:	3776766.71
Elevation:	1278.12' above sea level

Maps Provided:

2012	1943
1996	1942
1988	1941
1980	1936, 1938
1975	1901
1973	1898
1967	1896
1954	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Devore
2012
7.5-minute, 24000



Fontana
2012
7.5-minute, 24000



San Bernardino North
2012
7.5-minute, 24000



San Bernardino South
2012
7.5-minute, 24000

1996 Source Sheets



San Bernardino North
1996
7.5-minute, 24000
Aerial Photo Revised 1994



Devore
1996
7.5-minute, 24000
Aerial Photo Revised 1994

1988 Source Sheets



Devore
1988
7.5-minute, 24000
Aerial Photo Revised 1985



San Bernardino North
1988
7.5-minute, 24000
Aerial Photo Revised 1985

1980 Source Sheets



Devore
1980
7.5-minute, 24000
Aerial Photo Revised 1978



Fontana
1980
7.5-minute, 24000
Aerial Photo Revised 1978



San Bernardino North
1980
7.5-minute, 24000
Aerial Photo Revised 1978



San Bernardino South
1980
7.5-minute, 24000
Aerial Photo Revised 1979

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1975 Source Sheets



SAN BERNARDINO
1975
15-minute, 50000

1973 Source Sheets



San Bernardino North
1973
7.5-minute, 24000
Aerial Photo Revised 1966

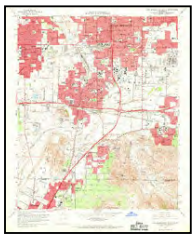


Fontana
1973
7.5-minute, 24000
Aerial Photo Revised 1973

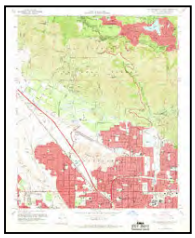


San Bernardino South
1973
7.5-minute, 24000
Aerial Photo Revised 1973

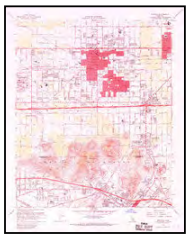
1967 Source Sheets



San Bernardino South
1967
7.5-minute, 24000
Aerial Photo Revised 1966

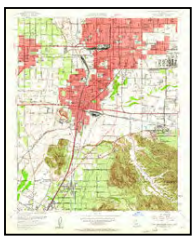


San Bernardino North
1967
7.5-minute, 24000
Aerial Photo Revised 1966



Fontana
1967
7.5-minute, 24000
Aerial Photo Revised 1966

1954 Source Sheets



San Bernardino South
1954
7.5-minute, 24000
Aerial Photo Revised 1952



Devore
1954
7.5-minute, 24000
Aerial Photo Revised 1952



San Bernardino North
1954
7.5-minute, 24000
Aerial Photo Revised 1952

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1943 Source Sheets



Colton
1943
7.5-minute, 31680



Fontana
1943
7.5-minute, 31680

1942 Source Sheets



SAN BERNARDINO
1942
15-minute, 50000

1941 Source Sheets



Arrowhead
1941
7.5-minute, 31680



Devore
1941
7.5-minute, 31680

1936, 1938 Source Sheets



Arrowhead
1936
7.5-minute, 31680



Devore
1936
7.5-minute, 31680

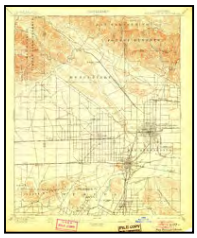


Colton
1938
7.5-minute, 31680

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1901 Source Sheets



San Bernardino
1901
15-minute, 62500

1898 Source Sheets



San Bernardino
1898
15-minute, 62500

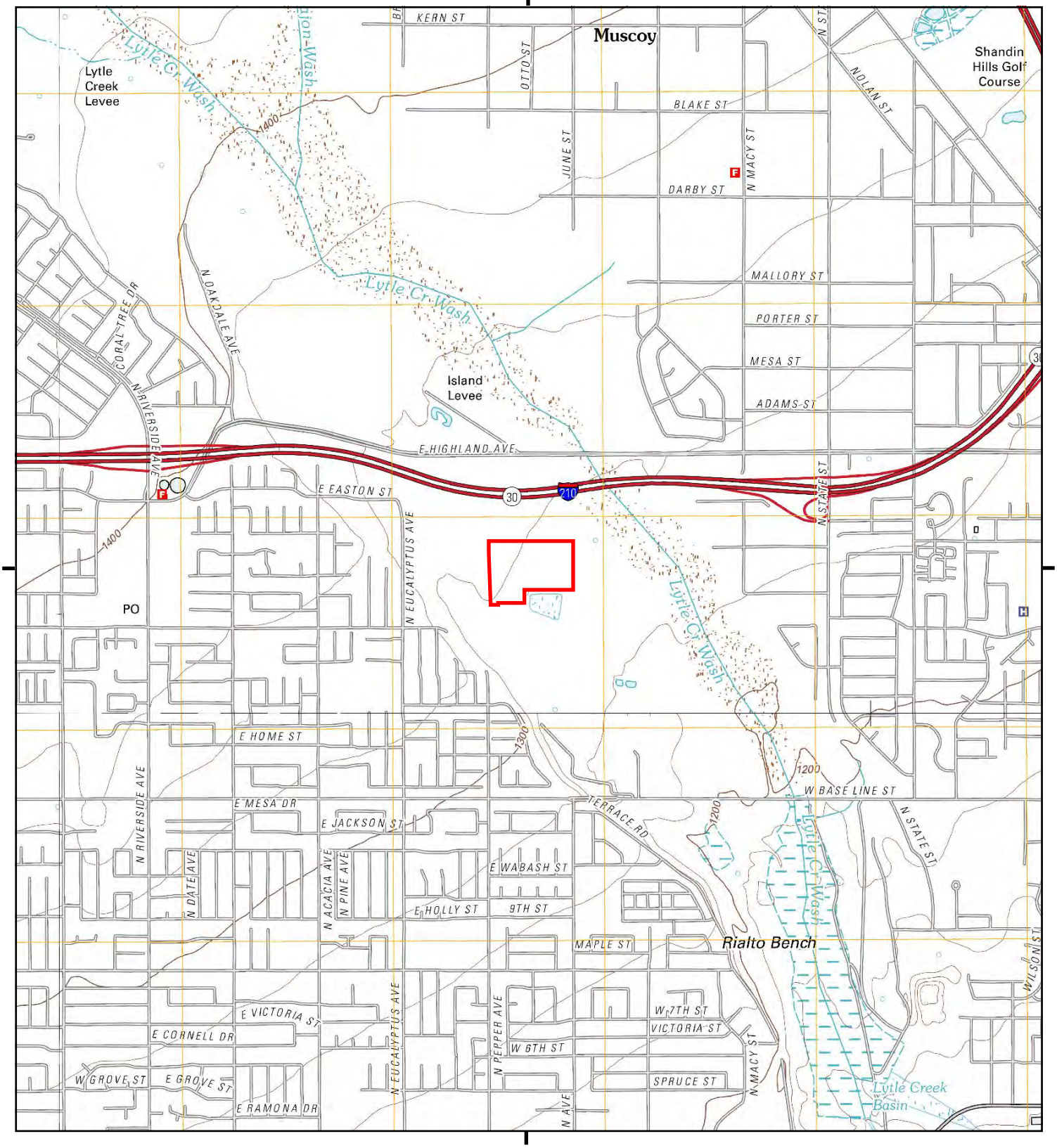
1896 Source Sheets



San Bernardino
1896
15-minute, 62500

Historical Topo Map

2012



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W E
SW S SE

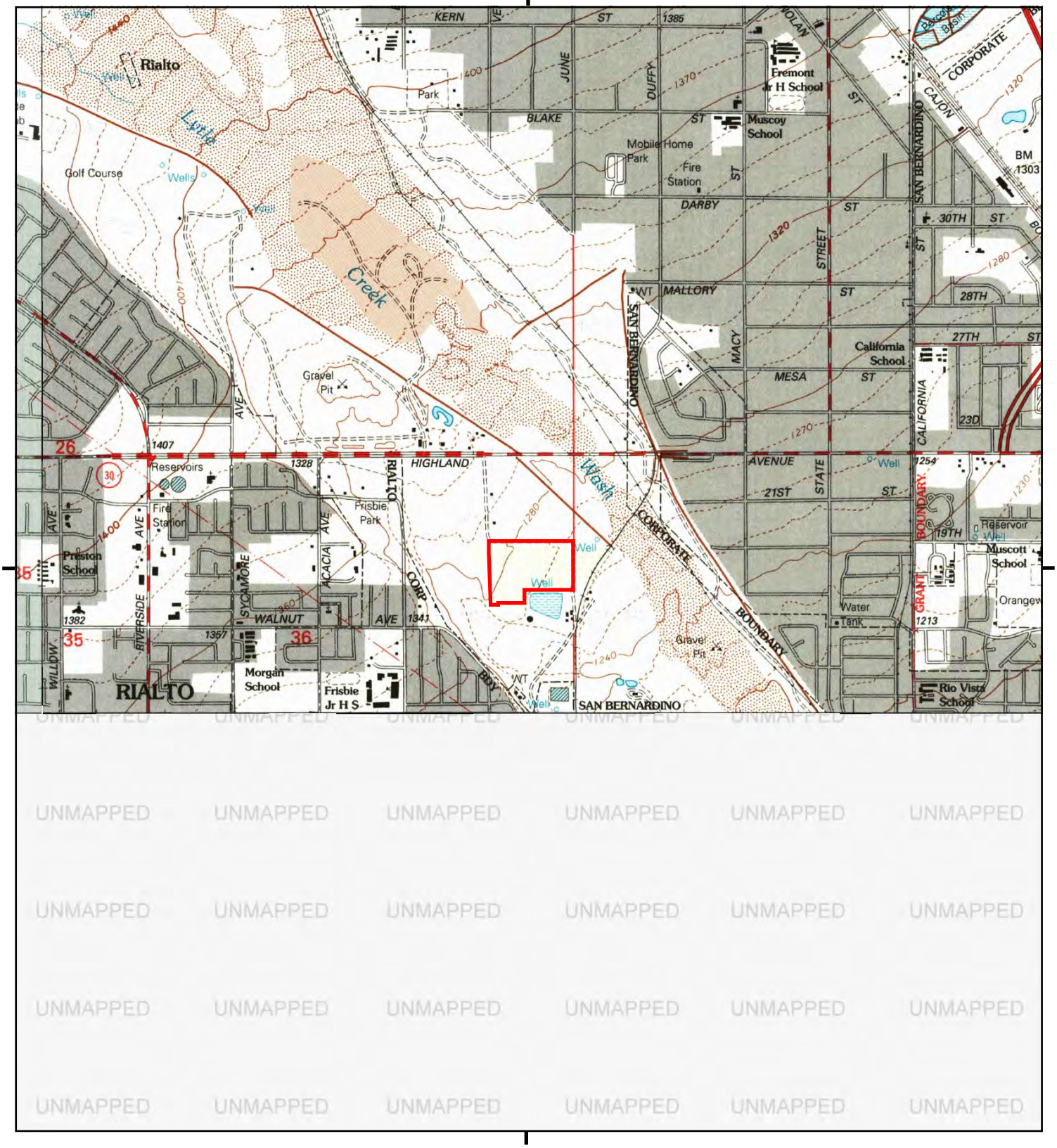
TP, San Bernardino North, 2012, 7.5-minute
SE, San Bernardino South, 2012, 7.5-minute
SW, Fontana, 2012, 7.5-minute
NW, Devore, 2012, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1996



This report includes information from the following map sheet(s).

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W E
SW S SE

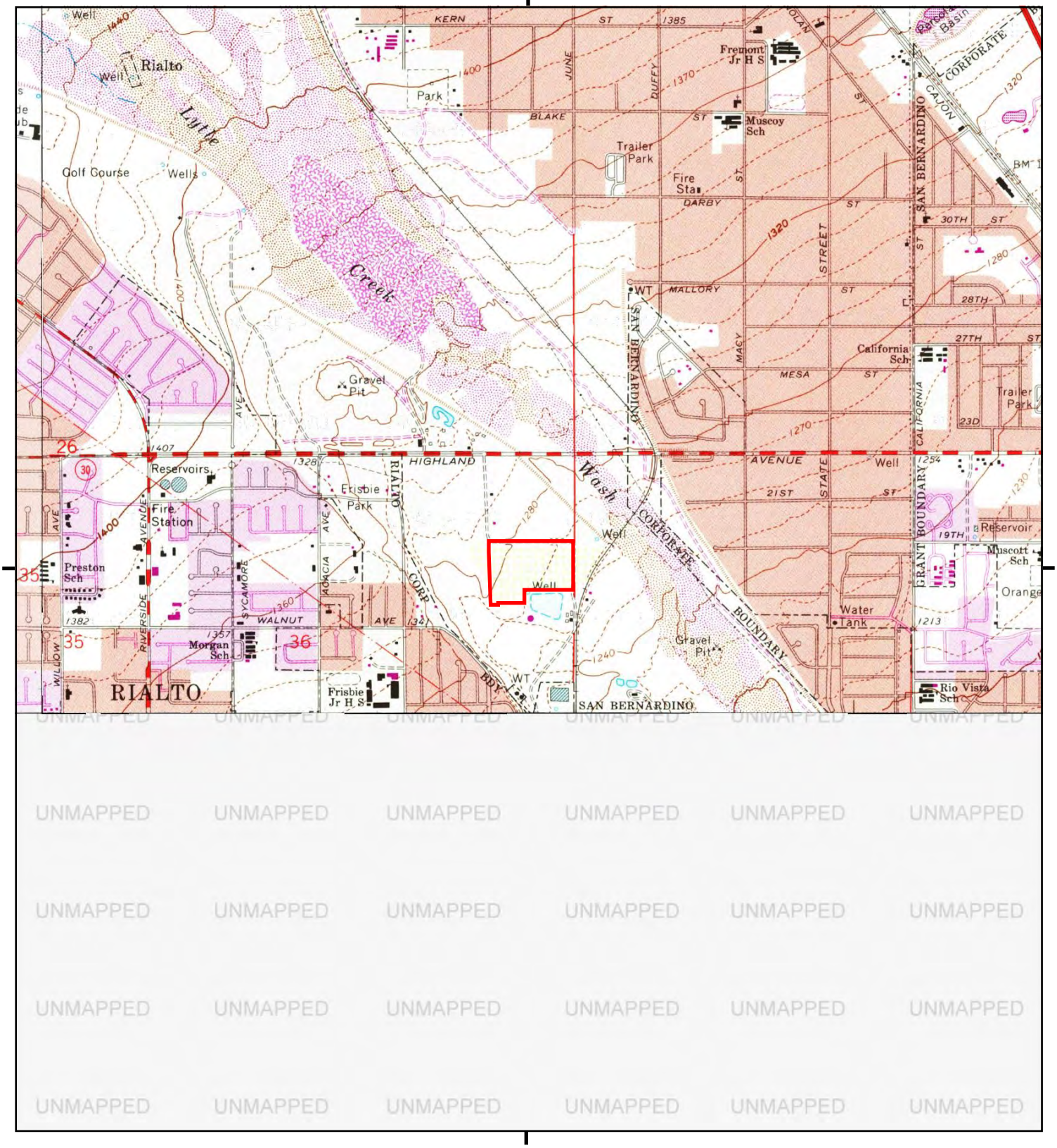
TP, San Bernardino North, 1996, 7.5-minute
NW, Devore, 1996, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1988



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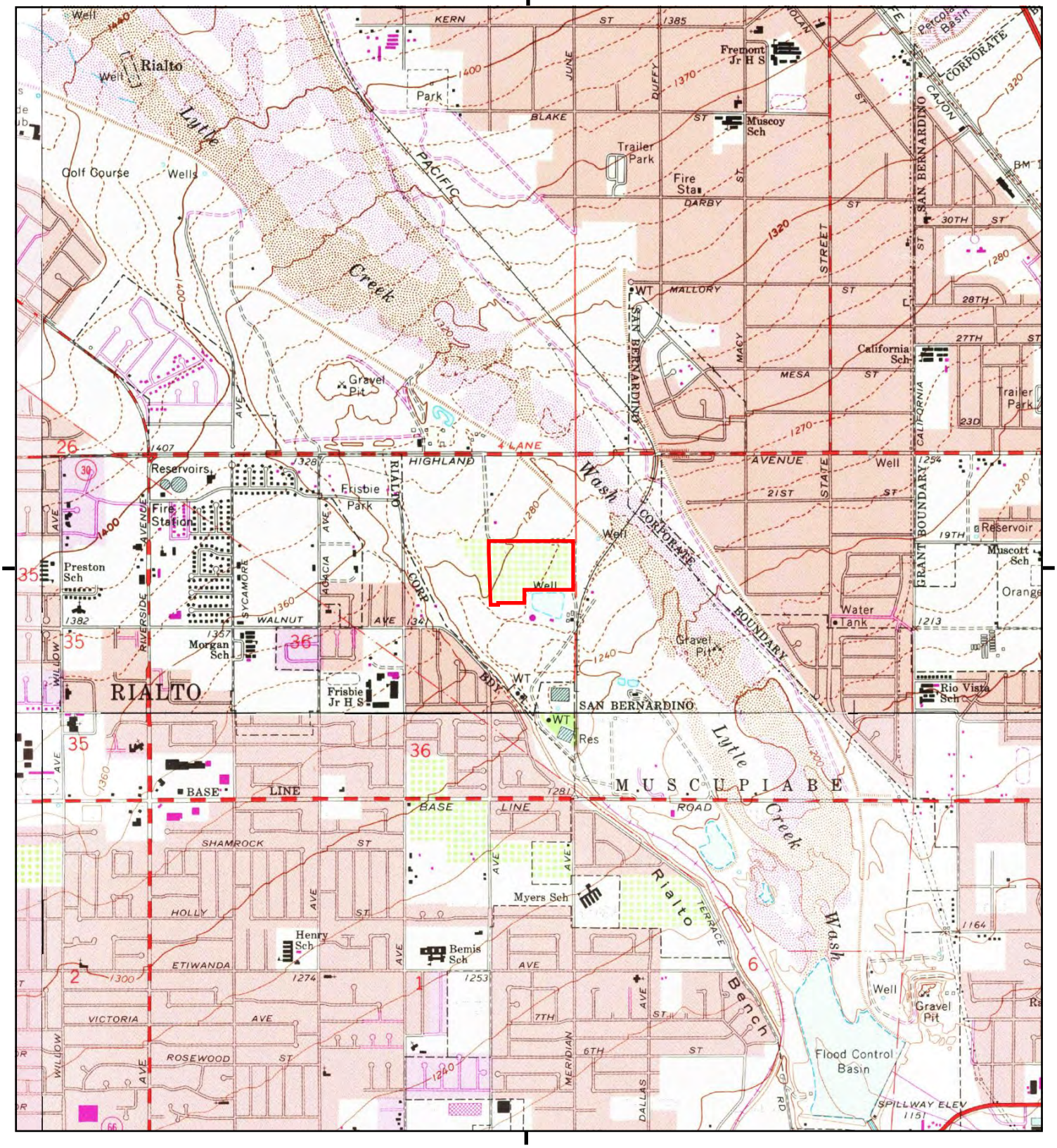
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, San Bernardino North, 1988, 7.5-minute
NW, Devore, 1988, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



This report includes information from the following map sheet(s).

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W E
SW S SE

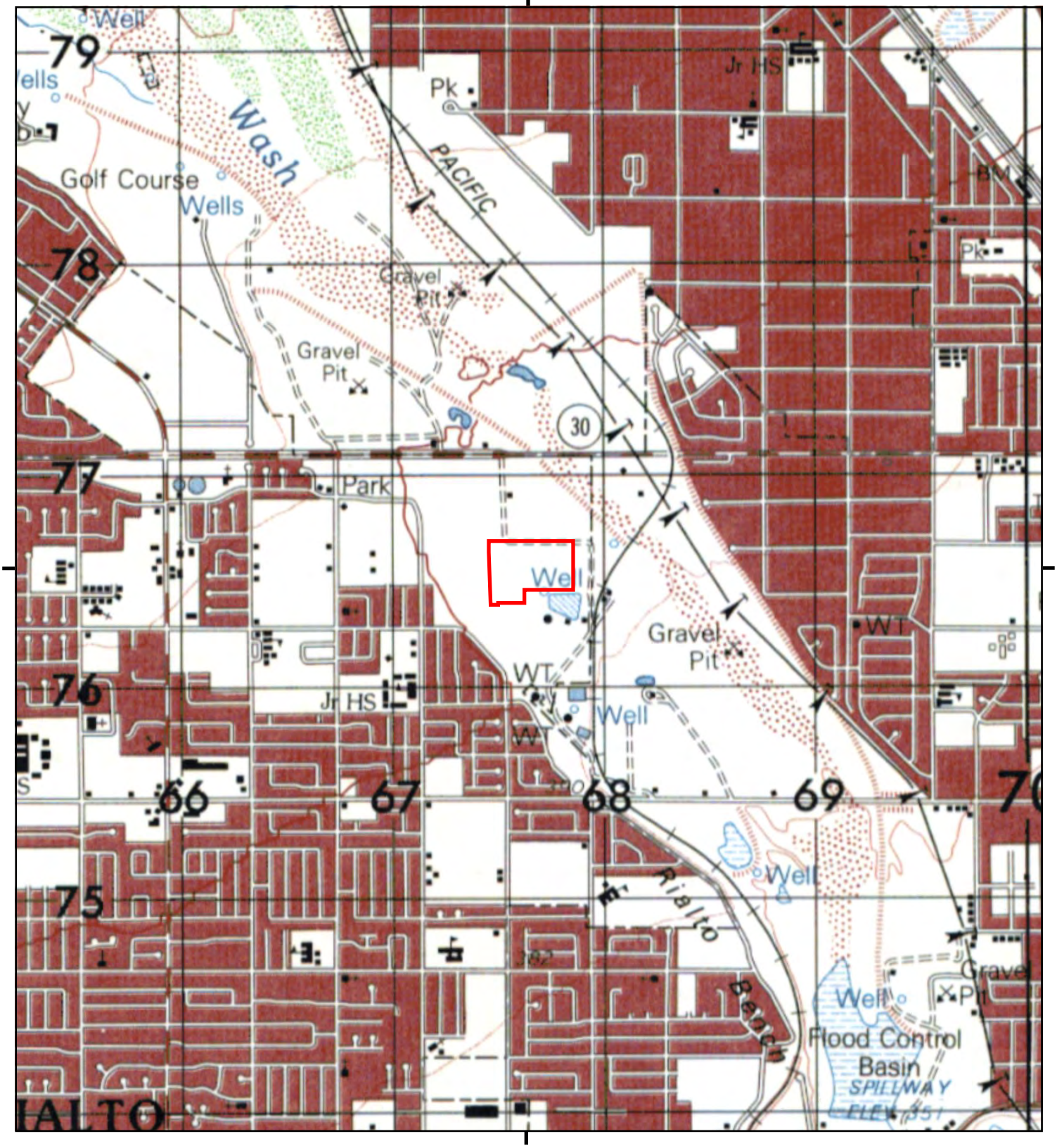
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SE, San Bernardino South, 1980, 7.5-minute
SW, Fontana, 1980, 7.5-minute
NW, Devore, 1980, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1975



This report includes information from the following map sheet(s).

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W E
SW S SE

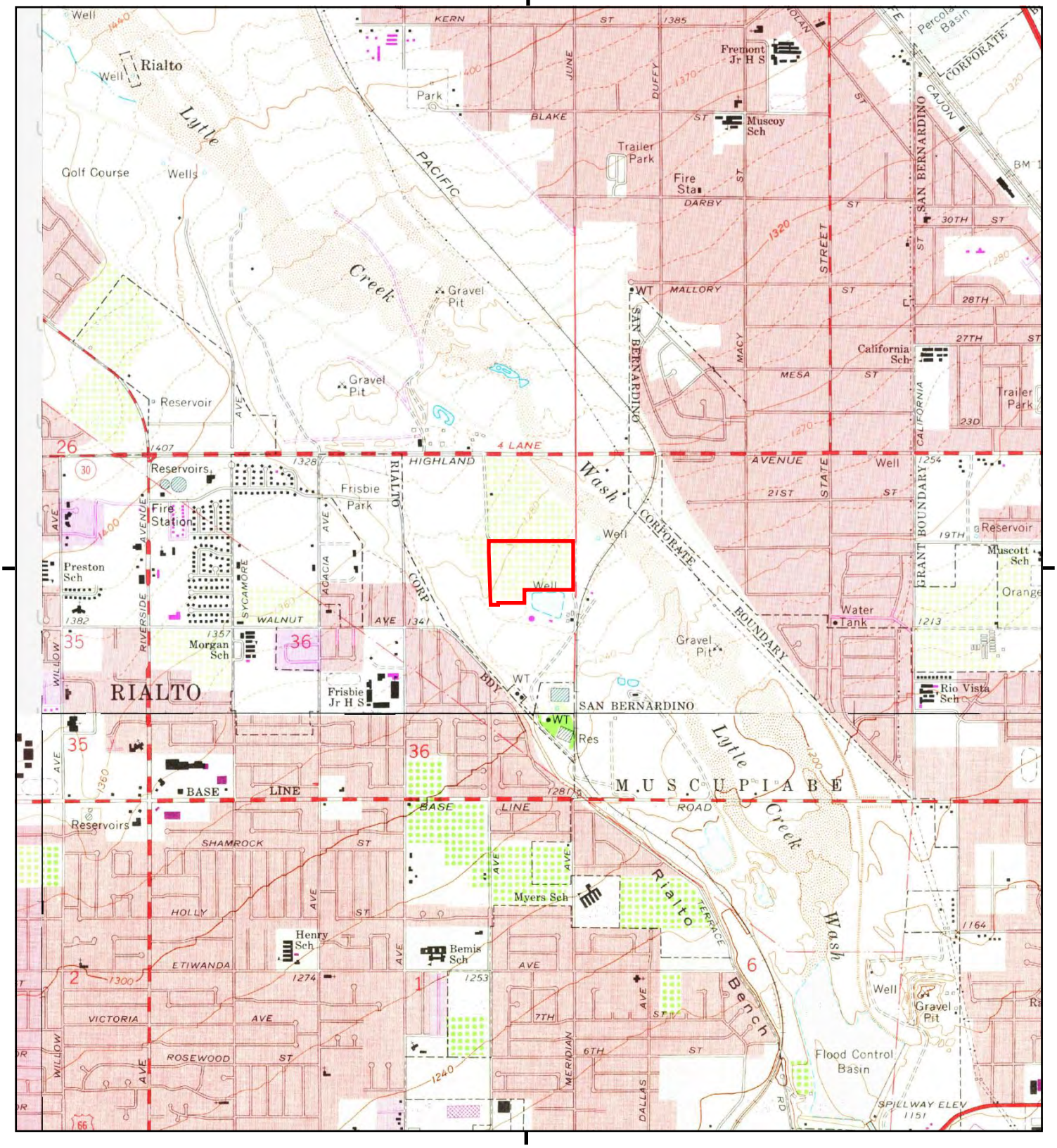
TP, SAN BERNARDINO, 1975, 15-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1973



This report includes information from the following map sheet(s).

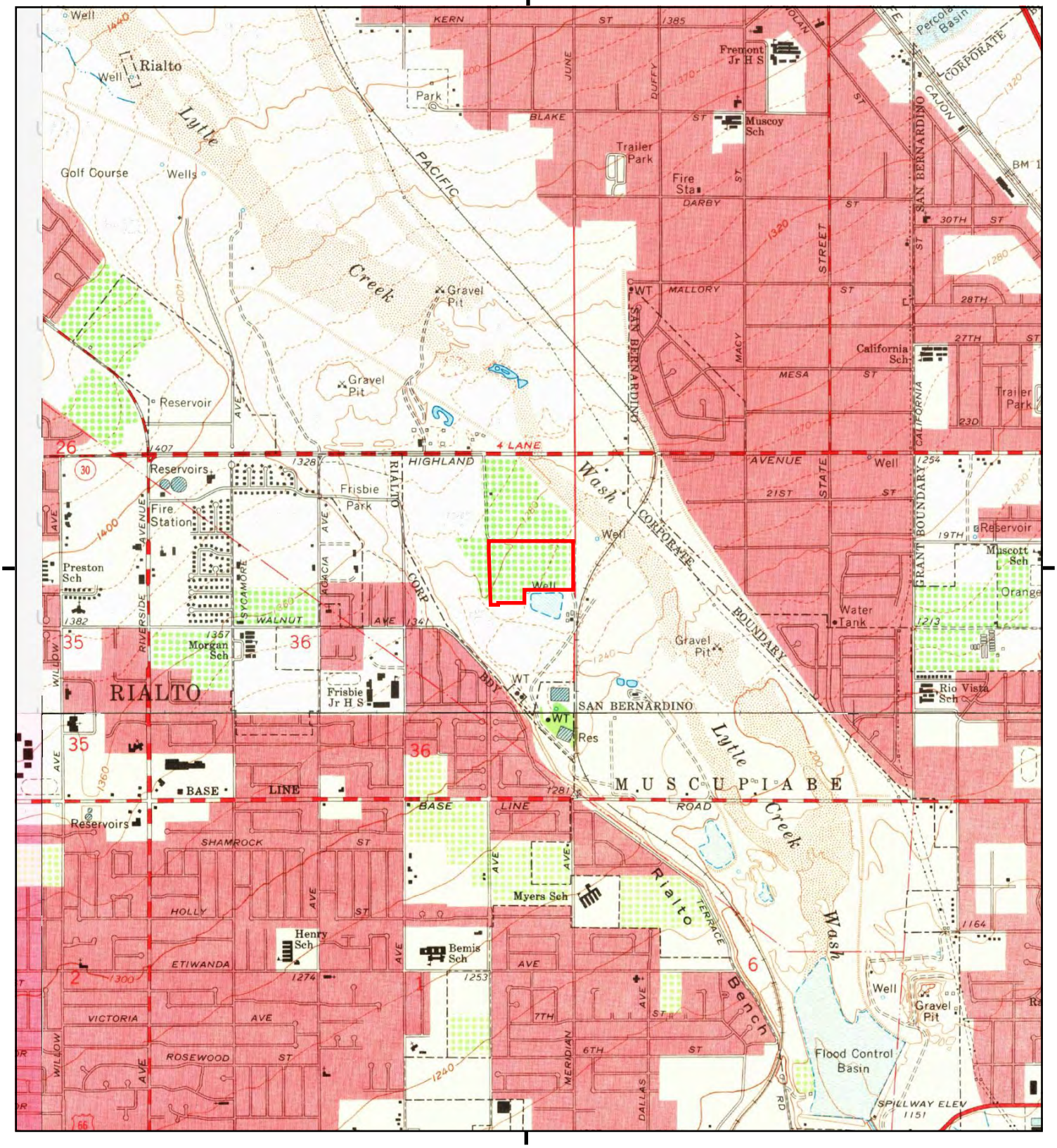
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NW N NE
W E
SW S SE

TP, San Bernardino North, 1973, 7.5-minute
SE, San Bernardino South, 1973, 7.5-minute
SW, Fontana, 1973, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

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W E
SW S SE

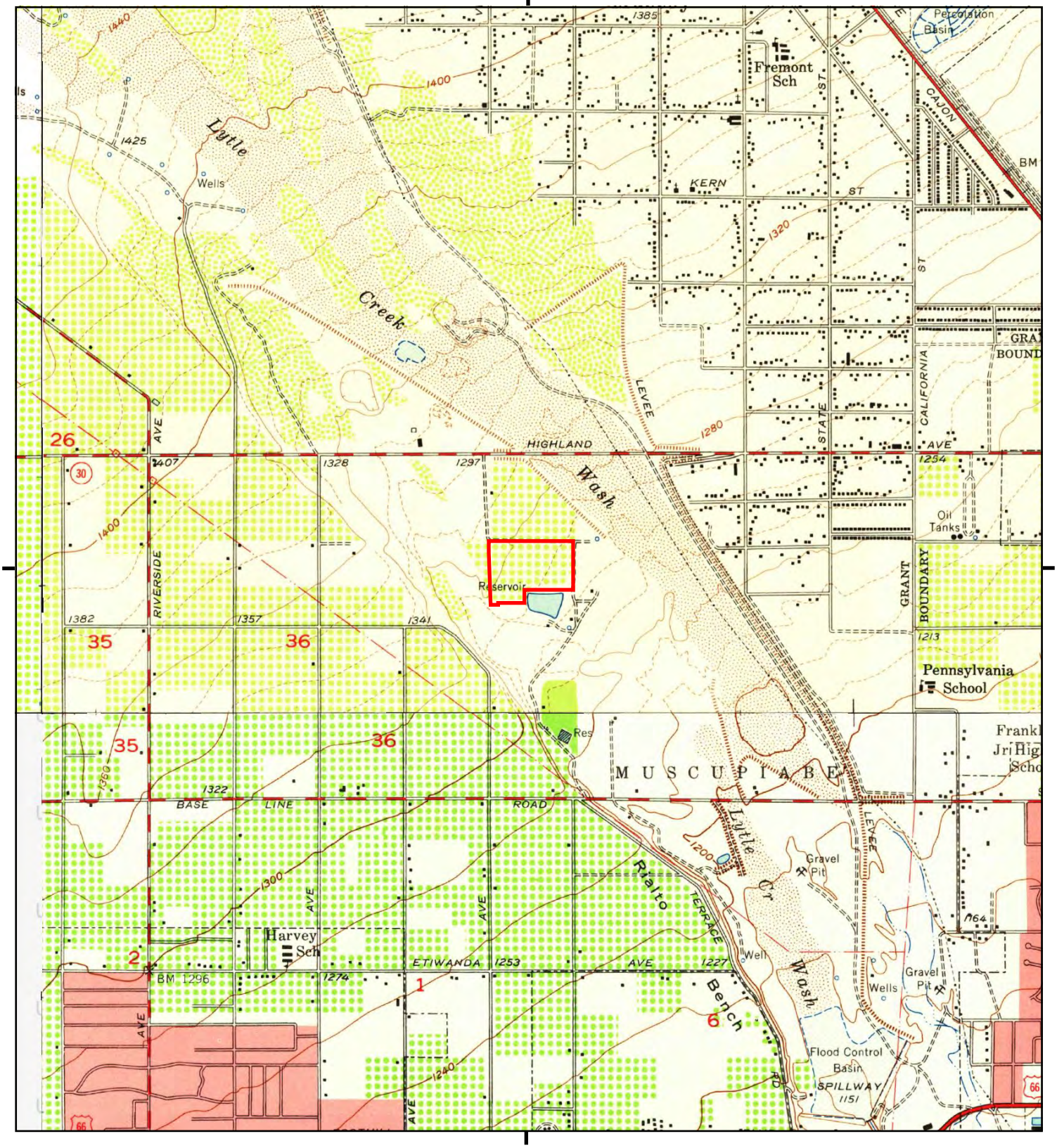
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SE, San Bernardino South, 1967, 7.5-minute
SW, Fontana, 1967, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1954



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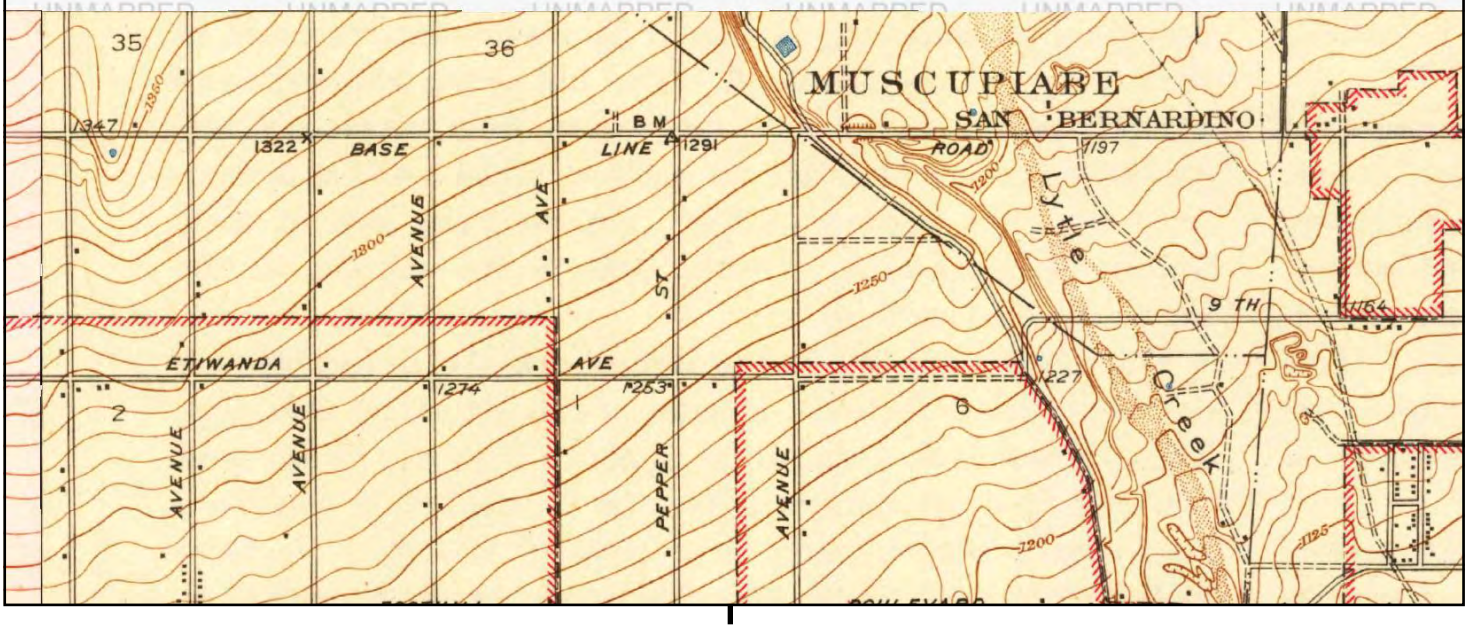
NW N NE
W E
SW S SE

TP, San Bernardino North, 1954, 7.5-minute
SE, San Bernardino South, 1954, 7.5-minute
NW, Devore, 1954, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

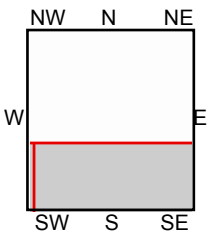
N

UNMAPPED



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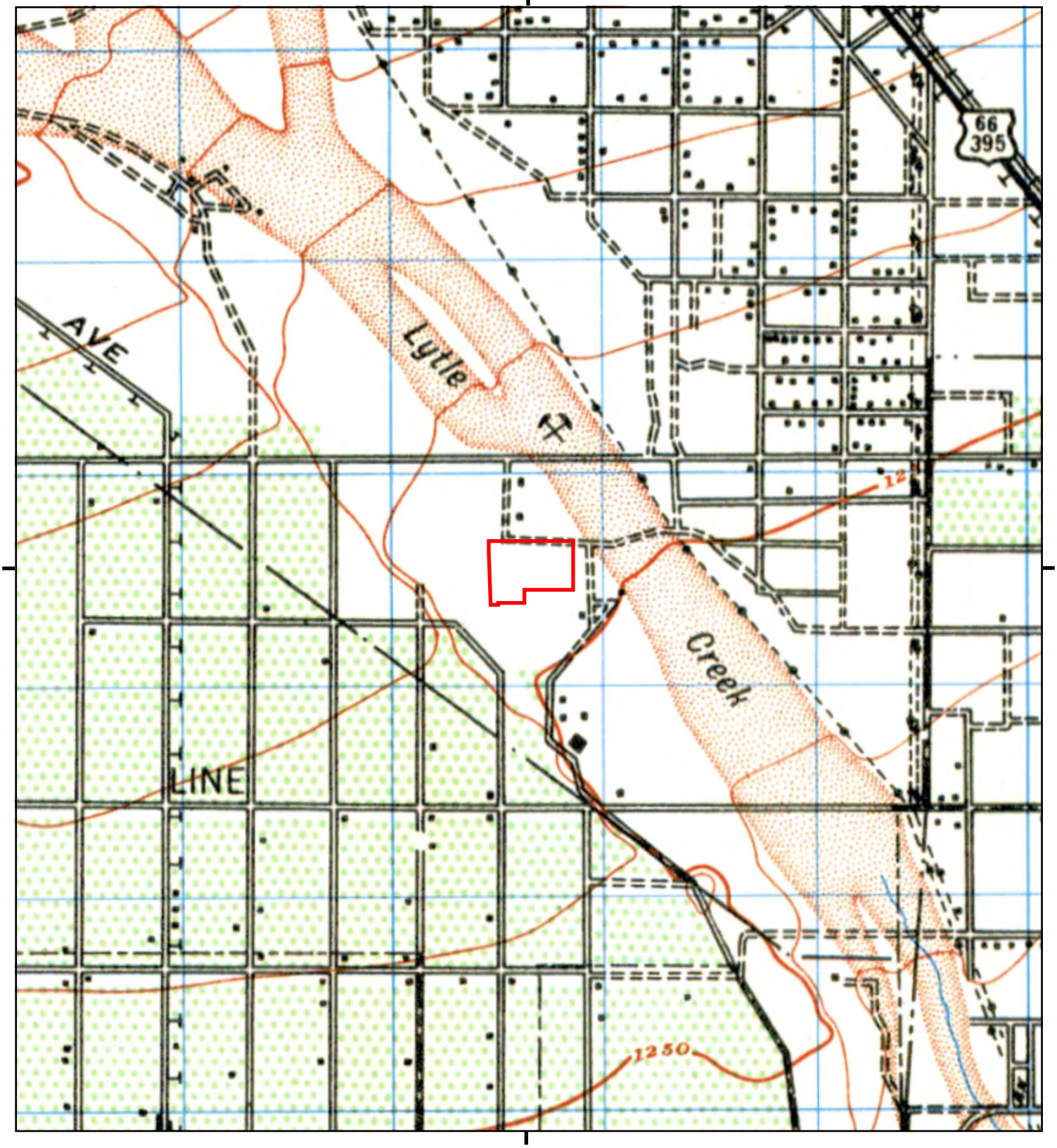
SE, Colton, 1943, 7.5-minute
SW, Fontana, 1943, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1942



This report includes information from the following map sheet(s).

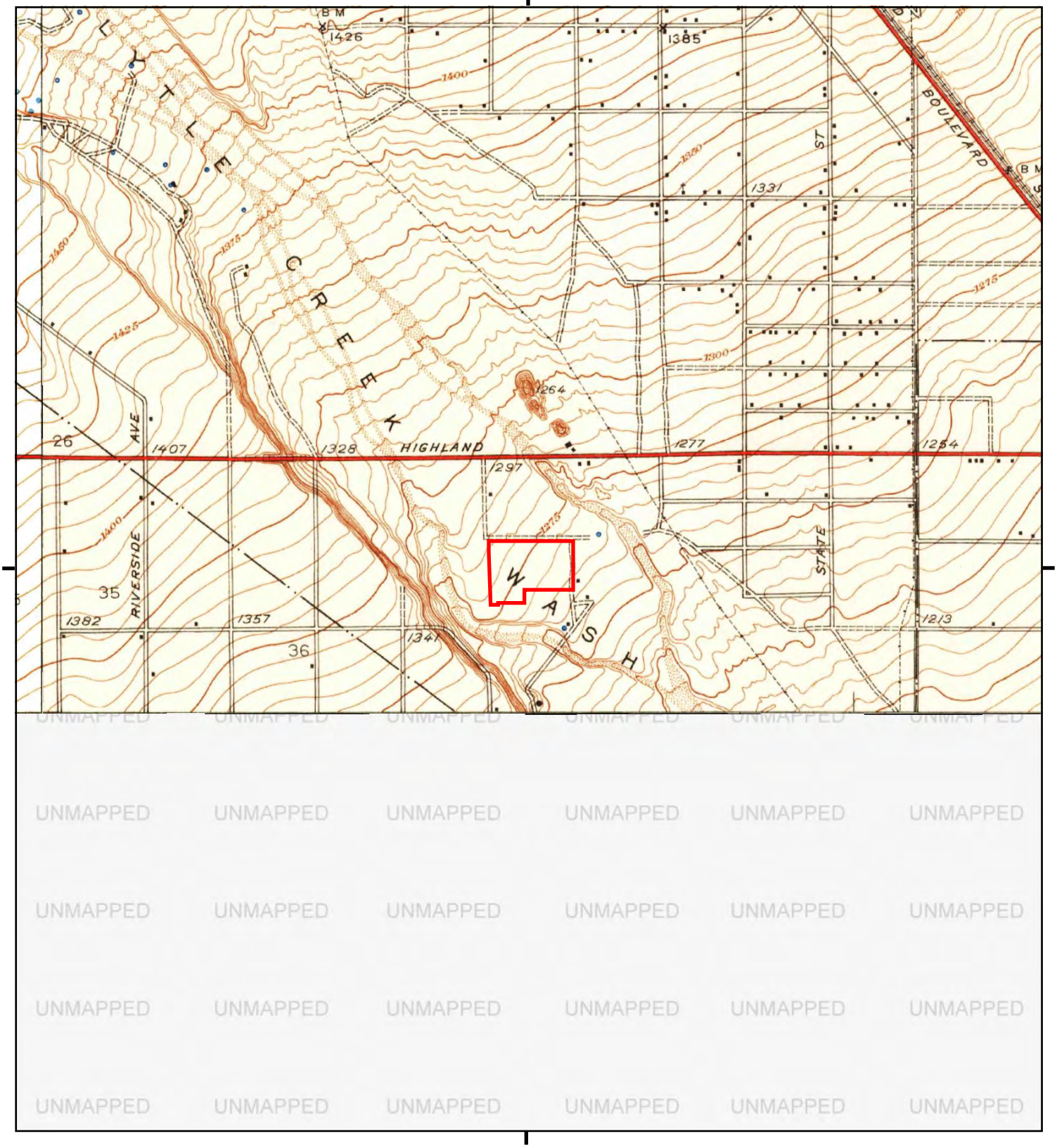
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, SAN BERNARDINO, 1942, 15-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



UNMAPPED

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

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W E
SW S SE

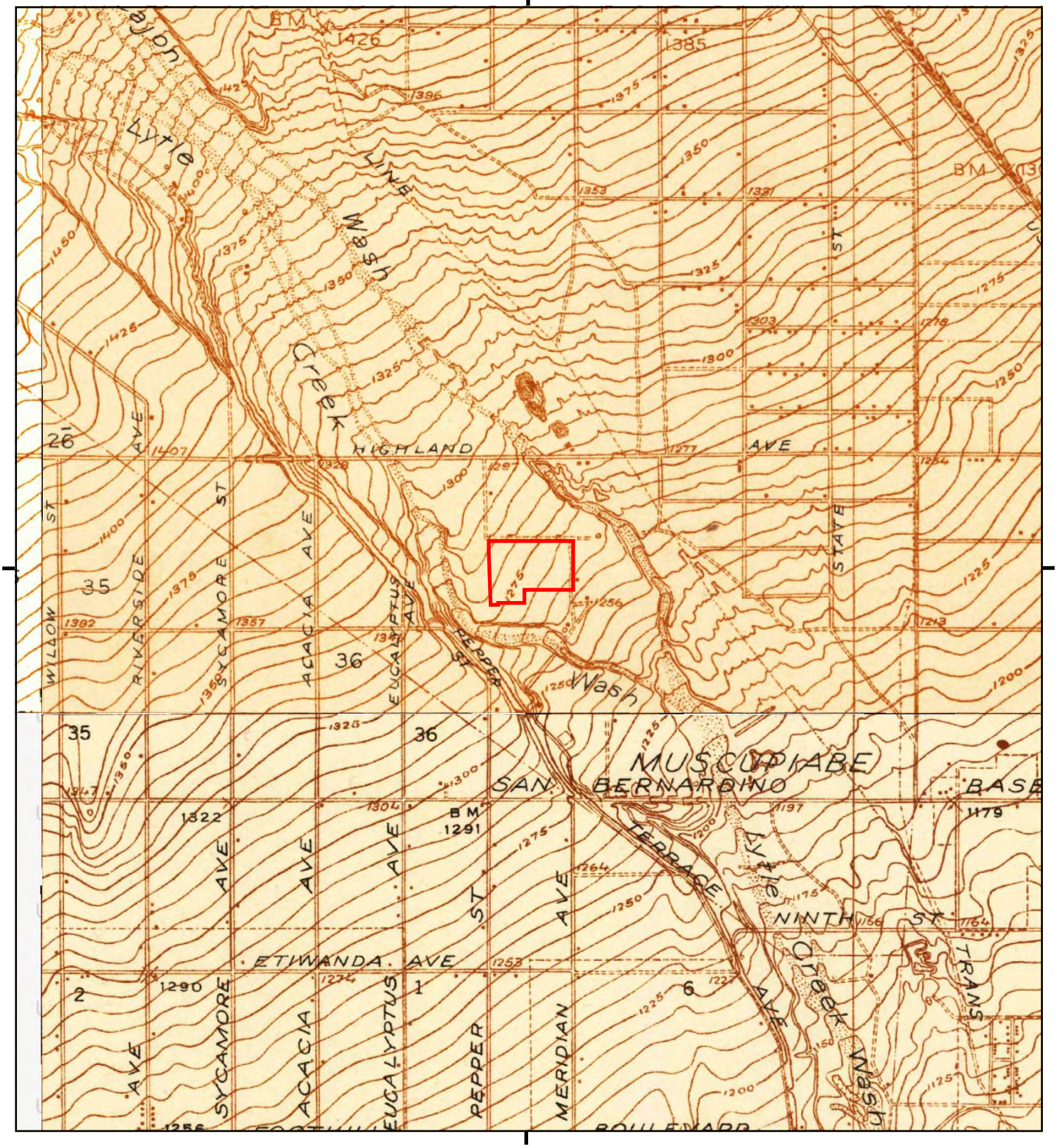
TP, Arrowhead, 1941, 7.5-minute
NW, Devore, 1941, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Historical Topo Map

1936, 1938



This report includes information from the following map sheet(s).

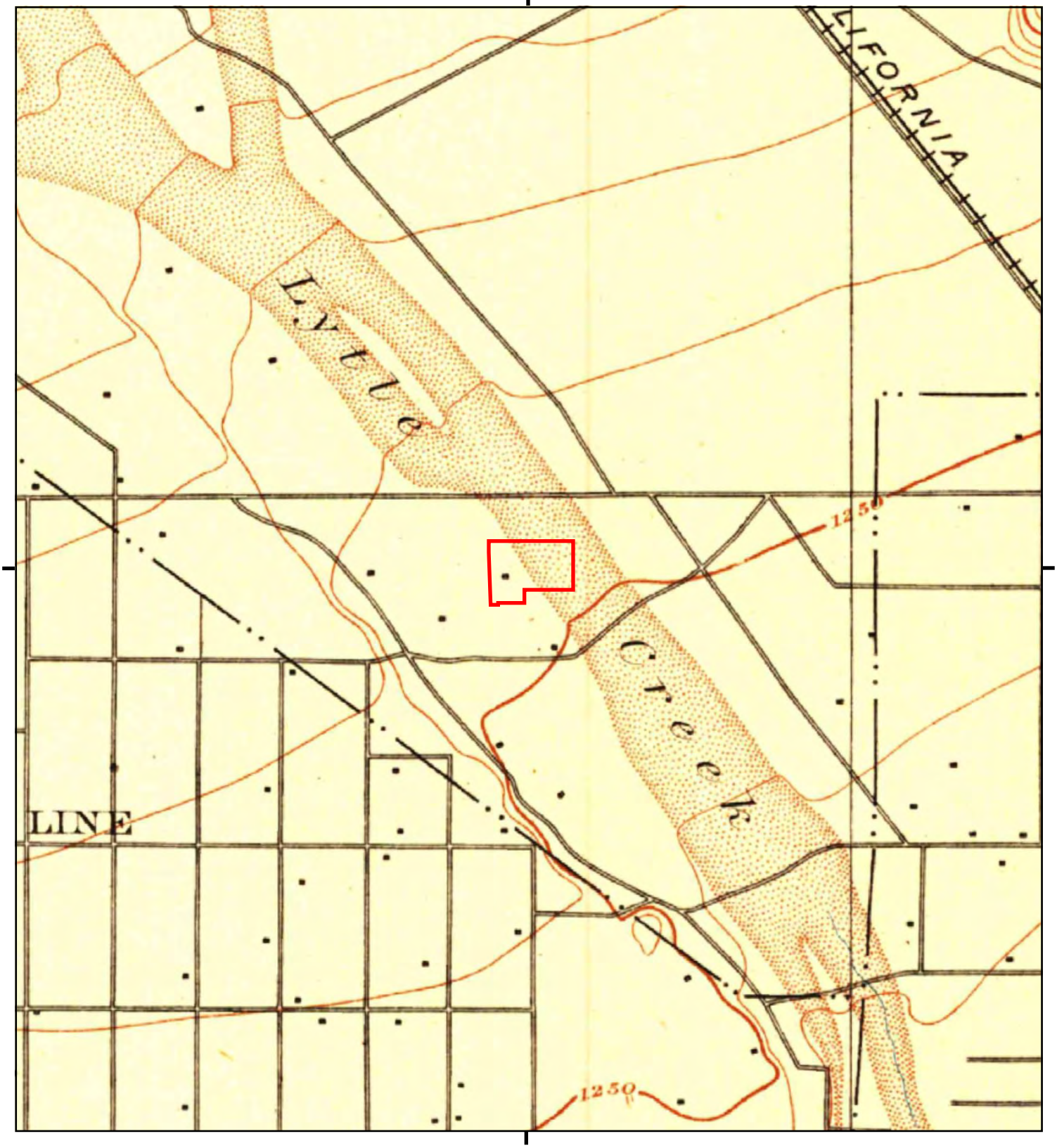
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NW N NE
W E
SW S SE

TP, Arrowhead, 1936, 7.5-minute
SE, Colton, 1938, 7.5-minute
NW, Devore, 1936, 7.5-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, San Bernardino, 1901, 15-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



This report includes information from the following map sheet(s).

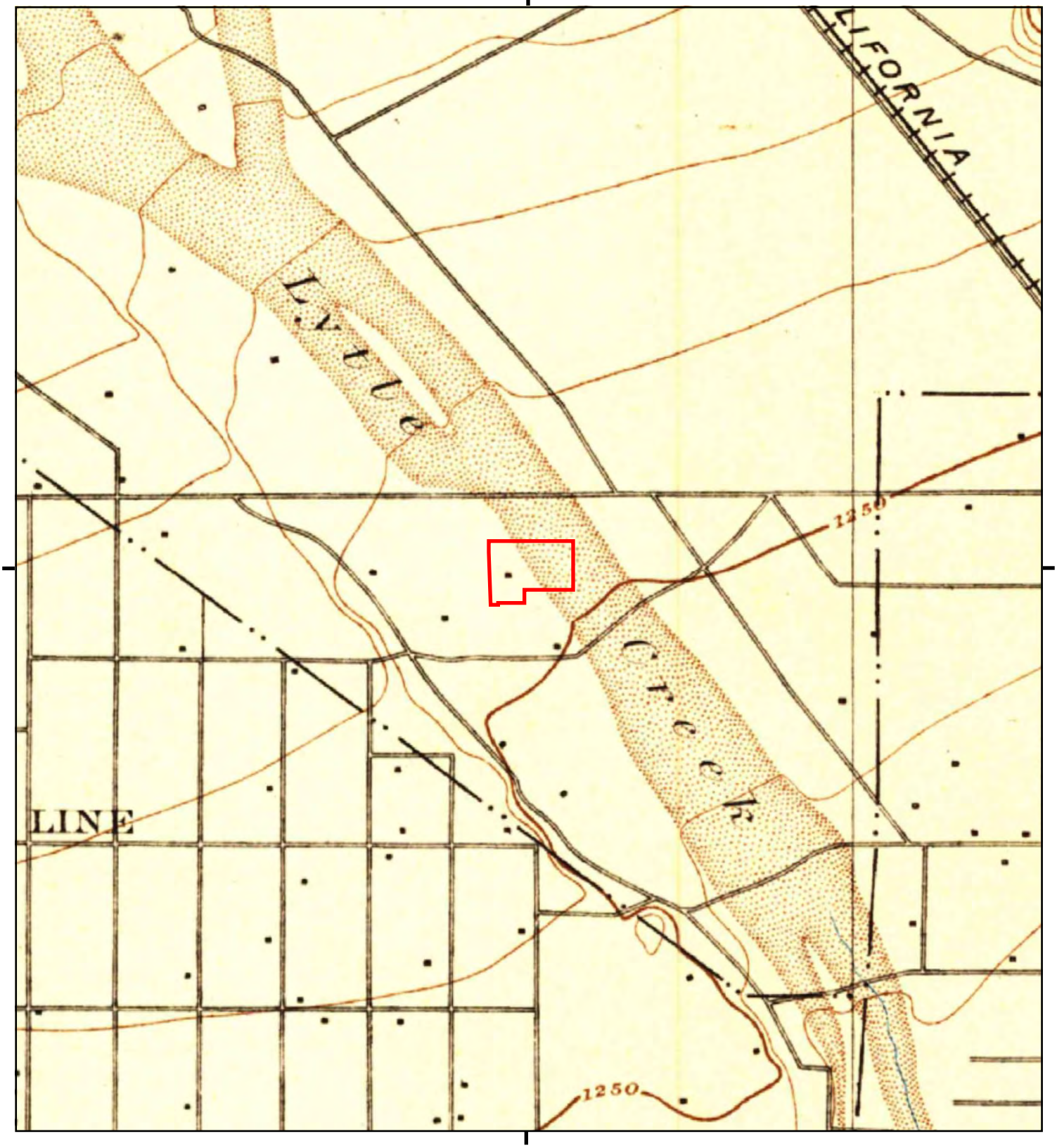
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, San Bernardino, 1898, 15-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, San Bernardino, 1896, 15-minute

SITE NAME: Pepper Industry Parcels
ADDRESS: Pepper Avenue and 210 Freeway
Rialto, CA 92376
CLIENT: SCS Engineers

N

Pepper Industry Parcels

Pepper Avenue and 210 Freeway

Rialto, CA 92376

Inquiry Number: 5633595.8

April 29, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

04/29/19

Site Name:

Pepper Industry Parcels
Pepper Avenue and 210 Freew
Rialto, CA 92376
EDR Inquiry # 5633595.8

Client Name:

SCS Engineers
3900 Kilroy Airport Way
Long Beach, CA 90806
Contact: Kim Braun

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Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1995	1"=500'	Acquisition Date: October 03, 1995	USGS/DOQQ
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1975	1"=500'	Flight Date: August 01, 1975	USGS
1968	1"=500'	Flight Date: September 09, 1968	USDA
1966	1"=500'	Flight Date: April 16, 1966	USGS
1959	1"=500'	Flight Date: October 15, 1959	USDA
1953	1"=500'	Flight Date: January 23, 1953	USDA
1949	1"=500'	Flight Date: May 06, 1949	USDA
1938	1"=500'	Flight Date: June 03, 1938	USDA
1930	1"=500'	Flight Date: March 25, 1930	FAIR

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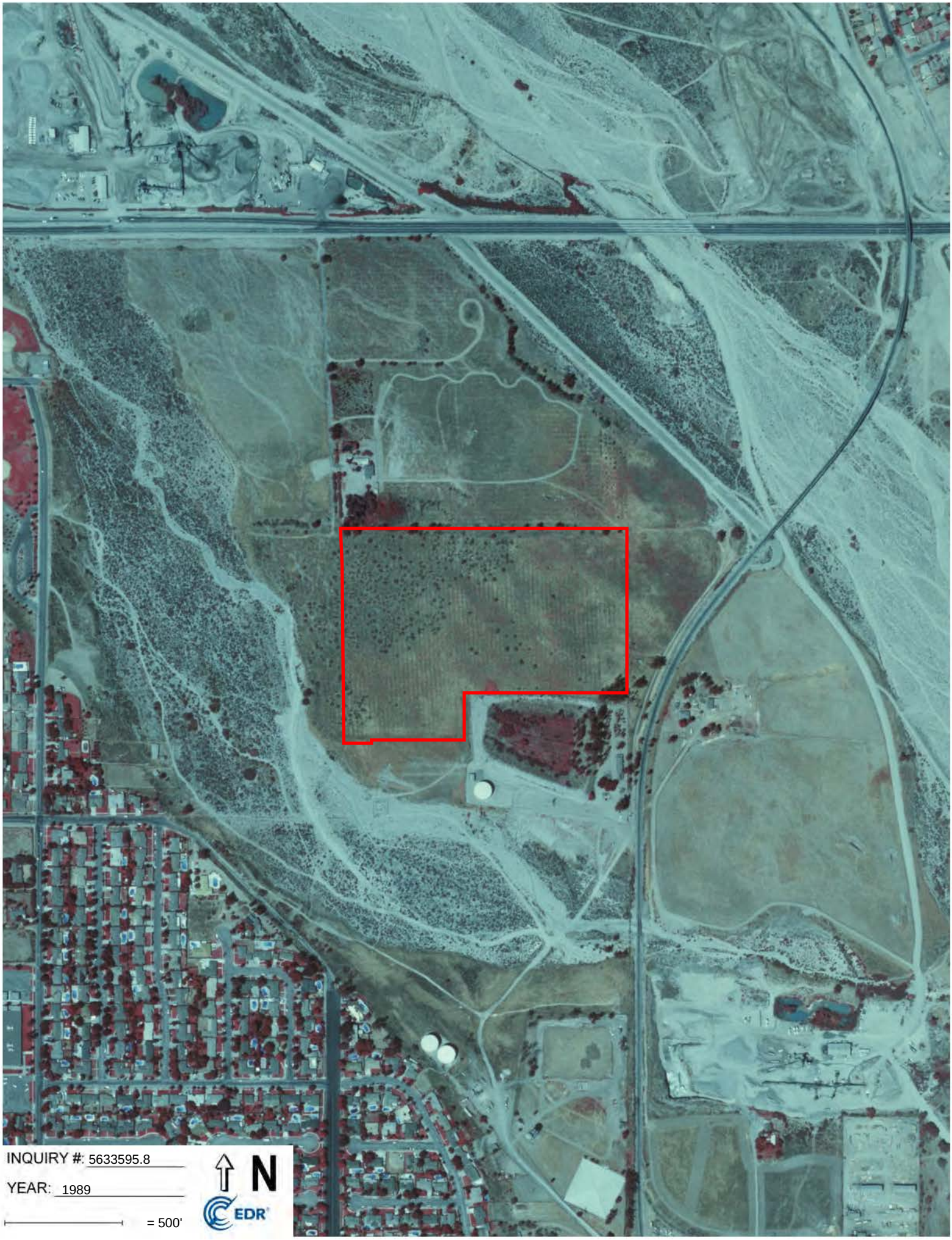

INQUIRY #: 5633595.8
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1995
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1989
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1985
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1975
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1968
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1966
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1959
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1953
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1949
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1938
= 500'
N
EDR


INQUIRY #: 5633595.8
YEAR: 1930
= 500'
N
EDR

Pepper Industry Parcels
Pepper Avenue and 210 Freeway
Rialto, CA 92376

Inquiry Number: 5633595.5
May 01, 2019

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1985	☑	☐	Haines Criss-Cross Directory
1981	☑	☐	Haines Criss-Cross Directory
1975	☑	☐	Haines Criss-Cross Directory
1971	☑	☐	Haines Criss-Cross Directory
1964	☑	☐	Luskey Brothers & Co. Publications
	☑	☐	Lusky Brothers
1942	☐	☐	San Bernardino Directory Company

FINDINGS

TARGET PROPERTY STREET

Pepper Avenue and 210 Freeway
Rialto, CA 92376

Year	*CD Image*	*Source*	
N PEPPER AVE			
2014	pg A2	EDR Digital Archive	
2010	pg A4	EDR Digital Archive	
2005	pg A6	EDR Digital Archive	
2000	pg A8	EDR Digital Archive	
1995	pg A10	EDR Digital Archive	
1992	pg A12	EDR Digital Archive	
1985	pg A13	Haines Criss-Cross Directory	
1985	pg A14	Haines Criss-Cross Directory	
1981	pg A15	Haines Criss-Cross Directory	
1981	pg A16	Haines Criss-Cross Directory	
1975	pg A17	Haines Criss-Cross Directory	
1975	pg A18	Haines Criss-Cross Directory	
1971	pg A19	Haines Criss-Cross Directory	
1971	pg A20	Haines Criss-Cross Directory	
1964	pg A21	Lusky Brothers	
1942	-	San Bernardino Directory Company	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
210 FREEWAY			
2014	-	EDR Digital Archive	Street not listed in Source
2010	-	EDR Digital Archive	Street not listed in Source
2005	-	EDR Digital Archive	Street not listed in Source
2000	-	EDR Digital Archive	Street not listed in Source
1995	-	EDR Digital Archive	Street not listed in Source
1992	-	EDR Digital Archive	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1981	-	Haines Criss-Cross Directory	Street not listed in Source
1975	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source
1964	-	Luskey Brothers & Co. Publications	Street not listed in Source
1942	-	San Bernardino Directory Company	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2014

118	MYRICKS, REGINA M
135	BARAJAS, CINDY
	BLACKWELL, TINA L
	BOTEO, JORGE H
	CALLISON, JANIE A
	CASTANEDA, HUGO
	CASTILLO, GONZALO
	CEBALLO, NANCY
	CHAVEZ, VICTORIANO
	CLARK, LOUIS B
	DIAZ, ESMERALDA
	EVANS, MORLEY
	FALGREN, RICHARD J
	GARCIA, MARCELO C
	GARIBO, JOSE L
	GASPAR, ANA
	GONZALES, EDUARDO
	GUEVARA, VICTOR M
	HARRIS, JUDITA M
	HERNANDEZ, OFELIA
	KNOWLES, KATHY R
	LADUKE, PHILLIP A
	MANHART, RICHARD M
	MATA, MAURILIO C
	MCINTIRE, MAUREEN P
	MERCADO, CRISTINA
	MONTOYA, DAVID
	OLVERA, JUANA G
	PEDROZA, MARIA E
	PEPPER, VILLA
	PRECIE, ANTHONY A
	RAMIREZ, ISIDRO
	ROZINKA, EMILY G
	SANCHEZ, JULISSA
	SCHRUENDER, KENNETH W
	SUTTON, ELLEN L
	TAPIA, JESUS E
	VELASCO, JESUS C
	WARNER, JANICE A
304	KNOWLEDGE UNIVERSE EDUCATN LLC
	VOLUNTEERS OF AMERICA
605	CRUZ, MIGUEL V
619	LOPEZ, SANDRA D
635	FRIAS, ANGEL F
649	GONZALEZ, ALFREDO U
665	OCCUPANT UNKNOWN,
679	AVILA, HERIBERTO
685	MANZANO, JOSE D
695	RODRIGUEZ, JUAN
705	ARMENDARIZ, ESPERANZA V

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2014 (Cont'd)

715	JASSO, CARMEN
727	SPIKES, EDNA D
737	JONES, ROSETTA
749	POLLARD, ERNEST P
761	FELIX, FERNANDO
773	BEAUDOIN, JUDY
783	GARCIA, BOBBIE
795	ALMAS CLEANING SERVICES
	RIVERA, LUIS M
797	GODINA, ROSALINA F
825	PALMERIN, MARIBEL
831	HERNANDEZ, DAVID
841	MARISCAL, MARIO J
849	DOZAL, JULIE
859	AMAZING CABINETS
	MORENO, VICTOR M
867	GARCIA, ANTONIO
877	OCCUPANT UNKNOWN,
890	BIRDSALL, ROGER L
908	COOK, PATRICIA A
930	LOPEZ JOSEPH M
	LOPEZ, JOSEPH M
1040	MARIA CLEANING
	ZEPEDA, ALEJANDRO
1050	OCCUPANT UNKNOWN,
1445	MARTINEZ OSCAR
	MARTINEZ, OSCAR
	WEST INTERMODAL TRANSPORT INC
1475	BLISS, THOMAS C

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2010

118	MYRICKS, REGINA M
135	AVERILL, BARBARA A
	BEALER, CAROL
	BLACKWELL, TINA L
	BLANKENSHIP, LETA V
	BOTEO, JORGE H
	CALLISON, JANIE A
	CASTANEDA, DORA
	CASTILLO, GONZALO
	CHAVEZ, VICTORIANO
	CLARK, SYLVESTER
	COLLINS, ALAN
	CROWTHER, EUGENE D
	DECOLA, LOUIS S
	DOTY, TINA M
	EVANS, M
	GASPAR, ANA
	GOMEZ, J S
	GUEVARA, VICTOR M
	HARRIS, JUDITA M
	HEMM, ANTOINETTE
	KNOWLES, KATHY R
	LADUKE, RUTH A
	LOPEZ, HUGO
	MANHART, RICHARD M
	MARTIN, BRIAN
	MATA, MAURILIO C
	MCINTIRE, LLOYD M
	MERCADO, CRISTINA
	MONTOYA, DAVID
	OLVERA, JUANA G
	PAREDES, SUSANA
	PEPPER, VILLA
	RAMIREZ, LORENA L
	RODRIGUEZ, REYNA
	SABO, CHUCK E
	SUTTON, ELLEN L
	TAPIA, JESUS
	TOVAR, EFREN
	VELASCO, JESUS C
	VILLA, PEPPER
	WARNER, JANICE A
	WINSTEAD, GREGORY
304	KNOWLEDGE LEARNING CORPORATION
	VOLUNTEERS OF AMERICA
605	DETOLEDO, ANTONIA V
619	TRESA, MARIA
635	PADILLA, ALEX
649	VASQUEZ, CESAR A
665	DIAZ, ARNOLDO

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2010 (Cont'd)

695	RODRIGUEZ, JUAN
705	ARMENDARIZ, JOANNE P
715	LOPEZ, GLORIA M
727	SPIKES, EDNA D
737	JONES, ROSETTA
749	POLLARD, ERNEST P
773	BEAUDOIN, M
783	GARCIA, BOBBIE
795	ALMAS CLEANING SERVICES
	ARELLANO, HECTOR
815	DANIELS, DELORES D
825	PALMERIN, DANIEL
831	HERNANDEZ, DAVID
841	ZUNIGA, ROSITA
849	NUNEZ, FRANCISCO
859	MORENO, VICTOR M
867	ESPINOZA, STEVE J
877	SANCHEZ, MARGARITO R
890	BIRDSALL, ROGER L
908	RONELLE, JERMAINE
930	LOPEZ JOSEPH M
	LOPEZ, JOSEPH M
1040	FARIAS, RAUL
	MARIA CLEANING
1050	OCCUPANT UNKNOWN,
1445	OCCUPANT UNKNOWN,
1475	BLISS, THOMAS C

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2005

118	MYRICKS, REGINA M
135	ACKERMAN, PORTER B
	AVERILL, BARBARA A
	BEALER, CAROL
	BLACKWELL, TINA
	BLANKENSHIP, LETA V
	CALLISON, JANIE A
	CHAVEZ, VICTORIANO
	CRESPIN, LOUIS
	CROWTHER, EUGENE
	DAVIS, ELLEN
	DECOLA, LOUIS S
	ESTRADA, VERONICA
	EVANS, MORLEY
	FERNANDEZ, ANA J
	FORD, SYLVESTER
	GREEN, CLENTONIA R
	GREENWOOD, LOUISE
	HANTSBERGER, ROBERT J
	HARRIS, JUDITA M
	HEMM, ANTOINETTE
	HERNANDEZ, RUDY
	JIMENEZ, JOSE M
	KNIGHT, S C
	LADUKE, RUTH
	LEWIS, HENRY L
	MAUL, MICHAEL
	MCINTIRE, MAUREEN
	MONTEZ, MADELINE
	MORRIS, SHONTINA
	PEPPER VILLA MOBILE HOME PARK
	RODRIGUEZ, JUANA I
	SABO, CHUCK E
	SULLIVAN, NICHOLAS
	TOVAR, EFREN
	VELASCO, JESUS
	WARNER, JANICE A
	ZELLE, SHARON J
300	SOUTHERN CALIFORNIA EDISON CO
304	KNOWLEDGE LEARNING CORPORATION
605	TOLEDO, ANTONIA
619	PREZA, JUANA P
635	OCCUPANT UNKNOWN,
649	GUTIERREZ, ALEJANDRA
665	DIAZ, ARNOLDO
679	TREECE, RICHARD D
695	SOTELO, CRISOFORO
705	OCCUPANT UNKNOWN,
715	OCCUPANT UNKNOWN,
727	SPIKES, EDNA D

N PEPPER AVE 2005 (Cont'd)

737	JONES, ROSETTA
749	POLLARD, ERNEST P
761	BRAVO, SANTOS A
773	BEAUDOIN, M
795	ALMAS CLEANING SERVICES
	DIAZ, ERIKA
	NANNIES ETC AGENCY
797	TALAMANTES, JESUS M
815	OSORIO, JOSE P
825	PALMERIN, DANIEL
831	ROBERSON CARPET CLEANING SERVI
	ROMERO, JUALIAN
841	MARISCAL, CAMILA A
849	NUNEZ, MARTHA
859	MORENO, VICTOR
867	OCCUPANT UNKNOWN,
877	MADRIGAL, JUAN
890	BIRDSALL, ROGER L
908	COOK, STELLA L
930	LOPEZ JOSEPH M
1040	GUZMAN, FELIPE
1050	OCCUPANT UNKNOWN,
1445	TOWNSEND, MARY R
1475	BLISS, THOMAS C

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2000

118	ELBIALI, MOHAMED A
135	AVERILL, GEE
	BATSON, KENNEDY
	DECOLA, LEWIS
	DICKSON, R V
	EVANS, MORLEY
	FORD, S
	GREENWOOD, LOUISE
	GUERRO, JUANA O
	JOHANSEN, BRENDA L
	LIRA, RAFAEL
	MECCA, AMANDA L
	MORRISON, PAT
	PEPPER VILLA MOBILE HOME PARK
	PERRY, LOIS J
	PHILLIPS, WESLEY
	PIETERSE, F
	POPE, JAMES R
	SCHRUENDER, DANIEL B
	THOMAS, M C
	VOOGT, TRACEY
	WHITE, DEBORAH L
	WOOD, CHERYL
300	SOUTHERN CALIFORNIA EDISON CO
304	CHILDRENS DSCVERY CTRS OF AMER
695	SOTELLO, ALFONSO
715	OCCUPANT UNKNOWN,
727	HAMMOND, DEXTER
737	JONES, ROSETTA
749	POLLARD, ERNEST P
761	SANTOS, BRAVO
773	BEAUDOIN, RITA P
783	HILL, NICOLE
795	NANNIES ETC AGENCY
	OCCUPANT UNKNOWN,
797	ALEMAN, SEARAY
815	OSORIO, JOSE
825	PALMERIN, MARIBEL
831	MARTINEZ, PABLO
841	MARISCAL, MARISA
849	TUCKER, FRANK
859	MORENO, VICTOR
867	OCCUPANT UNKNOWN,
877	FLEMMING, DEBI
887	OCCUPANT UNKNOWN,
890	BIRDSALL ROGER
	BIRDSALL, ROGER L
908	COOK, STELLA
930	MARTIN, NANCY S
1040	ELLIOTT, PAT

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 2000 (Cont'd)

1475 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 1995

118	HERKELRATH LARRY R
135	AVERILL, CHARLES
	BLANKENSHIP, STEVE
	BRUCE, M
	CLARKSON, L
	EHLERS, M E
	EVANS, MORLEY
	FORD, S
	GABAUER, NATOMA J
	GREENWOOD, LOUISE
	HANTSBERGER, ROBERT J
	LEDOUX, ARMEND
	MORRIS, FRED A
	MYERS, RICHARD G
	OSTERHOLD, CHARLES P
	PEPPER VILLA MOBILE HOME PARK
	PERRY, L J
	PHILLIPS, WESLEY
	POPE, JAMES
	SCHRUENDER, KENNETH
	SMITH, KRISTI
	SULLIVAN, S S
	TENNY, T
	THOMAS, JERRY
	THOMPSON, J
	TOLEDO, AMADO F
	WOOD, JACK L
270	BERMUDEZ, RAUL M
300	SOUTHERN CALIFORNIA EDISON CO
304	ADV EDUC - PPPRCREEK PRESCHOOL
	CHILDRENS DSCVERY CTRS OF AMER
619	OCCUPANT UNKNOWNN
649	MARTINEZ, ROBERT M
665	OCCUPANT UNKNOWNN
695	DWOSKIN, HELEN M
705	ARMENDARIZ, MICAELA
715	JASSO, JUAN J
727	HAMMOND, DEXTER
737	ANDERSON, CHANTAL L
749	POLLARD, ERNEST P
761	OCCUPANT UNKNOWNN
783	RUSSO, JOE J
797	AL, MUBDI S
805	PEREZ, SOLOMON
815	OSORIO, JOSE
825	OCCUPANT UNKNOWNN
841	MARISCAL, ANTONIO H
849	OCCUPANT UNKNOWNN
859	OCCUPANT UNKNOWNN
867	OCCUPANT UNKNOWNN

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 1995 (Cont'd)

877	OCCUPANT UNKNOWNN
890	OCCUPANT UNKNOWNN
908	COOK, STELLA
930	MARTIN, NANCY S
1050	OCCUPANT UNKNOWNN
1475	BLISS, MARY

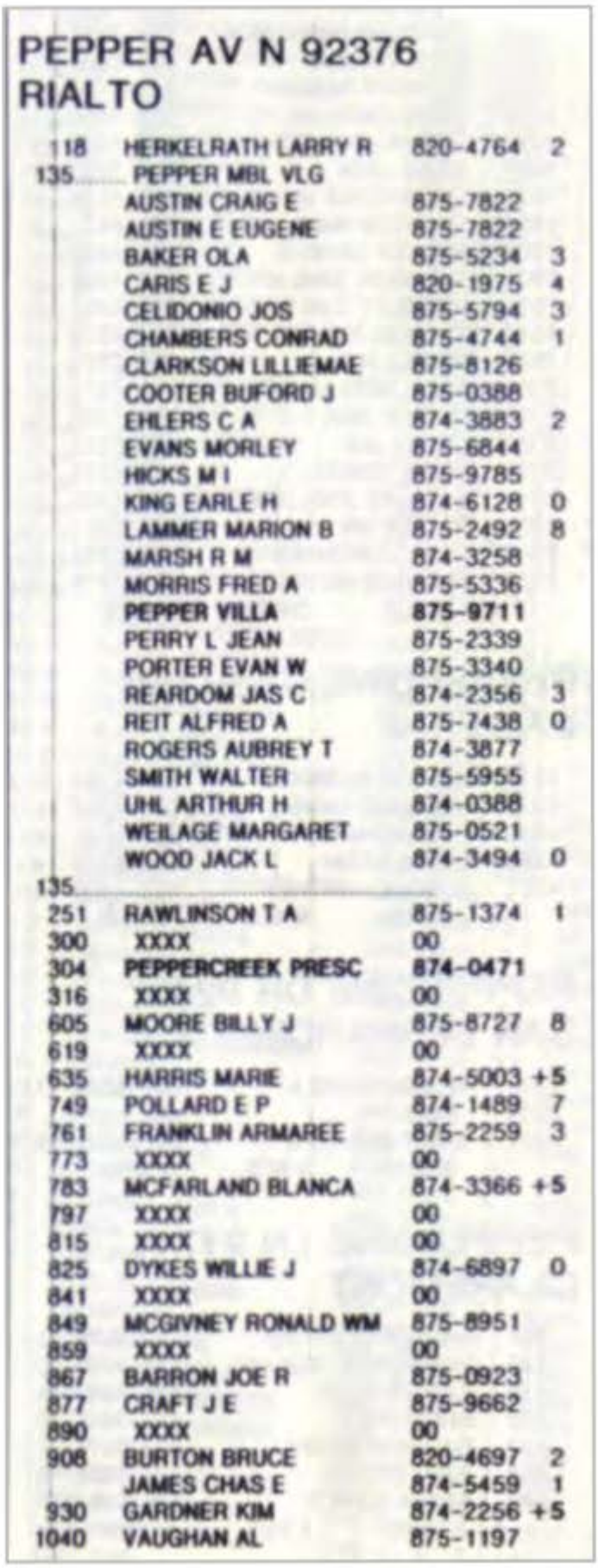
Target Street	Cross Street	Source
✓	-	EDR Digital Archive

N PEPPER AVE 1992

118	HERKELRATH LARRY R
135	CLARKSON, L
	EHLERS, M E
	EVANS, MORLEY
	MORRIS, FRED A
	PEPPER VILLA MOBILE HOME PARK
	PERRY, L J
270	BERMUDEZ, RAUL M
300	SOUTHERN CALIFORNIA EDISON CO
304	ADV EDUC - PPPRCREEK PRESCHOOL
	CHILDRENS DSCVERY CTRS OF AMER
	NEW HORIZONS SCHOOL
	TOTAL LEARNING CENTER
749	POLLARD, E P
825	DYKES, WILLIE J
890	BIRDSALL, ROGER L
908	COOK, STELLA
1351	WOOD, JACK L
1356	POPE, JAMES
1358	GREENWOOD, LOUISE
1475	BLISS, MARY

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1985

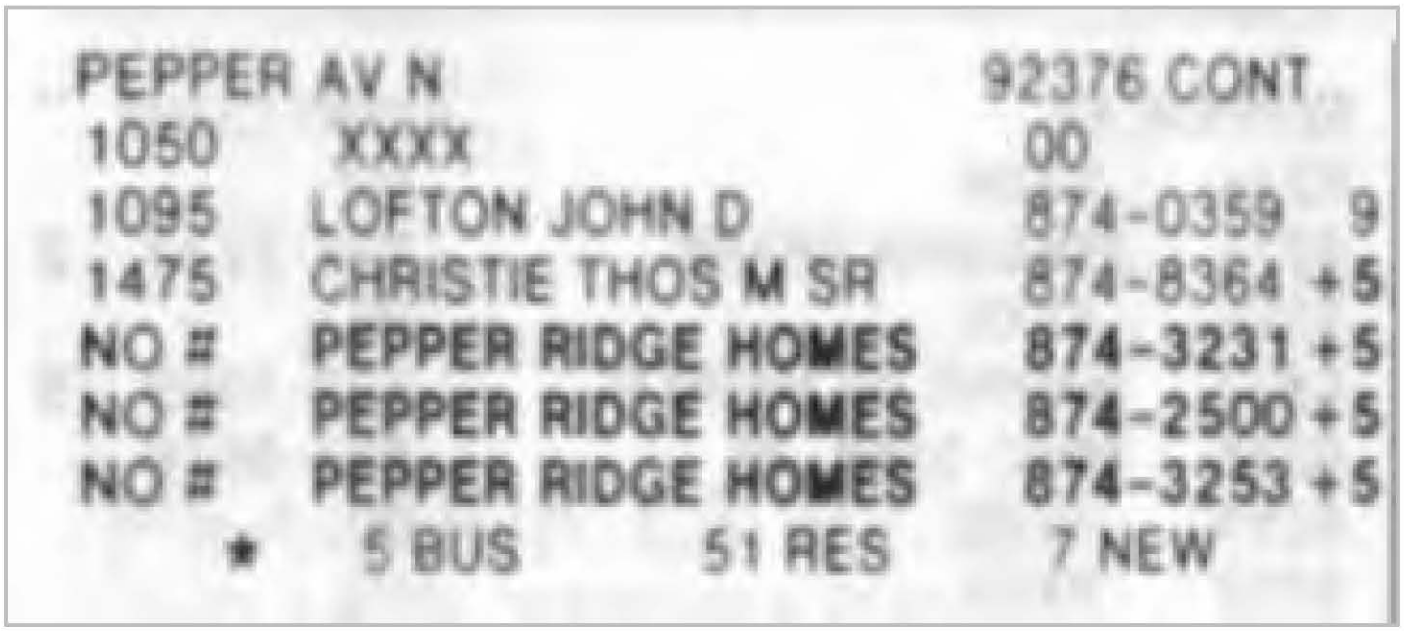


PEPPER AV N 92376
RIALTO

118	HERKELRATH LARRY R	820-4764	2
135	PEPPER MBL VLG		
	AUSTIN CRAIG E	875-7822	
	AUSTIN E EUGENE	875-7822	
	BAKER OLA	875-5234	3
	CARIS E J	820-1975	4
	CELIDONIO JOS	875-5794	3
	CHAMBERS CONRAD	875-4744	1
	CLARKSON LILLIEMAE	875-8126	
	COOTER BUFORD J	875-0388	
	EHLERS C A	874-3883	2
	EVANS MORLEY	875-6844	
	HICKS M I	875-9785	
	KING EARLE H	874-6128	0
	LAMMER MARION B	875-2492	8
	MARSH R M	874-3258	
	MORRIS FRED A	875-5336	
	PEPPER VILLA	875-9711	
	PERRY L JEAN	875-2339	
	PORTER EVAN W	875-3340	
	REARDOM JAS C	874-2356	3
	REIT ALFRED A	875-7438	0
	ROGERS AUBREY T	874-3877	
	SMITH WALTER	875-5955	
	UHL ARTHUR H	874-0388	
	WEILAGE MARGARET	875-0521	
	WOOD JACK L	874-3494	0
135			
251	RAWLINSON T A	875-1374	1
300	XXXX	00	
304	PEPPERCREEK PRESC	874-0471	
316	XXXX	00	
605	MOORE BILLY J	875-8727	8
619	XXXX	00	
635	HARRIS MARIE	874-5003	+5
749	POLLARD E P	874-1489	7
761	FRANKLIN ARMAREE	875-2259	3
773	XXXX	00	
783	MCFARLAND BLANCA	874-3366	+5
797	XXXX	00	
815	XXXX	00	
825	DYKES WILLIE J	874-6897	0
841	XXXX	00	
849	MCGIVNEY RONALD WM	875-8951	
859	XXXX	00	
867	BARRON JOE R	875-0923	
877	CRAFT J E	875-9662	
890	XXXX	00	
908	BURTON BRUCE	820-4697	2
	JAMES CHAS E	874-5459	1
930	GARDNER KIM	874-2256	+5
1040	VAUGHAN AL	875-1197	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

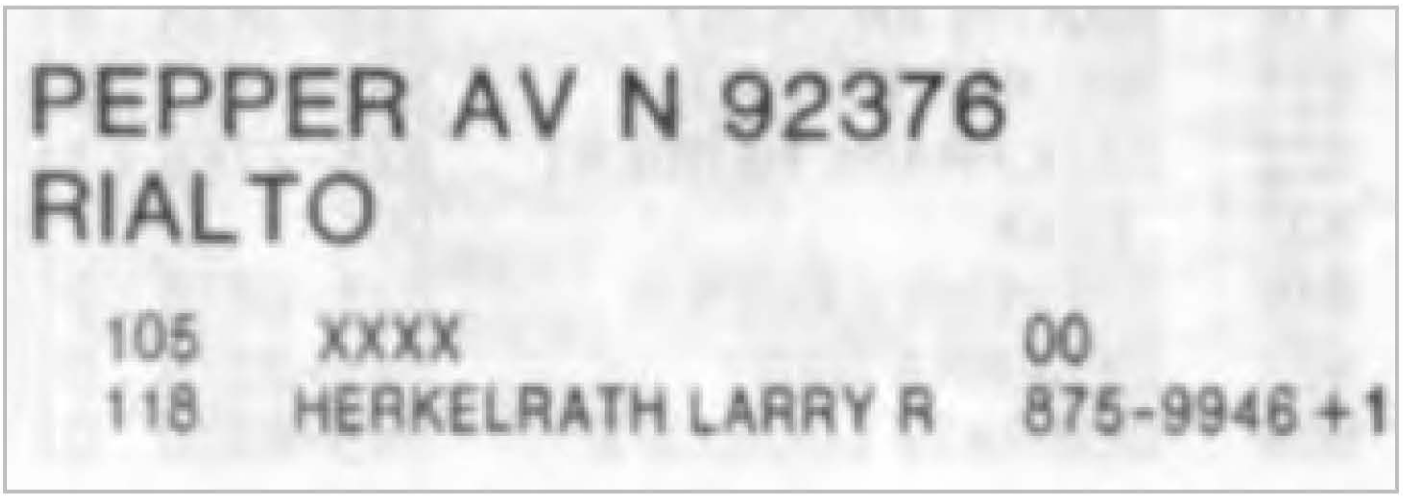
N PEPPER AVE 1985



PEPPER AV N		92376 CONT
1050	XXXX	00
1095	LOFTON JOHN D	874-0359 9
1475	CHRISTIE THOS M SR	874-8364 +5
NO #	PEPPER RIDGE HOMES	874-3231 +5
NO #	PEPPER RIDGE HOMES	874-2500 +5
NO #	PEPPER RIDGE HOMES	874-3253 +5
*	5 BUS 51 RES	7 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1981



PEPPER AV N 92376
RIALTO

105	XXXX	00
118	HERKELRATH LARRY R	875-9946 +1

Target Street	Cross Street	Source
✔	-	Haines Criss-Cross Directory

N PEPPER AVE 1981

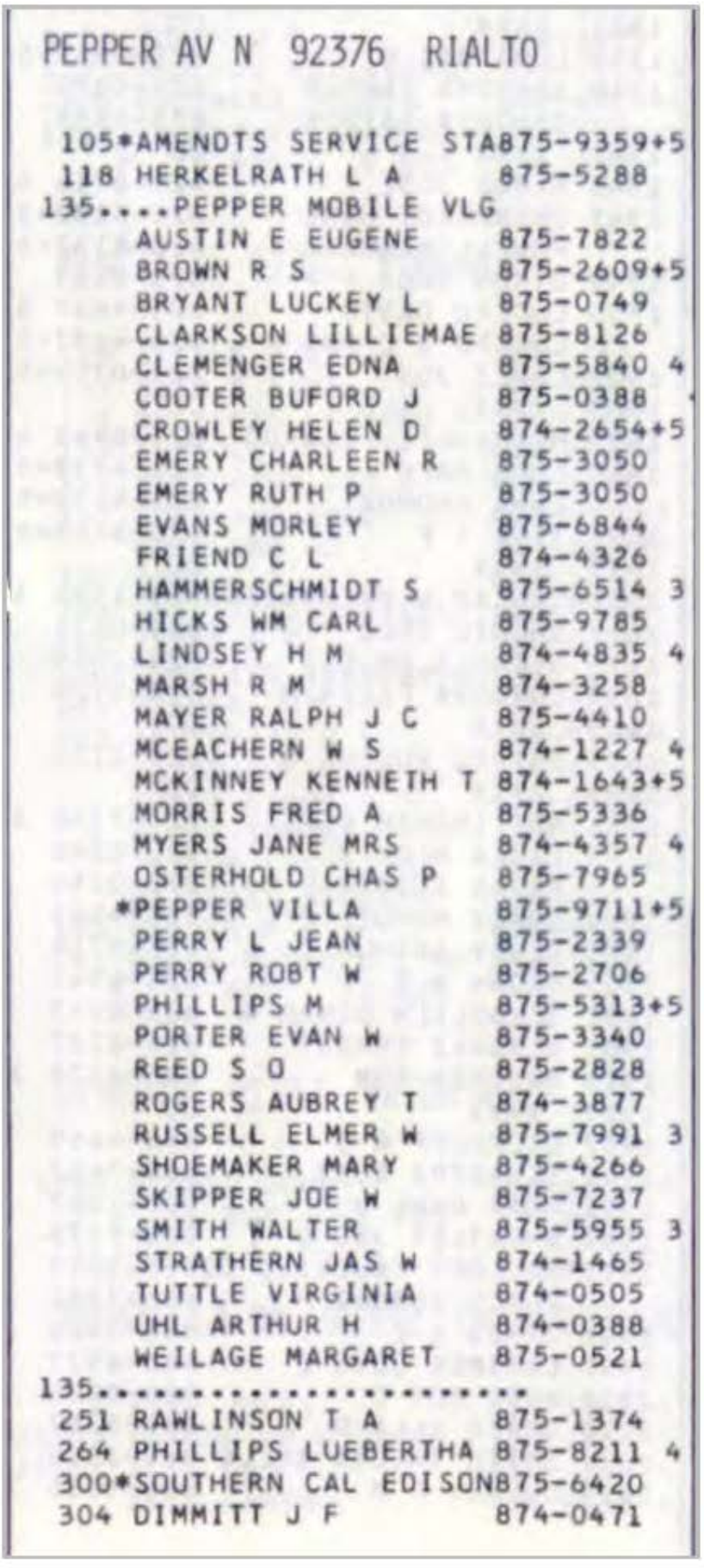


PEPPER AV N 92376 CONT

135	PEPPER MBL VLG		
	AUSTIN E EUGENE	875-7822	
	BROWN R S	875-2609	5
	BRYANT LUCKEY L	875-0749	
	BYRKET JAS	874-2253	6
	CHAMBERS CONRAD	875-4744	+1
	CLARKSON LILLIEMAE	875-8126	
	COOTER BUFORD J	875-0388	
	DYERLY CHAS T	875-5997	0
	EVANS MORLEY	875-6844	
	FRENCH DALTON	874-6225	0
	FYLER HAROLD	875-0607	+1
	GEHRIS WILLIAM C	875-4989	+1
	HICKS M I	875-9785	
	JONES B	874-0815	7
	JORGENSON VERN L	875-9585	7
	KING EARLE H	874-6128	0
	LAMMER MARION B	875-2492	8
	LEONARD CORRIE L	874-4326	8
	MARSH R M	874-3258	
	MORRIS FRED A	875-5336	
	MURPHY FAY M	875-5431	+1
	OSTERHOLD CHAS P	875-7965	
	PEPPER VILLA	**875-9711**	5
	PERRY L JEAN	875-2339	
	PORTER EVAN W	875-3340	
	RAINWATER M	875-9039	+1
	REIT ALFRED A	875-7438	0
	ROGERS AUBREY T	874-3877	
	ROGERS WM A	874-4938	8
	SMITH WALTER	875-5955	3
	TUTTLE VIRGINIA	874-0505	
	UHL ARTHUR H	874-0388	
	WEILAGE MARGARET	875-0521	
	WHITCOMB MARSHALL	875-8637	7
	WILLIAMS FRED O	875-6819	9
	WOOD JACK L	874-3494	0
135			
251	RAWLINSON T A	875-1374	+1
264	XXXX	00	
300	XXXX	00	
304	PEPPER CREEK PRE SC	874-0471	
316	XXXX	00	
435	XXXX	00	
605	MOORE BILLY J	875-8727	8
619	XXXX	00	
635	XXXX	00	
649	XXXX	00	
665	HARRIS WALTER L	874-0617	+1
749	POLLARD E P	874-1489	7
761	STEPHENS A E	875-5779	+1
773	BEAUDOIN JEFF D	875-4070	
783	**CONCEPT PRESTIGE HM**	**874-7590**	+1
797	**CONCEPT PRESTIGE HM**	**874-7450**	+1
815	XXXX	00	
825	DYKES WILLIE J	874-6897	0
841	XXXX	00	
849	MCGIVNEY RONALD WM	875-8951	
859	XXXX	00	
867	BARRON JOE R	875-0923	5
877	CRAFT J E	875-9662	
890	BIRDSALL ROGER L	875-1093	
908	JAMES CHARLES E	874-5459	+1
930	HUBBARD WM D	875-6705	8
1040	VAUGHAN AL	875-1197	
1050	XXXX	00	
1095	LOFTON JOHN D	874-0359	9
1475	BLANTON ERVIN	884-7978	+1
*	3 BUS 65 RES	13 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1975



PEPPER AV N 92376 RIALTO

105*AMENDTS SERVICE STA875-9359+5
118 HERKELRATH L A 875-5288
135....PEPPER MOBILE VLG
AUSTIN E EUGENE 875-7822
BROWN R S 875-2609+5
BRYANT LUCKEY L 875-0749
CLARKSON LILLIEMAE 875-8126
CLEMENGER EDNA 875-5840 4
COOTER BUFORD J 875-0388
CROWLEY HELEN D 874-2654+5
EMERY CHARLEEN R 875-3050
EMERY RUTH P 875-3050
EVANS MORLEY 875-6844
FRIEND C L 874-4326
HAMMERSCHMIDT S 875-6514 3
HICKS WM CARL 875-9785
LINDSEY H M 874-4835 4
MARSH R M 874-3258
MAYER RALPH J C 875-4410
MCEACHERN W S 874-1227 4
MCKINNEY KENNETH T 874-1643+5
MORRIS FRED A 875-5336
MYERS JANE MRS 874-4357 4
OSTERHOLD CHAS P 875-7965
*PEPPER VILLA 875-9711+5
PERRY L JEAN 875-2339
PERRY ROBT W 875-2706
PHILLIPS M 875-5313+5
PORTER EVAN W 875-3340
REED S O 875-2828
ROGERS AUBREY T 874-3877
RUSSELL ELMER W 875-7991 3
SHOEMAKER MARY 875-4266
SKIPPER JOE W 875-7237
SMITH WALTER 875-5955 3
STRATHERN JAS W 874-1465
TUTTLE VIRGINIA 874-0505
UHL ARTHUR H 874-0388
WEILAGE MARGARET 875-0521
135.....
251 RAWLINSON T A 875-1374
264 PHILLIPS LUEBERTHA 875-8211 4
300*SOUTHERN CAL EDISON875-6420
304 DIMMITT J F 874-0471

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1975

..PEPPER AV N 92376 CONT..

	*PEPPRMT PLC PRE	SCH874-0471
605	MCDONALD SAM D	874-0898 4
619	XXXX	OO
635	XXXX	OO
665	XXXX	OO
679	XXXX	OO
695	LORTS ERNEST J JR	875-5888
705	XXXX	OO
727	SPIKES EDNA	874-3214 4
737	JONES ERNEST	875-5143
749	POLLARD F P	875-0743 4
773	BEAUDOIN JEFF D	875-4070
	BEAUDOIN RITA	875-4070
815	JONES DAVID G	874-2340+5
825	MCDIVITT ARTHUR L	875-1160
841	WIENS FRANK F	875-2684+5
849	MCGIVNEY RONALD WM	875-8951
859	XXXX	OO
867	BARRON JOE R	875-0923+5
877	CRAFT J E	875-9662
890	BIRDSALL ROGER L	875-1093
908	XXXX	OO
930	MARTIN GRAHAM	875-1904
1040	VAUGHAN AL	875-1197
1050	TUDOR EDW T	875-9695 3
1095	LOFTON JOHN D	874-0359
1445	XXXX	OO
1475	MONTGOMERY DON T	875-1824

* 4 BUS 66 RES 9 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1971

PEPPER AV N 92376 RIALTO

118	HERKELRATH L A	875-5288
135	....PEPPER MOBILE VLG	
	AUSTIN E EUGENE	875-7822
	BAIRD WM W	874-4617
	BALES OLEN L	874-0959
	BROWN R S	875-2609
	BRYANT LUCKEY L	875-0749
	CHAMBERS P B	874-0667
	CLARKSON LILLIEMAE	875-8126
	COOTER BUFORD J	875-0388
	DUBOIS MURRAY E	875-9711
	EMERY CHARLEEN R	875-3050
	EMERY RUTH P	875-3050
	EVANS MORLEY	875-6844
	FLANARY JOHN F	875-6926
	FRIEND C L	874-4326
	HAY EDW M	875-9448
	HICKS WM CARL	875-9785
	MARSH R M	874-3258
	MAYER RALPH J C	875-4410
	MOORE FRANK C	875-3289
	MORRIS FRED A	875-5336
	MURCHISON ETHEL	874-2927
	MYERS JANE MRS	874-1330
	NICKEL C L	875-9188
	OSTERHOLD CHAS P	875-7965
	*PEPPER MOBILE VLG	875-9711
	PERRY L JEAN	875-2339
	PERRY ROBT W	875-2706
	PETERSON ELWOOD B	875-8565
	PETERSON HELEN J	875-8565
	PHILLIPS L ROY	875-5313
	PORTER EVAN W	875-3340
	*PRIDMORE LEWIS	875-9711
	REED S O	875-2828
	REESER M J	874-0505
	ROGERS AUBREY T	874-3877
	SCHIEL EDNA	875-5840
	SCOTT JUDY	875-5580
	SCOTT RICHARD	875-5580
	SHOEMAKER MARY	875-4266
	SKIPPER JOE W	875-7237
	SMITH GORDON W	874-4087
	SOPER LEON C	875-8858
	STRATHERN JAS W	874-1465
	TUTTLE VIRGINIA	874-0505
	UHL ARTHUR H	874-0388
	UNDERWOOD WM F	875-8433
	WEILAGE MARGARET	875-0521
	WILLIAMS RAY	875-3378
135	.....	
251	RAWLINSON T A	875-1374
300	*SOUTHERN CAL EDISON	875-5100
	*SOUTHERN CAL EDISON	875-6420
304	DIMMITT J F	874-0471
	*PEPPRMT PLC PRE SCH	874-0471
605	BOLDUC LLOYD	874-1286
619	BLANEY JOHNNIE MSGT	875-7395
665	PINKERTON R N	875-1745
679	ELDERS CHAS	875-1046
695	LORTS ERNEST J JR	875-5888
727	SPIKES ALONZO	874-3058
	SPIKES EDNA	874-3058
737	JONES ERNEST	875-5143
749	POLLARD EARNEST	875-0743
773	BEAUDOIN JEFF D	875-4070
	BEAUDOIN RITA	875-4070
825	MCDIVITT ARTHUR L	875-1160

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

N PEPPER AVE 1971

849	MCGIVNEY RONALD WM	875-8951
859	MILLER DONNA	875-4744
	MILLER LARRY G	875-4744
867	TAYLOR EMERY G	874-0854
877	CRAFT J E	875-9662
890	BIRDSALL ROGER L	875-1093
908	HEIMBECKER M A CAPT	874-0187
930	MARTIN GRAHAM	875-1904
1040	VAUGHAN AL	875-1197
1050	VAUGHAN GOLDA MRS	875-3966
1095	LOFTON JOHN D	874-0359
1445	HENNINGER KEITH	875-6787
1475	MONTGOMERY DON T	875-1824
*	5 BUS 74 RES	

Target Street	Cross Street	Source
✓	-	Lusky Brothers

N PEPPER AVE 1964

PEPPER AV, N – FROM 2900 W
RIALTO AV, NORTH

118	Herkelrath LA	TR 5–5288
251	*Rawlinson TA	TR 5–1374
304	*Shook GT Mrs	
316	Smith ER	
605	*Dedmon Ronald	TR 5–7719
619	*Axe PG	TR 5–0794
635	*Page TL	TR 5–6791
649	*Rouse Vic	
665	*Padgett DC	TR 5–5567
679	Brook HJ	TR 5–6239
695	*Lorts EJ	TR 5–5888
705	Pierce DB	TR 5–1476
715	Wattnem FE Mrs	TR 5–1579
737	Hurlbut HM	875–6494
761	Vacant	
773	Beaudoin JD	TR 5–4070
797	*Zieske GR	TR 5–4654
815	*Boesch CR	TR 5–7851
825	*Bailey HH	TR 5–4212
831	*Koscinski MF	TR 5–1321
841	*Karl Chas	TR 5–2802
851	Vacant	
859	*Scroggin RO	TR 5–6799
867	*Knapp KD	TR 5–4046
877	Isakson RK	TR 5–7040
890	*Birdsall RL	TR 5–1093
908	*Price SW	TR 5–5645
930	*Martin GR	TR 5–1904

Pepper Industry Parcels

Pepper Avenue and 210 Freeway

Rialto, CA 92376

Inquiry Number: 5633595.3

April 25, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

04/25/19

Site Name:

Pepper Industry Parcels
Pepper Avenue and 210 Freew
Rialto, CA 92376
EDR Inquiry # 5633595.3

Client Name:

SCS Engineers
3900 Kilroy Airport Way
Long Beach, CA 90806
Contact: Kim Braun

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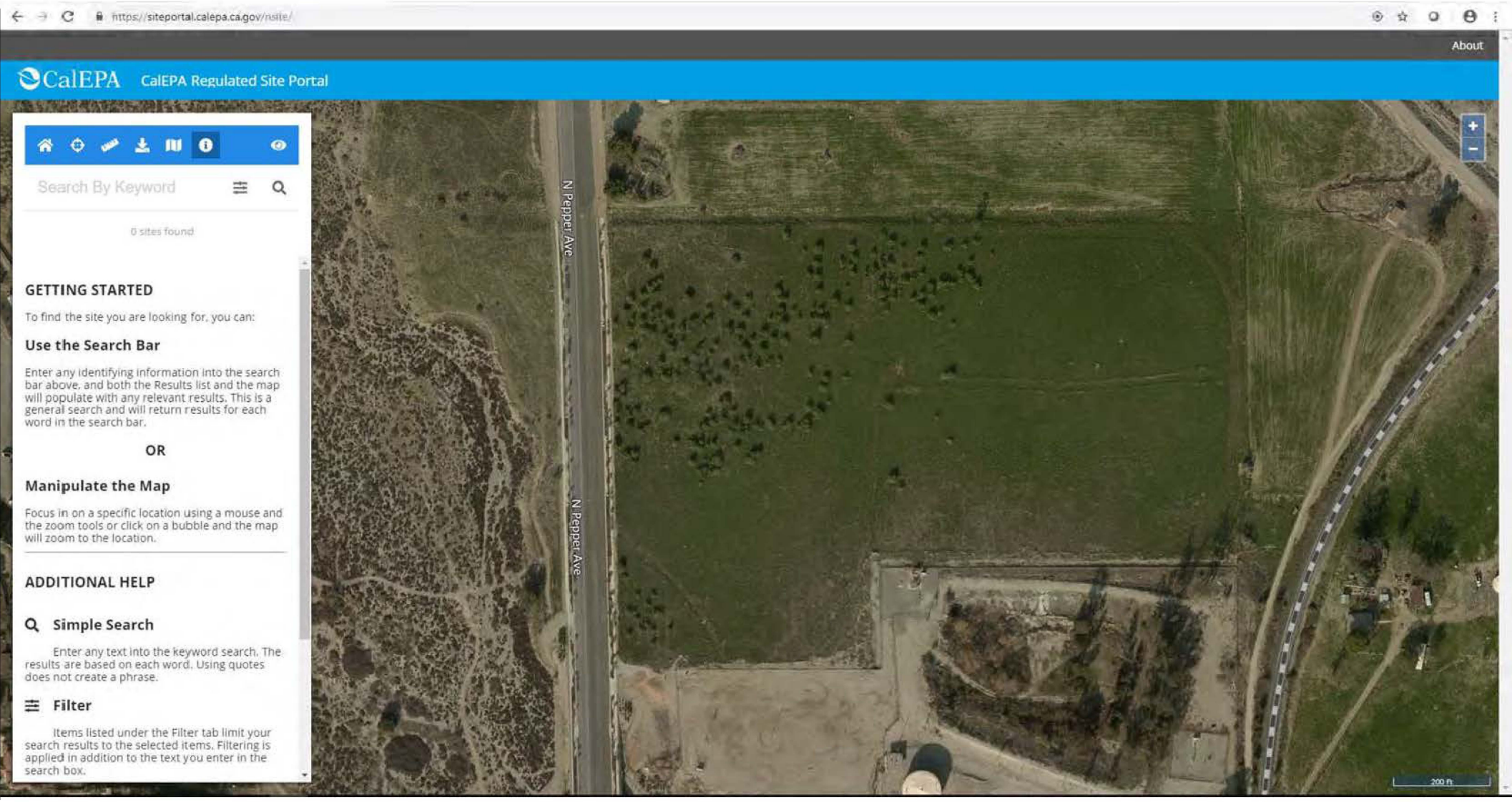
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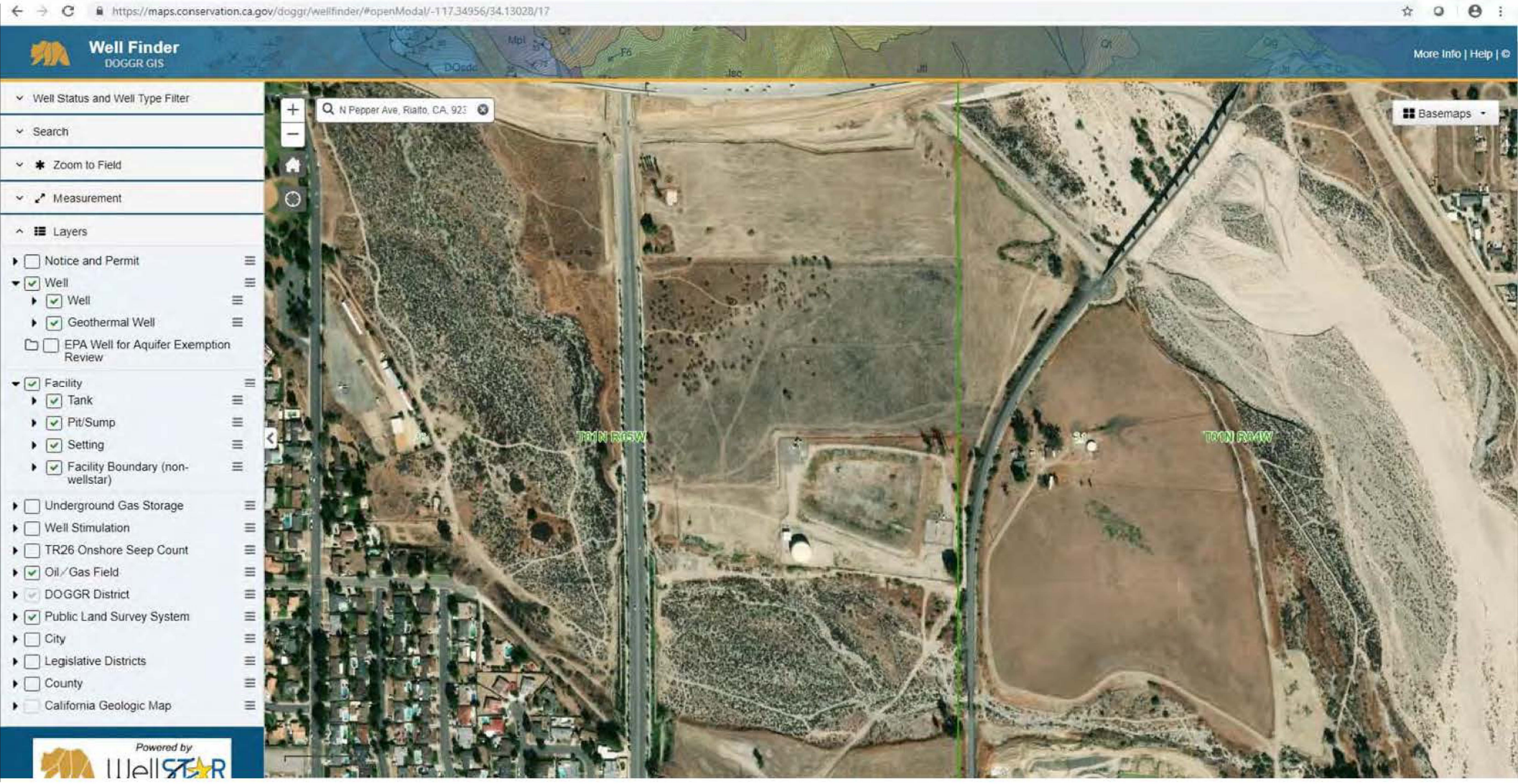
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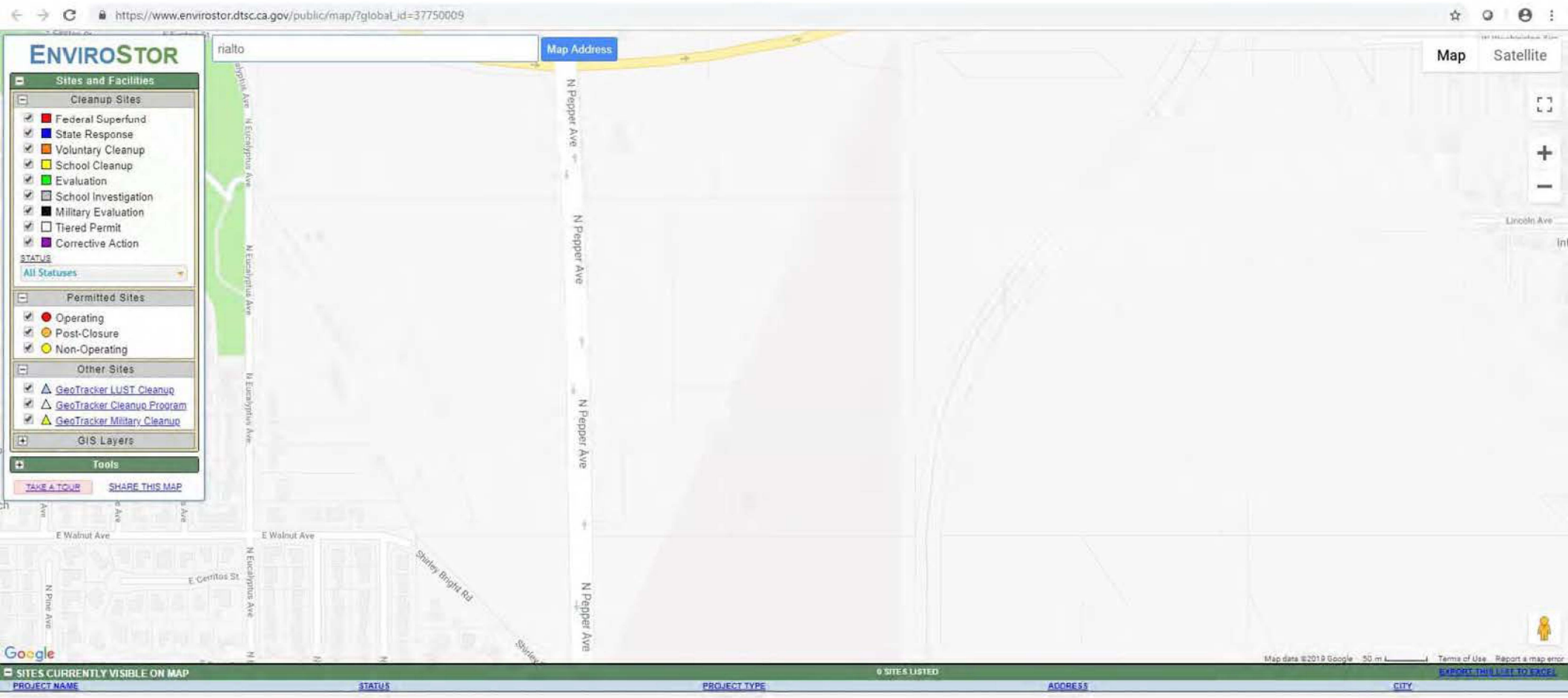
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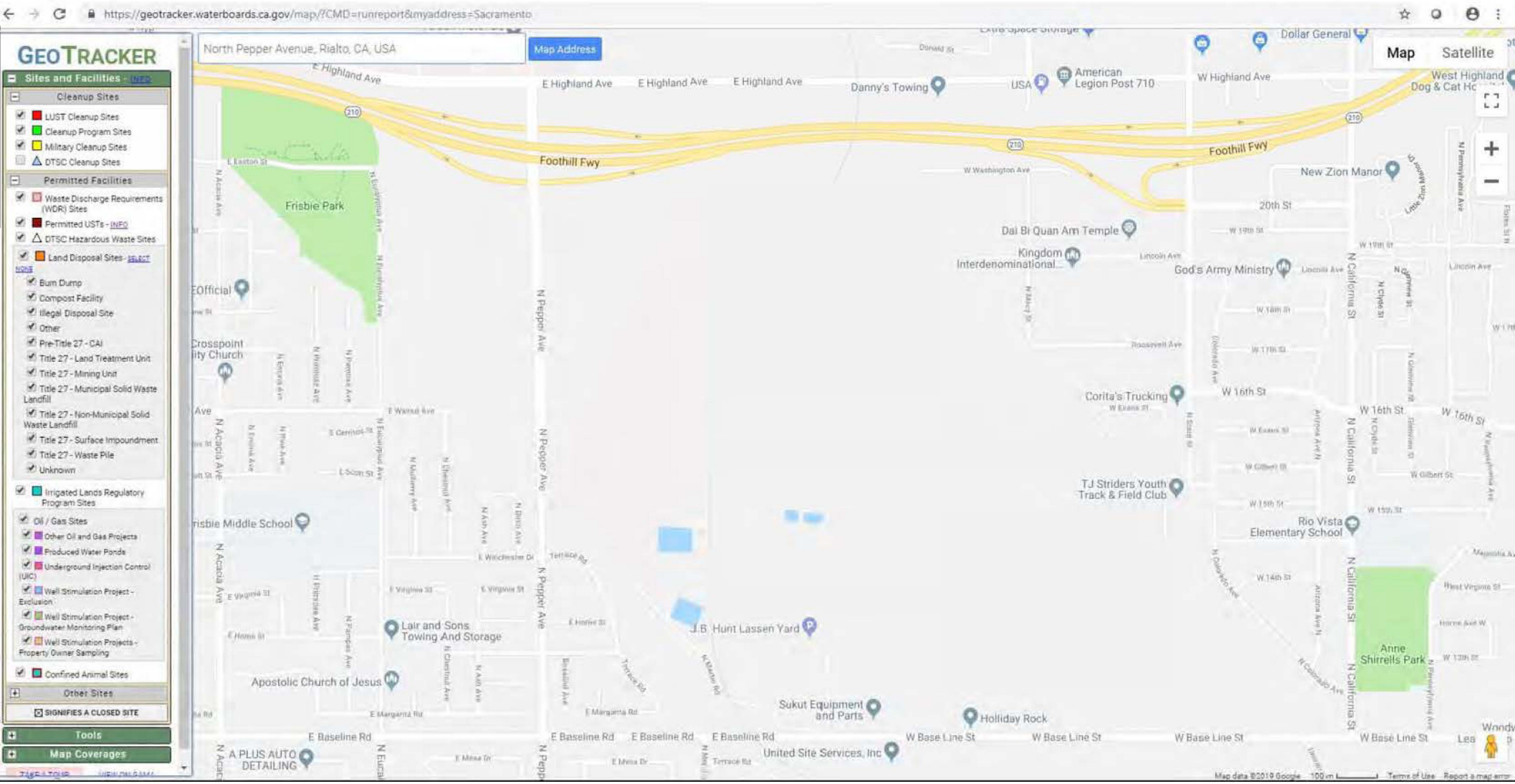
Appendix D

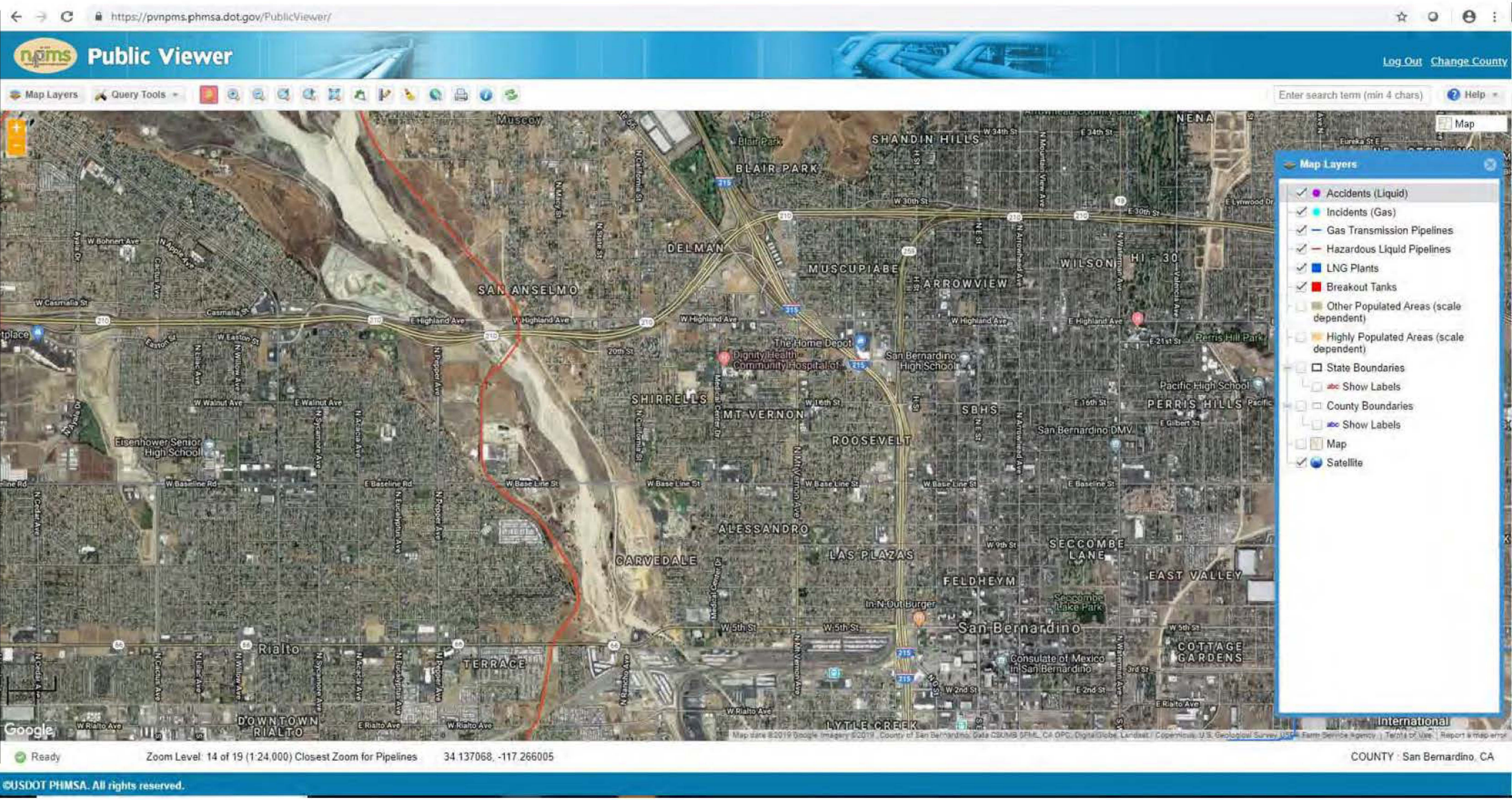
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To find the site you are looking for, you can:
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Enter any identifying information into the search bar above, and both the Results list and the map will populate with any relevant results. This is a general search and will return results for each word in the search bar.
OR
Manipulate the Map
Focus in on a specific location using a mouse and the zoom tools or click on a bubble and the map will zoom to the location.
ADDITIONAL HELP
Simple Search
Enter any text into the keyword search. The results are based on each word. Using quotes does not create a phrase.
Filter
Items listed under the Filter tab limit your search results to the selected items. Filtering is applied in addition to the text you enter in the search box.
N Pepper Ave
N Pepper Ave
200 ft


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Well Finder
DOGGR GIS
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Measurement
Layers
Notice and Permit
Well
Well
Geothermal Well
EPA Well for Aquifer Exemption Review
Facility
Tank
Pit/Sump
Setting
Facility Boundary (non-wellstar)
Underground Gas Storage
Well Stimulation
TR26 Onshore Seep Count
Oil/Gas Field
DOGGR District
Public Land Survey System
City
Legislative Districts
County
California Geologic Map
Powered by
WellSTAR
N Pepper Ave, Rialto, CA, 923
Basemaps
T01N R05W
T01N R04W


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Map Address
Map
Satellite
Sites and Facilities
Cleanup Sites
Federal Superfund
State Response
Voluntary Cleanup
School Cleanup
Evaluation
School Investigation
Military Evaluation
Tiered Permit
Corrective Action
STATUS
All Statuses
Permitted Sites
Operating
Post-Closure
Non-Operating
Other Sites
GeoTracker LUST Cleanup
GeoTracker Cleanup Program
GeoTracker Military Cleanup
GIS Layers
Tools
TAKE A TOUR
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N Eucalyptus Ave
E Walnut Ave
E Cerritos St
Shirley Bright Rd
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Lincoln Ave
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0 SITES LISTED
PROJECT NAME
STATUS
PROJECT TYPE
ADDRESS
CITY


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GEOTRACKER
North Pepper Avenue, Rialto, CA, USA
Map Address
Map
Satellite
Sites and Facilities
Cleanup Sites
LUST Cleanup Sites
Cleanup Program Sites
Military Cleanup Sites
DTSC Cleanup Sites
Permitted Facilities
Waste Discharge Requirements (WDR) Sites
Permitted USTs - INFO
DTSC Hazardous Waste Sites
Land Disposal Sites - SELECT NONE
Burn Dump
Compost Facility
Illegal Disposal Site
Other
Pre-Title 27 - CAI
Title 27 - Land Treatment Unit
Title 27 - Mining Unit
Title 27 - Municipal Solid Waste Landfill
Title 27 - Non-Municipal Solid Waste Landfill
Title 27 - Surface Impoundment
Title 27 - Waste Pile
Unknown
Irrigated Lands Regulatory Program Sites
Oil / Gas Sites
Other Oil and Gas Projects
Produced Water Ponds
Underground Injection Control (UIC)
Well Stimulation Project - Exclusion
Well Stimulation Project - Groundwater Monitoring Plan
Well Stimulation Projects - Property Owner Sampling
Confined Animal Sites
Other Sites
SIGNIFIES A CLOSED SITE
Tools
Map Coverages
E Highland Ave
Foothill Fwy
Frisbie Park
N Pepper Ave
Danny's Towing
USA
American Legion Post 710
Dollar General
West Highland Dog & Cat Hc
New Zion Manor
20th St
Dai Bi Quan Am Temple
Kingdom Interdenominational...
God's Army Ministry
Crosspoint ity Church
Corita's Trucking
W 16th St
TJ Striders Youth Track & Field Club
Rio Vista Elementary School
N California St
Anne Shirrells Park
Lair and Sons Towing And Storage
J.B. Hunt Lassen Yard
Apostolic Church of Jesus
Sukut Equipment and Parts
Holliday Rock
E Baseline Rd
W Base Line St
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Select Search Type	Name	Street	City	Zip			
Find a Facility		Pepper Avenue	Rialto	92376	☑ RECLAIM	☑ TITLE V	SEARCH



San Bernardino County, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA

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SEARCH RESULTS

0 Results

- Street: Pepper Avenue
- City: Rialto
- Zip: 92376
- Reclaim
- Title

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Appendix E

EDR Database Report

Pepper Industry Parcels
Pepper Avenue and 210 Freeway
Rialto, CA 92376

Inquiry Number: 05633595.2r
April 25, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

PEPPER AVENUE AND 210 FREEWAY
RIALTO, CA 92376

COORDINATES

Latitude (North):	34.1312690 - 34° 7' 52.56''
Longitude (West):	117.3513350 - 117° 21' 4.80''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	467604.2
UTM Y (Meters):	3776571.8
Elevation:	1278 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5630643 SAN BERNARDINO NORTH, CA
Version Date:	2012
Southeast Map:	5620416 SAN BERNARDINO SOUTH, CA
Version Date:	2012
Southwest Map:	5619058 FONTANA, CA
Version Date:	2012
Northwest Map:	5630611 DEVORE, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603, 20140529
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
PEPPER AVENUE AND 210 FREEWAY
RIALTO, CA 92376

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	NEWMARK GROUND WATER	BUNKER HILL GROUND W	NPL, SEMS, US ENG CONTROLS, US INST CONTROL, ROD,..	Same	4009, 0.759, ENE
1	PEPPER AVENUE EXTENS	BETWEEN WINCHESTER D	NPDES, CIWQS	Higher	35, 0.007, West
2	PEPPER AVENUE EXTENS		CIWQS	Lower	371, 0.070, SSW
3	STATE ROUTE 210/PEPP		CIWQS	Higher	741, 0.140, NNW
A4	HUD INTOWN PROPERTIE	1487 BIRCH AVE N	HAZNET	Higher	1131, 0.214, SSW
A5		1475 NORTH PEPPER AV	CHMIRS	Higher	1194, 0.226, SSW
6	JAMES JORDAN	1532 N CHESTNUT AVE	HAZNET	Higher	1200, 0.227, SW
7	VERIZON WIRELESS: DU	2565 HIGHLAND AVE	San Bern. Co. Permit	Higher	1402, 0.266, NE
B8	CARDENAS MARKETS #36	2450 E HIGHLAND AVE	San Bern. Co. Permit	Higher	1785, 0.338, NE
B9	VULCAN MATERIALS CAL	2400 W HIGHLAND AVE	RCRA-SQG, HAZNET	Higher	1808, 0.342, NE
B10	CAL MAT CO.	2400 W HIGHLAND AVE	UST	Higher	1808, 0.342, NE
B11	SAN BERNARDINO	2400 W HIGHLAND AV	HIST UST	Higher	1808, 0.342, NE
B12	VULCAN MATERIALS WES	2400 W HIGHLAND AVE	AST	Higher	1808, 0.342, NE
B13	CALMAT CO	2400 W HIGHLAND AVE	SWEEPS UST, CA FID UST, EMI, NPDES, San Bern. Co....	Higher	1808, 0.342, NE
14	CAJON CREEK	19455 SOUTH CAJON BO	MINES	Higher	1813, 0.343, NW
B15	CALMAT CO		US MINES	Higher	1853, 0.351, NE
B16	HARRIS TRANSFER, INC		US MINES	Higher	1853, 0.351, NE
17	SAN BERNARDINO PLANT		MINES	Lower	1864, 0.353, SE
C18	RIALTO UNI SCH DIST,	1442 N EUCALYPTUS	EMI, San Bern. Co. Permit	Higher	1962, 0.372, SW
C19	RIALTO UNIFIED SCHOO	1442 N EUCALYPTUS ,A	RCRA-SQG, FINDS, ECHO	Higher	1962, 0.372, SW
B20	HOLLIDAY ROCK CO., I	2400 W. HIGHLAND AVE	RCRA NonGen / NLR	Higher	2016, 0.382, NE
D21	VULCAN MATERIALS	2350 W HIGHLAND AVE	RCRA-SQG, AST, FINDS, ECHO, San Bern. Co. Permit	Higher	2236, 0.423, NE
D22	CALMAT CO	2340 W HIGHLAND AVE	LUST, SWEEPS UST, CA FID UST, EMI, HIST CORTESE	Higher	2281, 0.432, NE
23	SAN BERNARDINO	2400 WEST HIGHLAND A	MINES	Higher	2458, 0.466, NW
D24	DANNY'S TOWING SERVI	2305 W HIGHLAND AVE	HAZNET, San Bern. Co. Permit	Lower	2568, 0.486, ENE
25	NORTON AFB ILS OMA		ENVIROSTOR	Higher	2923, 0.554, WNW
26	THRIFTY OIL #325/ AR	2187 W HIGHLAND AVE	LUST	Lower	3046, 0.577, ENE
27	GEORGE F CASEY CO	2323 W BASELINE	LUST, RCRA NonGen / NLR	Lower	3801, 0.720, SSE
28	RIALTO AMM STORAGE P	7 MILES NW OF SAN BE	ENVIROSTOR, HIST Cal-Sites	Higher	5168, 0.979, NW
29	MUSCOY MIDDLE SCHOOL	DARBY STREET/DUFFY S	ENVIROSTOR, SCH	Higher	6186, 1.172, NNE
30	MUSCOY HIGH SCHOOL	MALLORY STREET/CALIF	ENVIROSTOR, SCH	Higher	6577, 1.246, NE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
SCH ---------- School Property Evaluation Program
CDL ---------- Clandestine Drug Labs
CERS HAZ WASTE ---------- CERS HAZ WASTE
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
US CDL ---------- National Clandestine Laboratory Register
PFAS ---------- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

CERS TANKS ---------- California Environmental Reporting System (CERS) Tanks

EXECUTIVE SUMMARY

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities

EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
MWMP Medical Waste Management Program Listing
PEST LIC Pesticide Regulation Licenses Listing
PROC Certified Processors Database
Notify 65 Proposition 65 Records
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
WIP Well Investigation Program Case List
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants
EDR Hist Auto EDR Exclusive Historical Auto Stations
EDR Hist Cleaner EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF Recovered Government Archive Solid Waste Facilities List
RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 NPL site within approximately 1.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEWMARK GROUND WATER Cerclis ID:: 902439 EPA Id: CAD981434517	***BUNKER HILL GROUND W***	***ENE 1/2 - 1 (0.759 mi.)***	***0***	***8***

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 03/25/2019 has revealed that there are 3 RCRA-SQG sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VULCAN MATERIALS CAL EPA ID:: CAR000073007	***2400 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.342 mi.)***	***B9***	***30***
RIALTO UNIFIED SCHOO EPA ID:: CAD981159981	***1442 N EUCALYPTUS ,A***	***SW 1/4 - 1/2 (0.372 mi.)***	***C19***	***62***
VULCAN MATERIALS EPA ID:: CAR000072991	***2350 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.423 mi.)***	***D21***	***65***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/28/2019 has revealed that there are

4 ENVIROSTOR sites within approximately 1.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORTON AFB ILS OMA Facility Id: 80000113 Status: Inactive - Needs Evaluation		WNW 1/2 - 1 (0.554 mi.)	25	76
RIALTO AMM STORAGE P Facility Id: 36970014 Status: Inactive - Action Required	***7 MILES NW OF SAN BE***	***NW 1/2 - 1 (0.979 mi.)***	***28***	***80***
MUSCOY MIDDLE SCHOOL Facility Id: 36880001 Status: Inactive - Needs Evaluation	***DARBY STREET/DUFFY S***	***NNE 1 - 2 (1.172 mi.)***	***29***	***83***
MUSCOY HIGH SCHOOL Facility Id: 36650015 Status: Inactive - Needs Evaluation	***MALLORY STREET/CALIF***	***NE 1 - 2 (1.246 mi.)***	***30***	***86***

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 3 LUST sites within approximately 0.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CALMAT CO Database: LUST REG 8, Date of Government Version: 02/14/2005 Database: LUST, Date of Government Version: 12/10/2018 Status: Completed - Case Closed Facility Status: Case Closed Global Id: T0607100198 Global ID: T0607100198	***2340 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.432 mi.)***	***D22***	***67***

Lower Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #325/ AR Database: LUST, Date of Government Version: 12/10/2018 Status: Completed - Case Closed Global Id: T0607100154	2187 W HIGHLAND AVE	ENE 1/2 - 1 (0.577 mi.)	26	77
GEORGE F CASEY CO Database: LUST REG 8, Date of Government Version: 02/14/2005 Database: LUST, Date of Government Version: 12/10/2018 Status: Completed - Case Closed Global Id: T0605901359	***2323 W BASELINE***	***SSE 1/2 - 1 (0.720 mi.)***	***27***	***78***

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CAL MAT CO. Database: UST, Date of Government Version: 12/10/2018 Facility Id: FA0001676 Facility Id: 86008958	2400 W HIGHLAND AVE	NE 1/4 - 1/2 (0.342 mi.)	B10	32

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there are 2 AST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VULCAN MATERIALS WES Database: AST, Date of Government Version: 07/06/2016	2400 W HIGHLAND AVE	NE 1/4 - 1/2 (0.342 mi.)	B12	33
VULCAN MATERIALS Database: AST, Date of Government Version: 07/06/2016	***2350 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.423 mi.)***	***D21***	***65***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

HIST Cal-Sites: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

A review of the HIST Cal-Sites list, as provided by EDR, and dated 08/08/2005 has revealed that there is 1 HIST Cal-Sites site within approximately 1.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIALTO AMM STORAGE P	***7 MILES NW OF SAN BE***	***NW 1/2 - 1 (0.979 mi.)***	***28***	***80***

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are

2 SWEEPS UST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CALMAT CO	***2400 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.342 mi.)***	***B13***	***34***
Status: A Tank Status: A Comp Number: 5695				
CALMAT CO	***2340 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.432 mi.)***	***D22***	***67***
Status: A Comp Number: 27953				

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAN BERNARDINO Facility Id: 00000005695	2400 W HIGHLAND AV	NE 1/4 - 1/2 (0.342 mi.)	B11	32

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 2 CA FID UST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CALMAT CO Facility Id: 36000014 Status: A	***2400 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.342 mi.)***	***B13***	***34***
CALMAT CO Facility Id: 36000354 Status: A	***2340 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.432 mi.)***	***D22***	***67***

Records of Emergency Release Reports

CHMIRS: The California Hazardous Material Incident Report System contains information on reported hazardous material incidents, i.e., accidental releases or spills. The source is the California Office of Emergency Services.

A review of the CHMIRS list, as provided by EDR, and dated 10/24/2018 has revealed that there is 1 CHMIRS site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported OES Incident Number: 6-5101	1475 NORTH PEPPER AV	SSW 1/8 - 1/4 (0.226 mi.)	A5	28

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HOLLIDAY ROCK CO., I EPA ID:: CAC002999854	2400 W. HIGHLAND AVE	NE 1/4 - 1/2 (0.382 mi.)	B20	63

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 ROD site within approximately 1.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEWMARK GROUND WATER EPA ID:: CAD981434517	***BUNKER HILL GROUND W***	***ENE 1/2 - 1 (0.759 mi.)***	***0***	***8***

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there are 2 US MINES sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CALMAT CO Database: US MINES, Date of Government Version: 11/27/2018 Mine ID:: 0401984		NE 1/4 - 1/2 (0.351 mi.)	B15	59
HARRIS TRANSFER, INC Database: US MINES, Date of Government Version: 11/27/2018 Mine ID:: 0405642		NE 1/4 - 1/2 (0.351 mi.)	B16	60

HAZNET: The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000-1,000,000 annually, representing approximately 350,000-500,000 shipments. Data from non-California manifests & continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source is the Department of Toxic Substance Control is the agency. This database begins with calendar year 1993.

A review of the HAZNET list, as provided by EDR, and dated 12/31/2017 has revealed that there are 2

HAZNET sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HUD INTOWN PROPERTIE GEPAID: CAC002173833	1487 BIRCH AVE N	SSW 1/8 - 1/4 (0.214 mi.)	A4	27
JAMES JORDAN GEPAID: CAC002654001	1532 N CHESTNUT AVE	SW 1/8 - 1/4 (0.227 mi.)	6	29

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CALMAT CO Reg Id: 083601667T	***2340 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.432 mi.)***	***D22***	***67***

MINES: A listing of mine site locations from the Office of Mine Reclamation.

A review of the MINES list, as provided by EDR, and dated 12/10/2018 has revealed that there are 3 MINES sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CAJON CREEK	19455 SOUTH CAJON BO	NW 1/4 - 1/2 (0.343 mi.)	14	59
SAN BERNARDINO	2400 WEST HIGHLAND A	NW 1/4 - 1/2 (0.466 mi.)	23	74

Lower Elevation	Address	Direction / Distance	Map ID	Page
SAN BERNARDINO PLANT		SE 1/4 - 1/2 (0.353 mi.)	17	60

NPDES: A listing of NPDES permits, including stormwater.

A review of the NPDES list, as provided by EDR, and dated 02/11/2019 has revealed that there is 1 NPDES site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEPPER AVENUE EXTENS	***BETWEEN WINCHESTER D***	***W 0 - 1/8 (0.007 mi.)***	***1***	***25***

San Bern. Co. Permit: San Bernardino County Fire Department Hazardous Materials Division.

A review of the San Bern. Co. Permit list, as provided by EDR, and dated 02/27/2019 has revealed that there are 6 San Bern. Co. Permit sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VERIZON WIRELESS: DU	2565 HIGHLAND AVE	NE 1/4 - 1/2 (0.266 mi.)	7	29

Facility Status: ACTIVE Facility Id: FA0017202				
CARDENAS MARKETS #36 Facility Status: ACTIVE Facility Status: FEE EXEMPT Facility Id: FA0017816	2450 E HIGHLAND AVE	NE 1/4 - 1/2 (0.338 mi.)	B8	30
CALMAT CO Facility Status: ACTIVE Facility Status: INACTIVE Facility Id: FA0001676 Facility Id: FA0001854 Facility Id: FA0017475	***2400 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.342 mi.)***	***B13***	***34***
RIALTO UNI SCH DIST, Facility Status: INACTIVE Facility Id: FA0005978	***1442 N EUCALYPTUS***	***SW 1/4 - 1/2 (0.372 mi.)***	***C18***	***61***
VULCAN MATERIALS Facility Status: ACTIVE Facility Status: INACTIVE Facility Id: FA0007904	***2350 W HIGHLAND AVE***	***NE 1/4 - 1/2 (0.423 mi.)***	***D21***	***65***

Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
DANNY'S TOWING SERVI Facility Status: ACTIVE Facility Id: FA0002637	***2305 W HIGHLAND AVE***	***ENE 1/4 - 1/2 (0.486 mi.)***	***D24***	***75***

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 03/05/2019 has revealed that there are 3 CIWQS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
PEPPER AVENUE EXTENS	***BETWEEN WINCHESTER D***	***W 0 - 1/8 (0.007 mi.)***	***1***	***25***
STATE ROUTE 210/PEPP		NNW 1/8 - 1/4 (0.140 mi.)	3	26

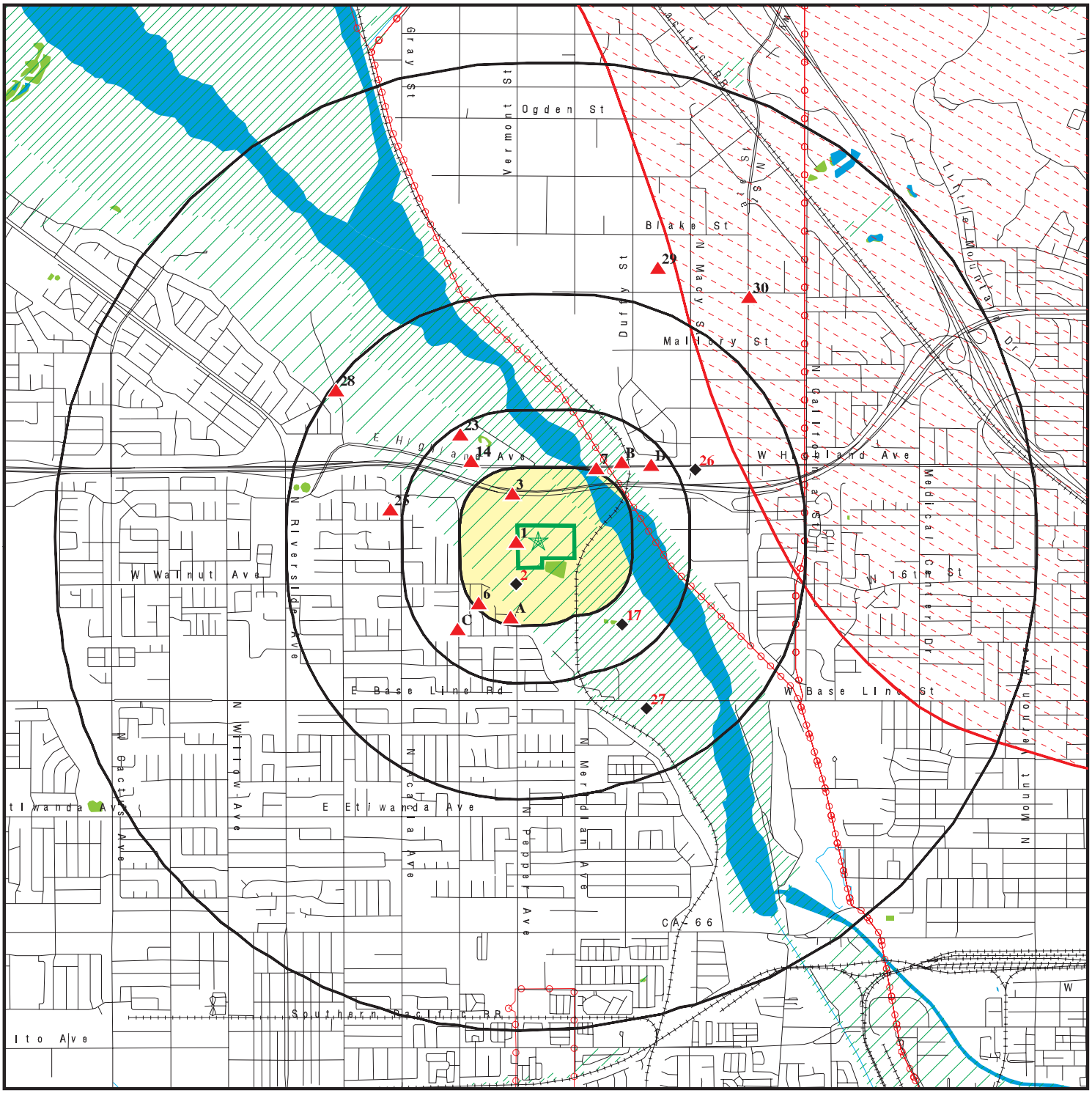
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
PEPPER AVENUE EXTENS		SSW 0 - 1/8 (0.070 mi.)	2	26

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
UNOCAL #1842	LUST, HIST CORTESE
	CDL
	CDL
	CDL

OVERVIEW MAP - 05633595.2R



0 1/2 1 2 Miles

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

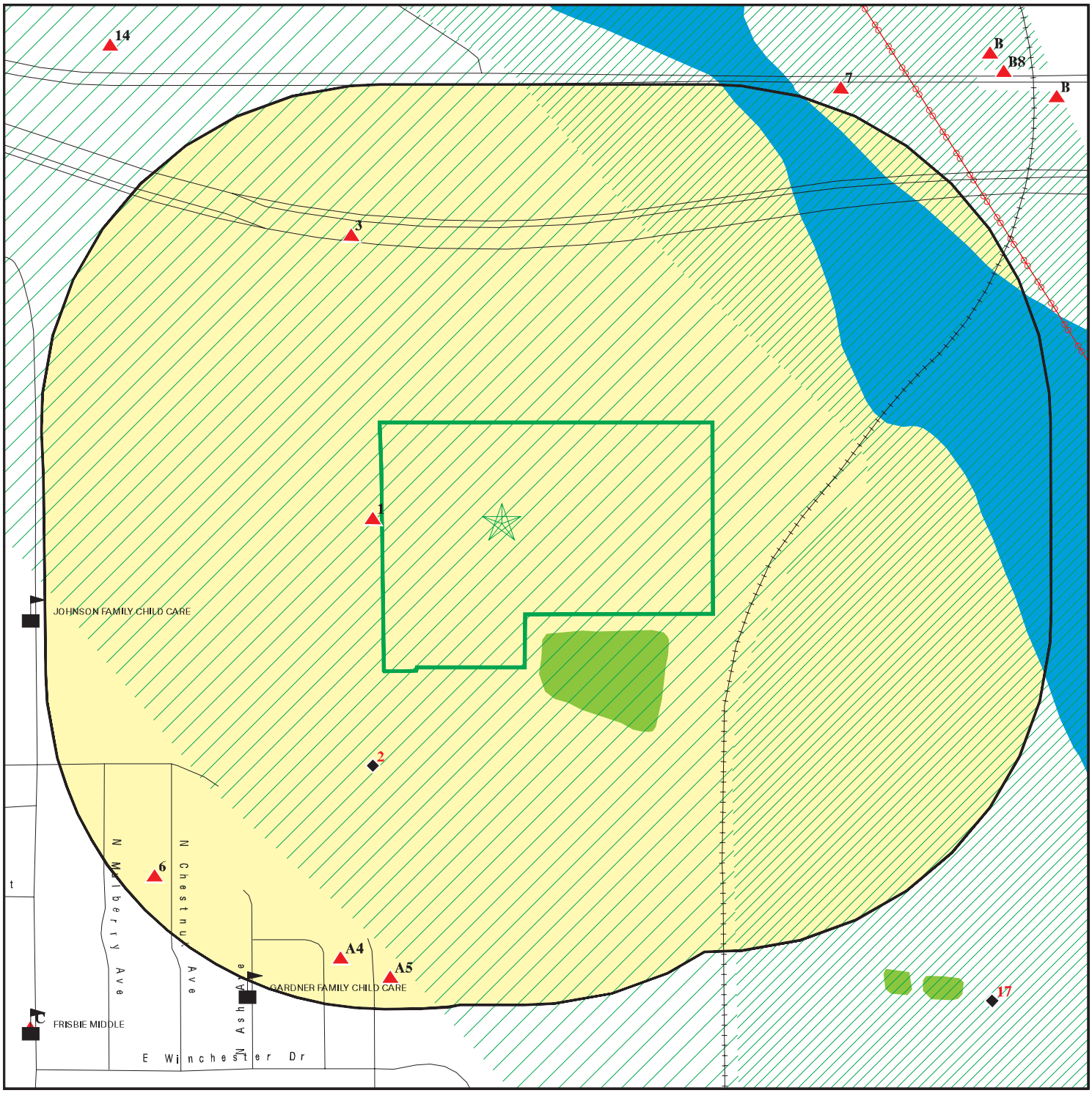
Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Pepper Industry Parcels	CLIENT:	SCS Engineers
ADDRESS:	Pepper Avenue and 210 Freeway Rialto CA 92376	CONTACT:	Kim Braun
LAT/LONG:	34.131269 / 117.351335	INQUIRY #:	05633595.2r
		DATE:	April 25, 2019 7:49 pm

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DETAIL MAP - 05633595.2R



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Pepper Industry Parcels	CLIENT:	SCS Engineers
ADDRESS:	Pepper Avenue and 210 Freeway Rialto CA 92376	CONTACT:	Kim Braun
LAT/LONG:	34.131269 / 117.351335	INQUIRY #:	05633595.2r
		DATE:	April 25, 2019 7:51 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.250		0	0	0	1	0	1
Proposed NPL	1.250		0	0	0	0	0	0
NPL LIENS	1.250		0	0	0	0	0	0
Federal Delisted NPL site list								
Delisted NPL	1.250		0	0	0	0	0	0
Federal CERCLIS list								
FEDERAL FACILITY	0.750		0	0	0	0	NR	0
SEMS	0.750		0	0	0	1	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.750		0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.250		0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.750		0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG	0.500		0	0	0	NR	NR	0
RCRA-SQG	0.500		0	0	3	NR	NR	3
RCRA-CESQG	0.500		0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.750		0	0	0	0	NR	0
US ENG CONTROLS	0.750		0	0	0	1	NR	1
US INST CONTROL	0.750		0	0	0	1	NR	1
Federal ERNS list								
ERNS	0.250		0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.250		0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.250		0	0	0	2	2	4
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.750		0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST	0.750		0	0	1	2	NR	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.750		0	0	0	0	NR	0
CPS-SLIC	0.750		0	0	0	0	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.500		0	0	0	NR	NR	0
UST	0.500		0	0	1	NR	NR	1
AST	0.500		0	0	2	NR	NR	2
INDIAN UST	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.750		0	0	0	0	NR	0
VCP	0.750		0	0	0	0	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.750		0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.750		0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.750		0	0	0	0	NR	0
SWRCY	0.750		0	0	0	0	NR	0
HAULERS	0.250		0	0	NR	NR	NR	0
INDIAN ODI	0.750		0	0	0	0	NR	0
DEBRIS REGION 9	0.750		0	0	0	0	NR	0
ODI	0.750		0	0	0	0	NR	0
IHS OPEN DUMPS	0.750		0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.250		0	0	NR	NR	NR	0
HIST Cal-Sites	1.250		0	0	0	1	0	1
SCH	0.500		0	0	0	NR	NR	0
CDL	0.250		0	0	NR	NR	NR	0
CERS HAZ WASTE	0.500		0	0	0	NR	NR	0
Toxic Pits	1.250		0	0	0	0	0	0
US CDL	0.250		0	0	NR	NR	NR	0
PFAS	0.750		0	0	0	0	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.500		0	0	2	NR	NR	2
HIST UST	0.500		0	0	1	NR	NR	1
CERS TANKS	0.500		0	0	0	NR	NR	0
CA FID UST	0.500		0	0	2	NR	NR	2
Local Land Records								
LIENS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.250		0	0	NR	NR	NR	0
DEED	0.750		0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS	0.250		0	0	NR	NR	NR	0
CHMIRS	0.250		0	1	NR	NR	NR	1
LDS	0.250		0	0	NR	NR	NR	0
MCS	0.250		0	0	NR	NR	NR	0
SPILLS 90	0.250		0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.500		0	0	1	NR	NR	1
FUDS	1.250		0	0	0	0	0	0
DOD	1.250		0	0	0	0	0	0
SCRD DRYCLEANERS	0.750		0	0	0	0	NR	0
US FIN ASSUR	0.250		0	0	NR	NR	NR	0
EPA WATCH LIST	0.250		0	0	NR	NR	NR	0
2020 COR ACTION	0.500		0	0	0	NR	NR	0
TSCA	0.250		0	0	NR	NR	NR	0
TRIS	0.250		0	0	NR	NR	NR	0
SSTS	0.250		0	0	NR	NR	NR	0
ROD	1.250		0	0	0	1	0	1
RMP	0.250		0	0	NR	NR	NR	0
RAATS	0.250		0	0	NR	NR	NR	0
PRP	0.250		0	0	NR	NR	NR	0
PADS	0.250		0	0	NR	NR	NR	0
ICIS	0.250		0	0	NR	NR	NR	0
FTTS	0.250		0	0	NR	NR	NR	0
MLTS	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	0.250		0	0	NR	NR	NR	0
COAL ASH EPA	0.750		0	0	0	0	NR	0
PCB TRANSFORMER	0.250		0	0	NR	NR	NR	0
RADINFO	0.250		0	0	NR	NR	NR	0
HIST FTTS	0.250		0	0	NR	NR	NR	0
DOT OPS	0.250		0	0	NR	NR	NR	0
CONSENT	1.250		0	0	0	0	0	0
INDIAN RESERV	1.250		0	0	0	0	0	0
FUSRAP	1.250		0	0	0	0	0	0
UMTRA	0.750		0	0	0	0	NR	0
LEAD SMELTERS	0.250		0	0	NR	NR	NR	0
US AIRS	0.250		0	0	NR	NR	NR	0
US MINES	0.500		0	0	2	NR	NR	2
ABANDONED MINES	0.500		0	0	0	NR	NR	0
FINDS	0.250		0	0	NR	NR	NR	0
UXO	1.250		0	0	0	0	0	0
DOCKET HWC	0.250		0	0	NR	NR	NR	0
ECHO	0.250		0	0	NR	NR	NR	0
FUELS PROGRAM	0.500		0	0	0	NR	NR	0
CA BOND EXP. PLAN	1.250		0	0	0	0	0	0
Cortese	0.750		0	0	0	0	NR	0
CUPA Listings	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.500		0	0	0	NR	NR	0
EMI	0.250		0	0	NR	NR	NR	0
ENF	0.250		0	0	NR	NR	NR	0
Financial Assurance	0.250		0	0	NR	NR	NR	0
HAZNET	0.250		0	2	NR	NR	NR	2
HIST CORTESE	0.750		0	0	1	0	NR	1
HWP	1.250		0	0	0	0	0	0
HWT	0.500		0	0	0	NR	NR	0
MINES	0.500		0	0	3	NR	NR	3
MWMP	0.500		0	0	0	NR	NR	0
NPDES	0.250		1	0	NR	NR	NR	1
San Bern. Co. Permit	0.500		0	0	6	NR	NR	6
PEST LIC	0.250		0	0	NR	NR	NR	0
PROC	0.750		0	0	0	0	NR	0
Notify 65	1.250		0	0	0	0	0	0
UIC	0.250		0	0	NR	NR	NR	0
UIC GEO	0.250		0	0	NR	NR	NR	0
WASTEWATER PITS	0.750		0	0	0	0	NR	0
WDS	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.250		0	0	NR	NR	NR	0
PROJECT	0.250		0	0	NR	NR	NR	0
WDR	0.250		0	0	NR	NR	NR	0
CIWQS	0.250		2	1	NR	NR	NR	3
CERS	0.250		0	0	NR	NR	NR	0
NON-CASE INFO	0.250		0	0	NR	NR	NR	0
WIP	0.500		0	0	0	NR	NR	0
OTHER OIL GAS	0.250		0	0	NR	NR	NR	0
PROD WATER PONDS	0.250		0	0	NR	NR	NR	0
SAMPLING POINT	0.250		0	0	NR	NR	NR	0
WELL STIM PROJ	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.250		0	0	0	0	0	0
EDR Hist Auto	0.375		0	0	0	NR	NR	0
EDR Hist Cleaner	0.375		0	0	0	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.250		0	0	NR	NR	NR	0
RGA LUST	0.250		0	0	NR	NR	NR	0
- Totals --		0	3	4	25	10	2	44

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

NPL **NEWMARK GROUND WATER CONTAMINATION** **NPL** **1000296132**
Region **BUNKER HILL GROUND WATER BASIN** **SEMS** **CAD981434517**
ENE **SAN BERNARDINO, CA 92408** **US ENG CONTROLS**
1/2-1 **US INST CONTROL**
4009 ft. **ROD**
PRP

NPL:

EPA ID:	CAD981434517
Cerclis ID:	902439
EPA Region:	9
Federal:	N
Final Date:	1989-03-31 00:00:00
Site Score:	35.57
Latitude:	34.171810999999998
Longitude:	-117.31310000000001

Category Details:

NPL Status:	Currently on the Final NPL
Category Description:	Depth To Aquifer-<= 10 Feet
Category Value:	1

NPL Status:	Currently on the Final NPL
Category Description:	Distance To Nearest Population-> 0 And <= 1/4 Mile
Category Value:	10

Site Details:

Site Name:	NEWMARK GROUND WATER CONTAMINATION
Site Status:	Final
Site Zip:	92408
Site City:	SAN BERNARDINO
Site State:	CA
Federal Site:	No
Site County:	SAN BERNARDINO
EPA Region:	09
Date Proposed:	06/24/88
Date Deleted:	Not reported
Date Finalized:	03/31/89

Substance Details:

NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE
CAS #:	127-18-4
Pathway:	GROUND WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	U227
Substance:	TRICHLOROETHANE, 1,1,2-
CAS #:	79-00-5
Pathway:	GROUND WATER PATHWAY
Scoring:	3

NPL Status:	Currently on the Final NPL
Substance ID:	U228
Substance:	TRICHLOROETHYLENE (TCE)
CAS #:	79-01-6

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Pathway: GROUND WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: Not reported
Substance: Not reported
CAS #: Not reported
Pathway: Not reported
Scoring: Not reported

NPL Status: Currently on the Final NPL
Substance ID: U079
Substance: TRANS-DICHLOROETHYLENE, 1,2-
CAS #: 156-60-5
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U080
Substance: METHYLENE CHLORIDE
CAS #: 75-09-2
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U121
Substance: TRICHLOROFLUOROMETHANE
CAS #: 75-69-4
Pathway: NO PATHWAY INDICATED
Scoring: 1

Summary Details:

Conditions at proposal June 24, 1988): The four municipal supply wells of Newmark Well Field are in an area of approximately 700 square feet bounded by 48th Street, Magnolia Drive, Reservoir Drive, and the San Bernardino County Flood ControlChannel in the Muscoy area north of San Bernardino, San Bernardino County, California. The San Bernardino Municipal Water Department was forced to close the four wells in the early 1980s when they were found to be contaminated with high levelsof halogenated organic chemicals, including tetrachloroethylene, also known as perchloroethylene PCE), and trichloroethylene TCE). An August 1986 report by a consultant to the California Regional Water Quality Control Board identified possible contaminant sources. A midnight dumping operation from the late 1950s to early 1960s appears to be the most likely source of contamination. It is approximately 300 feet upgradient of the Newmark wells. The California Department of Health Services is installing air stripping towers to remove contaminants from ground water. The towers are scheduled to be in operation in mid-1988. An additional 10 municipal wells in San Bernardino have also been retired from service dueto PCE/TCE contamination. An apparent hydrogeologic barrier, the Pelona Schist outcrop of the Shandin Hills, suggests that contamination of these 10 wells is originating from different sources. The 14 municipal wells that have already been retired from service served 25 percent of the city s total population, and additional wells are also threatened. The San Bernardino wells supply 80,000 people in the cities of San Bernardino and Loma Linda, and the loss of any additional wells could leave some areas without water. The municipal supply wells for Riverside also lie directly downgradient. No alternative water sources are

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

currently available. Status March 31, 1989): The air stripping towers are now in operation.

Site Status Details:
- NPL Status: Final
- Proposed Date: 06/24/1988
- Final Date: 03/31/1989
- Deleted Date: Not reported

Narratives Details:
- NPL Name: NEWMARK GROUND WATER CONTAMINATION
- City: SAN BERNARDINO
- State: CA

SEMS:
- Site ID: 0902439
- EPA ID: CAD981434517
- Cong District: 31,40
- FIPS Code: 06071
- Latitude: 34.171811
- Longitude: -117.313100
- FF: N
- NPL: Currently on the Final NPL
- Non NPL Status: Not reported

SEMS Detail:
- Region: 09
- Site ID: 0902439
- EPA ID: CAD981434517
- Site Name: NEWMARK GROUND WATER CONTAMINATION
- NPL: F
- FF: N
- OU: 02
- Action Code: RO
- Action Name: ROD
- SEQ: 6
- Start Date: 2015-04-03 04:00:00
- Finish Date: 8/20/2015 4:00:00 AM
- Qual: Not reported
- Current Action Lead: EPA Perf

- Region: 09
- Site ID: 0902439
- EPA ID: CAD981434517
- Site Name: NEWMARK GROUND WATER CONTAMINATION
- NPL: F
- FF: N
- OU: 02
- Action Code: CO
- Action Name: RI/FS
- SEQ: 2
- Start Date: 1992-09-25 04:00:00
- Finish Date: 3/24/1995 5:00:00 AM
- Qual: Not reported
- Current Action Lead: EPA Perf

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	ED
Action Name:	R/H ASMT
SEQ:	2
Start Date:	1994-12-02 05:00:00
Finish Date:	12/2/1994 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1987-06-01 04:00:00
Finish Date:	6/1/1987 4:00:00 AM
Qual:	L
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	02
Action Code:	RA
Action Name:	RA
SEQ:	2
Start Date:	1996-09-05 04:00:00
Finish Date:	9/28/2007 4:00:00 AM
Qual:	FR
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	JF
Action Name:	ECO RISK
SEQ:	2
Start Date:	1994-12-02 05:00:00
Finish Date:	12/2/1994 5:00:00 AM

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	ED
Action Name:	R/H ASMT
SEQ:	1
Start Date:	1993-03-21 05:00:00
Finish Date:	3/21/1993 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	1
Start Date:	1993-08-04 04:00:00
Finish Date:	8/4/1993 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	JF
Action Name:	ECO RISK
SEQ:	1
Start Date:	1993-03-21 05:00:00
Finish Date:	3/21/1993 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	MA
Action Name:	ST COOP

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

SEQ:	1
Start Date:	1990-09-27 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	03
Action Code:	CO
Action Name:	RI/FS
SEQ:	3
Start Date:	1994-02-09 05:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2015-04-03 04:00:00
Finish Date:	8/20/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	FE
Action Name:	5 YEAR
SEQ:	3
Start Date:	2018-09-26 04:00:00
Finish Date:	9/26/2018 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1986-08-01 04:00:00
Finish Date:	8/1/1986 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	RD
Action Name:	RD
SEQ:	1
Start Date:	1993-09-24 04:00:00
Finish Date:	10/3/1997 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	1
Start Date:	1992-09-02 04:00:00
Finish Date:	9/2/1992 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	RA
Action Name:	RA
SEQ:	1
Start Date:	1995-09-18 04:00:00
Finish Date:	9/30/2004 4:00:00 AM
Qual:	FR
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1988-06-24 04:00:00
Finish Date:	6/24/1988 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	1987-06-01 04:00:00
Finish Date:	6/1/1987 4:00:00 AM
Qual:	H
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	AR
Action Name:	ADMIN REC
SEQ:	1
Start Date:	1991-06-30 04:00:00
Finish Date:	Not reported
Qual:	E
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	02
Action Code:	RD
Action Name:	RD
SEQ:	2
Start Date:	1995-04-17 04:00:00
Finish Date:	9/30/2003 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	CO
Action Name:	RI/FS
SEQ:	1
Start Date:	1990-06-28 04:00:00
Finish Date:	8/4/1993 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	TG
Action Name:	TA GRANT
SEQ:	1
Start Date:	1993-04-30 04:00:00
Finish Date:	7/1/1993 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	02
Action Code:	LR
Action Name:	LT RESP
SEQ:	2
Start Date:	2007-01-01 05:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	MA
Action Name:	ST COOP
SEQ:	2
Start Date:	2010-10-27 04:00:00
Finish Date:	Not reported

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	FE
Action Name:	5 YEAR
SEQ:	2
Start Date:	2013-09-27 04:00:00
Finish Date:	9/27/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	FE
Action Name:	5 YEAR
SEQ:	1
Start Date:	2007-11-14 05:00:00
Finish Date:	9/23/2008 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	AR
Action Name:	ADMIN REC
SEQ:	2
Start Date:	2000-07-18 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

SEQ: 2
Start Date: 1990-09-30 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0902439
EPA ID: CAD981434517
Site Name: NEWMARK GROUND WATER CONTAMINATION
NPL: F
FF: N
OU: 00
Action Code: TA
Action Name: TECH ASSIST
SEQ: 1
Start Date: 2001-04-03 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0902439
EPA ID: CAD981434517
Site Name: NEWMARK GROUND WATER CONTAMINATION
NPL: F
FF: N
OU: 00
Action Code: RS
Action Name: RV ASSESS
SEQ: 2
Start Date: 1989-07-31 04:00:00
Finish Date: 7/31/1989 4:00:00 AM
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0902439
EPA ID: CAD981434517
Site Name: NEWMARK GROUND WATER CONTAMINATION
NPL: F
FF: N
OU: 01
Action Code: LR
Action Name: LT RESP
SEQ: 1
Start Date: 2000-09-29 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0902439
EPA ID: CAD981434517
Site Name: NEWMARK GROUND WATER CONTAMINATION
NPL: F
FF: N

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

OU:	00
Action Code:	NF
Action Name:	NPL FINL
SEQ:	1
Start Date:	1989-03-31 05:00:00
Finish Date:	3/31/1989 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	1
Start Date:	1990-06-28 04:00:00
Finish Date:	9/30/1998 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	02
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	1995-03-24 05:00:00
Finish Date:	3/24/1995 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	3
Start Date:	1990-07-02 04:00:00
Finish Date:	7/2/1990 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0902439
EPA ID:	CAD981434517

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	00
Action Code:	HR
Action Name:	HAZRANK
SEQ:	1
Start Date:	1987-10-01 04:00:00
Finish Date:	10/1/1987 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	02
Action Code:	OM
Action Name:	OM
SEQ:	2
Start Date:	2007-10-01 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	St Ovrsght

Region:	09
Site ID:	0902439
EPA ID:	CAD981434517
Site Name:	NEWMARK GROUND WATER CONTAMINATION
NPL:	F
FF:	N
OU:	01
Action Code:	OM
Action Name:	OM
SEQ:	1
Start Date:	2000-10-01 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	St Ovrsght

US ENG CONTROLS:

EPA ID:	CAD981434517
Site ID:	0902439
Name:	NEWMARK GROUND WATER CONTAMINATION
Address:	BUNKER HILL GROUND WATER BASIN SAN BERNARDINO, CA 92408
EPA Region:	09
County:	SAN BERNARDINO
Event Code:	Not reported
Actual Date:	06/30/1998
Contact Name:	Not reported
Contact Phone and Ext:	Not reported
Event Code Description:	Not reported

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Air Stripping
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Carbon Adsorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Discharge
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Filtration
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Liquid Phase Carbon Adsorption
Contact Name: Not reported

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Reinjection
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 08/04/1993
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: UV Oxidation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 03/24/1995
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Air Stripping
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 03/24/1995
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Carbon Adsorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 03/24/1995
Operable Unit: 02

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Contaminated Media : Groundwater
Engineering Control: Discharge
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 03/24/1995
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

US INST CONTROL:
EPA ID: CAD981434517
Site ID: 0902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action Name: Explanation Of Significant Differences
Address: BUNKER HILL GROUND WATER BASIN
SAN BERNARDINO, CA 92408
EPA Region: 09
County: SAN BERNARDINO
Event Code: Not reported
Inst. Control: Groundwater use/well drilling regulation
Actual Date: 08/31/2004
Complet. Date: 08/09/2004
Operable Unit: 01
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD981434517
Site ID: 0902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action Name: Explanation Of Significant Differences
Address: BUNKER HILL GROUND WATER BASIN
SAN BERNARDINO, CA 92408
EPA Region: 09
County: SAN BERNARDINO
Event Code: Not reported
Inst. Control: Groundwater use/well drilling regulation
Actual Date: 08/31/2004
Complet. Date: 08/09/2004
Operable Unit: 02
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

ROD:
EPA ID: CAD981434517

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

RG: 9
Site ID: 902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT Decision Document (ROD)
Operable Unit Number: NEWMARK OU
SEQ ID: 1
Action Completion: 1993-08-04 00:00:00
NPL Status: Final
Non NPL Status: Not reported

EPA ID: CAD981434517
RG: 9
Site ID: 902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT Decision Document (ROD)
Operable Unit Number: MUSCOY OU
SEQ ID: 2
Action Completion: 1995-03-24 00:00:00
NPL Status: Final
Non NPL Status: Not reported

EPA ID: CAD981434517
RG: 9
Site ID: 902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT Decision Document (ROD)
Operable Unit Number: NEWMARK OU
SEQ ID: 5
Action Completion: 2015-08-20 00:00:00
NPL Status: Final
Non NPL Status: Not reported

EPA ID: CAD981434517
RG: 9
Site ID: 902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT Decision Document (ROD)
Operable Unit Number: MUSCOY OU
SEQ ID: 6
Action Completion: 2015-08-20 00:00:00
NPL Status: Final
Non NPL Status: Not reported

EPA ID: CAD981434517
RG: 9
Site ID: 902439
Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT ESD
Operable Unit Number: MUSCOY OU
SEQ ID: 2
Action Completion: 2004-08-09 00:00:00
NPL Status: Final
Non NPL Status: Not reported

EPA ID: CAD981434517
RG: 9
Site ID: 902439

NEWMARK GROUND WATER CONTAMINATION (Continued) **1000296132**

Name: NEWMARK GROUND WATER CONTAMINATION
Action: GOVT ESD
Operable Unit Number: NEWMARK OU
SEQ ID: 1
Action Completion: 2004-08-09 00:00:00
NPL Status: Final
Non NPL Status: Not reported

PRP:
PRP Name: COUNTY OF SAN BERNARDINO
DEPARTMENT OF THE ARMY
HEADQUARTERS DEPARTMENT OF THE ARMY

1
West
< 1/8
0.007 mi.
35 ft.

PEPPER AVENUE EXTENSION PROJECT **NPDES S119086672**
BETWEEN WINCHESTER DRIVE AND I 210 **CIWQS N/A**
RIALTO, CA 92376

Relative:
Higher

Actual:
1285 ft.

NPDES:
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: Not reported
Regulatory Measure Type: Region 8 MS4 CIPs
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: Terminated
Status Date: 11/24/2014
Operator Name: City of Rialto Public Works Department
Operator Address: 335 W Rialto Avenue
Operator City: Rialto
Operator State: California
Operator Zip: 92376

CIWQS:
Agency: City of Rialto Public Works Department
Agency Address: 335 W Rialto Avenue, Rialto, CA 92376
Place/Project Type: Facility
SIC/NAICS: Not reported
Region: 8
Program: MNSTW1
Regulatory Measure Status: Terminated
Regulatory Measure Type: Region 8 MS4 CIPs
Order Number: R8-2010-0036

PEPPER AVENUE EXTENSION PROJECT (Continued) **S119086672**

WDID:	Not reported
NPDES Number:	CAS618036
Adoption Date:	Not reported
Effective Date:	08/07/2012
Termination Date:	11/24/2014
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	2
Violations within 5 years:	2
Latitude:	34.1313
Longitude:	-117.353

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2 **PEPPER AVENUE EXTENSION** **CIWQS** **S121663468**
SSW **N/A**
< 1/8 **RIALTO, CA**
0.070 mi.
371 ft.

Relative: **Lower**
Actual: **1266 ft.**

CIWQS:

Agency:	Rialto City
Agency Address:	325 West Rialto Avenue, Rialto, CA 92376
Place/Project Type:	Dredge/Fill Site
SIC/NAICS:	Not reported
Region:	8
Program:	CERFILLEXC
Regulatory Measure Status:	Historical
Regulatory Measure Type:	401 Certification
Order Number:	Not reported
WDID:	Not reported
NPDES Number:	Not reported
Adoption Date:	11/30/2011
Effective Date:	11/30/2011
Termination Date:	11/30/2016
Expiration/Review Date:	11/30/2017
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	34.128639
Longitude:	-117.353

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3 **STATE ROUTE 210/PEPPER AVENUE NEW INTERCHANGE PROJ** **CIWQS** **S120035413**
NNW **N/A**
1/8-1/4 **RIALTO, CA 92376**
0.140 mi.
741 ft.

Relative: **Higher**
Actual: **1296 ft.**

CIWQS:

Agency:	San Bernardino Associated Governments
Agency Address:	1170 West 3rd Street, San Bernardino, CA 92410
Place/Project Type:	Dredge/Fill Site

STATE ROUTE 210/PEPPER AVENUE NEW INTERCHANGE PROJECT (Continued) **S120035413**

SIC/NAICS:	Not reported
Region:	8
Program:	CERFILLEXC
Regulatory Measure Status:	Active
Regulatory Measure Type:	401 Certification
Order Number:	Not reported
WDID:	362015-28
NPDES Number:	Not reported
Adoption Date:	12/22/2015
Effective Date:	12/22/2015
Termination Date:	Not reported
Expiration/Review Date:	12/22/2020
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	34.134344
Longitude:	-117.353275

A4 **HUD INTOWN PROPERTIES** **HAZNET** **S112900735**
SSW **1487 BIRCH AVE N** **N/A**
1/8-1/4 **RIALTO, CA 92376**
0.214 mi.
1131 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
1306 ft.

HAZNET:

Facility Name:	HUD INTOWN PROPERTIES
envid:	S112900735
Year:	1999
GEPAID:	CAC002173833
Contact:	HUD
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	7365 CARNELIAN # 105
Mailing City,St,Zip:	RANCHO CUCAMONGA, CA 917300000
Gen County:	Not reported
TSD EPA ID:	CAD028409019
TSD County:	Not reported
Waste Category:	Household waste
Disposal Method:	Transfer Station
Tons:	.0075
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Bernardino

A5
SSW
1/8-1/4
0.226 mi.
1194 ft.

1475 NORTH PEPPER AVENUE
RIALTO, CA

Site 2 of 2 in cluster A

CHMIRS **S109036285**
N/A

Relative:
Higher

Actual:
1314 ft.

CHMIRS:

OES Incident Number:	6-5101
OES notification:	08/26/2006
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Not reported
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Reporting Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	2006
Agency:	Rialto FD
Incident Date:	8/26/2006 12:00:00 AM
Admin Agency:	San Bernardino County Health Department
Amount:	Not reported
Contained:	Yes
Site Type:	Road
E Date:	Not reported
Substance:	Paint
Gallons:	0.000000
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported

(Continued) **S109036285**

Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Located 8 five gallon bukets, 3 gallons spilled out.

6
SW
1/8-1/4
0.227 mi.
1200 ft.

JAMES JORDAN **HAZNET** **S113460564**
1532 N CHESTNUT AVE **N/A**
RIALTO, CA 92376

Relative: Higher

Actual: 1333 ft.

HAZNET:

Facility Name:	JAMES JORDAN
envid:	S113460564
Year:	2010
GEPAID:	CAC002654001
Contact:	JAMES JORDAN
Telephone:	9098759942
Mailing Name:	Not reported
Mailing Address:	1532 N CHESTNUT AVE
Mailing City,St,Zip:	RIALTO, CA 92376
Gen County:	Not reported
TSD EPA ID:	CAD982444481
TSD County:	Not reported
Waste Category:	Other inorganic solid waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.3
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Bernardino

7
NE
1/4-1/2
0.266 mi.
1402 ft.

VERIZON WIRELESS: DUNDEE **San Bern. Co. Permit** **S119102901**
2565 HIGHLAND AVE **N/A**
SAN BERNARDINO, CA 92404

Relative: Higher

Actual: 1284 ft.

San Bern. Co. Permit:

Region:	SAN BERNARDINO
Facility ID:	FA0017202
Owner:	Verizon Wireless
Permit Number:	PT0036662
Permit Category:	HAZARDOUS MATERIALS 1-3 CHEMICALS SPECIAL
Facility Status:	ACTIVE

VERIZON WIRELESS: DUNDEE (Continued) **S119102901**

Expiration Date: 12/31/2018

B8 **CARDENAS MARKETS #36** **San Bern. Co. Permit** **S122218708**
NE **2450 E HIGHLAND AVE** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92404**
0.338 mi.
1785 ft. **Site 1 of 9 in cluster B**

Relative:
Higher

Actual:
1282 ft.

San Bern. Co. Permit:
Region: SAN BERNARDINO
Facility ID: FA0017816
Owner: Cardenas Markets, LLC.
Permit Number: PT0038532
Permit Category: HAZARDOUS MATERIALS 4-10 CHEMICALS
Facility Status: ACTIVE
Expiration Date: 08/31/2019

Region: SAN BERNARDINO
Facility ID: FA0017816
Owner: Cardenas Markets, LLC.
Permit Number: PT0039042
Permit Category: HAZWASTE GENERAL ACTIVITY (NB)
Facility Status: FEE EXEMPT
Expiration Date: 08/31/2019

B9 **VULCAN MATERIALS CAL MAT DIV** **RCRA-SQG** **1004675446**
NE **2400 W HIGHLAND AVE** **HAZNET** **CAR000073007**
1/4-1/2 **SAN BERNARDINO, CA 92405**
0.342 mi.
1808 ft. **Site 2 of 9 in cluster B**

Relative:
Higher

Actual:
1285 ft.

RCRA-SQG:
Date form received by agency: 05/10/2000
Facility name: VULCAN MATERIALS CAL MAT DIV
Facility address: 2400 W HIGHLAND AVE
SAN BERNARDINO, CA 92405
EPA ID: CAR000073007
Mailing address: 3200 SAN FERNANDO RD
LOS ANGELES, CA 90065
Contact: CARLOS BUGARIN
Contact address: 2400 W HIGHLAND AVE
SAN BERNARDINO, CA 92405
Contact country: US
Contact telephone: 909-875-1150
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: VULCAN MATERIALS
Owner/operator address: 2400 W HIGHLAND AVE

VULCAN MATERIALS CAL MAT DIV (Continued) **1004675446**

SAN BERNARDINO, CA 92405
Owner/operator country: Not reported
Owner/operator telephone: 909-875-1150
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D000
. Waste name: Not Defined

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

Violation Status: No violations found

HAZNET:
Facility Name: VULCAN MATERIALS CAL MAT DIV
envid: 1004675446
Year: 2001
GEPAID: CAR000073007
Contact: B WOYSHNER-REGIONAL ENVIR. MGR
Telephone: 3232582777
Mailing Name: Not reported
Mailing Address: 3200 SAN FERNANDO RD
Mailing City,St,Zip: LOS ANGELES, CA 900650000
Gen County: Not reported
TSD EPA ID: CAT000613927
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: 0.13
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Bernardino

envid: 1004675446

VULCAN MATERIALS CAL MAT DIV (Continued) **1004675446**

Year:	2000
GEPAID:	CAR000073007
Contact:	B WOYSHNER-REGIONAL ENVIR. MGR
Telephone:	3232582777
Mailing Name:	Not reported
Mailing Address:	3200 SAN FERNANDO RD
Mailing City,St,Zip:	LOS ANGELES, CA 900650000
Gen County:	Not reported
TSD EPA ID:	CAT000613927
TSD County:	Not reported
Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Transfer Station
Tons:	0.1
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Bernardino

B10 **CAL MAT CO.** **UST** **U003784737**
NE **2400 W HIGHLAND AVE** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92407**
0.342 mi.
1808 ft. **Site 3 of 9 in cluster B**

Relative: **Higher**
Actual: **1285 ft.**

UST:

Facility ID:	FA0001676
Permitting Agency:	San Bernardino County Fire Department
Latitude:	34.13603
Longitude:	-117.349019
Facility ID:	86008958
Permitting Agency:	SAN BERNARDINO COUNTY
Latitude:	34.13608
Longitude:	-117.34463

B11 **SAN BERNARDINO** **HIST UST** **U001575998**
NE **2400 W HIGHLAND AV** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92405**
0.342 mi.
1808 ft. **Site 4 of 9 in cluster B**

Relative: **Higher**
Actual: **1285 ft.**

HIST UST:

File Number:	00029AA7
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00029AA7.pdf
Region:	STATE
Facility ID:	00000005695
Facility Type:	Other
Other Type:	SAND & GRAVEL PLANT
Contact Name:	Not reported
Telephone:	2132582777
Owner Name:	CAL MAT CO FORMERLY CONROCK CO
Owner Address:	3200 SAN FERNANDO RD
Owner City,St,Zip:	LOS ANGELES, CA 90065
Total Tanks:	0003
Tank Num:	001
Container Num:	1

SAN BERNARDINO (Continued) **U001575998**

Year Installed:	Not reported
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	None
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	None
Tank Num:	003
Container Num:	3
Year Installed:	Not reported
Tank Capacity:	00000200
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	Not reported
Leak Detection:	None

Click here for Geo Tracker PDF:

B12 **VULCAN MATERIALS WEST DIVISION #2** **AST** **A100346262**
NE **2400 W HIGHLAND AVE** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92407**
0.342 mi.
1808 ft. **Site 5 of 9 in cluster B**

Relative:
Higher

Actual:
1285 ft.

AST:

Certified Unified Program Agencies:	San Bernardino
Owner:	CALMAT CO.
Total Gallons:	5,500
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported

VULCAN MATERIALS WEST DIVISION #2 (Continued) **A100346262**

Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported
Certified Unified Program Agencies:	Not reported
Owner:	Calmat Co. dba Vulcan Materials Co.
Total Gallons:	Not reported
CERSID:	10036714
Facility ID:	FA0001676
Business Name:	CalMat Co. DBA Vulcan Materials Company
Phone:	(909) 875-1150
Fax:	(323) 258-3289
Mailing Address:	2400 W HIGHLAND AVE
Mailing Address City:	SAN BERNARDINO
Mailing Address State:	CA
Mailing Address Zip Code:	92407
Operator Name:	Calmat Co. dba Vulcan Materials Co.
Operator Phone:	(909) 875-1150
Owner Phone:	(818) 553-8938
Owner Mail Address:	500 N. Brand Blvd., Suite 500
Owner State:	CA
Owner Zip Code:	91203
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAD981568579

B13 **CALMAT CO** **SWEEPS UST** **S101590889**
NE **2400 W HIGHLAND AVE** **CA FID UST** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92407** **EMI**
0.342 mi. **NPDES**
1808 ft. **Site 6 of 9 in cluster B** **San Bern. Co. Permit**
WDS
Relative: Higher **CIWQS**

Actual: 1285 ft.

SWEEPS UST:

Status:	Active
Comp Number:	5695
Number:	9
Board Of Equalization:	44-016249
Referral Date:	03-24-92
Action Date:	03-24-92
Created Date:	02-29-88
Owner Tank Id:	1
SWRCB Tank Id:	36-000-005695-000001
Tank Status:	A
Capacity:	10000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	2

CALMAT CO (Continued) **S101590889**

Status: Active
Comp Number: 5695
Number: 9
Board Of Equalization: 44-016249
Referral Date: 03-24-92
Action Date: 03-24-92
Created Date: 02-29-88
Owner Tank Id: 2
SWRCB Tank Id: 36-000-005695-000002
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

CA FID UST:
Facility ID: 36000014
Regulated By: UTNKA
Regulated ID: 00005695
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: Not reported
Mail To: Not reported
Mailing Address: PO BOX 2950 TRMNL AN
Mailing Address 2: Not reported
Mailing City,St,Zip: SAN BERNARDINO 92405
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

EMI:
Year: 1990
County Code: 36
Air Basin: SC
Facility ID: 34281
Air District Name: SC
SIC Code: 3273
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 1993
County Code: 36

CALMAT CO (Continued) **S101590889**

Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	15

Year:	1995
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	15

Year:	1996
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Year:	2012
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported

CALMAT CO (Continued) **S101590889**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.0068593066498
Reactive Organic Gases Tons/Yr:	0.00665
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	50.22556
Part. Matter 10 Micrometers and Smllr Tons/Yr:	25.11278

Year:	2013
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.0073544725738
Reactive Organic Gases Tons/Yr:	0.00714
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	47.00211
Part. Matter 10 Micrometers and Smllr Tons/Yr:	23.501055

Year:	2014
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.0037878787879
Reactive Organic Gases Tons/Yr:	0.003
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	50.58753
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.904649

Year:	2015
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.12973606636
Reactive Organic Gases Tons/Yr:	0.12880243
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0

CALMAT CO (Continued) **S101590889**

Particulate Matter Tons/Yr:	50.48125244
Part. Matter 10 Micrometers and Smllr Tons/Yr:	10.25592076
Year:	2016
County Code:	36
Air Basin:	SC
Facility ID:	34281
Air District Name:	SC
SIC Code:	3273
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4.4065656566
Reactive Organic Gases Tons/Yr:	3.49
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	51.786213
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9.5349865

NPDES:

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 36I018946
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	04/05/2017
Operator Name:	CalPortland Company
Operator Address:	2025 E Financial Way
Operator City:	Glendora
Operator State:	California
Operator Zip:	91741

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Terminated
Agency Number:	0
Region:	8
Regulatory Measure ID:	213770
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported

CALMAT CO (Continued) **S101590889**

WDID:	8 36I018946
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/03/2004
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	03/10/2017
Discharge Name:	CalPortland Company
Discharge Address:	2025 E Financial Way
Discharge City:	Glendora
Discharge State:	California
Discharge Zip:	91741
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported

CALMAT CO (Continued) **S101590889**

Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	213770
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 36I018946
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	03/10/2017
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	08/03/2004
Status:	Terminated
Status Date:	04/05/2017
Place Size:	1.1
Place Size Unit:	Acres
Contact:	Basil Ortiz
Contact Title:	Operations Manager
Contact Phone:	626-852-6200
Contact Phone Ext:	Not reported
Contact Email:	bortiz@calportland.com
Operator Name:	CalPortland Company
Operator Address:	2025 E Financial Way
Operator City:	Glendora
Operator State:	California
Operator Zip:	91741
Operator Contact:	Irene Zamorano
Operator Contact Title:	Enviromental Manager
Operator Contact Phone:	626-733-3782
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	izamorano@calportland.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported

CALMAT CO (Continued) **S101590889**

Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	626-825-7511
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Lytle Creek Wash
Certifier:	Julia Lakes Martinez
Certifier Title:	Environmental Manager
Certification Date:	19-FEB-15
Primary Sic:	3273-Ready-Mixed Concrete
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 36I001928
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	03/31/1992
Operator Name:	CalMat Co dba Vulcan Materials Co
Operator Address:	500 N Brand Blvd
Operator City:	Glendale
Operator State:	California
Operator Zip:	91203

CALMAT CO (Continued) **S101590889**

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	213120
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 36I001928
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/31/1992
Status:	Active
Status Date:	03/31/1992
Place Size:	1010
Place Size Unit:	Acres
Contact:	Floyd Sibole
Contact Title:	Plant Manager
Contact Phone:	909-875-1150
Contact Phone Ext:	Not reported
Contact Email:	sibolef@vmcmail.com
Operator Name:	CalMat Co dba Vulcan Materials Co
Operator Address:	500 N Brand Blvd
Operator City:	Glendale
Operator State:	California
Operator Zip:	91203
Operator Contact:	Cesar Aranda
Operator Contact Title:	Water Resources Manager
Operator Contact Phone:	559-434-1202
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	arandac@vmcmail.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	909-875-1150
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported

CALMAT CO (Continued) **S101590889**

Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	Lytle Creek Wash
Certifier:	Cesar Aranda
Certifier Title:	Water Resources Manager
Certification Date:	02-JUN-15
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	2951-Asphalt Paving Mixtures and Blocks
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	213120
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 36I001928
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/31/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	CalMat Co dba Vulcan Materials Co
Discharge Address:	500 N Brand Blvd
Discharge City:	Glendale
Discharge State:	California
Discharge Zip:	91203
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported

CALMAT CO (Continued) **S101590889**

Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Active
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	490953
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	8 36I027474
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/14/2017
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	1401 N Benson Ave
Discharge Name:	Holliday Rock Co Inc
Discharge City:	Upland

CALMAT CO (Continued) **S101590889**

Discharge State:	California
Discharge Zip:	91786
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	490953
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 36I027474
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/14/2017
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Holliday Rock Co Inc
Discharge Address:	1401 N Benson Ave
Discharge City:	Upland
Discharge State:	California
Discharge Zip:	91786
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported

CALMAT CO (Continued) **S101590889**

Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 36I027474
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	11/14/2017
Operator Name:	Holliday Rock Co Inc
Operator Address:	1401 N Benson Ave
Operator City:	Upland
Operator State:	California
Operator Zip:	91786

CALMAT CO (Continued) **S101590889**

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	490953
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 36I027474
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/14/2017
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Holliday Rock Co Inc
Discharge Address:	1401 N Benson Ave
Discharge City:	Upland
Discharge State:	California
Discharge Zip:	91786
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported

CALMAT CO (Continued) **S101590889**

Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Active
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	213120
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	8 36I001928
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/31/1992
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	500 N Brand Blvd
Discharge Name:	CalMat Co dba Vulcan Materials Co
Discharge City:	Glendale
Discharge State:	California
Discharge Zip:	91203
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	213120
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 36I001928

CALMAT CO (Continued) **S101590889**

Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/31/1992
Status:	Active
Status Date:	03/31/1992
Place Size:	1010
Place Size Unit:	Acres
Contact:	Floyd Sibole
Contact Title:	Plant Manager
Contact Phone:	909-875-1150
Contact Phone Ext:	Not reported
Contact Email:	sibolef@vmcmail.com
Operator Name:	CalMat Co dba Vulcan Materials Co
Operator Address:	500 N Brand Blvd
Operator City:	Glendale
Operator State:	California
Operator Zip:	91203
Operator Contact:	Cesar Aranda
Operator Contact Title:	Water Resources Manager
Operator Contact Phone:	559-434-1202
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	arandac@vmcmail.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	909-875-1150
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported

CALMAT CO (Continued) **S101590889**

Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	Lytle Creek Wash
Certifier:	Cesar Aranda
Certifier Title:	Water Resources Manager
Certification Date:	02-JUN-15
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	2951-Asphalt Paving Mixtures and Blocks
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	213120
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 36I001928
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/31/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	CalMat Co dba Vulcan Materials Co
Discharge Address:	500 N Brand Blvd
Discharge City:	Glendale
Discharge State:	California
Discharge Zip:	91203
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported

CALMAT CO (Continued) **S101590889**

Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Terminated
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	213770
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	8 36I018946
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/03/2004
Termination Date Of Regulatory Measure:	03/10/2017
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	2025 E Financial Way
Discharge Name:	CalPortland Company
Discharge City:	Glendora
Discharge State:	California
Discharge Zip:	91741
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

CALMAT CO (Continued) **S101590889**

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Terminated
Agency Number:	0
Region:	8
Regulatory Measure ID:	213770
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 36I018946
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/03/2004
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	03/10/2017
Discharge Name:	CalPortland Company
Discharge Address:	2025 E Financial Way
Discharge City:	Glendora
Discharge State:	California
Discharge Zip:	91741
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported

CALMAT CO (Continued) **S101590889**

Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	213770
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 36I018946
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	03/10/2017
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	08/03/2004
Status:	Terminated
Status Date:	04/05/2017
Place Size:	1.1
Place Size Unit:	Acres
Contact:	Basil Ortiz
Contact Title:	Operations Manager
Contact Phone:	626-852-6200
Contact Phone Ext:	Not reported
Contact Email:	bortiz@calportland.com
Operator Name:	CalPortland Company
Operator Address:	2025 E Financial Way
Operator City:	Glendora
Operator State:	California
Operator Zip:	91741
Operator Contact:	Irene Zamorano
Operator Contact Title:	Enviromental Manager

CALMAT CO (Continued) **S101590889**

Operator Contact Phone:	626-733-3782
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	izamorano@calportland.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	626-825-7511
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Lytle Creek Wash
Certifier:	Julia Lakes Martinez
Certifier Title:	Environmental Manager
Certification Date:	19-FEB-15
Primary Sic:	3273-Ready-Mixed Concrete
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

San Bern. Co. Permit:

Region:	SAN BERNARDINO
Facility ID:	FA0001676
Owner:	Calmat Co. dba Vulcan Materials Co.
Permit Number:	PT0020774
Permit Category:	APSA 1,320-10,000 GAL FAC CAPACITY
Facility Status:	ACTIVE
Expiration Date:	10/31/2019

Region:	SAN BERNARDINO
Facility ID:	FA0001676
Owner:	Calmat Co. dba Vulcan Materials Co.
Permit Number:	PT0002283
Permit Category:	HAZARDOUS MATERIALS 4-10 CHEMICALS
Facility Status:	ACTIVE
Expiration Date:	10/31/2019

CALMAT CO (Continued) **S101590889**

Region: SAN BERNARDINO
Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0002284
Permit Category: LARGE QUANTITY GENERATOR
Facility Status: ACTIVE
Expiration Date: 10/31/2019

Region: SAN BERNARDINO
Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0011813
Permit Category: REGULAR UST ANNUAL INSPECTION (PER TANK)
Facility Status: ACTIVE
Expiration Date: 10/31/2019

Region: SAN BERNARDINO
Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0011814
Permit Category: REGULAR UST ANNUAL INSPECTION (PER TANK)
Facility Status: ACTIVE
Expiration Date: 10/31/2019

Region: SAN BERNARDINO
Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0011815
Permit Category: REGULAR UST ANNUAL INSPECTION (PER TANK)
Facility Status: ACTIVE
Expiration Date: 10/31/2019

Region: SAN BERNARDINO
Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0011816
Permit Category: REGULAR UST ANNUAL INSPECTION (PER TANK)
Facility Status: ACTIVE
Expiration Date: 10/31/2019

Region: SAN BERNARDINO
Facility ID: FA0001854
Owner: CalPortland Co
Permit Number: PT0006502
Permit Category: SMALL QUANTITY GENERATOR
Facility Status: INACTIVE
Expiration Date: 08/31/2017

Region: SAN BERNARDINO
Facility ID: FA0001854
Owner: CalPortland Co
Permit Number: PT0006504
Permit Category: HAZARDOUS MATERIALS 11-30 CHEMICALS
Facility Status: INACTIVE
Expiration Date: 08/31/2017

Region: SAN BERNARDINO

CALMAT CO (Continued) **S101590889**

Facility ID: FA0001676
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0024806
Permit Category: EPCRA FACILITY
Facility Status: INACTIVE
Expiration Date: 10/31/2011

Region: SAN BERNARDINO
Facility ID: FA0017475
Owner: John Holliday
Permit Number: PT0037382
Permit Category: HAZARDOUS MATERIALS 11-30 CHEMICALS
Facility Status: ACTIVE
Expiration Date: 08/31/2019

WDS:
Facility ID: Santa Ana River 36I001928
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 8
Facility Telephone: Not reported
Facility Contact: CHIU PETER
Agency Name: CALMAT CO.
Agency Address: P.O. BOX 2950 TERMINAL ANNEX
Agency City,St,Zip: LOS ANGELES 90051
Agency Contact: PETER CHIU
Agency Telephone: 3232582777
Agency Type: Private
SIC Code: 0
SIC Code 2: Not reported
Primary Waste Type: Not reported
Primary Waste: Not reported
Waste Type2: Not reported
Waste2: Not reported
Primary Waste Type: Not reported
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best

CALMAT CO (Continued) **S101590889**

management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

Facility ID: Santa Ana River 36I018946
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 8
Facility Telephone: 9099839789
Facility Contact: Art Conti
Agency Name: CHAPARRAL CONCRETE CO
Agency Address: 2400 W Highland Ave
Agency City,St,Zip: San Bernardino 92407
Agency Contact: Art Conti
Agency Telephone: 9099839789
Agency Type: Private
SIC Code: 3273
SIC Code 2: Not reported
Primary Waste Type: Not reported
Primary Waste: Not reported
Waste Type2: Not reported
Waste2: Not reported
Primary Waste Type: Not reported
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CIWQS:
Agency: Holliday Rock Co Inc
Agency Address: 1401 N Benson Ave, Upland, CA 91786
Place/Project Type: Industrial - Ready-Mixed Concrete
SIC/NAICS: 3273
Region: 8

CALMAT CO (Continued) **S101590889**

Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 36I027474
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	11/14/2017
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	34.1363
Longitude:	-117.34503

Agency:	CalMat Co dba Vulcan Materials Co
Agency Address:	500 N Brand Blvd Suite 500, Glendale, CA 91203
Place/Project Type:	Industrial - Construction Sand and Gravel
SIC/NAICS:	Multiple
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 36I001928
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	03/31/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	34.13607
Longitude:	-117.34451

Agency:	CalPortland Company
Agency Address:	2025 E Financial Way, Glendora, CA 91741
Place/Project Type:	Industrial - Ready-Mixed Concrete
SIC/NAICS:	3273
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 36I018946
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	08/03/2004
Termination Date:	03/10/2017

CALMAT CO (Continued) **S101590889**

Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	34.13607
Longitude:	-117.34451

14
NW
1/4-1/2
0.343 mi.
1813 ft.

CAJON CREEK **MINES** **S117661217**
19455 SOUTH CAJON BOULEVARD **N/A**
, CA

Relative:
Higher

Actual:
1311 ft.

MINES:

Latitude:	34.136389
Longitude:	-117.356389
Lead Agency identification code:	36.4
Lead Agency name:	City of San Bernardino
Year of the operator supplied annual report:	2017
Type of report submitted by operator:	2
Number of acres disturbed by the mine:	220.2
Status of mining operation:	ACTIVE
Status of mine reclamation:	RECLAMATION NOT STARTED
Mine operator:	CALMAT DBA VULCAN MATERIALS
Operator Address:	19455 SOUTH CAJON BLVD
Operator City, State, Zip:	SAN BERNARDINO, CA 92407
Operator County:	Not reported
Mine owner:	CALMAT COMPANY
Owner Address:	3200 N. SAN FERNANDO ROAD
Owner City, State, Zip:	LOS ANGELES, CA 90065
Owner County:	Not reported
Reclamation plan identification number:	Not reported
Primary product produced by the mine:	SAND AND GRAVEL
Other products produced by the mine:	Not reported
Type of mining utilized by mine:	OPEN PIT
Conditional use permit identification number:	91-31
Number of acres permitted for mining disturbance:	660
Total amount of funds posted by the mine for reclamation:	1387442
Financial Assurance Cost Estimate for reclamation:	828184

B15
NE
1/4-1/2
0.351 mi.
1853 ft.

CALMAT CO **US MINES** **1014677305**
N/A
SAN BERNARDINO (County), CA
Site 7 of 9 in cluster B

Relative:
Higher

Actual:
1282 ft.

US MINES:

Sic Code(s):	144200
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000

CALMAT CO (Continued) **1014677305**

Mine ID:	0401984
Entity Name:	SAN BERNARDINO PLANT
Company:	CALMAT CO
Status:	1
Status Date:	19730613
Operation Class:	2
Number of Shops:	0
Number of Plants:	0
Latitude Degree:	34
Longitude Degree:	117
Latitude Minute:	08
Latitude Seconds:	09
Longitude Minutes:	20
Longitude Seconds:	39
Number of Pits:	000

B16 **HARRIS TRANSFER, INC.** **US MINES** **1011131052**
NE **N/A**
1/4-1/2 **SAN BERNARDINO (County), CA**
0.351 mi.
1853 ft. **Site 8 of 9 in cluster B**

Relative: **Higher**
Actual: **1282 ft.**

US MINES:

Sic Code(s):	144200
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Mine ID:	0405642
Entity Name:	BENSON MINE
Company:	HARRIS TRANSFER, INC.
Status:	1
Status Date:	20181001
Operation Class:	2
Number of Shops:	0
Number of Plants:	0
Latitude Degree:	34
Longitude Degree:	117
Latitude Minute:	08
Latitude Seconds:	09
Longitude Minutes:	20
Longitude Seconds:	39
Number of Pits:	000

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17 **SAN BERNARDINO PLANT** **MINES** **S117662535**
SE **N/A**
1/4-1/2 **, CA**
0.353 mi.
1864 ft.

Relative: **Lower**
Actual: **1232 ft.**

MINES:

Latitude:	34.126111
Longitude:	-117.345
Lead Agency identification code:	36.4
Lead Agency name:	City of San Bernardino

SAN BERNARDINO PLANT (Continued) **S117662535**

Year of the operator supplied annual report:	1995
Type of report submitted by operator:	2
Number of acres disturbed by the mine:	0
Status of mining operation:	EXEMPT
Status of mine reclamation:	RECLAMATION NOT STARTED
Mine operator:	HOLLIDAY TRUCKING, INC.
Operator Address:	2300 W. BASELINE
Operator City, State, Zip:	SAN BERNARDINO, CA 92411
Operator County:	Not reported
Mine owner:	HOLLIDAY TRUCKING, INC.
Owner Address:	2193 W. FOOTHILL BOULEVARD
Owner City, State, Zip:	UPLAND, CA 91786
Owner County:	Not reported
Reclamation plan identification number:	Not reported
Primary product produced by the mine:	SAND AND GRAVEL
Other products produced by the mine:	Not reported
Type of mining utilized by mine:	OPEN PIT
Conditional use permit identification number:	BLANK
Number of acres permitted for mining disturbance:	0
Total amount of funds posted by the mine for reclamation:	Not reported
Financial Assurance Cost Estimate for reclamation:	Not reported

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C18 **RIALTO UNI SCH DIST, FRISBIE J** **EMI** **S100852457**
SW **1442 N EUCALYPTUS** **San Bern. Co. Permit** **N/A**
1/4-1/2 **RIALTO, CA 92376**
0.372 mi.
1962 ft. **Site 1 of 2 in cluster C**

Relative:
Higher

Actual:
1329 ft.

EMI:

Year:	1990
County Code:	36
Air Basin:	SC
Facility ID:	53801
Air District Name:	SC
SIC Code:	8211
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

San Bern. Co. Permit:

Region:	SAN BERNARDINO
Facility ID:	FA0005978
Owner:	Rialto Unified School District
Permit Number:	PT0005403
Permit Category:	CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR
Facility Status:	INACTIVE
Expiration Date:	08/31/2009

C19
SW
1/4-1/2
0.372 mi.
1962 ft.

RIALTO UNIFIED SCHOOL DIST - FJH
1442 N EUCALYPTUS ,AVE
RIALTO, CA 92376

Site 2 of 2 in cluster C

RCRA-SQG
FINDS
ECHO

1000292652
CAD981159981

Relative:
Higher

Actual:
1329 ft.

RCRA-SQG:

Date form received by agency:	09/01/1996
Facility name:	RIALTO UNIFIED SCHOOL DIST - FJH
Facility address:	1442 N EUCALYPTUS ,AVE RIALTO, CA 92376
EPA ID:	CAD981159981
Mailing address:	182 E WALNUT AVE RIALTO, CA 92376
Contact:	Not reported
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	STATE OF CALIFORNIA
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	State
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	State
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No

RIALTO UNIFIED SCHOOL DIST - FJH (Continued) **1000292652**

Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Historical Generators:

Date form received by agency:	10/30/1985
Site name:	RIALTO UNIFIED SCHOOL DIST - FJH
Classification:	Large Quantity Generator
Violation Status:	No violations found

FINDS:

Registry ID: 110002677808

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000292652
Registry ID:	110002677808
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002677808

B20 **HOLLIDAY ROCK CO., INC.** **RCRA NonGen / NLR** **1024779898**
NE **2400 W. HIGHLAND AVE.** **CAC002999854**
1/4-1/2 **SAN BERNARDINO, CA 92407**
0.382 mi.
2016 ft. **Site 9 of 9 in cluster B**

Relative:
Higher

Actual:
1281 ft.

RCRA NonGen / NLR:

Date form received by agency:	02/06/2019
Facility name:	HOLLIDAY ROCK CO., INC.
Facility address:	2400 W. HIGHLAND AVE. SAN BERNARDINO, CA 92407
EPA ID:	CAC002999854
Mailing address:	1401 N. BENSON AVE UPLAND, CA 91786
Contact:	GEORGE SMITH

HOLLIDAY ROCK CO., INC. (Continued) **1024779898**

Contact address: 1401 N. BENSON AVE
UPLAND, CA 91786
Contact country: Not reported
Contact telephone: 909-652-9899
Contact email: GSMITH@HOLLIDAYROCK.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: HOLLIDAY ROCK CO., INC.
Owner/operator address: 1401 N. BENSON AVE
UPLAND, CA 91786
Owner/operator country: Not reported
Owner/operator telephone: 909-652-9899
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: GEORGE SMITH
Owner/operator address: 1401 N. BENSON AVE
UPLAND, CA 91786
Owner/operator country: Not reported
Owner/operator telephone: 909-652-9899
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

D21 **VULCAN MATERIALS** **RCRA-SQG** **1004675445**
NE **2350 W HIGHLAND AVE** **AST** **CAR000072991**
1/4-1/2 **SAN BERNARDINO, CA 92406** **FINDS**
0.423 mi. **ECHO**
2236 ft. **Site 1 of 3 in cluster D** **San Bern. Co. Permit**

Relative: Higher

Actual: 1280 ft.

RCRA-SQG:

Date form received by agency:	05/10/2000
Facility name:	VULCAN MATERIALS
Facility address:	2350 W HIGHLAND AVE SAN BERNARDINO, CA 92406
EPA ID:	CAR000072991
Mailing address:	3200 SAN FERNANDO RD LOS ANGELES, CA 90065
Contact:	ANDY MEEDER
Contact address:	2350 W HIGHLAND AVE SAN BERNARDINO, CA 92406
Contact country:	US
Contact telephone:	909-875-5180
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	VULCAN MATERIALS
Owner/operator address:	2350 W HIGHLAND AVE SAN BERNARDINO, CA 92406
Owner/operator country:	Not reported
Owner/operator telephone:	909-875-5180
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

VULCAN MATERIALS (Continued) **1004675445**

. Waste code: D000
. Waste name: Not Defined

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

Violation Status: No violations found

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Calmat Co. dba Vulcan Materials Co.
Total Gallons:	Not reported
CERSID:	10047694
Facility ID:	FA0007904
Business Name:	CalMat Co. DBA Vulcan Materials Company
Phone:	(909) 875-1150
Fax:	(323) 258-3289
Mailing Address:	500 N. Brand Blvd. Suite 500
Mailing Address City:	Glendale
Mailing Address State:	CA
Mailing Address Zip Code:	91203
Operator Name:	Calmat Co. dba Vulcan Materials Co.
Operator Phone:	(909) 875-5180
Owner Phone:	(818) 553-8938
Owner Mail Address:	500 N. Brand Blvd. Suite 500
Owner State:	CA
Owner Zip Code:	91203
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

FINDS:

Registry ID: 110002936903

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid: 1004675445

VULCAN MATERIALS (Continued) **1004675445**

Registry ID: 110002936903
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002936903

San Bern. Co. Permit:
Region: SAN BERNARDINO
Facility ID: FA0007904
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0037874
Permit Category: APSA 1,320-10,000 GAL FAC CAPACITY
Facility Status: ACTIVE
Expiration Date: 08/31/2019

Region: SAN BERNARDINO
Facility ID: FA0007904
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0013814
Permit Category: HAZARDOUS MATERIALS 4-10 CHEMICALS
Facility Status: ACTIVE
Expiration Date: 08/31/2019

Region: SAN BERNARDINO
Facility ID: FA0007904
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0024492
Permit Category: SMALL QUANTITY GENERATOR
Facility Status: INACTIVE
Expiration Date: 08/31/2018

Region: SAN BERNARDINO
Facility ID: FA0007904
Owner: Calmat Co. dba Vulcan Materials Co.
Permit Number: PT0013815
Permit Category: REGULAR UST ANNUAL INSPECTION (PER TANK)
Facility Status: INACTIVE
Expiration Date: 08/31/2010

D22 **CALMAT CO** **LUST** **S101590952**
NE **2340 W HIGHLAND AVE** **SWEEPS UST** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92405** **CA FID UST**
0.432 mi. **EMI**
2281 ft. **Site 2 of 3 in cluster D** **HIST CORTESE**

Relative: **Higher**
Actual: **1280 ft.**

LUST:
Lead Agency: SAN BERNARDINO COUNTY
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0607100198
Global Id: T0607100198
Latitude: 34.1361493
Longitude: -117.3429744
Status: Completed - Case Closed
Status Date: 12/29/1992
Case Worker: CB
RB Case Number: 083601667T
Local Agency: SAN BERNARDINO COUNTY
File Location: Local Agency
Local Case Number: 90084
Potential Media Affect: Soil

CALMAT CO (Continued) **S101590952**

Potential Contaminants of Concern: Diesel
Site History: Not reported

LUST:
Global Id: T0607100198
Contact Type: Local Agency Caseworker
Contact Name: CURTIS BRUNDAGE
Organization Name: SAN BERNARDINO COUNTY
Address: 620 S. E STREET
City: SAN BERNARDINO
Email: cbrundage@sbcfire.org
Phone Number: Not reported

Global Id: T0607100198
Contact Type: Regional Board Caseworker
Contact Name: ROSE SCOTT
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: rose.scott@waterboards.ca.gov
Phone Number: 9513206375

LUST:
Global Id: T0607100198
Action Type: Other
Date: 09/24/1990
Action: Leak Reported

Global Id: T0607100198
Action Type: Other
Date: 05/18/1990
Action: Leak Discovery

Global Id: T0607100198
Action Type: Other
Date: 05/18/1990
Action: Leak Stopped

LUST:
Global Id: T0607100198
Status: Completed - Case Closed
Status Date: 12/29/1992

Global Id: T0607100198
Status: Open - Case Begin Date
Status Date: 05/18/1990

LUST REG 8:
Region: 8
County: San Bernardino
Regional Board: Santa Ana Region
Facility Status: Case Closed
Case Number: 083601667T
Local Case Num: 90084
Case Type: Soil only

CALMAT CO (Continued) **S101590952**

Substance:	Diesel
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	MACY
Enf Type:	Not reported
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	Tank
Global ID:	T0607100198
How Stopped Date:	5/18/1990
Enter Date:	9/16/1990
Date Confirmation of Leak Began:	Not reported
Date Preliminary Assessment Began:	Not reported
Discover Date:	5/18/1990
Enforcement Date:	Not reported
Close Date:	12/29/1992
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	9/16/1990
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	34.1361493
Longitude:	-117.3429744
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	RS
Staff Initials:	CB5
Lead Agency:	Local Agency
Local Agency:	36000L
Hydr Basin #:	UPPER SANTA ANA VALL
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

SWEEPS UST:

Status:	Active
Comp Number:	27953
Number:	1
Board Of Equalization:	Not reported
Referral Date:	09-11-91
Action Date:	09-11-91

CALMAT CO (Continued) **S101590952**

Created Date: 09-13-90
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 27953
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 36-000-027953-000001
Tank Status: Not reported
Capacity: 12000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: DIESEL
Number Of Tanks: 1

CA FID UST:
Facility ID: 36000354
Regulated By: UTNKA
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 7148755180
Mail To: Not reported
Mailing Address: 6623 CALLE EVA MIRANDA
Mailing Address 2: Not reported
Mailing City,St,Zip: SAN BERNARDINO 92405
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

EMI:
Year: 2002
County Code: 36
Air Basin: SC
Facility ID: 108457
Air District Name: SC
SIC Code: 2951
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported

CALMAT CO (Continued) **S101590952**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	6
Part. Matter 10 Micrometers and Smllr Tons/Yr:	4

Year:	2003
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	6
Part. Matter 10 Micrometers and Smllr Tons/Yr:	4

Year:	2004
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.445
Reactive Organic Gases Tons/Yr:	0.19
Carbon Monoxide Emissions Tons/Yr:	0.938
NOX - Oxides of Nitrogen Tons/Yr:	3.48
SOX - Oxides of Sulphur Tons/Yr:	0.0222
Particulate Matter Tons/Yr:	5.581
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3.92

Year:	2005
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.24179
Reactive Organic Gases Tons/Yr:	.106244488
Carbon Monoxide Emissions Tons/Yr:	1.16
NOX - Oxides of Nitrogen Tons/Yr:	4.3
SOX - Oxides of Sulphur Tons/Yr:	.0199

CALMAT CO (Continued) **S101590952**

Particulate Matter Tons/Yr:	3.8311
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.68124
Year:	2006
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.9681210977706147349
Reactive Organic Gases Tons/Yr:	.701
Carbon Monoxide Emissions Tons/Yr:	.97
NOX - Oxides of Nitrogen Tons/Yr:	3.601
SOX - Oxides of Sulphur Tons/Yr:	.017
Particulate Matter Tons/Yr:	4.602
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.284827
Year:	2007
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.9681210977706147349
Reactive Organic Gases Tons/Yr:	.701
Carbon Monoxide Emissions Tons/Yr:	.97
NOX - Oxides of Nitrogen Tons/Yr:	3.601
SOX - Oxides of Sulphur Tons/Yr:	.017
Particulate Matter Tons/Yr:	4.602
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.284827
Year:	2008
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.8181425855516922241
Reactive Organic Gases Tons/Yr:	.59777329
Carbon Monoxide Emissions Tons/Yr:	.82
NOX - Oxides of Nitrogen Tons/Yr:	3.07
SOX - Oxides of Sulphur Tons/Yr:	.01
Particulate Matter Tons/Yr:	4.21
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.08887
Year:	2012
County Code:	36
Air Basin:	SC

CALMAT CO (Continued) **S101590952**

Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.61940421296
Reactive Organic Gases Tons/Yr:	0.45762
Carbon Monoxide Emissions Tons/Yr:	0.58747
NOX - Oxides of Nitrogen Tons/Yr:	0.74961
SOX - Oxides of Sulphur Tons/Yr:	0.01007
Particulate Matter Tons/Yr:	5.01639
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.8063248

Year:	2013
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.0504455977
Reactive Organic Gases Tons/Yr:	0.87339
Carbon Monoxide Emissions Tons/Yr:	0.64277
NOX - Oxides of Nitrogen Tons/Yr:	0.82018
SOX - Oxides of Sulphur Tons/Yr:	0.01101
Particulate Matter Tons/Yr:	5.06354
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.77079486

Year:	2014
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.56678868922
Reactive Organic Gases Tons/Yr:	0.55826
Carbon Monoxide Emissions Tons/Yr:	0.74707
NOX - Oxides of Nitrogen Tons/Yr:	0.95327
SOX - Oxides of Sulphur Tons/Yr:	0.0128
Particulate Matter Tons/Yr:	5.43578
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.2020656

Year:	2015
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

CALMAT CO (Continued) **S101590952**

Total Organic Hydrocarbon Gases Tons/Yr:	0.49430974334
Reactive Organic Gases Tons/Yr:	0.4872632
Carbon Monoxide Emissions Tons/Yr:	0.617225
NOX - Oxides of Nitrogen Tons/Yr:	0.78758
SOX - Oxides of Sulphur Tons/Yr:	0.010581
Particulate Matter Tons/Yr:	4.623827455
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.874537438

Year:	2016
County Code:	36
Air Basin:	SC
Facility ID:	108457
Air District Name:	SC
SIC Code:	2951
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.53856236786
Reactive Organic Gases Tons/Yr:	0.53
Carbon Monoxide Emissions Tons/Yr:	0.76
NOX - Oxides of Nitrogen Tons/Yr:	0.97
SOX - Oxides of Sulphur Tons/Yr:	0.01
Particulate Matter Tons/Yr:	4.97413
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.012052

HIST CORTESE:

Region:	CORTESE
Facility County Code:	36
Reg By:	LTNKA
Reg Id:	083601667T

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23 **SAN BERNARDINO** **MINES** **S117662536**
NW **2400 WEST HIGHLAND AVENUE** **N/A**
1/4-1/2 **, CA**
0.466 mi.
2458 ft.

Relative: **Higher**

Actual: **1321 ft.**

MINES:

Latitude:	34.138056
Longitude:	-117.357222
Lead Agency identification code:	36
Lead Agency name:	County of San Bernardino
Year of the operator supplied annual report:	2017
Type of report submitted by operator:	2
Number of acres disturbed by the mine:	105.7
Status of mining operation:	CLOSED NO INTENT TO RESUME
Status of mine reclamation:	RECLAMATION IN PROGRESS
Mine operator:	CALMAT DBA VULCAN MATERIALS COM.
Operator Address:	2400 W. HIGHLAND AVENUE
Operator City, State, Zip:	SAN BERNARDINO, CA 92405
Operator County:	Not reported
Mine owner:	CALMAT COMPANY
Owner Address:	1600 FOOTHILL BLVD
Owner City, State, Zip:	IRWINDALE, CA 91706
Owner County:	Not reported
Reclamation plan identification number:	90M-011
Primary product produced by the mine:	SAND AND GRAVEL

SAN BERNARDINO (Continued) **S117662536**

Other products produced by the mine:	Not reported
Type of mining utilized by mine:	OPEN PIT,PLANT OR MILL
Conditional use permit identification number:	BLANK
Number of acres permitted for mining disturbance:	1006
Total amount of funds posted by the mine for reclamation:	1972846
Financial Assurance Cost Estimate for reclamation:	1527341

D24 **DANNY'S TOWING SERVICE** **HAZNET** **S102041804**
ENE **2305 W HIGHLAND AVE** **San Bern. Co. Permit** **N/A**
1/4-1/2 **SAN BERNARDINO, CA 92407**
0.486 mi.
2568 ft. **Site 3 of 3 in cluster D**

Relative: Lower

Actual: 1275 ft.

HAZNET:

Facility Name:	DANNY TOWING
envid:	S102041804
Year:	2015
GEPAID:	CAL000221022
Contact:	DANNY ALCAREZ-OWNER
Telephone:	9098870651
Mailing Name:	Not reported
Mailing Address:	2305 W HIGHLAND AVE
Mailing City,St,Zip:	SAN BERNARDINO, CA 924050000
Gen County:	San Bernardino
TSD EPA ID:	CAD044429835
TSD County:	Los Angeles
Waste Category:	Other organic solids
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.175
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Bernardino

San Bern. Co. Permit:

Region:	SAN BERNARDINO
Facility ID:	FA0002637
Owner:	DANNY'S TOWING SERVICE
Permit Number:	PT0006383
Permit Category:	CONDITIONALLY EXEMPT SM QTY GENERATOR
Facility Status:	ACTIVE
Expiration Date:	11/30/2018

Region:	SAN BERNARDINO
Facility ID:	FA0002637
Owner:	DANNY'S TOWING SERVICE
Permit Number:	PT0006384
Permit Category:	HAZARDOUS MATERIALS 4-10 CHEMICALS
Facility Status:	ACTIVE
Expiration Date:	11/30/2018

25
WNW
1/2-1
0.554 mi.
2923 ft.

NORTON AFB ILS OMA

ILS OMA, CA

ENVIROSTOR **S109548235**
N/A

Relative:
Higher

Actual:
1373 ft.

ENVIROSTOR:

Facility ID:	80000113
Status:	Inactive - Needs Evaluation
Status Date:	07/01/2005
Site Code:	Not reported
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	0
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Douglas Bautista
Division Branch:	Cleanup Cypress
Assembly:	47
Senate:	20
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	DERA
Latitude:	34.13333
Longitude:	-117.3625
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CA99799F534400
Alias Type:	Federal Facility ID
Alias Name:	J09CA0166
Alias Type:	INPR
Alias Name:	80000113
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Inventory Project Report (INPR)
Completed Date:	04/20/1990
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

26
ENE
1/2-1
0.577 mi.
3046 ft.

THRIFTY OIL #325/ ARCO #9697
2187 W HIGHLAND AVE
SAN BERNARDINO, CA 92405

LUST **S105698256**
N/A

Relative:
Lower

Actual:
1272 ft.

LUST:

Lead Agency:	SAN BERNARDINO COUNTY
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0607100154
Global Id:	T0607100154
Latitude:	34.1359853
Longitude:	-117.3392912
Status:	Completed - Case Closed
Status Date:	11/02/2004
Case Worker:	Not reported
RB Case Number:	083601304T
Local Agency:	Not reported
File Location:	Local Agency
Local Case Number:	98049
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Other Solvent or Non-Petroleum Hydrocarbon
Site History:	Not reported

LUST:

Global Id:	T0607100154
Contact Type:	Regional Board Caseworker
Contact Name:	VALERIE JAHN-BULL
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	valerie.jahn-bull@waterboards.ca.gov
Phone Number:	9517824903

LUST:

Global Id:	T0607100154
Action Type:	Other
Date:	06/22/1989
Action:	Leak Reported

Global Id:	T0607100154
Action Type:	REMEDIATION
Date:	01/16/2002
Action:	Soil Vapor Extraction (SVE)

Global Id:	T0607100154
Action Type:	ENFORCEMENT
Date:	11/02/2004
Action:	Closure/No Further Action Letter

Global Id:	T0607100154
Action Type:	Other
Date:	01/27/1989
Action:	Leak Discovery

LUST:

Global Id:	T0607100154
Status:	Completed - Case Closed
Status Date:	11/02/2004

THRIFTY OIL #325/ ARCO #9697 (Continued) **S105698256**

Global Id: T0607100154
Status: Open - Case Begin Date
Status Date: 01/27/1989

Global Id: T0607100154
Status: Open - Remediation
Status Date: 01/16/2002

Global Id: T0607100154
Status: Open - Site Assessment
Status Date: 08/18/1998

Global Id: T0607100154
Status: Open - Site Assessment
Status Date: 12/08/1999

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27 **GEORGE F CASEY CO** **LUST 1000357277**
SSE **2323 W BASELINE** **RCRA NonGen / NLR CAD981685407**
1/2-1 **SAN BERNARDINO, CA 92410**
0.720 mi.
3801 ft.

Relative:
Lower

Actual:
1223 ft.

LUST:
Lead Agency: ORANGE COUNTY LOP
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605901359
Global Id: T0605901359
Latitude: 33.7760572
Longitude: -117.9583356
Status: Completed - Case Closed
Status Date: 08/09/1994
Case Worker: KL
RB Case Number: 083001819T
Local Agency: ORANGE COUNTY LOP
File Location: Local Agency
Local Case Number: 88UT099
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0605901359
Contact Type: Local Agency Caseworker
Contact Name: KEVIN LAMBERT
Organization Name: ORANGE COUNTY LOP
Address: 1241 E DYER ROAD SUITE 120
City: SANTA ANA
Email: klambert@ochca.com
Phone Number: 7144336261

Global Id: T0605901359
Contact Type: Regional Board Caseworker
Contact Name: VALERIE JAHN-BULL
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: valerie.jahn-bull@waterboards.ca.gov

GEORGE F CASEY CO (Continued) **1000357277**

Phone Number: 9517824903

LUST:
Global Id: T0605901359
Action Type: Other
Date: 05/11/1988
Action: Leak Reported

Global Id: T0605901359
Action Type: REMEDIATION
Date: 12/19/1989
Action: Excavation

Global Id: T0605901359
Action Type: Other
Date: 05/11/1988
Action: Leak Discovery

LUST:
Global Id: T0605901359
Status: Completed - Case Closed
Status Date: 08/09/1994

Global Id: T0605901359
Status: Open - Case Begin Date
Status Date: 05/11/1988

RCRA NonGen / NLR:
Date form received by agency: 10/23/1986
Facility name: GEORGE F CASEY CO
Facility address: 2323 W BASELINE
SAN BERNARDINO, CA 92410
EPA ID: CAD981685407
Mailing address: W BASELINE
SAN BERNARDINO, CA 92410
Contact: ENVIRONMENTAL MANAGER
Contact address: 2323 W BASELINE
SAN BERNARDINO, CA 92410
Contact country: US
Contact telephone: 714-825-2591
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: NOTTINGHAMN PACIFIC CO
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: 415-555-1212
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported

GEORGE F CASEY CO (Continued) **1000357277**

Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED
	NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

28
NW
1/2-1
0.979 mi.
5168 ft.

RIALTO AMM STORAGE PT (J09CA057200)
7 MILES NW OF SAN BERNARDINO
RIALTO, CA 92376

ENVIROSTOR **S105481924**
HIST Cal-Sites **N/A**

Relative:
Higher

Actual:
1381 ft.

ENVIROSTOR:

Facility ID:	36970014
Status:	Inactive - Action Required
Status Date:	10/04/2018
Site Code:	400775
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	2822.15
NPL:	NO
Regulatory Agencies:	DTSC, RWQCB 8 - Santa Ana
Lead Agency:	RWQCB 8 - Santa Ana
Program Manager:	Not reported
Supervisor:	Patrick Hsieh
Division Branch:	Cleanup Cypress
Assembly:	47

RIALTO AMM STORAGE PT (J09CA057200) (Continued) **S105481924**

Senate: 20
Special Program: DSMOA
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: * Defense Environmental Restoration Program (DERP)
Latitude: 34.14083
Longitude: -117.3666
APN: NONE SPECIFIED
Past Use: RAILROAD RIGHT OF WAY, TRANSPORTATION - WAREHOUSING
Potential COC: Explosives (UXO, MEC Perchlorate
Confirmed COC: 30011-NO 30017-NO
Potential Description: SOIL, WELL
Alias Name: RIALTO AMMUNITION STORAGE PLANT
Alias Type: Alternate Name
Alias Name: 110033606550
Alias Type: EPA (FRS #)
Alias Name: T0607171117
Alias Type: GeoTracker Global ID
Alias Name: 400775
Alias Type: Project Code (Site Code)
Alias Name: 36970014
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Inventory Project Report (INPR)
Completed Date: 01/20/1993
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 07/07/2016
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Calsite:
Region: GLENDALE
Facility ID: 36970014
Facility Type: CLOSE
Type: CLOSED MILITARY BASE
Branch: SO
Branch Name: OMF-SOUTHERN CALIF
File Name: Not reported
State Senate District: 12192001
Status: ANNUAL WORKPLAN (AWP) - ACTIVE SITE
Status Name: ANNUAL WORKPLAN - ACTIVE SITE

RIALTO AMM STORAGE PT (J09CA057200) (Continued) **S105481924**

Lead Agency:	DEPT OF TOXIC SUBSTANCES CONTROL
NPL:	Not Listed
SIC Code:	97
SIC Name:	NATIONAL SECURITY/INTERNATIONAL AFFAIRS
Access:	Not reported
Cortese:	Not reported
Hazardous Ranking Score:	Not reported
Date Site Hazard Ranked:	Not reported
Groundwater Contamination:	Not reported
Staff Member Responsible for Site:	AGIMENO
Supervisor Responsible for Site:	Not reported
Region Water Control Board:	SA
Region Water Control Board Name:	SANTA ANA
Lat/Long Direction:	Not reported
Lat/Long (dms):	0 0 0 / 0 0 0
Lat/long Method:	Not reported
Lat/Long Description:	FUDS
State Assembly District Code:	62
State Senate District Code:	32
Facility ID:	Not reported
Activity:	Not reported
Activity Name:	Not reported
AWP Code:	Not reported
Proposed Budget:	Not reported
AWP Completion Date:	Not reported
Revised Due Date:	Not reported
Comments Date:	Not reported
Est Person-Yrs to complete:	Not reported
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	Not reported
Definition of Status:	Not reported
Liquids Removed (Gals):	Not reported
Liquids Treated (Gals):	Not reported
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	Not reported
For Industrial Reuse:	Not reported
For Residential Reuse:	Not reported
Unknown Type:	Not reported
Alternate Address:	7 MILES NW OF SAN BERNARDINO
Alternate City,St,Zip:	RIALTO, CA 92376
Background Info:	This is a formerly used defense site with potential ordnance and explosives contamination that needs Army Corps funding. Until the Army Corps of Engineers receives funding to start the site inves tigation with DTSC oversight, this site is idle. There are curren tly no files available at DTSC, however the latest information on this site can be obtained from the Army Corp of Engineers' offic e.
Comments Date:	Not reported
Comments:	Not reported
ID Name:	Not reported
ID Value:	Not reported
Alternate Name:	RIALTO AMMUNITION STORAGE PLANT

RIALTO AMM STORAGE PT (J09CA057200) (Continued) **S105481924**

Alternate Name: RIALTO AMM STORAGE PT (J09CA057200)
Alternate Name: Not reported
Special Programs Code: Not reported
Special Programs Name: Not reported

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29 **MUSCOY MIDDLE SCHOOL** **ENVIROSTOR** **S106568135**
NNE **DARBY STREET/DUFFY STREET** **SCH** **N/A**
> 1 **SAN BERNARDINO, CA 92407**
1.172 mi.
6186 ft.

Relative:
Higher

Actual:
1351 ft.

ENVIROSTOR:
Facility ID: 36880001
Status: Inactive - Needs Evaluation
Status Date: 03/23/2007
Site Code: 404546
Site Type: School Cleanup
Site Type Detailed: School
Acres: 23
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Rana Georges
Supervisor: Thomas Cota
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 47
Senate: 20
Special Program: Voluntary Cleanup Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.1485
Longitude: -117.3423
APN: NONE SPECIFIED
Past Use: RESIDENTIAL AREA
Potential COC: Lead
Confirmed COC: 30013-NO
Potential Description: SOIL
Alias Name: SAN BERNARDINO CITY UNIFIED SCHOOL DIST.
Alias Type: Alternate Name
Alias Name: SAN BERNARDINO CITY USD-PRPSD MUSCOY MS
Alias Type: Alternate Name
Alias Name: 404546
Alias Type: Project Code (Site Code)
Alias Name: 36880001
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 07/25/2005
Comments: revised workplan approved

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 05/03/2006

MUSCOY MIDDLE SCHOOL (Continued) **S106568135**

Comments: DTSC issued a further action determination for the PEA. SSI required to investigate areas of restricted access.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Supplemental Site Investigation Workplan
Completed Date: 08/30/2006
Comments: DTSC sent official approval letter with the request from the district in order to gain court approval for the restricted access.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 08/30/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 08/19/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 03/23/2007
Comments: CRU signed and emailed to HQ.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Inactive Status Letter
Completed Date: 03/06/2007
Comments: Sent an inactive status letter.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 36880001
Site Type: School Cleanup
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 23
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Rana Georges
Supervisor: Thomas Cota

MUSCOY MIDDLE SCHOOL (Continued) **S106568135**

Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404546
Assembly:	47
Senate:	20
Special Program Status:	Voluntary Cleanup Program
Status:	Inactive - Needs Evaluation
Status Date:	03/23/2007
Restricted Use:	NO
Funding:	School District
Latitude:	34.1485
Longitude:	-117.3423
APN:	NONE SPECIFIED
Past Use:	RESIDENTIAL AREA
Potential COC:	Lead
Confirmed COC:	30013-NO
Potential Description:	SOIL
Alias Name:	SAN BERNARDINO CITY UNIFIED SCHOOL DIST.
Alias Type:	Alternate Name
Alias Name:	SAN BERNARDINO CITY USD-PRPSD MUSCOY MS
Alias Type:	Alternate Name
Alias Name:	404546
Alias Type:	Project Code (Site Code)
Alias Name:	36880001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	07/25/2005
Comments:	revised workplan approved

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	05/03/2006
Comments:	DTSC issued a further action determination for the PEA. SSI required to investigate areas of restricted access.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Supplemental Site Investigation Workplan
Completed Date:	08/30/2006
Comments:	DTSC sent official approval letter with the request from the district in order to gain court approval for the restricted access.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	08/30/2004
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	08/19/2004
Comments:	Not reported

MUSCOY MIDDLE SCHOOL (Continued) **S106568135**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	03/23/2007
Comments:	CRU signed and emailed to HQ.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Inactive Status Letter
Completed Date:	03/06/2007
Comments:	Sent an inactive status letter.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

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30 **MUSCOY HIGH SCHOOL** **ENVIROSTOR** **S106665373**
NE **MALLORY STREET/CALIFORNIA AVENU** **SCH** **N/A**
> 1 **SAN BERNARDINO, CA 92407**
1.246 mi.
6577 ft.

Relative: **Higher**

Actual: **1323 ft.**

ENVIROSTOR:

Facility ID:	36650015
Status:	Inactive - Needs Evaluation
Status Date:	01/05/2006
Site Code:	404564
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	60
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Rana Georges
Supervisor:	Thomas Cota
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	47
Senate:	20
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	34.14668
Longitude:	-117.3354
APN:	NONE SPECIFIED
Past Use:	* UNKNOWN
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	SAN BERNARDINO CITY UNIFIED SCHOOL DISTR
Alias Type:	Alternate Name
Alias Name:	SAN BERNARDINO CITY USD-PRPSD MUSCOY HS

MUSCOY HIGH SCHOOL (Continued) **S106665373**

Alias Type: Alternate Name
Alias Name: 404564
Alias Type: Project Code (Site Code)
Alias Name: 36650015
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/18/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Inactive Status Letter
Completed Date: 03/24/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 01/05/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 11/05/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 07/03/2007
Comments: Per Ken’s request.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 36650015
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 60
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP

MUSCOY HIGH SCHOOL (Continued) **S106665373**

Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Rana Georges
Supervisor:	Thomas Cota
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404564
Assembly:	47
Senate:	20
Special Program Status:	Not reported
Status:	Inactive - Needs Evaluation
Status Date:	01/05/2006
Restricted Use:	NO
Funding:	School District
Latitude:	34.14668
Longitude:	-117.3354
APN:	NONE SPECIFIED
Past Use:	* UNKNOWN
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	SAN BERNARDINO CITY UNIFIED SCHOOL DISTR
Alias Type:	Alternate Name
Alias Name:	SAN BERNARDINO CITY USD-PRPSD MUSCOY HS
Alias Type:	Alternate Name
Alias Name:	404564
Alias Type:	Project Code (Site Code)
Alias Name:	36650015
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Other Report
Completed Date:	10/18/2004
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Inactive Status Letter
Completed Date:	03/24/2005
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	01/05/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	11/05/2004
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	07/03/2007
Comments:	Per Ken’s request.

MUSCOY HIGH SCHOOL (Continued) **S106665373**

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
RIALTO	S107539172		LAUREL AVE, SO OF HIGHLAND AVE	92376	CDL
RIALTO	S107540006		ON PEPPER AVENUE, 100 YARDS NO	92376	CDL
SAN BERNARDINO	S104759433	UNOCAL #1842	301 BASELINE ST	92410	LUST, HIST CORTESE
SAN BERNARDINO	S107533721		4040 E HIGHLAND (CROSS OF BOUL		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 41

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/07/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 02/04/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 28

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 21

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/20/2018
Date Data Arrived at EDR: 12/21/2018
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/19/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/09/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/27/2019
Number of Days to Update: 43

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/13/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 02/01/2019
Next Scheduled EDR Contact: 05/13/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 04/15/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 12/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 41

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 10/24/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 40

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/24/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 04/03/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/15/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/08/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/08/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/20/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/24/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2019
Date Data Arrived at EDR: 02/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/14/2018
Date Data Arrived at EDR: 10/11/2018
Date Made Active in Reports: 12/07/2018
Number of Days to Update: 57

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 01/25/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 51

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 02/11/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 38

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/22/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018
Date Data Arrived at EDR: 02/27/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 33

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/21/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 10

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/03/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/21/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 39

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/20/2018
Date Data Arrived at EDR: 12/21/2018
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 69

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 01/23/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 02/26/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 47

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/19/2019
Date Data Arrived at EDR: 03/22/2019
Date Made Active in Reports: 04/09/2019
Number of Days to Update: 18

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/02/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/10/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/11/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 37

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/20/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 56

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 23

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/05/2019
Number of Days to Update: 31

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/19/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/19/2018
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/18/2019
Number of Days to Update: 37
Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 59

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 58

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/24/2019
Date Data Arrived at EDR: 01/25/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 39

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 17

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 01/16/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 28

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 10/18/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 27

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/12/2019
Number of Days to Update: 28

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/19/2018
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 56

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 13

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/15/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/31/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 19

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 02/05/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 01/25/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

ORANGE COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 26

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 31

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/12/2019
Number of Days to Update: 42

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 34

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 01/04/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 60

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 67

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 11/15/2018
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 27

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 33

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 02/19/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 38

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/15/2019
Date Made Active in Reports: 03/14/2019
Number of Days to Update: 27

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/23/2019
Number of Days to Update: 36

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 15

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 11/29/2018
Date Data Arrived at EDR: 12/04/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 38

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 12/21/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/08/2019
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 55

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 33

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 28

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 42

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 35

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/07/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 42
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/26/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 01/16/2019
Number of Days to Update: 13
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 22
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/04/2019
Number of Days to Update: 20

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/01/2018
Number of Days to Update: 19

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/30/2019
Date Made Active in Reports: 02/14/2019
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/30/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/27/2018
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/19/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

PEPPER INDUSTRY PARCELS
PEPPER AVENUE AND 210 FREEWAY
RIALTO, CA 92376

TARGET PROPERTY COORDINATES

Latitude (North):	34.131269 - 34° 7' 52.57''
Longitude (West):	117.351335 - 117° 21' 4.81''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	467604.2
UTM Y (Meters):	3776571.8
Elevation:	1278 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5630643 SAN BERNARDINO NORTH, CA
Version Date:	2012
Southeast Map:	5620416 SAN BERNARDINO SOUTH, CA
Version Date:	2012
Southwest Map:	5619058 FONTANA, CA
Version Date:	2012
Northwest Map:	5630611 DEVORE, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

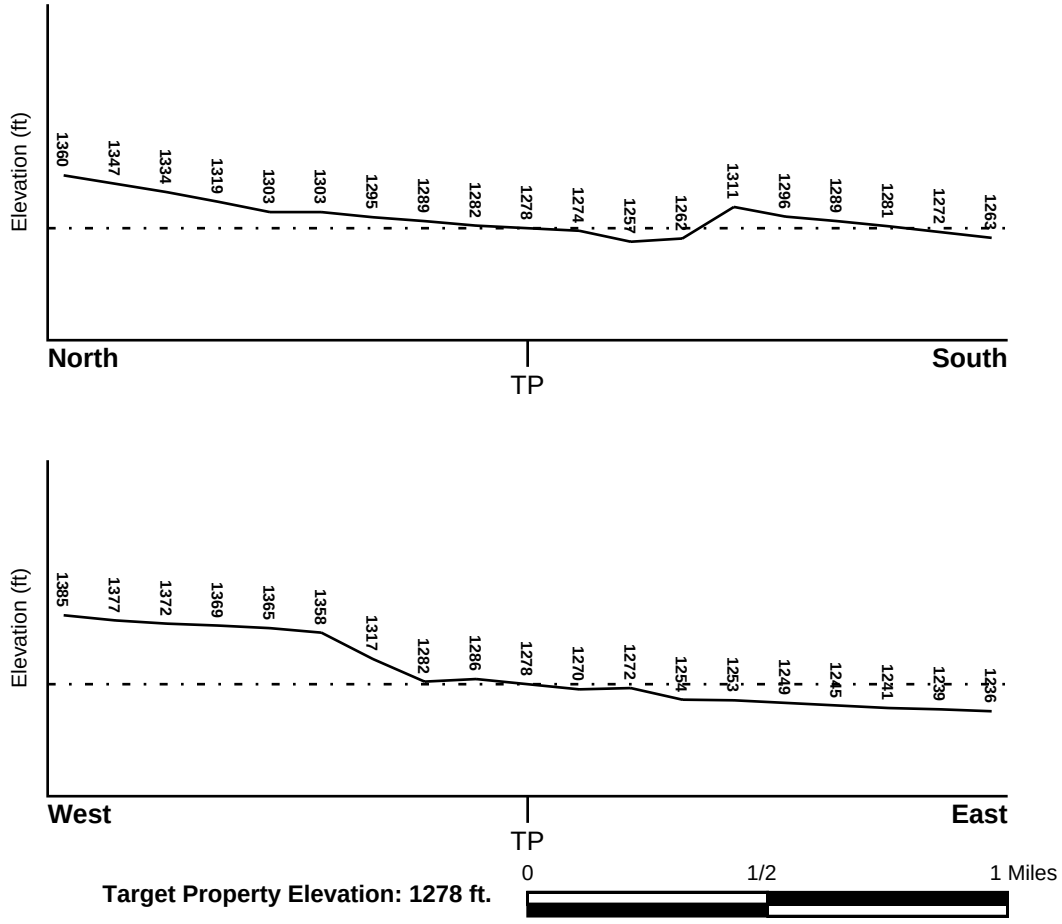
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1278 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06071C7940H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06071C8676H	FEMA FIRM Flood data
06071C8677H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

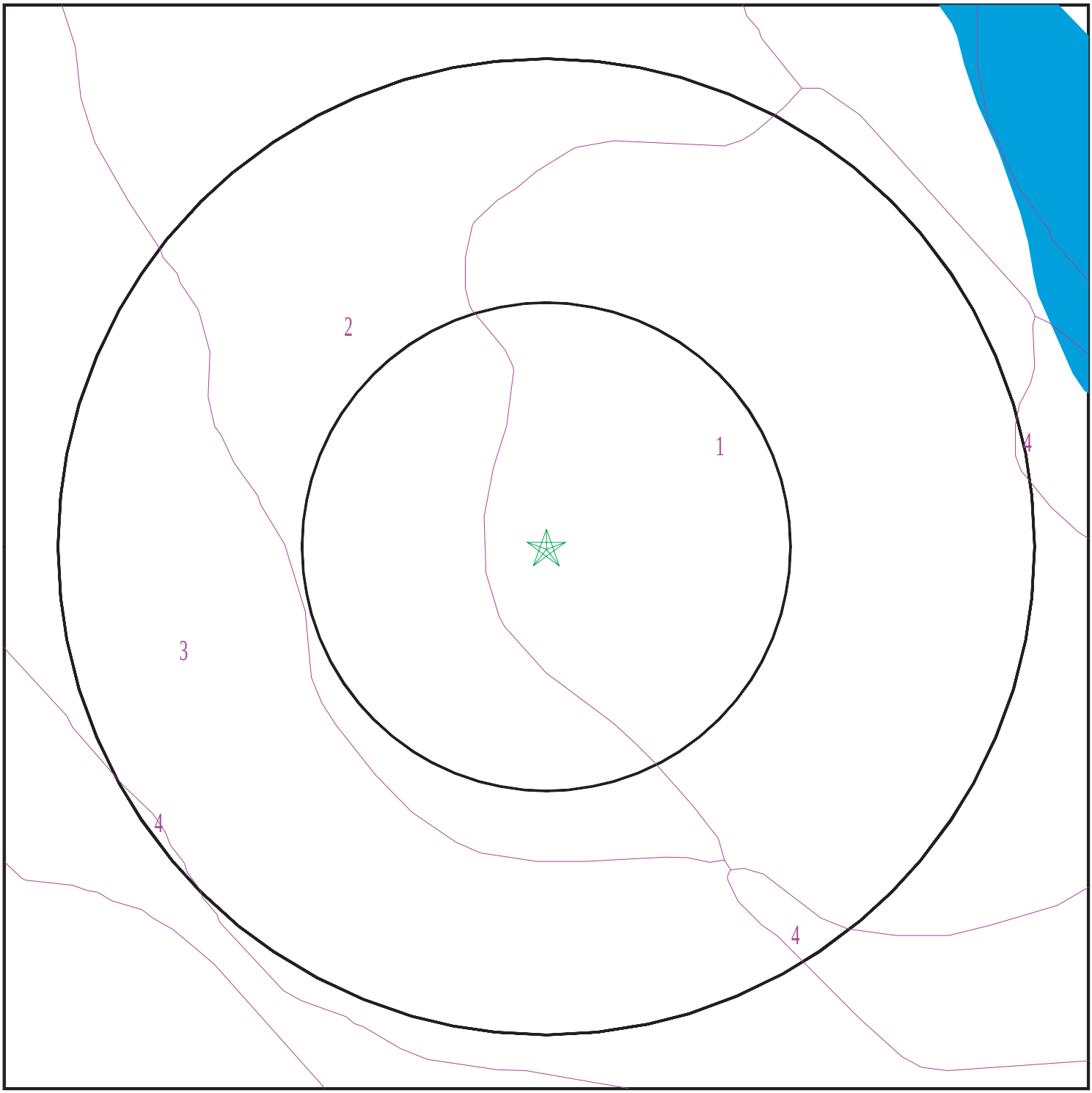
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 05633595.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Pepper Industry Parcels	CLIENT:	SCS Engineers
ADDRESS:	Pepper Avenue and 210 Freeway Rialto CA 92376	CONTACT:	Kim Braun
LAT/LONG:	34.131269 / 117.351335	INQUIRY #:	05633595.2r
		DATE:	April 25, 2019 7:51 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: GRANGEVILLE

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	11 inches	59 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: TUJUNGA

Soil Surface Texture: gravelly loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 6.1
2	18 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 6.1

Soil Map ID: 3

Soil Component Name: FLUVENTS

Soil Surface Texture: gravelly sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	gravelly sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	9 inches	29 inches	stratified gravelly sand to gravelly loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	29 inches	59 inches	stratified gravelly sand to gravelly loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 4

Soil Component Name: TUJUNGA

Soil Surface Texture: gravelly loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	35 inches	gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	35 inches	59 inches	gravelly sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000141718	0 - 1/8 Mile SSE
B5	USGS40000141726	1/8 - 1/4 Mile ESE
6	USGS40000141753	1/8 - 1/4 Mile ENE
C7	USGS40000141695	1/8 - 1/4 Mile SE
B8	USGS40000141717	1/8 - 1/4 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
10	USGS40000141815	1/4 - 1/2 Mile NNE
D12	USGS40000141626	1/2 - 1 Mile SE
13	USGS40000141597	1/2 - 1 Mile SSE
D14	USGS40000141613	1/2 - 1 Mile SE
15	USGS40000141625	1/2 - 1 Mile SE
16	USGS40000141565	1/2 - 1 Mile SSE
E17	USGS40000141542	1/2 - 1 Mile SE
E18	USGS40000141543	1/2 - 1 Mile SE
F22	USGS40000141998	1/2 - 1 Mile NNE
23	USGS40000141466	1/2 - 1 Mile SSE
24	USGS40000141701	1/2 - 1 Mile East
25	USGS40000141465	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

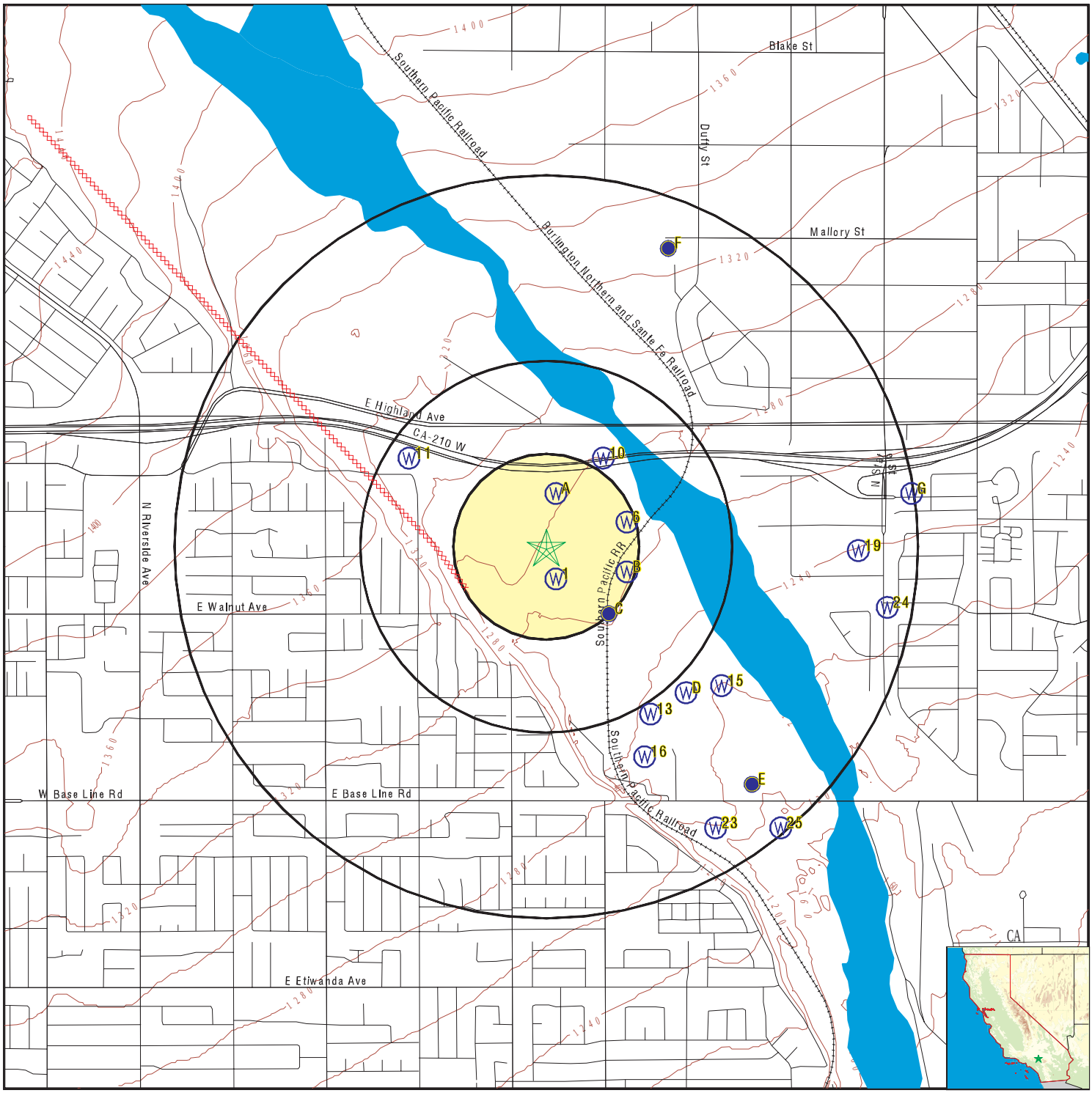
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	204	1/8 - 1/4 Mile North
A3	205	1/8 - 1/4 Mile North
A4	3124	1/8 - 1/4 Mile North
C9	CADW60000003441	1/4 - 1/2 Mile SE
11	203	1/4 - 1/2 Mile WNW
19	141	1/2 - 1 Mile East
F20	138	1/2 - 1 Mile NNE
E21	CADW60000000838	1/2 - 1 Mile SE
G26	144	1/2 - 1 Mile East
G27	142	1/2 - 1 Mile East
G28	139	1/2 - 1 Mile East
G29	18801	1/2 - 1 Mile East
G30	18800	1/2 - 1 Mile East
G31	145	1/2 - 1 Mile East
G32	137	1/2 - 1 Mile East

PHYSICAL SETTING SOURCE MAP - 05633595.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Pepper Industry Parcels	CLIENT:	SCS Engineers
ADDRESS:	Pepper Avenue and 210 Freeway Rialto CA 92376	CONTACT:	Kim Braun
LAT/LONG:	34.131269 / 117.351335	INQUIRY #:	05633595.2r
		DATE:	April 25, 2019 7:51 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
SSE
0 - 1/8 Mile
Lower

FED USGS **USGS40000141718**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N005W36H004S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	475
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

A2
North
1/8 - 1/4 Mile
Higher

CA WELLS **204**

Seq:	204	Prim sta c:	01N/05W-36H04 S
Frds no:	3610004005	County:	36
District:	13	User id:	TAN
System no:	3610004	Water type:	G
Source nam:	WELL 07	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172100.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3610004	System nam:	WEST SAN BERNARDINO CWD
Hqname:	Not Reported	Address:	PO BOX 920
City:	RIALTO	State:	CA
Zip:	92376	Zip ext:	0920
Pop serv:	41454	Connection:	15052
Area serve:	RIALTO-BLOOMINGTON		

Sample date:	22-JUN-16	Finding:	2.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	22-JUN-16	Finding:	4.7
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	04-MAY-16	Finding:	4.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	15-MAR-16	Finding:	4.5
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	16-FEB-16	Finding:	4.5

Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	06-JAN-16	Finding:	1.4
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	06-JAN-16	Finding:	3.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	08-DEC-15	Finding:	1.4
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	08-DEC-15	Finding:	3.5
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	09-NOV-15	Finding:	3.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	08-OCT-15	Finding:	0.3
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	08-OCT-15	Finding:	3.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	10-SEP-15	Finding:	1.4
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	10-SEP-15	Finding:	4.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	11-AUG-15	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	11-AUG-15	Finding:	4.9
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	06-JUL-15	Finding:	4.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	18-JUN-15	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	18-JUN-15	Finding:	1.3
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	18-JUN-15	Finding:	4.7
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	07-MAY-15	Finding:	0.4
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	07-MAY-15	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	10-APR-15	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	10-APR-15	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	11-MAR-15	Finding:	4.9
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	11-MAR-15	Finding:	4.3
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	11-MAR-15	Finding:	23.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	17.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	11-MAR-15	Finding:	4.5
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	6.8e-002
Chemical:	PHOSPHATE, ORTHO	Report units:	MG/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	140.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	49.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	7.8
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	0.47
Chemical:	RADIUM, TOTAL, MDA95-NTNC ONLY, BY 903.0		
Report units:	PCI/L	Dlr:	0.
Sample date:	11-MAR-15	Finding:	0.129
Chemical:	RA-226 OR TOTAL RA BY 903.0 C.E.	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	4.2
Chemical:	ARSENIC	Report units:	UG/L

Dlr:	2.		
Sample date:	11-MAR-15	Finding:	3.1
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	11-MAR-15	Finding:	1.5
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	1.3
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	11-MAR-15	Finding:	0.54
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	1.4
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	0.87
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	3.9e-002
Chemical:	RADIUM 228	Report units:	PCI/L
Dlr:	1.		
Sample date:	11-MAR-15	Finding:	0.634
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-MAR-15	Finding:	0.253
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	19-FEB-15	Finding:	5.2
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	21-JAN-15	Finding:	5.
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	05-DEC-14	Finding:	1.6
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	05-DEC-14	Finding:	4.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	19-NOV-14	Finding:	4.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	23-SEP-14	Finding:	4.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	23-SEP-14	Finding:	1.4
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	26-AUG-14	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	29-JUL-14	Finding:	3.9
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	25-JUN-14	Finding:	19.9
Chemical:	SOURCE TEMPERATURE C	Report units:	C
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	330.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	7.7
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	140.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	170.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	45.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	4.3
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	16.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	2.2
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	4.9
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	18.
Chemical:	SULFATE	Report units:	MG/L

Dlr:	0.5		
Sample date:	25-JUN-14	Finding:	0.33
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	25-JUN-14	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	25-JUN-14	Finding:	130.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	25-JUN-14	Finding:	4.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	25-JUN-14	Finding:	200.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	0.66
Chemical:	LANGELIER INDEX @ 60 C	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	5.e-002
Chemical:	LANGELIER INDEX AT SOURCE TEMP.	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	9.7
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	25-JUN-14	Finding:	0.6
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	25-JUN-14	Finding:	11.85
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-JUN-14	Finding:	2200.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	21-MAY-14	Finding:	4.2
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	21-MAY-14	Finding:	0.4
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	22-APR-14	Finding:	4.3
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	11-MAR-14	Finding:	4.2
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	11-MAR-14	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	24-FEB-14	Finding:	5.
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	28-JAN-14	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	16-JAN-14	Finding:	9.8
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-DEC-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	13-DEC-13	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	21-NOV-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	21-NOV-13	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	24-OCT-13	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	30-SEP-13	Finding:	5.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	30-SEP-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	21-AUG-13	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	21-AUG-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	17-JUL-13	Finding:	4.7
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	25-JUN-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	25-JUN-13	Finding:	4.9
Chemical:	ARSENIC	Report units:	UG/L

Dlr:	2.		
Sample date:	30-MAY-13	Finding:	4.7
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	11-APR-13	Finding:	3.9
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	19-MAR-13	Finding:	4.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	19-MAR-13	Finding:	5.
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	19-MAR-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	19-MAR-13	Finding:	7.8
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	19-MAR-13	Finding:	7.1e-002
Chemical:	PHOSPHATE, ORTHO	Report units:	MG/L
Dlr:	0.		
Sample date:	19-MAR-13	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	19-MAR-13	Finding:	20.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	19-MAR-13	Finding:	17.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	19-MAR-13	Finding:	4.2
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	19-MAR-13	Finding:	46.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-FEB-13	Finding:	4.
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	22-FEB-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	24-JAN-13	Finding:	4.2
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

Sample date:	24-JAN-13	Finding:	0.7
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	12-DEC-12	Finding:	20.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	12-DEC-12	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	12-DEC-12	Finding:	18.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	12-DEC-12	Finding:	4.4
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	12-DEC-12	Finding:	46.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	12-DEC-12	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	12-DEC-12	Finding:	4.3
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	12-DEC-12	Finding:	4.3
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	12-DEC-12	Finding:	8.
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	27-NOV-12	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	23-OCT-12	Finding:	4.5
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	24-SEP-12	Finding:	6.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	24-SEP-12	Finding:	4.5
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	24-SEP-12	Finding:	21.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	24-SEP-12	Finding:	18.
Chemical:	SULFATE	Report units:	MG/L

Dlr:	0.5		
Sample date:	24-SEP-12	Finding:	49.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	24-SEP-12	Finding:	140.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	24-SEP-12	Finding:	7.3
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	24-SEP-12	Finding:	4.2
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-AUG-12	Finding:	0.4
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	22-AUG-12	Finding:	4.2
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	17-JUL-12	Finding:	0.3
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	17-JUL-12	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	27-JUN-12	Finding:	5.2
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	27-JUN-12	Finding:	46.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	7.7
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	4.7
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	27-JUN-12	Finding:	23.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	4.4
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	27-JUN-12	Finding:	18.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	23-MAY-12	Finding:	4.1
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	05-APR-12	Finding:	4.4
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	12-MAR-12	Finding:	7.5
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	12-MAR-12	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	12-MAR-12	Finding:	18.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	12-MAR-12	Finding:	21.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	12-MAR-12	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	12-MAR-12	Finding:	3.7
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	12-MAR-12	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	24-FEB-12	Finding:	4.8
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	24-FEB-12	Finding:	0.8
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	26-JAN-12	Finding:	4.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		

A3
North
1/8 - 1/4 Mile
Higher

CA WELLS 205

Seq:	205	Prim sta c:	01N/05W-36J03 S
Frds no:	3610004006	County:	36
District:	13	User id:	TAN
System no:	3610004	Water type:	G

Source nam:	WELL 08	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172100.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610004	System nam:	WEST SAN BERNARDINO CWD
Hqname:	Not Reported	Address:	PO BOX 920
City:	RIALTO	State:	CA
Zip:	92376	Zip ext:	0920
Pop serv:	41454	Connection:	15052
Area serve:	RIALTO-BLOOMINGTON		

A4
North
1/8 - 1/4 Mile
Higher

CA WELLS 3124

Seq:	3124	Prim sta c:	036/004-003
Frds no:	3610004027	County:	36
District:	13	User id:	TAN
System no:	3610004	Water type:	G
Source nam:	WELL 36	Station ty:	WELL/AMBNT
Latitude:	340800.0	Longitude:	1172100.0
Precision:	Not Reported	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610004	System nam:	WEST SAN BERNARDINO CWD
Hqname:	Not Reported	Address:	PO BOX 920
City:	RIALTO	State:	CA
Zip:	92376	Zip ext:	0920
Pop serv:	41454	Connection:	15052
Area serve:	RIALTO-BLOOMINGTON		
Sample date:	13-DEC-12	Finding:	22.
Chemical:	MANGANESE	Report units:	UG/L
Dlr:	20.		
Sample date:	13-DEC-12	Finding:	380.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	13-DEC-12	Finding:	17.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	13-DEC-12	Finding:	23.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	13-DEC-12	Finding:	8.7
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	13-DEC-12	Finding:	47.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L

Dlr:	0.		
Sample date:	13-DEC-12	Finding:	7.9
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	13-DEC-12	Finding:	19.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	17.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	22.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	27-JUN-12	Finding:	19.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	9.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	27-JUN-12	Finding:	8.1
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	27-JUN-12	Finding:	47.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

B5
ESE **FED USGS** **USGS40000141726**
1/8 - 1/4 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31E002S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

6
ENE **FED USGS** **USGS40000141753**
1/8 - 1/4 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31D002S	Type:	Well

Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19160101	Well Depth:	714
Well Depth Units:	ft	Well Hole Depth:	775
Well Hole Depth Units:	ft		

C7
SE **FED USGS** **USGS40000141695**
1/8 - 1/4 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N005W36J003S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	629
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

B8
ESE **FED USGS** **USGS40000141717**
1/8 - 1/4 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31E001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	764
Well Depth Units:	ft	Well Hole Depth:	764
Well Hole Depth Units:	ft		

C9
SE **CA WELLS** **CADW60000003441**
1/4 - 1/2 Mile
Lower

Objectid:	3441	Latitude:	34.128689
Longitude:	-117.347855	Site code:	341287N1173479W001
State well numbe:	01N05W36H006S	Local well name:	'Well 8A'
Well use id:	4	Well use descrip:	Residential
County id:	36	County name:	San Bernardino
Basin code:	'8-2.06'	Basin desc:	Bunker Hill
Dwr region id:	80238	Dwr region:	Southern Region Office
Site id:	CADW60000003441		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

10
NNE
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS40000141815**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31D001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19100101	Well Depth:	1000
Well Depth Units:	ft	Well Hole Depth:	1000
Well Hole Depth Units:	ft		

11
WNW
1/4 - 1/2 Mile
Higher | **CA WELLS** | **203**

Seq:	203	Prim sta c:	01N/05W-36C01 S
Frds no:	3610038005	County:	36
District:	13	User id:	TAN
System no:	3610038	Water type:	G
Source nam:	CITY WELL 03	Station ty:	WELL/AMBNT
Latitude:	340805.0	Longitude:	1172125.0
Precision:	2	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610038	System nam:	RIALTO-CITY
Hqname:	Not Reported	Address:	150 S PALM AVE
City:	RIALTO	State:	CA
Zip:	92376	Zip ext:	Not Reported
Pop serv:	48418	Connection:	11089
Area serve:	RIALTO		
Sample date:	09-JUL-13	Finding:	5.
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	09-JUL-13	Finding:	69.
Chemical:	SOURCE TEMPERATURE C	Report units:	C
Dlr:	0.		
Sample date:	13-MAR-13	Finding:	5.3
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-FEB-13	Finding:	4.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	13-FEB-13	Finding:	1.2

Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	18-JUL-12	Finding:	6.5
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	18-JUL-12	Finding:	1.1
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	22-MAR-12	Finding:	30.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	1.7
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	5.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	23.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	22-MAR-12	Finding:	5.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	22-MAR-12	Finding:	6.1
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	22-MAR-12	Finding:	200.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	6.6
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	22-MAR-12	Finding:	2.1
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	22-MAR-12	Finding:	1500.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	22-MAR-12	Finding:	2.3
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	33.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	88.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

Sample date:	22-MAR-12	Finding:	150.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	120.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	7.7
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	300.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	22-MAR-12	Finding:	0.4
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	23-FEB-12	Finding:	1.1
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	23-FEB-12	Finding:	4.7
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		

D12
SE **FED USGS** **USGS40000141626**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31M001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19240101	Well Depth:	575
Well Depth Units:	ft	Well Hole Depth:	608
Well Hole Depth Units:	ft		

13
SSE **FED USGS** **USGS40000141597**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31N002S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19270101	Well Depth:	802

Well Depth Units:	ft	Well Hole Depth:	802
Well Hole Depth Units:	ft		

D14
SE **FED USGS** **USGS40000141613**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31M002S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

15
SE **FED USGS** **USGS40000141625**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31L002S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	526
Well Depth Units:	ft	Well Hole Depth:	526
Well Hole Depth Units:	ft		

16
SSE **FED USGS** **USGS40000141565**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31N001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19290101	Well Depth:	476
Well Depth Units:	ft	Well Hole Depth:	486
Well Hole Depth Units:	ft		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

E17
SE
1/2 - 1 Mile
Lower

FED USGS **USGS40000141542**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31P001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19150101	Well Depth:	592
Well Depth Units:	ft	Well Hole Depth:	592
Well Hole Depth Units:	ft		

E18
SE
1/2 - 1 Mile
Lower

FED USGS **USGS40000141543**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31P003S	Type:	Well
Description:	Orig. well depth 697 ft; sounded 622 ft 04/2006.		
HUC:	18070203	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	California Coastal Basin aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19270101	Well Depth:	622
Well Depth Units:	ft	Well Hole Depth:	697
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	19	Level reading date:	2003-10-24
Feet below surface:	Not Reported	Feet to sea level:	Not Reported
Note:	The site was dry (no water level recorded).		
Level reading date:	2003-04-22	Feet below surface:	277.39
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2002-10-29	Feet below surface:	257.60
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2002-04-11	Feet below surface:	227.37
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2001-10-23	Feet below surface:	215.51
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2001-04-16	Feet below surface:	188.58
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2000-10-26	Feet below surface:	177.49
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	2000-04-18	Feet below surface:	149.24

Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1999-10-19	Feet below surface:	131.97
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1999-04-13	Feet below surface:	119.84
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1998-10-20	Feet below surface:	121.76
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1998-04-07	Feet below surface:	124.20
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1997-10-29	Feet below surface:	131.65
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1997-04-15	Feet below surface:	109.28
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1996-10-09	Feet below surface:	108.55
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1996-04-23	Feet below surface:	89.56
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-10-24	Feet below surface:	109.27
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-04-19	Feet below surface:	105.84
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1994-10-28	Feet below surface:	127.06
Feet to sea level:	Not Reported	Note:	Not Reported

19
East
1/2 - 1 Mile
Lower

CA WELLS 141

Seq:	141	Prim sta c:	01N/04W-31F01 S
Frds no:	3610057005	County:	36
District:	13	User id:	TAN
System no:	3610057	Water type:	G
Source nam:	LYTLE CREEK WELL 08	Station ty:	WELL/AMBNT
Latitude:	340752.0	Longitude:	1172009.0
Precision:	3	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610057	System nam:	RIVERSIDE HIGHLAND WATER CO
Hqname:	Not Reported	Address:	1450 WASHINGTON ST
City:	COLTON	State:	CA
Zip:	92324	Zip ext:	Not Reported
Pop serv:	14542	Connection:	3873
Area serve:	GRAND TERR/HIGHGROVE-RIVERSIDE		
Sample date:	10-JAN-18	Finding:	0.759
Chemical:	RADIUM 226 MDA95	Report units:	PCI/L

Dlr:	0.		
Sample date:	10-JAN-18	Finding:	0.424
Chemical:	RADIUM 226 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-JAN-18	Finding:	0.427
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-JAN-18	Finding:	1.06
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-JAN-18	Finding:	0.804
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-JAN-18	Finding:	2.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	10-JAN-18	Finding:	3.02
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	10-JAN-18	Finding:	0.311
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-JAN-18	Finding:	2.3
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	10-JAN-17	Finding:	2.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	06-OCT-16	Finding:	35.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	06-OCT-16	Finding:	240.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	0.14
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	06-OCT-16	Finding:	3.25
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	06-OCT-16	Finding:	1.29
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	2.8e-002
Chemical:	RADIUM 228	Report units:	PCI/L
Dlr:	1.		

Sample date:	06-OCT-16	Finding:	0.467
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	1.47
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	06-OCT-16	Finding:	0.752
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	1.08
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	0.3
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	0.253
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	370.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	8.
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	1.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	06-OCT-16	Finding:	160.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	52.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	8.3
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	9.3
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	2.3
Chemical:	POTASSIUM	Report units:	MG/L

Dlr:	0.		
Sample date:	06-OCT-16	Finding:	3.6
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	06-OCT-16	Finding:	22.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	06-OCT-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	11-JUL-16	Finding:	410.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	0.2
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	1.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	11-JUL-16	Finding:	180.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	56.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	9.5
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	9.5
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	2.4
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	3.4
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	25.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		

Sample date:	11-JUL-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	11-JUL-16	Finding:	43.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	11-JUL-16	Finding:	2.
Chemical:	CHROMIUM (TOTAL)	Report units:	UG/L
Dlr:	10.		
Sample date:	11-JUL-16	Finding:	410.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	11-JUL-16	Finding:	260.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	1.8
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	11-JUL-16	Finding:	3.33
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	11-JUL-16	Finding:	0.942
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	0.373
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	1.81
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	11-JUL-16	Finding:	1.08
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	0.795
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	0.481
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	11-JUL-16	Finding:	7.8
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	06-APR-16	Finding:	380.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	06-APR-16	Finding:	0.253
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L

Dlr:	0.		
Sample date:	06-APR-16	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	2.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	06-APR-16	Finding:	170.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	53.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	9.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	9.5
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	2.4
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	3.6
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	22.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	06-APR-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	06-APR-16	Finding:	38.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	06-APR-16	Finding:	210.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	0.29
Chemical:	LANGELIER INDEX AT SOURCE TEMP.	Report units:	Not Reported
Dlr:	0.		
Sample date:	06-APR-16	Finding:	0.88
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		

Sample date:	06-APR-16	Finding:	12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	06-APR-16	Finding:	1.08
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	3.e-003
Chemical:	RADIUM 228	Report units:	PCI/L
Dlr:	1.		
Sample date:	06-APR-16	Finding:	0.592
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	1.99
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	06-APR-16	Finding:	0.97
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	0.859
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	0.3
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	06-APR-16	Finding:	7.7
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	390.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	0.2
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	1.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	25-JAN-16	Finding:	170.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	52.
Chemical:	CALCIUM	Report units:	MG/L

Dlr:	0.		
Sample date:	25-JAN-16	Finding:	9.1
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	8.7
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	2.3
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	3.3
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	24.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	25-JAN-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	25-JAN-16	Finding:	45.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	25-JAN-16	Finding:	3.
Chemical:	CHROMIUM (TOTAL)	Report units:	UG/L
Dlr:	10.		
Sample date:	25-JAN-16	Finding:	1800.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	25-JAN-16	Finding:	46.
Chemical:	MANGANESE	Report units:	UG/L
Dlr:	20.		
Sample date:	25-JAN-16	Finding:	620.
Chemical:	ALUMINUM	Report units:	UG/L
Dlr:	50.		
Sample date:	25-JAN-16	Finding:	240.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	9.5
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	25-JAN-16	Finding:	1.27
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	0.559
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		

Sample date:	25-JAN-16	Finding:	2.23
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	25-JAN-16	Finding:	1.14
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	1.34
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	0.3
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-JAN-16	Finding:	7.5
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		

F20
NNE
1/2 - 1 Mile
Higher

CA WELLS 138

Seq:	138	Prim sta c:	01N/04W-30M01 S
Frds no:	3610039035	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	MALLORY WELL	Station ty:	WELL/AMBNT
Latitude:	340834.0	Longitude:	1172042.0
Precision:	2	Status:	AR
Comment 1:	FORMERLY OWNED BY SAN BERNARDINO WATER UTILITIES CORPORATION WHICH IS		
Comment 2:	NOW DEFUNCT	Comment 3:	Not Reported
Comment 4:	Not Reported	Comment 5:	Not Reported
Comment 6:	Not Reported	Comment 7:	Not Reported
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		
Sample date:	03-APR-18	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	06-MAR-18	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	20-FEB-18	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	23-JAN-18	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	16-JAN-18	Finding:	4.3

Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-DEC-17	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	21-NOV-17	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	17-OCT-17	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	03-OCT-17	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-SEP-17	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	3.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	220.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	66.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	44.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-AUG-17	Finding:	330.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	3.8
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	08-AUG-17	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	26-JUL-17	Finding:	15.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	4.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	1.1
Chemical:	LANGELIER INDEX @ 60 C	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	350.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	0.54
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	26-JUL-17	Finding:	46.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	26-JUL-17	Finding:	12.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	3.3
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	68.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	230.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	230.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	190.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	7.9
Chemical:	PH, LABORATORY	Report units:	Not Reported

Dlr:	0.		
Sample date:	26-JUL-17	Finding:	520.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	25-JUL-17	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	16-MAY-17	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	18-APR-17	Finding:	3.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	11-APR-17	Finding:	3.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	07-MAR-17	Finding:	3.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	31-JAN-17	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	24-JAN-17	Finding:	3.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	25-OCT-16	Finding:	3.6
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	23-AUG-16	Finding:	42.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	23-AUG-16	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	340.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	220.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

Sample date:	23-AUG-16	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	23-AUG-16	Finding:	66.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-16	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-APR-16	Finding:	4.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JAN-16	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-OCT-15	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-OCT-15	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	04-AUG-15	Finding:	230.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	67.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	16.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	12.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	40.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	04-AUG-15	Finding:	220.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	28-JUL-15	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L

Dlr:	2.		
Sample date:	28-APR-15	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-JAN-15	Finding:	29.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	21-OCT-14	Finding:	22.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	69.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	230.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	16.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	14.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	410.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	40.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-JUL-14	Finding:	520.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	6200.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-JUL-14	Finding:	12.1
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	11.
Chemical:	CARBON DIOXIDE	Report units:	UG/L
Dlr:	0.		

Sample date:	29-JUL-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	29-JUL-14	Finding:	0.26
Chemical:	LANGELIER INDEX AT SOURCE TEMP.	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	310.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	0.7
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	29-JUL-14	Finding:	43.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-JUL-14	Finding:	13.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	3.2
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	16.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	69.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	230.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	220.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	180.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	7.6
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	08-APR-14	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-DEC-13	Finding:	6.e-002
Chemical:	FOAMING AGENTS (MBAS)	Report units:	MG/L

Dlr:	0.		
Sample date:	15-OCT-13	Finding:	21.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-13	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	68.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	230.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-13	Finding:	320.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	38.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	20-AUG-13	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	16-JUL-13	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-AUG-12	Finding:	14.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	15-AUG-12	Finding:	16.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	15-AUG-12	Finding:	9.2
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	15-AUG-12	Finding:	33.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	15-AUG-12	Finding:	220.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

Sample date:	15-AUG-12	Finding:	64.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	15-AUG-12	Finding:	320.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		

E21
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW60000000838**

Objectid:	838	Latitude:	34.12207
Longitude:	-117.341026	Site code:	341221N1173410W001
State well numbe:	01N04W31P003S	Local well name:	'Well 9'
Well use id:	1	Well use descrip:	Observation
County id:	36	County name:	San Bernardino
Basin code:	'8-2.06'	Basin desc:	Bunker Hill
Dwr region id:	80238	Dwr region:	Southern Region Office
Site id:	CADW60000000838		

F22
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000141998**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W30M001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19590506	Well Depth:	652
Well Depth Units:	ft	Well Hole Depth:	652
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	9	Level reading date:	1989-09-25
Feet below surface:	245.97	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1988-11-21	Feet below surface:	225.89
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1988-07-06	Feet below surface:	Not Reported
Feet to sea level:	Not Reported	Note:	The site was being pumped.

Level reading date:	1987-12-20	Feet below surface:	210
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1987-06-18	Feet below surface:	194.25
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1986-11-24	Feet below surface:	Not Reported
Feet to sea level:	Not Reported	Note:	The site was being pumped.

Level reading date:	1986-06-25	Feet below surface:	Not Reported

Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1986-04-08	Feet below surface:	165.94
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1959-05-06	Feet below surface:	275
Feet to sea level:	Not Reported	Note:	Not Reported

23
SSE **FED USGS** **USGS40000141466**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S004W06C002S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19110101	Well Depth:	620
Well Depth Units:	ft	Well Hole Depth:	620
Well Hole Depth Units:	ft		

24
East **FED USGS** **USGS40000141701**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001N004W31H001S	Type:	Well
Description:	INFREQUENTLY PUMPED DUE TO TCE..10/8/87		
HUC:	18070203	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	California Coastal Basin aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	350
Well Depth Units:	ft	Well Hole Depth:	350
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	330	Level reading date:	1988-11-21
Feet below surface:	166.20	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1988-07-06	Feet below surface:	158.45
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1987-12-29	Feet below surface:	128.91
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1987-10-08	Feet below surface:	129.71
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-12-02	Feet below surface:	98.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1985-11-01	Feet below surface:	97.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-10-01	Feet below surface:	80.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-09-03	Feet below surface:	76.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-08-01	Feet below surface:	76.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-07-01	Feet below surface:	88.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-06-03	Feet below surface:	87.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-05-01	Feet below surface:	84.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-04-01	Feet below surface:	84.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-03-01	Feet below surface:	80.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-02-01	Feet below surface:	80.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1985-01-02	Feet below surface:	78.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-12-03	Feet below surface:	80.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-10-01	Feet below surface:	80.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-09-04	Feet below surface:	81.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-08-01	Feet below surface:	75.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-07-02	Feet below surface:	74.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-06-01	Feet below surface:	73.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-05-01	Feet below surface:	70.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-04-02	Feet below surface:	68.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-03-01	Feet below surface:	65.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1984-02-01	Feet below surface:	75.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1983-12-01	Feet below surface:	69.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-11-01	Feet below surface:	75.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-10-03	Feet below surface:	79.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-09-01	Feet below surface:	76.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-08-01	Feet below surface:	81.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-07-01	Feet below surface:	75.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-06-01	Feet below surface:	79.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-05-02	Feet below surface:	91.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-04-01	Feet below surface:	104.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-03-01	Feet below surface:	103.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-02-01	Feet below surface:	104.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1983-01-03	Feet below surface:	104.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-08-28	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-08-14	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-08-07	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-07-28	Feet below surface:	185.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-07-21	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-07-14	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-07-07	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-06-28	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-06-21	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.

Level reading date:	1981-06-14	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-06-07	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1981-05-28	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-05-07	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-04-28	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-04-21	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1981-04-14	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-12-14	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-12-07	Feet below surface:	113.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-11-28	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-11-21	Feet below surface:	110.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-11-14	Feet below surface:	114.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-11-07	Feet below surface:	111.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-10-28	Feet below surface:	114.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-10-21	Feet below surface:	114.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-10-14	Feet below surface:	113.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-09-28	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-09-21	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-09-14	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-09-07	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-08-28	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1980-08-21	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-08-14	Feet below surface:	112.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-08-07	Feet below surface:	118.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-07-14	Feet below surface:	126.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-06-14	Feet below surface:	131.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-06-07	Feet below surface:	131.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-05-28	Feet below surface:	130.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-05-21	Feet below surface:	130.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-05-14	Feet below surface:	125.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-05-07	Feet below surface:	124.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-04-14	Feet below surface:	123.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-04-07	Feet below surface:	123.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-03-28	Feet below surface:	136.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-03-21	Feet below surface:	137.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-03-14	Feet below surface:	137.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-03-07	Feet below surface:	136.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-02-28	Feet below surface:	157.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-02-21	Feet below surface:	158.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-02-14	Feet below surface:	157.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-02-07	Feet below surface:	158.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-01-28	Feet below surface:	156.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1980-01-21	Feet below surface:	155.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-01-14	Feet below surface:	157.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1980-01-07	Feet below surface:	157.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-12-28	Feet below surface:	161.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-12-21	Feet below surface:	160.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-12-14	Feet below surface:	161.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-12-07	Feet below surface:	160.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-11-28	Feet below surface:	167.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-11-21	Feet below surface:	166.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-11-14	Feet below surface:	165.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-11-07	Feet below surface:	165.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-10-28	Feet below surface:	167.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-10-21	Feet below surface:	171.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-10-14	Feet below surface:	171.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-10-07	Feet below surface:	170.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-09-28	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-09-21	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-09-14	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-09-07	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-08-28	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-08-14	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1979-08-07	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-06-28	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-06-14	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-06-07	Feet below surface:	187.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-05-28	Feet below surface:	186.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-05-21	Feet below surface:	186.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-05-14	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-05-07	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-04-28	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-04-21	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-04-14	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-04-07	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-03-28	Feet below surface:	185.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-03-21	Feet below surface:	185.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-03-14	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-03-07	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-02-28	Feet below surface:	182.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-02-21	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-02-14	Feet below surface:	182.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-02-07	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-01-28	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1979-01-21	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-01-14	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1979-01-07	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-12-28	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-12-21	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-12-14	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-12-07	Feet below surface:	188.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-11-14	Feet below surface:	192.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-11-07	Feet below surface:	192.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-10-28	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-10-21	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-10-14	Feet below surface:	183.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-10-07	Feet below surface:	182.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-09-28	Feet below surface:	196.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-09-21	Feet below surface:	195.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-09-14	Feet below surface:	195.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-09-07	Feet below surface:	194.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-08-28	Feet below surface:	167.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-08-21	Feet below surface:	166.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-08-14	Feet below surface:	165.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-08-07	Feet below surface:	165.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1978-07-28	Feet below surface:	192.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-07-21	Feet below surface:	192.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-07-14	Feet below surface:	191.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-07-07	Feet below surface:	192.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-05-28	Feet below surface:	191.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-05-21	Feet below surface:	190.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-05-14	Feet below surface:	89.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-05-07	Feet below surface:	189.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-04-28	Feet below surface:	177.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-04-21	Feet below surface:	176.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-04-14	Feet below surface:	182.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-04-07	Feet below surface:	184.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-03-28	Feet below surface:	196.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-03-21	Feet below surface:	196.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-03-14	Feet below surface:	195.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-03-07	Feet below surface:	196.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-02-28	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-02-21	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-02-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-02-07	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-01-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1978-01-21	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-01-14	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1978-01-07	Feet below surface:	207.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-12-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-12-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-12-14	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-12-07	Feet below surface:	208.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-11-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-11-14	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-11-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-10-28	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-10-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-10-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-10-07	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-09-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-09-21	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-09-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-08-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-08-14	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-08-07	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-07-21	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1977-07-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-07-07	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-06-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-06-21	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-06-14	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-06-07	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-05-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-05-21	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-05-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-05-07	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-04-28	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-04-21	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-04-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-04-07	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-03-28	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-03-21	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-03-14	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-03-07	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-02-28	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-02-21	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-02-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1977-02-07	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-01-28	Feet below surface:	217.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-01-21	Feet below surface:	217.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-01-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1977-01-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-12-28	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-12-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-12-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-12-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-11-29	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-11-22	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-11-15	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-11-08	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-10-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-10-21	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-10-14	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-10-07	Feet below surface:	208.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-09-28	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-08-24	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-08-21	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-08-14	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1976-08-07	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-07-28	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-07-21	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-07-14	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-07-07	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-06-28	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-06-21	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-06-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-06-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-05-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-05-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-05-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-05-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-04-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-04-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-04-14	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-04-07	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-03-28	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-03-21	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-03-14	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-03-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1976-02-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-02-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-02-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-02-07	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-01-28	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-01-21	Feet below surface:	211.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-01-14	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1976-01-07	Feet below surface:	212.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-12-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-12-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-12-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-12-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-11-28	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-11-21	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-11-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-11-07	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-10-28	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-10-21	Feet below surface:	209.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-10-14	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-10-07	Feet below surface:	210.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-09-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1975-09-21	Feet below surface:	207.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-09-14	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-09-07	Feet below surface:	205.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-08-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-08-21	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-08-14	Feet below surface:	207.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-08-07	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-07-28	Feet below surface:	200.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-07-21	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-07-14	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-07-07	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-06-28	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-06-21	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-06-14	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-06-07	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-05-28	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-05-21	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-05-14	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-05-07	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-04-28	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-04-21	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1975-04-14	Feet below surface:	201.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-04-07	Feet below surface:	201.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-03-28	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-03-21	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-03-14	Feet below surface:	201.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-03-07	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-02-28	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-02-21	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-02-14	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-02-08	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-01-28	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-01-21	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-01-14	Feet below surface:	203.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1975-01-08	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-12-21	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-12-14	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-12-07	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-11-28	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-11-21	Feet below surface:	206.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-11-14	Feet below surface:	201.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-11-07	Feet below surface:	202.0
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1974-10-28	Feet below surface:	200.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-10-21	Feet below surface:	200.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-10-14	Feet below surface:	200.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1974-10-07	Feet below surface:	204.0
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1951-10-25	Feet below surface:	146.63
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1951-10-18	Feet below surface:	146.42
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1951-08-16	Feet below surface:	Not Reported
Feet to sea level:	Not Reported	Note:	The site was being pumped.
Level reading date:	1951-08-02	Feet below surface:	142.00
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1951-07-26	Feet below surface:	141.56
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1951-07-19	Feet below surface:	141.2
Feet to sea level:	Not Reported	Note:	Not Reported

25
SE
1/2 - 1 Mile
Lower

FED USGS **USGS40000141465**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S004W06C001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19150101	Well Depth:	416
Well Depth Units:	ft	Well Hole Depth:	416
Well Hole Depth Units:	ft		

G26
East
1/2 - 1 Mile
Lower

CA WELLS **144**

Seq:	144	Prim sta c:	01N/04W-32D03 S
Frds no:	3610039004	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	19 TH STREET WELL 01	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	8	Status:	AR

Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

G27
East
1/2 - 1 Mile
Lower

CA WELLS 142

Seq:	142	Prim sta c:	01N/04W-31H01 S
Frds no:	3610039050	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	STATE WELL	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

G28
East
1/2 - 1 Mile
Lower

CA WELLS 139

Seq:	139	Prim sta c:	01N/04W-31A01 S
Frds no:	3610039037	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	MT VERNON	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

Sample date:	21-MAR-18	Finding:	6.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-FEB-18	Finding:	6.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	17-JAN-18	Finding:	1.1
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	17-JAN-18	Finding:	5.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	17-JAN-18	Finding:	3.
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-DEC-17	Finding:	5.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	22-NOV-17	Finding:	5.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	18-OCT-17	Finding:	2.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-OCT-17	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-OCT-17	Finding:	6.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	5.4
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	360.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	38.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-AUG-17	Finding:	5.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	9.8
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	74.
Chemical:	CALCIUM	Report units:	MG/L

Dlr:	0.		
Sample date:	29-AUG-17	Finding:	250.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-17	Finding:	5.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	1.1
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	26-JUL-17	Finding:	13.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	5.2
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	1.3
Chemical:	LANGELIER INDEX @ 60 C	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	370.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	720.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	26-JUL-17	Finding:	41.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	26-JUL-17	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	3.7
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	26-JUL-17	Finding:	74.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	250.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	260.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	220.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	8.
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	560.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	0.61
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	12-JUL-17	Finding:	2.5
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-JUL-17	Finding:	5.6
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-JUL-17	Finding:	1.
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	17-MAY-17	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-APR-17	Finding:	1.1
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-APR-17	Finding:	3.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-APR-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	15-MAR-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L

Dlr:	0.4		
Sample date:	25-JAN-17	Finding:	4.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	25-JAN-17	Finding:	0.83
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	25-JAN-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-NOV-16	Finding:	5.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-OCT-16	Finding:	2.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-OCT-16	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-OCT-16	Finding:	5.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-SEP-16	Finding:	5.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	23-AUG-16	Finding:	260.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	480.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	41.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	23-AUG-16	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	76.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	23-AUG-16	Finding:	6.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-16	Finding:	6.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-JUL-16	Finding:	6.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-JUL-16	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-JUL-16	Finding:	2.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-APR-16	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-APR-16	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-APR-16	Finding:	2.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	31-MAR-16	Finding:	0.986
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	31-MAR-16	Finding:	0.955
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	09-SEP-15	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	04-AUG-15	Finding:	240.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	330.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	40.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	04-AUG-15	Finding:	7.8
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L

Dlr:	0.		
Sample date:	04-AUG-15	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	70.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	15-JUL-15	Finding:	1.
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-JUL-15	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-APR-15	Finding:	1.9
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-APR-15	Finding:	1.
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-FEB-15	Finding:	21.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-JAN-15	Finding:	21.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-JAN-15	Finding:	0.98
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-JAN-15	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-DEC-14	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	17-SEP-14	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	12.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		

Sample date:	26-AUG-14	Finding:	380.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	35.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	80.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	270.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	47.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	13-AUG-14	Finding:	35.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	29-JUL-14	Finding:	3.6
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	80.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	270.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	260.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	210.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	7.5
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	590.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L

Dlr:	0.		
Sample date:	29-JUL-14	Finding:	1600.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-JUL-14	Finding:	12.1
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	14.
Chemical:	CARBON DIOXIDE	Report units:	UG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	340.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	0.7
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	29-JUL-14	Finding:	93.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	09-JUL-14	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-JUL-14	Finding:	35.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	09-JUL-14	Finding:	1.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-JUL-14	Finding:	21.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	11-JUN-14	Finding:	34.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-MAY-14	Finding:	30.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	09-APR-14	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-APR-14	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-APR-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	19-MAR-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	12-FEB-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	11-DEC-13	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	25-NOV-13	Finding:	25.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-OCT-13	Finding:	1.1
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-OCT-13	Finding:	1.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-OCT-13	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-OCT-13	Finding:	11.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	18-SEP-13	Finding:	34.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-13	Finding:	270.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	81.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	43.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	20-AUG-13	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L

Dlr:	2.		
Sample date:	20-AUG-13	Finding:	360.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	15-AUG-13	Finding:	38.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-JUL-13	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-JUL-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-JUL-13	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JUL-13	Finding:	1.5
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JUL-13	Finding:	42.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	19-JUN-13	Finding:	36.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-MAY-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	17-APR-13	Finding:	0.97
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	17-APR-13	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	17-APR-13	Finding:	2.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	21-MAR-13	Finding:	25.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-FEB-13	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-JAN-13	Finding:	25.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	16-JAN-13	Finding:	2.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-JAN-13	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	19-DEC-12	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	21-NOV-12	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-OCT-12	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	1.6
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	19-SEP-12	Finding:	6.3
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	19-SEP-12	Finding:	1.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	19-SEP-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	19-SEP-12	Finding:	42.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	12-SEP-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-SEP-12	Finding:	37.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	12-SEP-12	Finding:	6.4
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	12-SEP-12	Finding:	42.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	12-SEP-12	Finding:	1.2
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L

Dlr:	0.5		
Sample date:	05-SEP-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	05-SEP-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	05-SEP-12	Finding:	7.2
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	05-SEP-12	Finding:	47.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	29-AUG-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	29-AUG-12	Finding:	6.6
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	29-AUG-12	Finding:	1.6
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	29-AUG-12	Finding:	54.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	22-AUG-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	22-AUG-12	Finding:	52.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	22-AUG-12	Finding:	6.5
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	22-AUG-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-AUG-12	Finding:	48.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	15-AUG-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-AUG-12	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	15-AUG-12	Finding:	7.8
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		

Sample date:	15-AUG-12	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	08-AUG-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	08-AUG-12	Finding:	7.
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		

Sample date:	08-AUG-12	Finding:	44.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.

Sample date:	08-AUG-12	Finding:	1.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	01-AUG-12	Finding:	1.6
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	01-AUG-12	Finding:	6.9
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		

Sample date:	01-AUG-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	01-AUG-12	Finding:	44.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.

Sample date:	25-JUL-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	25-JUL-12	Finding:	38.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.

Sample date:	25-JUL-12	Finding:	6.2
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		

Sample date:	25-JUL-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	24-JUL-12	Finding:	18.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	24-JUL-12	Finding:	84.
Chemical:	CALCIUM	Report units:	MG/L

Dlr:	0.		
Sample date:	24-JUL-12	Finding:	280.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	12.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	450.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	24-JUL-12	Finding:	46.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	18-JUL-12	Finding:	6.9
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	18-JUL-12	Finding:	44.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	18-JUL-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-JUL-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JUL-12	Finding:	7.2
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	11-JUL-12	Finding:	2.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JUL-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JUL-12	Finding:	50.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	11-JUL-12	Finding:	8.
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		

Sample date:	11-JUL-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JUL-12	Finding:	45.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	11-JUL-12	Finding:	31.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	11-JUL-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	02-JUL-12	Finding:	6.7
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	02-JUL-12	Finding:	41.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	02-JUL-12	Finding:	1.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	02-JUL-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JUN-12	Finding:	1.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JUN-12	Finding:	6.8
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	27-JUN-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JUN-12	Finding:	42.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	20-JUN-12	Finding:	1.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	20-JUN-12	Finding:	6.6
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	20-JUN-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	20-JUN-12	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L

Dlr:	2.		
Sample date:	20-JUN-12	Finding:	41.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	13-JUN-12	Finding:	1.5
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-JUN-12	Finding:	8.4
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	13-JUN-12	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-JUN-12	Finding:	55.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	06-JUN-12	Finding:	1.5
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	06-JUN-12	Finding:	55.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	06-JUN-12	Finding:	8.1
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	06-JUN-12	Finding:	2.
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	29-MAY-12	Finding:	2.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	29-MAY-12	Finding:	6.6
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	29-MAY-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	29-MAY-12	Finding:	54.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	21-MAY-12	Finding:	0.95
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	21-MAY-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	26-MAR-12	Finding:	39.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	26-MAR-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	26-MAR-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	26-MAR-12	Finding:	6.4
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	20-MAR-12	Finding:	38.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	20-MAR-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	20-MAR-12	Finding:	6.7
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	20-MAR-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-MAR-12	Finding:	30.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-MAR-12	Finding:	6.4
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	13-MAR-12	Finding:	37.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	13-MAR-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-MAR-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	07-MAR-12	Finding:	1.5
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	07-MAR-12	Finding:	6.5
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	07-MAR-12	Finding:	1.5
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L

Dlr:	0.5		
Sample date:	07-MAR-12	Finding:	38.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	28-FEB-12	Finding:	6.5
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	28-FEB-12	Finding:	1.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	28-FEB-12	Finding:	36.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	28-FEB-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	23-FEB-12	Finding:	1.2
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	23-FEB-12	Finding:	33.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	23-FEB-12	Finding:	6.1
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	23-FEB-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	22-FEB-12	Finding:	5.3
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	22-FEB-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	22-FEB-12	Finding:	1.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	22-FEB-12	Finding:	31.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	16-FEB-12	Finding:	1.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-FEB-12	Finding:	0.98
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	18-JAN-12	Finding:	1.5
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-JAN-12	Finding:	0.9
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-JAN-12	Finding:	29.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	13-JAN-12	Finding:	6.
Chemical:	TRICHLOROFLUOROMETHANE	Report units:	UG/L
Dlr:	5.		
Sample date:	13-JAN-12	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-JAN-12	Finding:	1.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-JAN-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-JAN-12	Finding:	1.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-JAN-12	Finding:	30.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	11-JAN-12	Finding:	30.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	11-JAN-12	Finding:	1.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JAN-12	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JAN-12	Finding:	1.1
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JAN-12	Finding:	1.5
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JAN-12	Finding:	15.
Chemical:	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		
Report units:	UG/L	Dlr:	10.
Sample date:	09-JAN-12	Finding:	0.98
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L

Dlr:	0.5		
Sample date:	09-JAN-12	Finding:	1.5
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

G29
East
1/2 - 1 Mile
Lower

CA WELLS **18801**

Seq:	18801	Prim sta c:	3610039-110GACT
Frds no:	3610039110	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	19 TH STREET GAC - TREATED	Station ty:	COMP/WELL/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	3	Status:	CT
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

G30
East
1/2 - 1 Mile
Lower

CA WELLS **18800**

Seq:	18800	Prim sta c:	3610039-109GACR
Frds no:	3610039109	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	19 TH STREET GAC - RAW	Station ty:	COMP/WELL/AMBNT
Latitude:	340800.0	Longitude:	1172000.0
Precision:	3	Status:	CR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G31
East
1/2 - 1 Mile
Lower

CA WELLS **145**

Seq:	145	Prim sta c:	01N/04W-32D04 S
Frds no:	3610039005	County:	36
District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	19 TH STREET WELL 02	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

Sample date:	21-MAR-18	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	14-FEB-18	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	17-JAN-18	Finding:	4.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	17-JAN-18	Finding:	3.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	17-JAN-18	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	13-DEC-17	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	22-NOV-17	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	18-OCT-17	Finding:	1.1
Chemical:	BROMOFORM (THM)	Report units:	UG/L
Dlr:	1.		

Sample date:	18-OCT-17	Finding:	1.1
Chemical:	BROMODICHLOROMETHANE (THM)	Report units:	UG/L
Dlr:	1.		

Sample date:	18-OCT-17	Finding:	1.5
Chemical:	DIBROMOCHLOROMETHANE (THM)	Report units:	UG/L
Dlr:	1.		
Sample date:	18-OCT-17	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-OCT-17	Finding:	4.3
Chemical:	TOTAL TRIHALOMETHANES	Report units:	UG/L
Dlr:	0.		
Sample date:	18-OCT-17	Finding:	4.6
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	20-SEP-17	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	390.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	4.8
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	9.4
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	76.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	43.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-AUG-17	Finding:	19.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-AUG-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-AUG-17	Finding:	260.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-17	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	4.9
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L

Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	13.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	1.4
Chemical:	LANGELIER INDEX @ 60 C	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	1.1
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	26-JUL-17	Finding:	0.54
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	26-JUL-17	Finding:	47.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	26-JUL-17	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	3.4
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	74.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	250.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-17	Finding:	2.1
Chemical:	CARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	260.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	220.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

Sample date:	26-JUL-17	Finding:	8.1
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	570.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	26-JUL-17	Finding:	380.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	12-JUL-17	Finding:	2.9
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-JUL-17	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-JUL-17	Finding:	4.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	17-MAY-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	12-APR-17	Finding:	3.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-APR-17	Finding:	2.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-APR-17	Finding:	4.7
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	15-MAR-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	25-JAN-17	Finding:	2.6
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	25-JAN-17	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	25-JAN-17	Finding:	6.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-DEC-16	Finding:	4.7
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-NOV-16	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L

Dlr:	0.4		
Sample date:	12-OCT-16	Finding:	2.7
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-OCT-16	Finding:	3.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-OCT-16	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-SEP-16	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	23-AUG-16	Finding:	73.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	360.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	9.3
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	43.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	23-AUG-16	Finding:	250.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	23-AUG-16	Finding:	4.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	10-AUG-16	Finding:	4.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-16	Finding:	4.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-JUL-16	Finding:	2.
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	13-JUL-16	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-JUL-16	Finding:	2.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	22-JUN-16	Finding:	4.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	11-MAY-16	Finding:	4.5
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-APR-16	Finding:	4.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-APR-16	Finding:	2.6
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	13-APR-16	Finding:	4.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	16-MAR-16	Finding:	3.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	02-FEB-16	Finding:	2.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	02-FEB-16	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JAN-16	Finding:	4.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	16-DEC-15	Finding:	4.4
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	19-NOV-15	Finding:	4.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-OCT-15	Finding:	4.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-OCT-15	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-OCT-15	Finding:	1.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L

Dlr:	0.5		
Sample date:	09-SEP-15	Finding:	4.6
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-SEP-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	12-AUG-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	04-AUG-15	Finding:	72.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	350.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	45.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	04-AUG-15	Finding:	9.1
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	16.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	04-AUG-15	Finding:	250.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	15-JUL-15	Finding:	2.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-JUL-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-JUL-15	Finding:	2.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JUN-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-APR-15	Finding:	2.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		

Sample date:	15-APR-15	Finding:	2.4
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-APR-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	11-FEB-15	Finding:	22.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-JAN-15	Finding:	2.4
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-JAN-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-JAN-15	Finding:	2.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	26-AUG-14	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	260.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	77.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	26-AUG-14	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	26-AUG-14	Finding:	45.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	26-AUG-14	Finding:	350.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	13-AUG-14	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	29-JUL-14	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L

Dlr:	0.		
Sample date:	29-JUL-14	Finding:	3.5
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	17.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	78.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	260.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	260.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	210.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	7.5
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	580.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	49.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	29-JUL-14	Finding:	5900.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	29-JUL-14	Finding:	12.1
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	15.
Chemical:	CARBON DIOXIDE	Report units:	UG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	5.9
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	29-JUL-14	Finding:	0.27
Chemical:	LANGELIER INDEX AT SOURCE TEMP.	Report units:	Not Reported
Dlr:	0.		

Sample date:	29-JUL-14	Finding:	350.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	29-JUL-14	Finding:	0.7
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	09-JUL-14	Finding:	2.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-JUL-14	Finding:	3.
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-JUL-14	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	11-JUN-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-MAY-14	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	09-APR-14	Finding:	3.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-APR-14	Finding:	3.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	09-APR-14	Finding:	30.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	19-MAR-14	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	12-FEB-14	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	11-DEC-13	Finding:	25.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	25-NOV-13	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-OCT-13	Finding:	24.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-OCT-13	Finding:	2.7
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L

Dlr:	0.5		
Sample date:	16-OCT-13	Finding:	3.2
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	18-SEP-13	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-13	Finding:	270.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-13	Finding:	350.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	42.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	20-AUG-13	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	17.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	20-AUG-13	Finding:	79.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	15-AUG-13	Finding:	26.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-JUL-13	Finding:	25.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-JUL-13	Finding:	3.7
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JUL-13	Finding:	2.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-JUL-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	19-JUN-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-MAY-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	17-APR-13	Finding:	1.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	17-APR-13	Finding:	2.3
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-JAN-13	Finding:	27.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-JAN-13	Finding:	3.9
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	16-JAN-13	Finding:	4.2
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	19-DEC-12	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	21-NOV-12	Finding:	30.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	28.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	3.9
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	10-OCT-12	Finding:	3.9
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	12-SEP-12	Finding:	31.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	20-AUG-12	Finding:	36.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-AUG-12	Finding:	3.8
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-AUG-12	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L

Dlr:	2.		
Sample date:	15-AUG-12	Finding:	4.3
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	15-AUG-12	Finding:	33.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	27-JUL-12	Finding:	4.1
Chemical:	DICHLORODIFLUOROMETHANE (FREON 12)	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JUL-12	Finding:	4.1
Chemical:	TETRACHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	27-JUL-12	Finding:	31.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	24-JUL-12	Finding:	380.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	44.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	24-JUL-12	Finding:	11.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	18.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	19.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	85.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	290.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	24-JUL-12	Finding:	30.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

G32
East
1/2 - 1 Mile
Lower

CA WELLS **137**

Seq:	137	Prim sta c:	01N/04W-29N02 S
Frds no:	3610039029	County:	36

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

District:	13	User id:	TAN
System no:	3610039	Water type:	G
Source nam:	GARDENA WELL - INACTIVE	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	340800.0	Longitude:	1172000.0
Precision:	8	Status:	IR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3610039	System nam:	SAN BERNARDINO CITY
Hqname:	SAN BERNARDINO MUN WATER DEPT.	Address:	P.O. BOX 710,
City:	SAN BERNARDINO	State:	CA
Zip:	92402	Zip ext:	Not Reported
Pop serv:	139789	Connection:	39453
Area serve:	SAN BERNARDINO		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92376	12	0

Federal EPA Radon Zone for SAN BERNARDINO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SAN BERNARDINO COUNTY, CA

Number of sites tested: 18

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.678 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Appendix F

Resumes of Project Personnel

J. JUSTIN RAUZON, REPA



Justin Rauzon, REPA

Education

MEM – Environmental Management, Duke University, 2014
BS – Zoology (Double Emphasis: Human and Marine Biology), Brigham Young University, 2004

Professional Licenses

Registered Environmental Property Assessor (REPA), National Registry of Environmental Professionals (No. 485639)

Specialty Certifications

OSHA 40-Hour Health and Safety Training for Hazardous Waste Workers
8-Hour Annual Refresher Training for Hazardous Waste Site Activities
OSHA 16-Hour Initial Asbestos Operations and Maintenance Training
Thermo Scientific Niton XRF Analyzer Operator's Training
First-Aid and CPR Training

Professional Affiliations

National Ground Water Association, Member (2015 to Present)

Professional Experience

Mr. Rauzon has more than 13 years of environmental services experience, all with SCS. Fluent in Spanish, Mr. Rauzon is an SCS Project Manager with a diverse background in biological and environmental sciences, and regularly performs environmental assessments and compliance audits at sites in the U.S. and in Latin America. He has technical and management experience with soil, soil vapor, and groundwater investigations at industrial, commercial, landfill, greenfield, and residential properties. He has extensive experience with environmental laws and regulations in both the U.S. and Mexico. His work experience includes all project phases, from development of cost estimates for various site assessment and cleanup programs to implementing remediation programs and interfacing with regulatory agencies.

Selected projects in which he has participated are described below.

Environmental Management

Due diligence assessments of properties prior to real estate transfer of properties in California, Arizona, New Jersey, Mexico, Puerto Rico, and the Dominican Republic. Mr. Rauzon has completed numerous due diligence assessments of properties prior to acquisition, disposition, or loan financing by investment banks, insurance companies, corporations, non-profit entities, real estate developers, and private parties. Projects have included Phase I assessments that meet federal All Appropriate Investigation (AAI) regulations, American Society for Testing and Materials

(ASTM) standards, and client-specific guidelines; inspections for asbestos and lead-based paint; Phase II investigations; preparation of abatement and remediation cost estimates; and regulatory agency coordination. These projects frequently involve review of previous environmental reports and investigation of current and past on-site operations, regulatory agency records searches, evaluation of historical property use information, identification of nearby potentially contaminated sites, and development of appropriate conclusions about environmental risks. Investigations involve preparation of work plans, soil boring and subsequent sampling, groundwater well installation and sampling, soil gas probe installation and sampling, precision mapping, evaluation of contaminants in accordance with regulatory requirements or generally accepted guidelines, preparation of investigation report, and analysis of applicable remedial alternatives. Mr. Rauzon has served as the Project Manager for sites that have received regulatory closure from various regulatory agencies.

Planning, coordinating, and supervising remedial actions that included excavation, transport, and disposal of contaminated soils and water. Investigations involve preparation of Remedial Action Plans (RAPs), direction of fieldwork, oversight of confirmatory sampling, and interfacing with regulatory agencies.

The characterization of hazardous waste materials. These projects include collection of soil and/or liquid samples to profile the waste materials, interpretation of laboratory results, and evaluation of disposal/recycling options to minimize the costs and liabilities to clients associated with the removal of wastes.

Assessment and certification of hazardous waste tank systems. These investigations involve working with a Professional Engineer to complete field inspections of hazardous waste tanks, associated ancillary equipment, leak-detection systems, and secondary containment devices, as well as interfacing with regulatory agencies.

Project Management

Project Manager for due diligence investigation of a portfolio with more than 300 industrial sites throughout Mexico. SCS services included conducting Phase I and Phase II environmental assessments within the strict timeline of the $1.2 billion industrial real estate transaction. Subsequent to the closing of the deal, SCS provided ongoing consulting services to facilitate integration and management of various facilities with ongoing environmental issues.

Project Manager for hazardous materials consulting services in support of the State Route 91 Corridor Improvement Project in Orange and Riverside Counties, CA. SCS services included sampling and inventory of potentially hazardous materials associated with more than 25 bridges along the SR-91 and I-15 freeways; environmental assessments on properties within the proposed freeway expansion area; and soil testing for herbicides, pesticides, and fungicides on several land parcels.

Project Manager for investigation and remediation of industrial facility located in Fontana, CA. SCS conducted a series of environmental assessments, investigations, and remedial activities that provided sufficient information to identify environmental issues and business risks, and facilitate the client's successful purchase of property. A number of recognized environmental conditions, including releases of coal tar, solvents, heavy metals, and total petroleum hydrocarbons, were identified. Project activities conducted during the acquisition and redevelopment of the property included shallow and deep soil and soil vapor investigations; installation of groundwater monitoring wells and subsequent groundwater sampling; subsequent remedial excavation under San Bernardino County Fire Department (SBCFD) oversight to obtain closure; and excavation and off-site disposition of contaminated soil.

Health and Safety

Mr. Rauzon has participated in a certified health and safety program in compliance with OSHA Standard 29 CFR 1910.120. He is knowledgeable in incident response operations, team functions, personnel safety, and field equipment. He is able to recognize and evaluate potential chemical and physical hazards and associated risks in field operations; discuss and use personal protective equipment (PPE), such as respiratory protection and protective clothing; use and interpret direct-reading instruments; and examine and establish Standard Operating Safety Guidelines to ensure safe and effective response operations.

Publications

Rauzon, J. J., "Mexico: Environmental Due Diligence and the Mexican Waste Law," EHS Journal, November 13, 2010.

KEVIN W. GREEN, PG

Education

BS – Marine Biology, California State University, Long Beach, 1978

Professional Licenses

Professional Geologist – California, 1994 (No. 5906)
Professional Geologist – Wyoming, 2009 (No. PG-3702)

Specialty Certifications

OSHA HAZWOPER Title 8, Section 5192(e)(8)

Professional Affiliations

National Ground Water Association
Groundwater Resources Association of California
Association for Environmental Health and Sciences

Professional Experience

Mr. Green has a background in geology and paleontology. Since joining SCS in 1987, he has participated in numerous projects related to the investigation and remediation of hazardous chemicals in soil, soil vapor, and groundwater. As a Vice President and Project Director, he provides environmental services throughout California. Selected project activities include:

- Mr. Green has been Project Manager for more than a thousand Phase I Environmental Site Assessments (ESAs). These projects were completed in accordance with various lenders, the American Society for Testing and Materials (ASTM), or government guidelines, and consisted of evaluating current on-site operations, generating historical property use information, identifying potentially contaminated sites in the surrounding areas, reviewing previous reports and/or files maintained by regulatory agencies, and developing conclusions and recommendations regarding the presence of Recognized Environmental Conditions (RECs) and further investigation. Project sites have varied from private single-use parcels to hundreds of properties involving multiple tenants associated with state and local government right-of-way improvements.

- Mr. Green has conducted hundreds of investigations of known or suspected hazardous waste sites to identify and characterize chemicals of concern in soil, soil vapor, and groundwater in accordance with regulatory requirements. Contaminants include a variety of hydrocarbon products, solvents, heavy metals, polychlorinated biphenyls (PCBs), and pesticides. Regulatory oversight agencies include the U.S. Environmental Protection Agency (U.S. EPA), Department of Toxic Substances Control (DTSC), and various Regional Water Quality Control Boards (RWQCBs), County Health or Fire Departments, and city Certified Unified Program Agencies (CUPAs).

- Mr. Green has been Project Manager for numerous soil gas surveys utilized to assess the presence, nature, and extent of volatile organic compounds (VOCs) and/or methane related to contaminated soils, groundwater, and/or landfills. Elements of these projects have included assessments of vapor intrusion, protection of structures from subsurface gases, monitoring of indoor air, and health risk assessments (HRAs).

- Mr. Green has managed numerous projects related to the removal, investigation, and remediation of contamination from Leaking Underground Storage Tanks (LUSTs). In accordance with requirements of the various regulatory agencies throughout Southern California, these LUST projects have included soil, soil gas, and groundwater contamination, and tasks such as evaluation of site and regional hydrogeologic conditions; development work plans and health and safety (H&S) plans; coordination and execution of tank removals; design of the investigative programs; review and selection of potential remedial alternatives; preparation of summary reports of findings; support of legal counsel in cost recovery actions; and support of client in cost recovery actions with the California Underground Storage Tank (UST) Cleanup Fund.

- Mr. Green has been the Project Manager for numerous remediation projects involving various hydrocarbon products, pesticides, chlorinated solvents, and/or heavy metals. Remediation projects included the excavation and disposal of soils; on- and off-site treatment of soils; recovery and treatment/disposal of free product and groundwater; and the design, installation, and operation of vapor extraction systems for soil and groundwater contaminated with VOCs.

- Mr. Green has evaluated environmental conditions at sanitary landfills. As Task Manager, he managed the installation and sampling of groundwater monitoring wells at and adjacent to existing landfills to determine the presence of leachate. This work was done in accordance with state regulations and local ordinances.

- As a committee member, Mr. Green helped develop the initial ASTM standard guide (E2600) for vapor encroachment screening on property involved in real estate transactions. He has years of experience in evaluating the potential for vapor encroachment and vapor intrusion, along with the methods and protocols for investigation and/or mitigation of buildings affected by known or suspected contamination by VOCs.

- Mr. Green provides expert testimony and research support for litigation related to ESAs, and the investigation and remediation of hazardous waste sites.

Project Experience

Vapor Extraction Assessment and Remediation of Former Industrial Dry Cleaning Facility. As Project Manager, Mr. Green's tasks included initial indoor air assessment for Proposition 65 compliance; coordination of equipment, subcontractors, and personnel for the installation of vapor extraction and monitoring wells, header lines, and vapor extraction system (VES), including acid "scrubber" for treated vapors, treatment pad and enclosure, electrical power, natural gas, water supply and wastewater discharge; city, county, and Air Quality Management District (AQMD) permits; operation and maintenance (O&M) of VES; regulatory reporting; and decommissioning of VES upon regulatory closure.

Community Redevelopment Agency of the City of Los Angeles (CRA/LA), General Environmental Consulting Services, Los Angeles, CA. As Project Director with almost 200 work order directives for

services over an approximately 20-year period, Mr. Green provided the initial site assessments, asbestos-containing material (ACM) surveys, LBP surveys, soil gas surveys, soils investigations, groundwater investigations, remedial and abatement activities for soils, asbestos, and LBP, second-party reviews of reports and work completed by other environmental consultants, UST removals, groundwater well abandonment, Brownfields consulting, and an environmental audit of hazardous materials handling practices of the client's operations. The projects were completed on vacant, former oil field, residential, commercial, industrial, and manufacturing properties ranging in size from a single lot to a 29-block mixed-use area. In addition to ACMs and LBP, the identified constituents of concern included a variety of petroleum hydrocarbon (TPH) products, chlorinated solvents, heavy metals, PCBs, pesticides, and subsurface combustible gases such as methane and VOCs.

Brownfields Redevelopment Site, Los Angeles, CA. As Project Director, Mr. Green completed several phases of environmental services to facilitate the mixed-use redevelopment of property for a parking garage, childcare center, and affordable housing. Historical machine shop operations resulted in a release of tetrachloroethylene (PCE) to soils. Although some cleanup was conducted in the early 1990s, residual PCE contamination remained. In accordance with current standards and with the proposed goal of affordable housing and childcare center, SCS reinvestigated the site under the oversight of the Los Angeles RWQCB. Services provided for this project included investigations of soil and soil gas, HRA and selection of remedial and mitigation options, design of vapor barrier to protect the building from chlorinated solvents, coordination and oversight of remedial excavation, oversight and certification for installation of a sub-building vapor barrier, post-construction monitoring of indoor, background, and sub-slab air to confirm that remediation and mitigation measures have met regulatory goals, and coordination of a No Further Action (NFA) letter from the regulatory authority.

Due Diligence Investigations of Manufacturing Facility, Torrance, CA. As Project Director, Mr. Green conducted a series of environmental assessments, investigations, and remedial activities that provided sufficient information to identify environmental issues and business risks and to facilitate the client's successful sale of property. A number of recognized environmental conditions, including former and existing USTs, a machine shop, wastewater treatment sumps and clarifier, paint shop, chemical storage, and chlorinated solvent degreasing operations were identified. Project activities included shallow and deep soil and soil vapor extraction (SVE) investigations, followed by groundwater sampling; geophysical survey and excavations to find an existing diesel UST previously closed in-place; removal of the UST; remedial excavations under Torrance Fire Department oversight to obtain closure; a long-term SVE pilot test, including a work plan submitted to the Los Angeles RWQCB; installation of SVE and monitoring wells; and development of an SVE Pilot Test Report, and recommendations for further SVE.

Investigation, Abatement, and Subsequent Demolition, Resource, Conservation and Recovery Act (RCRA), CA. Lead-containing dust from a shooting range was found to have contaminated building materials and soils. As Project Manager, Mr. Green was involved the selection of remedial methods and contractors, monitoring of workers to assess exposure to lead-containing dust, monitoring of dust emissions during demolition to confirm compliance, confirmation sampling and analyses, characterization of wastes for disposal, and submittal of a summary report documenting the appropriate remediation and disposal of lead-containing wastes. Efforts were as part of the RCRA for facility closure under the oversight of the California DTSC.

Investigation and Remediation, CA. Chemicals of concern at the former wood treating facility included pentachlorophenol, creosote, diesel fuel, methylene chloride, zinc, copper, and arsenic. As Project Director, Mr. Green managed the Remedial Investigation/Feasibility Study (RI/FS) report for vadose zone soil, including an HRA; Remedial Action Plan (RAP) for impacted soil, which recommended capping as the most feasible remedial alternative; a cone penetrometer (CPT) study aimed at further

defining site stratigraphy, evaluating for the presence of non-aqueous phase liquids, and mapping the areal distribution of chemicals of concern; quarterly groundwater monitoring from 16 wells; Storm Water Pollution Prevention Plan (SWPPP) and monitoring; and assistance to client in development and/or sale of the property. The work was done under the oversight of the California DTSC.

Well Investigation Program Compliance. As Project Manager, Mr. Green conducted a well investigation provided to the USEPA to identify Potentially Responsible Parties (PRPs) for the San Fernando Valley Superfund site. On-site operations included 14 USTs; numerous clarifiers, sumps, and drain lines; plating, machining, and painting shops; a jet engine test facility; and solvent, alkaline, and steam cleaning facilities. Approximately 70 exploratory soil borings were drilled and analyzed for chlorinated solvents, heavy metals, cyanide, and various hydrocarbon products, such as gasoline, machining and waste oils, Stoddard solvent, and jet fuel. A soil gas survey of the facility was also conducted to screen for potential contamination by VOCs, including the installation of multi-depth, nested soil vapor monitoring wells. Fate and transport modeling of chlorinated solvents was used to assess the potential for impacts to groundwater. The work was done under RWQCB oversight at a jet engine repair, maintenance, and testing facility. The RWQCB issued an NFA letter for the investigation and remediation of chlorinated solvents at the site. The project also included design, permitting, construction, and O&M of a hot air-assisted SVE system to remediate Jet A-impacted soils. After 1 year of operation, remediation was sufficient to obtain closure with no further requirements from the RWQCB. Furthermore, as a part of the decommissioning and demolition of the facility, a comprehensive survey for ACMs in nine buildings was conducted. SCS prepared plans and specifications for the abatement of ACMs, assisted the client in selection of an abatement contractor, conducted daily oversight of abatement activities, including air monitoring, and prepared a final report documenting the appropriate removal and disposal of ACMs.

Historical Industrial Site Redevelopment and Closure. Prior to acquisition of this property, Mr. Green, as Project Director, conducted a due diligence assessment and several phases of investigation to identify recognized environmental conditions, characterize the nature and extent of contamination, evaluate costs and environmental liabilities, and facilitate the client's successful purchase of the property. Following the acquisition, and as a part of site redevelopment and thereafter, SCS provided additional site characterization and remediation services under regulatory oversight and with closure. Project activities, conducted concurrently with property redevelopment, included:

- Shallow and deep soil and soil vapor investigations for due diligence purposes.
- Oil well abandonment under California Division of Oil, Gas and Geothermal Resources (DOGGR) oversight.
- Permitting and removal of an existing UST and remedial excavation under Los Angeles County Department of Public Works (LACDPW) oversight.
- Under RWQCB oversight, shallow soil excavation of a former UST area, installation and operation of a separate SVE system for deeper soil contamination, and installation and monitoring of groundwater wells.

SCS met with the RWQCB on several occasions to make a case for closure under the State Water Quality Control Board's (SWQCB's) Low-Threat UST Case Closure Policy. Upon completion of a closure investigation in October 2013, and a subsequent meeting to defend the case for closure, the RWQCB concurred with SCS's conclusions and approved the closure process under the Low-Threat Policy. Following SVE and well abandonment activities, the RWQCB issued an NFA letter for the property in July 2014.

Historical Manufacturing Facility and RCRA Closure, Vernon, CA. This 15.9-acre site was used for metals fabrication from about 1940 until 2017. The original occupant and its successors and subsidiaries conducted metal stamping, forming, and machining; heat treating; degreasing; plating; acid treating and pickling; painting and enameling; and anodizing until the 1990s. Some portions of the facility were occupied by tenants involved in manufacturing through mid-2017, after which time building demolition and site redevelopment was initiated.

Over the years, a number of industrial units at the facility underwent closure. Closure for those units that could have impacted the environment—including underground storage tanks (USTs), above-ground tanks, wastewater treatment systems, sumps and vaults, waste and other storage areas, degreasing and cleaning systems, and other surface treatment areas—generally included subsurface sampling. In this process, hundreds of soil and soil vapor samples were collected and analyzed for various potentially hazardous materials, including petroleum hydrocarbons, VOCs, metals, PCBs, semi-volatile organic compounds (SVOCs), and various inorganic substances. Closure of some units necessitated emplacement of Land Use Covenants/Deed Restrictions.

SCS conducted a Phase I Environmental Site Assessment and prepared a Current Conditions Report (CCR) for the facility. Based on existing data, the CCR identified several areas in which sampling indicated that chemicals of potential concern were present above generally-accepted cleanup levels, including VOC contamination from off-site sources. Subsequently, an RCRA Facility Investigation Workplan was prepared and implemented to further assess these areas. The resulting data was evaluated for potential health risks, and a Corrective Measures Study was conducted. Other tasks conducted by SCS have included preparation of a Community Profile, Corrective Measures Implementation Plan, Soil Management Plan (SMP), asbestos survey and abatement oversight, on- and off-site soil and vapor investigation, groundwater monitoring well installation and monitoring, implementation of the SMP, including compliance with South Coast Air Quality Management District Rules 1166 and 1466, Sampling and Analysis Plan (SAP) for PCBs, Workplan for Removal of PCB Remediation Waste, and interface with the regulatory agencies, including the California Department of Toxic Substances Control and U.S. Environmental Protection Agency.

Mr. Green has participated in a certified health and safety program in compliance with Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.120. He provided his expertise in the incident response operations, team functions, personnel safety, and field equipment. He was able to recognize and evaluate potential chemical and physical hazards and associated risks in field operations; discuss and use personnel protective equipment such as respiratory protection and protective clothing; use and interpret direct-reading instruments; and examine and establish Standard Operating Safety Guidelines to ensure safe and effective response operations.

Mr. Green has been involved in numerous SCS projects related to hazardous waste characterization and management. He has experience in ESA studies, UST investigations and their associated remediation programs, landfill studies, and geologic and hydrogeologic site characterization studies. His work experience includes all project phases from development of cost estimates for various site assessment and cleanup programs, to groundwater monitoring and sampling, to preparation of final reports and interfacing with regulatory agencies.

Litigation Support/Expert Testimony

Mr. Green has provided litigation support and expert testimony to legal counsel, including conducting research, and preparing reports and other supporting documents, in the following environmental cases:

City of Los Angeles v. Colonial Yacht Anchorage. In late 2017 and 2018, Mr. Green provided litigation support on behalf of the defendant regarding sources of contamination at a boat yard and

adjacent shipping channel, previous investigative findings, proposed remedial alternatives, regulatory requirements, cleanup levels, and the associated costs. The case is ongoing.

Banning v. Dureau, et al. In August 2013, Mr. Green provided testimony in federal court on behalf of the plaintiff, regarding the contractor's emergency response to a waste oil spill that entered the storm drain system. Testimony related to investigative and remedial actions and the applicability of, and compliance with, the National Contingency Plan (NCP). The case was won by the City of Banning, California.

Clipper Yacht Company, LLC v. Anderson's Boat Yard, Inc. In October 2012, Mr. Green was retained as an expert witness by the defendant to review documents, consult with legal counsel, and provide expert opinions at deposition and trial regarding contamination at a boat yard and associated marina in Sausalito, California. Specific topics of interest include the adequacy of previous investigations and remediation efforts, the sources of contamination (particularly copper), cleanup levels, and likelihood and estimated costs of additional remediation. This case was settled prior to trial.

Alfaville, LLC v. L.A. Signal, Inc. In August 2011, as part of the new property owner's litigation against the former tenant, Mr. Green provided testimony as a percipient witness, primarily as to the source and timing of a prior PCE release. In a Phase I ESA prepared by SCS in 2008, PCE solvent use by the departing property tenant was identified. Several phases of subsequent site investigation confirmed a release of PCE to soil and soil vapor with likely impacts to groundwater. Groundwater monitoring is ongoing under Los Angeles RWQCB oversight. Remediation by soil vapor extraction may be conducted. This case was settled.

Malcolm Carter Enterprise v. Microsemi Real Estate, Inc. In November 2008, Mr. Green provided an expert report and court testimony on behalf of the plaintiff. At issue was the evaluation of data for a Phase I ESA, identification of Recognized Environmental Concerns (RECs), regional and site-specific groundwater contamination by chlorinated solvents, selection of an appropriate regulatory agency for remedial oversight, and applicability of the NFA letter. This case was won by the plaintiff.

City of Riverside v. Johnson Revocable Trust, et al. In 2010, Mr. Green was retained by the defendant to review documents, consult with legal counsel, and provide expert reports and deposition and expert testimony regarding an eminent domain case in Riverside, California. Specific topics of interest included the adequacy of previous investigation, the source or sources of a PCE release, and the likelihood and estimated costs of remediation. This case was settled prior to trial.

Expert Witness for Plaintiff, Santa Clarita. In 2009, Mr. Green conducted a review of the scope of work and fees charged by another environmental consultant conducting expert witness work on a development project in Santa Clarita. A declaration was provided to the Plaintiff's counsel regarding typical consultant fees, and the reasonableness of the time and expenses charged in relation to the final work product.

Expert Witness, Strathmore. In 2006, Mr. Green reviewed documents, consulted with legal counsel, and provided deposition and expert testimony regarding the source and timing of a methyl tertiary butyl ether (MTBE) release at a service station site in Strathmore, California. This case was settled prior to trial.

Litigation Support, San Bernardino. In 2003, Mr. Green provided litigation support regarding the scope and limitations of a Phase I ESA as it pertains to a service station site in San Bernardino, California.

Expert Consultant, Los Angeles. In 1998, Mr. Green provided expert consulting services related to the use, history, and migration of hexavalent chromium and perchloroethene in soil and groundwater at a former plating site and adjacent Los Angeles Unified School District (LAUSD) school property, and proper allocation of responsibility regarding those issues.

Expert Consultant, San Fernando Valley. In 1994, Mr. Green provided a client's in-house and outside legal counsel with technical support on a case involving cost recovery/allocation and potential involvement in the Burbank Operable Unit of the San Fernando Valley Superfund site. This project included assessment of the nature, extent, fate, and transport of potential contaminants (chlorinated solvents, fuels, and/or heavy metals), previous and proposed site investigations, possible remedial alternatives and costs, and environmental investigations and/or remediation on properties in the surrounding area.

Expert Consultant, Irvine. Mr. Green has also provided outside legal counsel with technical support for due diligence assessment at a property in Irvine, California. The client's site was located adjacent to a service station that had groundwater impacted with gasoline-related constituents, including MTBE. His work involved obtaining regulatory records, review, and written summary regarding regulatory requirements and anticipated actions, health risks, and necessity of additional site assessment and/or investigation work on the client's property.

Expert Consultant, Los Angeles. Mr. Green assisted a client and the client's legal counsel with review of information and response to the Los Angeles RWQCB's request for a work plan for investigation of suspected hexavalent chromium impacts to soil and groundwater at the client's former operation, located adjacent to the Burbank Airport and within the Burbank Operable Unit of the San Fernando Valley Superfund Site. The work plan and further investigation were not subsequently required.

Azusa Redevelopment Agency v. Exxon. In 1991, Mr. Green provided expert testimony in this case involving investigation and remediation of gasoline-contaminated soil at a former Exxon station.

Expert Witness, Art Movers, Inc. 1991, Mr. Green provided expert testimony for Art Movers, Inc., in a case involving previous site investigations, proposed remedial activities, and potential risks to groundwater resources from perchloroethene-contaminated soils.

Publications and Presentations

Green, K. W., "Vapor Encroachment & Intrusion: What are the Real (Estate) Risks?" Journal of Property Management, March-April 2014.

Marsh, J. R., and K. W. Green., "All Appropriate Inquiry - The New Phase I Standard," California Real Estate Journal, May 8, 2006.

Green, K. W., T. Dong, and D. R. Ness, "Industrial Drycleaner Woes, Vernon, California," Proceedings of the Groundwater Resources Association, November 10, 2004.

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Marsh, J. R., K. W. Green, and T. Dong, "Phase I Assessments and Due Diligence: One and the Same?" Environmental Engineering Forum, American Society of Civil Engineers, Environmental Engineering Division, Journal of Environmental Engineering, Vol. 120, No. 6, November/ December 1994.

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FAULT STUDY
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

Pepper Avenue, South of Foothill Freeway
Rialto, California
for
Howard Industrial Partners

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

March 22, 2021

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Howard Industrial Partners
1944 North Tustin Street, Suite 122
Orange, California 92865

Attention: Mr. Mike Tunney
Vice President

Project No.: **20G234-2**

Subject: **Fault Study**
Proposed Commercial/Industrial Building
Pepper Avenue, South of Foothill Freeway
Rialto, California

Mr. Tunney:

In accordance with your request, we have conducted a fault study at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Daryl Kas, CEG 2467
Senior Geologist

PROFESSIONAL GEOLOGIST
DARYL R. KAS
No. 2467
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Robert G. Trazo, GE 2655
Principal Engineer

Distribution: (1) Addressee

REGISTERED PROFESSIONAL ENGINEER
ROBERT TRAZO
No. 2655
GEOTECHNICAL
STATE OF CALIFORNIA

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1.0 INTRODUCTION

1.1 Purpose and Scope

The subject site is located within an Alquist-Priolo earthquake fault zone and a San Bernardino County fault zone. Therefore, a fault study was required to be performed within the area of the proposed development. This report presents the results of our fault study for the proposed commercial/industrial building in Rialto, California. The purpose of our study was to evaluate the possible presence of on-site faulting and to provide conclusions and appropriate recommendations. Our scope of services included:

- Review of pertinent available geologic and geotechnical literature, maps, and aerial photographs.

- Excavation and logging of two (2) fault trenches across the proposed development area to a maximum depth of approximately 18 to 20± feet below existing site grade. The trenches extended from 65± feet southwest of the proposed building to 35± feet northeast of the proposed building, in a direction perpendicular to the mapped trace of the San Bernardino segment of the San Jacinto fault zone (SJFZ).

- Geologic review and analysis of the collected data.

- Preparation of this report presenting our findings and conclusions with regard to our fault investigation.

1.2 Site Description

The subject site is located on the east side of Pepper Avenue, approximately 500 feet south of the intersection of Pepper Avenue and the Foothill Freeway (CA-210) in Rialto, California. The site is bounded to the north and east by vacant lots, to the west by Pepper Avenue, and to the south by a vacant lot and a detention basin with an above-ground storage tank (AST). The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 of this report.

The site consists of an "L"-shaped parcel, 24.23± acres in size. The site is currently vacant and undeveloped. The ground surface cover consists of exposed soil with sparse to moderate native grass and weed growth. Tree trunks and debris are scattered around the northern region of the site.

Topographic information by Inland Aerial Surveys, Inc. was provided by the client. The site topography ranges from 1267± feet mean sea level (msl) located in the southeast corner of the site to 1290± msl in the northwest corner of the site. The site generally slopes downward to the southeast at a gradient of 1½± percent.

1.3 Proposed Development

Based on a conceptual site plan, prepared by Architects Orange (AO), provided to our office by the client, the subject site will be developed with one (1) new commercial/industrial building, 493,000± ft² in size, located in the north-central area of the site. Dock-high doors will be constructed along portions of the north and south building walls. The building will be surrounded by asphaltic concrete pavements in the parking and drive lanes, Portland cement concrete pavements in the loading dock areas, concrete flatwork, and limited areas of landscape planters throughout.

Detailed structural information has not been provided. It is assumed that the new building will be a single-story structure of tilt-up concrete construction, supported on a conventional shallow foundation system with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 80 to 100 kips and 4 to 7 kips per linear foot, respectively.

Grading plans for the proposed development were not available at the time of this report. No significant amounts of below-grade construction such as basements or crawl spaces are expected to be included in the proposed development. Based on the assumed topography, cuts and fills of 7 to 10± feet are expected to be necessary to achieve the proposed site grades.

1.4 Previous Studies

A geotechnical feasibility study was previously conducted for this site by Southern California Geotechnical. This report is identified as follows:

> Geotechnical Feasibility Investigation, Proposed Commercial/Industrial Building, Pepper Avenue, South of Foothill Freeway, Rialto, California, prepared by Southern California Geotechnical, Inc. (SCG), prepared for Howard Industrial Partners, SCG Project No.20G234-1 dated December 15, 2020.

As part of this investigation, a total of four (4) borings were drilled to a depth of 50± feet below the existing site grades. SCG reported that native alluvium was encountered at the ground surface at all of the boring locations, extending to at least the maximum depth explored of 50± feet below the existing site grades. The near-surface alluvium generally consisted of very loose to medium dense silty sands, sandy silts, gravelly sands, and well-graded sands, with varying silt and gravel content, extending to depths of 7 to 10± feet. The underlying alluvium generally consisted of medium dense to dense silty sands, sandy silts, and well graded sands with varying fine gravel and silt content, extending to depths of 15 to 20± feet. At greater depths, the alluvial soils generally consisted of dense to very dense silty sands, gravely sands, sandy gravels, and well graded sands, with varying silt, gravel and cobble content.

Free water was not encountered during the drilling of any of the borings. Based on the lack of any water within the borings and the moisture contents of the recovered soil samples, the static groundwater was considered to have existed at a depth in excess of 50± feet at the time of the subsurface exploration.

The SCG geotechnical feasibility study presented preliminary grading, foundation, and floor slab design recommendations based on the conditions encountered at the boring locations. It should be noted that no groundwater discrepancies, fault scarps, fault line scarps, or any other indicators of faulting were observed during the feasibility study. Accordingly, the preliminary geotechnical recommendations were made under the assumption that no active faulting occurred on the site.

2.0 SUBSURFACE INVESTIGATION

The major purpose of the subsurface investigation was to determine if any faults are present at the site and; if so, what is their relative activity (time of last offset). Accordingly, two (2) trenches were excavated at the site to depths of 18 to 20± feet. The two exploratory trenches were excavated and logged in detail by staff geologists and a certified engineering geologist from our firm to evaluate the possible presence of on-site faulting. Charcoal discovered within the soils near the bottom of the exploratory trenches allowed for radiocarbon dating.

2.2 Fault Trenching and Logging

The two trenches were excavated across the proposed development as follows:

Trench No.	Length (feet)	Depth (feet)	Orientation
T-1	430	18 to 20	N 56° E
T-2	948	18 to 20	N 57° E

The trenches were excavated in an orientation that is roughly perpendicular to the projection of the San Bernardino section of the San Jacinto fault zone. This section of the San Jacinto fault zone is inferred to extend into or near the site (https://usgs.maps.arcgis.com). The approximate locations of the fault trenches are presented on the Trench Location Plan (Plate 2). This allowed for a thorough assessment of the proposed development with regard to possible faults that may cross the proposed development. Cross-sections of the trenches are presented in the enclosed Fault Investigation Trenches (Plate B-1, B-2a, and B-2b).

The trenches were excavated using a track-mounted excavator equipped with a 48-inch-wide bucket. The trenches were excavated with approximately 4-foot-wide benches on each side of the trench every 4± vertical feet to allow for SCG personnel to safely log the trench. The trenches were labeled with stations at 5-foot horizontal intervals.

The trench walls were scraped using picks and shovels to remove smears and gouge marks left by the excavator. To prepare a graphic log of the trench, we used the horizontal stations as a reference to scale the trench walls and the geologic features exposed at a 1 inch to 5-foot scale log. The trench location was surveyed using a GPS device.

2.3 Backfilling of Fault Trench

After the trenches were logged, both of the trenches were backfilled and compacted. Backfilling operations occurred between January 21, 2021 and January 27, 2021 for Trench T-1 and between February 14, 2021 and February 18, 2021 for Trench T-2. The trenches were backfilled with the previously excavated on-site soils. The soil was moisture conditioned as necessary and compacted using a loader and a vibratory roller in 12± inch lifts. Moisture-density tests indicate that the fill soils were compacted to at least 90 percent of the ASTM D-1557 maximum dry density. In place density testing of the structural fill was performed using the Nuclear test method (ASTM D-2922-81), referenced to the maximum dry density values obtained by the Modified Proctor method

(ASTM D-1557-91). The density test locations are shown on the enclosed Density Test Location Plan, Plate 7 in Appendix D of this report. Moisture density test results are presented on Table 1, enclosed in Appendix D. In addition, data regarding the soil types used as structural fill are presented on Table 2 in Appendix D.

3.0 HISTORICAL AERIAL PHOTOGRAPH REVIEW

Historical aerial photographs provided by San Bernardino County Flood Control District. The stereographic aerial photographs were reviewed to characterize site geomorphology and topography and surrounding vicinity prior to urbanization. Relative topographic expression can be interpreted using stereo aerial photographs.

Photographs from the San Bernardino County Flood Control District Aerial from the following years were available for review: 1938, 1969, 1970, and 1978. Copies of the 1938, 1969, and 1978 aerial photographs are provided in Appendix C of this report. A brief summary of these aerial photographs reviewed is presented below.

The site appears to have been utilized for agricultural purposes, presumably citrus orchards, prior to the earliest photograph in 1938. The site appears to have been vacant and undeveloped in the 1969 photograph until the most recent photograph in 1978. A topographic linear feature was visible in all of the photographs reviewed. The topographic linear feature trends northwest-southeast and is located approximately 725± feet southwest of the subject site. This topographic linear feature is located in a similar location, parallel to and coinciding with the mapped trace of the San Bernardino segment of the San Jacinto fault zone (SJFZ) on the geologic map (Dibblee, 2004). This topographic linear feature could be fault scarp or fault line scarp of the SJFZ. It should be noted that no topographic feature was observed on the subject site during the historical aerial photographic analysis.

4.0 SUMMARY OF GEOLOGIC CONDITIONS

4.1 Regional Geology

The subject site is located within the Peninsular Ranges physiographic provinces of California. The Peninsular Ranges province consists of several northwesterly-trending ranges in the southwestern California. The province is truncated to the north by the east-west trending Transverse Ranges. Prior to the mid-Mesozoic, the region was covered by seas and thick marine sedimentary and volcanic sequences were deposited. The bedrock geology that dominates the elevated areas of the Peninsular Ranges consists of high-grade metamorphic rocks intruded by Mesozoic plutons. During the Cretaceous, extensive mountain building occurred during the emplacement of the southern California batholith. The Peninsular Ranges have been significantly disrupted by Tertiary and Quaternary strike-slip faulting along the Elsinore and San Jacinto faults. This tectonic activity has resulted in the present terrain.

The regional geologic conditions were obtained from two primary sources. A portion of the Geologic Map of the San Bernardino North 7.5' Quadrangle, San Bernardino County, California, by Fred K. Miller, Jonathan C. Matti, and Scott E. Carson in 2001 and the Geologic Map of the San Bernardino North/North ½ of the San Bernardino South Quadrangles, San Bernardino County, California, by Thomas W. Dibblee Jr. in 2004 are presented as Plate 3 and Plate 4 of this report, respectively. The Miller map indicates that the site is underlain by Holocene and late Pleistocene age, young alluvial-valley deposits Map Symbol Qya_4). These deposits are described as slightly to moderately dissected, consolidated to cemented deposits of angular to sub-angular silt, sand, and pebbles. The Dibblee map indicates that the site is located within the Lytle Creek wash and is underlain by Holocene-age surficial sediments (Map Symbol Qg). These deposits are described as alluvial gravel and sand of stream channels. A buried segment of the SJFZ is mapped 775± feet northeast of the subject site on the Miller map. A segment of the San Jacinto fault is mapped 650± feet southwest of the subject site and another segment of the San Jacinto fault is mapped 7500± feet northeast of the site on the Dibblee map.

4.2 Regional Faulting

There are two main structural geologic features on or near the subject site, the SJFZ and the San Andreas Fault Zone (SAFZ). The site is located within the SJFZ. The SJFZ extends from El Centro, California to San Bernardino, California. The SJFZ is a northwest-southeast trending, right-lateral, strike-slip fault system. Information presented on the Southern California Earthquake Data Center (SCEDC) website operated by CalTech has assigned the following parameters to the San Jacinto Fault:

- Length: 210 kilometers
- Slip Rate: 7 to 17 millimeters per year
- Probable Magnitudes (M_W): 6.5 to 7.5
- Recurrence Interval: Between 100 and 300 years, per segment

Several of the large segments of the SJFZ have individual identities. One of the northern segments of the SJFZ is identified as the San Bernardino segment. This segment of the SJFZ is nearest the subject site. This section of the fault is a right-lateral fault that trends N58ºW with an average dip of 65 degrees to the southwest. The average slip rate is 5 millimeters per year. In addition, the recurrence interval is 107 years (https://earthquake.usgs.gov).

The SAFZ is the other major structural feature near the subject site. The SAFZ is a northwest-southeast trending, right-lateral, strike-slip fault system (SCEDC). The SAFZ is located 4.5± miles northeast of the subject site. The SCEDC has assigned the following parameters to the San Andreas Fault:

- Length: 1200 kilometers
- Slip Rate: 20 to 35 millimeters per year
- Probable Magnitudes (M_W): 6.8 to 8.0
- Recurrence Interval: 140 years

4.3 Site Specific Geology

The subject site is located within the Lytle Creek wash. Lytle Creek extends from the eastern San Gabriel mountains, trending northwest-southeast to the Santa Ana river. Based on our subsurface exploration, and review of pertinent geologic and geotechnical literature, the site is underlain by a surficial layer artificial fill and alluvial soils characteristic of wash deposits. A description of the units is presented below.

Artificial Fill

Artificial fill was encountered at Trench No. T-2 extending from the ground surface to depths of 3 to 5± feet. The artificial fill consists of loose, fine sands to silty fine sands with trace amounts of medium to coarse sands and varying amounts debris including roots, concrete, and brick fragments.

Alluvium

Native alluvium was encountered at the ground surface at Trench No. T-1 and beneath the artificial fill at Trench No. T-2. The alluvium consists of interbedded loose to medium dense fine sands to silty fine sands in the upper 10 to 15± feet. The deeper alluvial soils consist of loose to medium dense fine to coarse sands and gravelly fine to coarse sands with occasional to extensive cobble content. The near surface alluvium generally consists of unbroken sediments which the deeper alluvium generally consists of sand and gravel layers that pinch out horizontally which is characteristic of channel deposits. The sand and gravel layers are predominating in the deeper alluvium in the northeastern area of the site, closer to Lytle Creek. It should be noted that three (3) charcoal samples were collected within the deeper alluvial soils at Trench No. T-2.

Groundwater

Free water was not encountered during the excavation of the two trenches. In addition, as previously stated, no groundwater was encountered during the drilling of the borings during the previous geotechnical feasibility study. The static groundwater was considered to have existed at a depth in excess of 50± feet at the time of the previous subsurface exploration.

As part of our research for the feasibility study, we reviewed readily available groundwater data in order to determine regional groundwater depths. The primary reference used to determine the groundwater depths in the subject site area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. The nearest monitoring well is located approximately 800 feet southeast from the site. Water level readings within this monitoring well indicates a high groundwater level of 418 feet below the ground surface in September 2020.

4.4 Sediment Age

A total of three (3) charcoal samples were collected from Trench T-2. These samples were submitted to DirectAMS a radiocarbon dating service. The results of the testing is below:

Sample	Radiocarbon Age (before present)
T-2 @17.5 feet	1967
T-2 @ 16.5 feet	2171
T-2 @ 17 feet	2160

Based on the results of the radiocarbon dating, the deeper alluvial soils have an average radiocarbon age of 2,099 years before present.

4.5 On-Site Faulting

Our discussion of on-site faulting on the site is prefaced with a discussion of California legislation and state policies concerning the classification and land-use criteria associated with faults. By definition of the California Geological Survey (CGS), an active fault is a fault which has had surface displacement with Holocene time (about the last 11,700 years). The State Geologist has defined a potentially active fault as any fault considered to have been active during Quaternary time (the last 1,600,000 years) but that has not been proven to be active or inactive. This definition is used in delineating Fault-Rupture Hazard Zones as mandated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and is most recently subsequently revised in 1997 (Hart, 1997). The intent of this act is to assure that unwise urban development does not occur across the traces of active faults.

Based on our review of the Special Study Zones Map of the San Bernardino North Quadrangle, published by the CGS, the subject site is located within a designated earthquake fault zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act. In accordance with the provisions of the Act, all new construction of habitable structures within the Fault Rupture Hazard Zone will be preceded by a fault trenching investigation to determine the presence of on-site strands of any active or potentially active fault and to determine the need for a structural setback. The general location of the site relative to the SJFZ is illustrated on the Alquist-Priolo Fault Zone Map, included as Plate 5 of this report.

Based on our review of the San Bernardino County Geologic Hazards Overlay Map of the San Bernardino North Quadrangle FH22, published by San Bernardino County, the site is also located

within a County of San Bernardino fault zone. The general location of the site relative to the SJFZ is illustrated on the San Bernardino County Fault Zone Map, included as Plate 6 of this report.

Approximately 18 to 20± feet of alluvial sediments were exposed at Trench Nos. T-1 and T-2. The upper 10 to 12± feet generally consisted of unbroken sediments. The deeper alluvial soils were characteristic of channel deposits with interbedded sand and gravel layers that pinch out horizontally. The cobbles were generally rounded and sub-rounded and were generally concentrated in the lower section of each depositional channel. None of the deeper alluvial channel deposits were offset. As previously stated, the sediments exposed near the bottom of Trench Nos. T-1 and T-2 were deposited approximately 2,100 years before present and the recurrence interval for the San Bernardino segment of the San Jacinto fault is 107 years. Based on the recurrence interval with respect to the approximate date of the deeper exposed sediments, we would expect that an offset in the deeper exposed sediments would be evident if the fault transected the subject site. Therefore, the San Bernardino segment of the SJFZ is not considered to transect the subject site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

We have reviewed readily available reports, maps, and performed a subsurface fault study of the subject site to evaluate the potential for surface faulting at the site. There is positive evidence that no active or potentially active faults transect the subject site. This conclusion is based on the following factors:

- Historical aerial stereographic photograph analysis indicates that a linear topographic feature is located 750± feet southwest of the subject site. This linear topographic feature is parallel to and coincides with the mapped trace of the San Jacinto fault on the Dibblee map. No linear topographic depressions or features were visible on the subject site.

- No evidence of on-site faulting was encountered within the fault trenches, which extended from 65± feet southwest of the proposed building to 35± northeast of the proposed building, in a direction perpendicular to the mapped trace of the San Bernardino segment of the SJFZ.

- Based on the recurrence interval for the San Bernardino segment of the SJFZ (107 years) with respect to the approximate date of the deeper exposed sediments (2,100 years before present), we would expect that an offset in the deeper exposed sediments would be evident if an active fault transected the subject site.

5.2 Recommendations

Based on the results of this fault study, positive evidence indicates that neither active nor potentially active faults occur at the proposed development. Therefore, we recommend that development proceed without structural setbacks related to active or potentially active faults. The conclusions and recommendations presented in the previously submitted geotechnical investigation are thus considered valid for the proposed development.

6.0 GENERAL COMMENTS

This report has been prepared for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring and trench locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geological and geotechnical engineering practice. No other warranty is implied or expressed.

7.0 REFERENCES

California Division of Mines and Geology (CDMG), 1974, Earthquake Fault Zones (Alquist-Priolo Earthquake Fault Zoning Act: San Bernardino North Quadrangle, CDMG, Scale 1:24,000.

Dibblee, T.W., 2004, Geologic Map of the San Bernardino North/North ½ San Bernardino South Quadrangles, San Bernardino County, California, published by the Dibblee Geologic Foundation, Scale 1:24,000.

Geotechnical Feasibility Study, Proposed Commercial/Industrial Building, Pepper Avenue, South of Foothill Freeway, Rialto, California, prepared by SCG, prepared for Howard Industrial Partners, SCG Project No. 20G234-1, dated December 15, 2020.

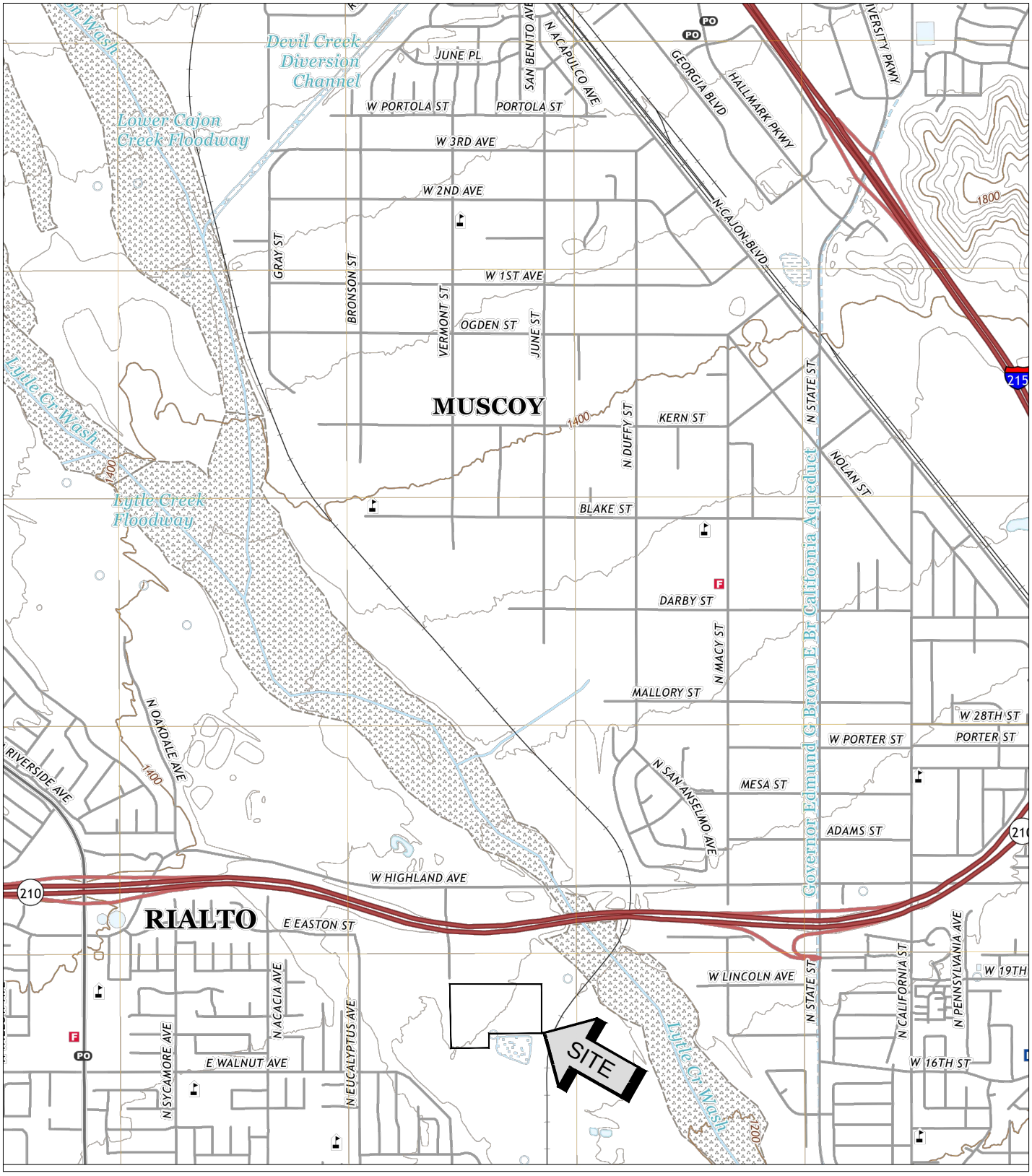
Miller, F.K., Matti, J.C., and Carson, S.E., 2001, Geologic Map of the San Bernardino North 7.5' Quadrangle, published by CDGM, OFR 01-131, Scale 1:24,000.

Southern California Earthquake Data Center, www.data.scec.org, San Jacinto Fault.

U.S. Quaternary Faults, https://usgs.maps.arcgis.com, maintained by United States Geologic Survey (USGS).

Quaternary Fault and Fold Database, https://earthquake.usgs.gov/, maintained by USGS.

APPENDIX A



SOURCE: USGS TOPOGRAPHIC MAPS OF THE SAN BERNARDINO NORTH QUADRANGLES, SAN BERNARDINO COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

(SECURED SERVICE YARD)

OFFICE & MEZZ.

B-1

G.D.

(49 DOCK POSITIONS)

G.D.

TRENCH T-2

B-2

B-3

PROPOSED INDUSTRIAL BUILDING

TRENCH T-1

1144'

B-4

OFFICE & MEZZ.

(49 DOCK POSITIONS)

G.D.

(SECURED SERVICE YARD)

DETENTION BASIN

(22 TRAILER PARKING)

(42 TRAILER PARKING)

POTENTIAL AUTO OR TRAILER PARKING
LA:=114,993SF
2.64 ACRES

Pepper Avenue

40'

135'

407'

185'

206'

37

1144'

GEOTECHNICAL LEGEND

APPROXIMATE TRENCH LOCATION

PREVIOUS BORING LOCATION
(SCG PROJECT NO. 20G234-1)

NORTH

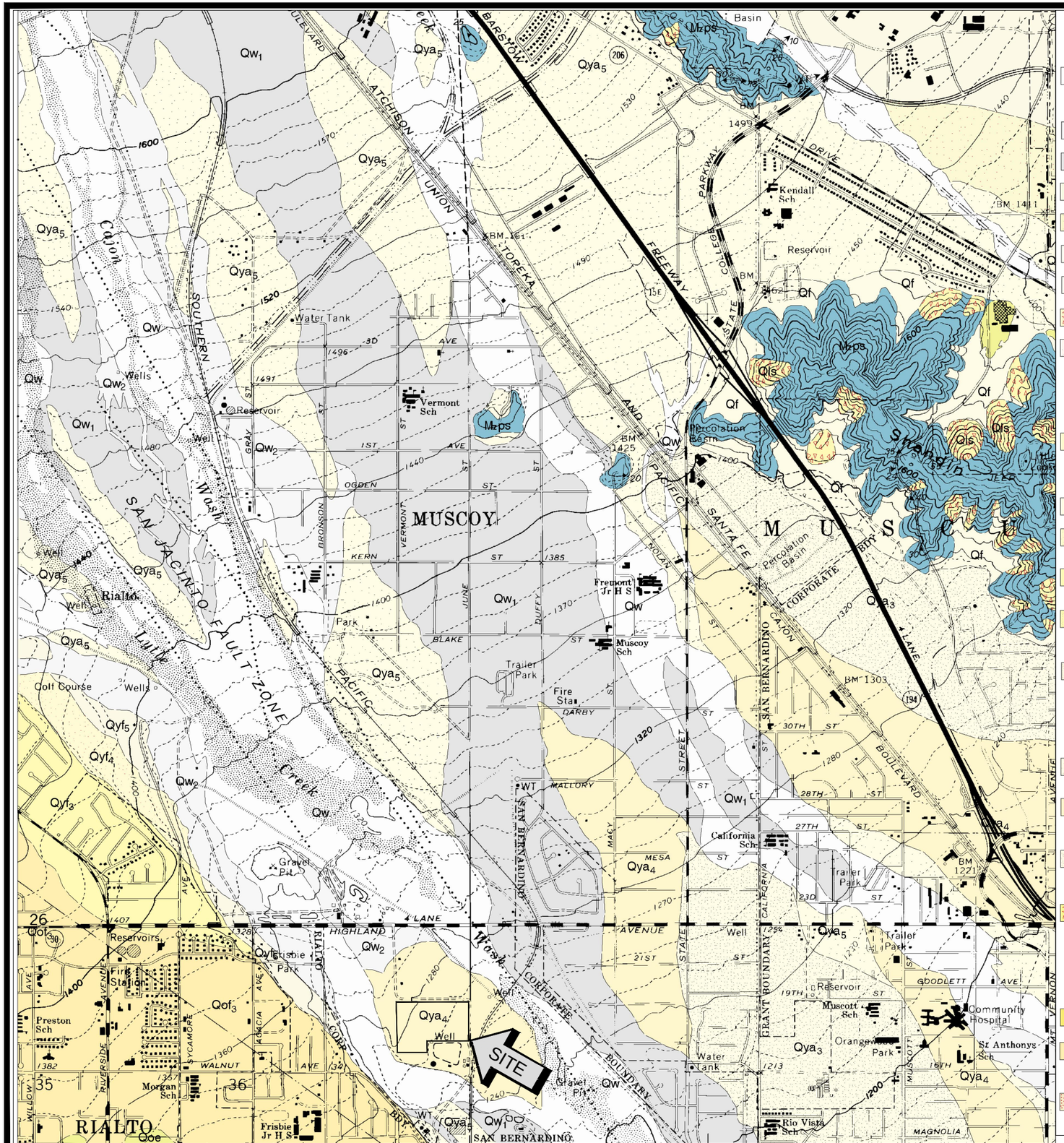
NOTE: SITE PLAN PREPARED BY ARCHITECTS ORANGE

TRENCH LOCATION PLAN

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING
RIALTO, CALIFORNIA

SCALE: 1" = 100'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE 2	

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



DESCRIPTION OF MAP UNITS

VERY YOUNG SURFICIAL DEPOSITS—Sediment recently transported and deposited in channels and washes, on surfaces of alluvial fans and alluvial plains, and on hillslopes. Soil-profile development is non-existant to minimal. Includes:

Qw **Very young wash deposits (late Holocene)**—Unconsolidated to locally cemented sand, gravel, and boulder deposits in active washes of streams and on active surfaces of alluvial fans. Typically shows fresh flood scours and channel-and-bar morphology. Locally includes small areas of older surficial deposits. Most deposits are centimeters to a few meters thick. Includes:

Qw_2 **Very young wash deposits, Unit 2 (late Holocene)**—Chiefly sand and gravel. Distinguished as lower level terraces in Qw terrace sequence; pebble to boulder clasts are sparse to abundant

Qw_1 **Very young wash deposits, Unit 1 (late Holocene)**—Chiefly sand and gravel. Distinguished as upper level terraces in Qw terrace sequence; pebble to boulder clasts are sparse to abundant

Qf **Very young alluvial-fan deposits (late Holocene)**—Unconsolidated to locally cemented, undissected deposits of gravel and sand that for active parts of alluvial fans. Essentially no pedogenic soil development

Qf_1 **Very young alluvial-fan deposits, Unit 1 (late Holocene)**—Undissected, unconsolidated to loosely compacted deposits of gravel and sand. Distinguished as high-level terrace in Qf terrace sequence

Qc **Very young colluvial deposits (late Holocene)**—Unconsolidated to slightly consolidated sandy and pebbly deposits of hillslopes and base of slopes. No pedogenic soil development

Qt **Very young talus deposits (late Holocene)**—Unconsolidated deposits of angular and sub-angular pebble-, cobble-, and boulder-sized clasts that form scree and rubble on hillslopes and at bases of slopes

Qls **Very young landslide deposits (late Holocene)**—Slope-failure deposits that consist of displaced bedrock blocks and (or) chaotically mixed rubble. Most deposits are probably active or recently active

Qs **Very young surficial deposits, undifferentiated (late Holocene)**—Sand and pebble to small cobble gravel deposits not assigned to any specific surficial materials unit. Unconsolidated to slightly consolidated. Includes wash, alluvial fan, colluvial, and valley-filling deposits

YOUNGER SURFICIAL DEPOSITS—Sedimentary units that are slightly consolidated to cemented and slightly to moderately dissected. Alluvial fan deposits (Qyf series) typically have high Coarse:fine clast ratios. Younger surficial units have upper surfaces that are capped by slight to moderately developed pedogenic-soil profiles (A/C to $A/AC/B_{cambric}C_{ox}$ profiles). Includes:

Qyf **Young alluvial-fan deposits (Holocene and late Pleistocene)**—Slightly consolidated to cemented, undissected to slightly dissected deposits of unsorted boulders, cobbles, gravel, and sand that form inactive parts of alluvial fans. Many have unsorted clast and matrix supported debris-flow fabrics. Subunits of Qyf generally form a nested series of thin fills that include from younger to older:

Qyf_5 **Young alluvial-fan deposits, Unit 5 (late Holocene)**—Sand and pebble-boulder gravel. Unconsolidated to slightly consolidated; sand is fine to coarse grained. Occupies topographically highest position relative to other Qyf units

Qyf_4 **Young alluvial-fan deposits, Unit 4 (late Holocene)**—Sand and pebble-boulder gravel. Unconsolidated to slightly consolidated; sand is fine to coarse grained. Differs from Qyf_5 and from Qyf_3 by relative position in terrace sequence, consolidation, and surface dissection

Qyf_3 **Young alluvial-fan deposits, Unit 3 (late and middle Holocene)**—Sand and pebble-boulder gravel. Unconsolidated to slightly consolidated, sand is fine to coarse grained. Differs from Qyf_4 and from Qyf_2 by relative position in terrace sequence, consolidation, and surface dissection

Qyf_2 **Young alluvial-fan deposits, Unit 2 (early Holocene)**—Sand, silty sand, and granule-pebble gravel. Slightly to moderately consolidated; sand is fine to coarse grained. Differs from Qyf_3 by relative position in terrace sequence, consolidation, surface dissection, and average grainsize and from Qyf_1 by relative topographic position and slight differences in average grain size

Qyf_1 **Young alluvial-fan deposits, Unit 1 (early Holocene and late Pleistocene)**—Sand and pebble-boulder gravel. Slightly to moderately consolidated; sand is fine to coarse grained. Differs from Qyf_2 by relative position in terrace sequence, consolidation, surface dissection, and slight difference in average grainsize

Young alluvial-valley deposits (Holocene and late Pleistocene)—Slightly to moderately dissected, consolidated to cemented deposits of angular to subangular silt, sand and pebbles. Generally finer grained than Qyf units Includes:

Qya_5 **Young alluvial-valley deposits, Unit 5 (Holocene and late Pleistocene)**—Slightly dissected, slightly consolidated to cemented deposits of angular to subangular silt, sand and pebbles. Differs from Qya_4 by relative position in terrace sequence, consolidation, and surface dissection

Qya_4 **Young alluvial-valley deposits, Unit 4 (Holocene and late Pleistocene)**—Slightly to moderately dissected, consolidated to cemented deposits of angular to subangular silt, sand and pebbles. Differs from Qya_5 and Qya_3 by relative position in terrace sequence, consolidation, and surface dissection

Qya_3 **Young alluvial-valley deposits, Unit 3 (Holocene and late Pleistocene)**—Slightly to moderately dissected, moderately well consolidated to cemented deposits of angular to subangular silt, sand and pebbles. Differs from Qya_4 by relative position in terrace sequence, consolidation, and surface dissection

Qyls **Young landslide deposits (Holocene and late Pleistocene)**—Landslide-failure deposits that consist of displaced bedrock blocks and (or) chaotically mixed rubble. Deposits are probably inactive under current climatic conditions and moderate to strong ground-shaking conditions

OLDER SURFICIAL DEPOSITS—Sedimentary units that are moderately consolidated and slightly to moderately dissected. Older surficial deposits have upper surfaces that are capped by moderately to well-developed pedogenic soils ($A/AB/B/C_{ox}$ profiles and Bt horizons as much as 1 to 2 m thick and maximum hues in the range of 10YR 5/4 and 6/4 through 7.5YR 6/4 to 4/4 and mature Bt horizons reaching 5YR 5/6). Includes:

Qof **Old alluvial-fan deposits (late to middle Pleistocene)**—Sedimentary units that are moderately consolidated and slightly to moderately dissected. Includes from younger to older:

Qof3 **Old alluvial-fan deposits, Unit 3 (late Pleistocene)**—Slightly to moderately dissected alluvial fan deposits. Moderately to well consolidated brownish sand, gravelly sand, and granule-boulder gravel mainly having matrix-supported debris-flow fabrics; lenses of sediment having clast-supported, imbricated fluvial fabrics are subordinate

Qof_2 **Old alluvial-fan deposits, Unit 2 (late Pleistocene)**—Slightly to moderately dissected alluvial fan deposits. Moderately to well consolidated brownish sand, gravelly sand, and granule-boulder gravel mainly having matrix-supported debris-flow fabrics

---

Contact—Solid where located within ±15 meters; dashed where located within ±30 meters

Contact—Separates terraced alluvial units, hachers point towards topographically lower surface. Located within ±15 meters

Fault—High angle. Solid where located within ±15 meters; dashed where located within ±30 meters; dotted where concealed. Hachures indicate scarp; hachures on down-dropped block. Opposed arrows indicate relative movement. Arrow and number indicate direction and amount of dip. MLS, Mill Creek strand; MCS, Mission Creek strand; SBS, San Bernardino strand of San Andreas Fault zone

Strike and dip of beds

70 **Inclined**

70 **Overturned**

Strike and dip of metamorphic foliation

70 **Inclined**

Bearing and plunge of linear features

70 **Minor fold axes**

70 **Aligned metamorphic minerals**

70 **Lineation, general**

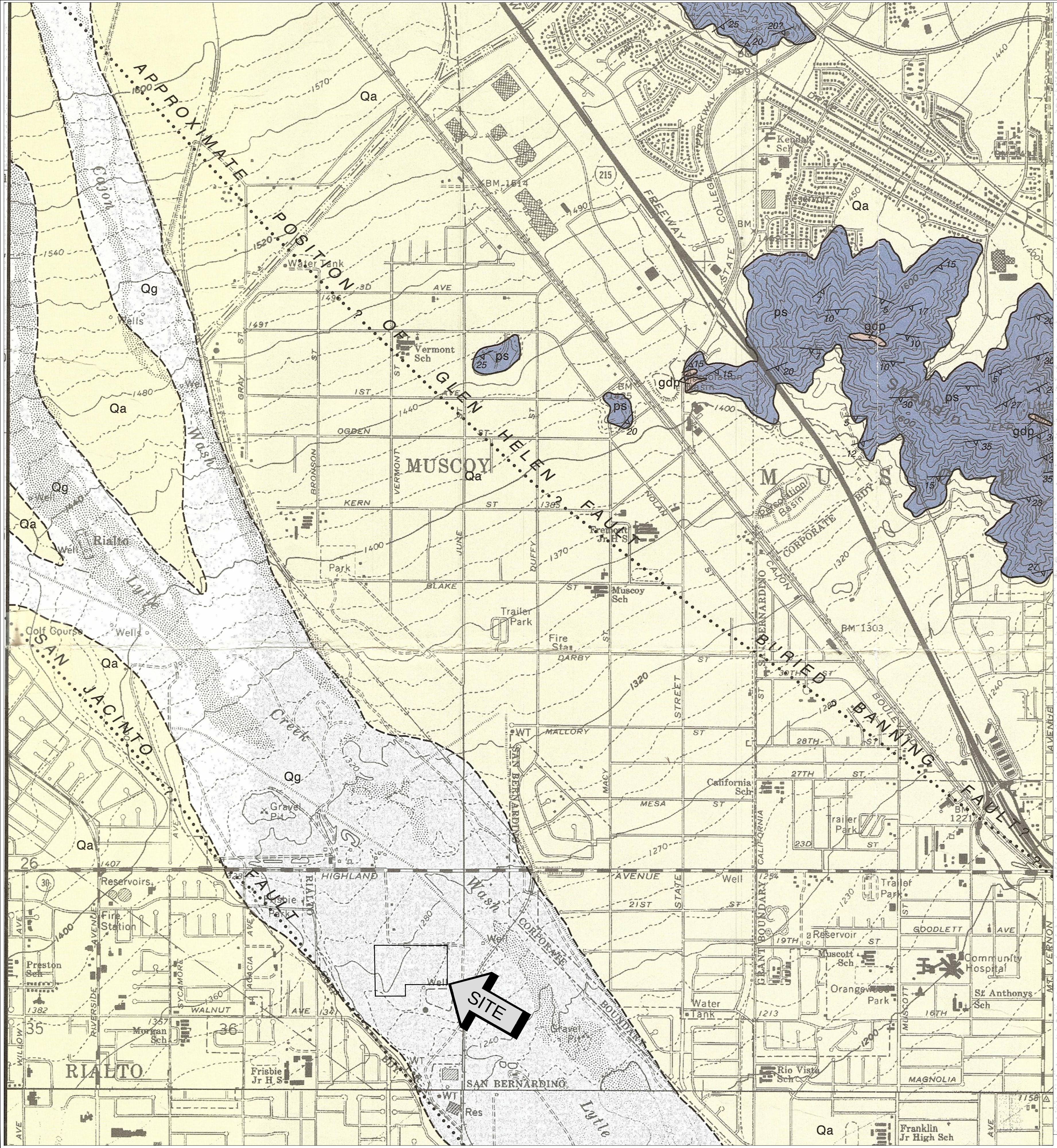
GEOLOGIC MAP OF THE SAN BERNARDINO NORTH 7.5' QUADRANGLE, SAN BERNARDINO COUNTY, CALIFORNIA, FRED K. MILLER, JONATHAN C. MATTI, AND SCOTT E. CARSON (2001)

GEOLOGIC MAP

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE 3	SOUTHERN CALIFORNIA GEOTECHNICAL



LEGEND

Qa | Qg | Qs

SURFICIAL SEDIMENTS

Alluvial sediments, Unconsolidated, undissected

Og *Alluvial gravel and sand of stream channels*
Qa *Alluvial fan gravel and sand of valley areas, derived from rocks of San Bernardino Mountains composed of unsorted boulders and cobbles in mountain area, down slope into finer cobble-gravel and sand outward southwest in valley area.*
Qs *Drift sand, deposited by north winds*

Qls

LANDSLIDE DEBRIS

Qls *Landslide of rock rubble*

Qoa | Qog

OLDER SURFICIAL SEDIMENTS

Dissected older alluvial deposits, slightly indurated, undeformed; age, late Pleistocene

Qoa *Alluvial fan gravel and sand of lower terraces*
Qog *Alluvial fan deposits of boulder gravel in major canyons, older, at higher levels*

— UNCONFORMITY —

AREA NORTHEAST OF SAN ANDREAS FAULT

Tcr | Ts

SEDIMENTARY ROCKS

Tcr *Crowder Formation near Crestline, terrestrial sandstone and cobble conglomerate of granitic detritus, friable, light gray to tan, arkosic; similar to Crowder Formation; Pliocene – late Miocene, in areas to northwest*
Ts *Terrestrial sandstone and conglomerate of granitic detritus, semi-lithified, light gray to tan, arkosic; exposed in San Andreas fault zone eastern part of quadrangle; similar to Cajon Formation, Miocene, of Cajon Valley area northwest of quadrangle*

— UNCONFORMITY —

gr | qd | di | mp

PLUTONIC ROCKS

Granitic rocks of San Bernardino Mountains, medium grained holocrystalline; age, Cretaceous

gr *Leucocratic granitic rocks, mostly quartz monzonite or monzogranite but vary to granodiorite, as determined only from thin sections, composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts and less than 10 percent biotite, little to no hornblende; in few places contains scattered phenocrysts of potassic feldspar; rock gray-white to light gray, massive, rarely gneissoid, somewhat incoherent where weathered especially on areas of subdued relief where weathered to residual sandy soil; includes units mapped by Miller et al, 2001, as biotite monzogranite granodiorite of Lake Gregory and granodiorite of Arrowhead Peak*
qd *Intermediate plutonic rocks, mostly quartz diorite, varies to monzodiorite, composed of 1/4 or less of quartz, 3/4 of sodic plagioclase, minor amounts of potassic feldspar, 10 – 15 % biotite and hornblende; gray, massive to gneissoid; commonly includes mixtures of gneiss; includes unit mapped by Miller et al, 2001, as monzodiorite of Crestline*
di *Diorite, dark gray, massive, medium grained, somewhat incoherent where weathered, composed of hornblende, biotite, and plagioclase feldspar; complexly migmatized with gneissic rocks; only one outcrop near lower Waterman Creek*
mp *Monzonite of Cedar Pines Park, composed of potassic feldspar and sodic plagioclase feldspar in nearly equal amounts, sparse quartz, and minor hornblende and biotite of a ratio greater than 10:1; locally porphyritic with phenocrysts of potassic feldspar; rock gray, indistinctly gneissoid, probably engulfed in granitic rocks; age based on correlation with similar rock near Fawnskin 27 km to east which yielded a zircon U/Pb age of 245 Ma (Miller et al, 2001, written commun: from J.E. Wooden) or Triassic age exposed on crest of range at north border of quadrangle*

gn | ml

GNEISS

(Gneiss of Devil Canyon of Miller et al, 2001) foliated holocrystalline rocks, metamorphosed under conditions of high temperature and pressure from sedimentary petroliths of probably Precambrian age; latest cooling age Mesozoic)

gn *Gneiss, composed of white to light gray laminae of mostly quartz and feldspar alternating with gray to nearly black laminae rich in biotite and minor hornblende; laminae undulated, locally contorted; hard but brittle, closely fractured; in many places includes small masses and migmatites of granitic rocks, in some areas complexly intruded by granitic dikes and sills*
ml *Marble, white to gray-white, medium to coarse crystalline, massive, with little evidence of bedding, composed of calcite or dolomite, occurs as many layers interbedded in gneiss as mapped*

AREA SOUTHWEST OF SAN ANDREAS FAULT

gdp | db

GRANODIORITE PORPHYRY DIKES

Hypabyssal dikes in Pelona Schist, similar to those rocks in eastern San Gabriel Mountains, radiometrically dated as 25.6 Ma (May and Walker, 1989, in Morton and Matti, 2001)

gdp *Granodiorite to dacite porphyry light gray, medium to fine grained, composed of quartz, potassic feldspar and sodic plagioclase, and minor biotite; dikes fine grained, rock porphyritic with small phenocrysts of potassic feldspar and quartz*
db *Diabase*

ps

PELONA SCHIST

Mica schist metamorphosed from petroliths of sedimentary and pyroclastic rocks of unknown age in late Cretaceous time

ps *Mica schist, composed of muscovite and biotite micas, albite feldspar and quartz, locally chlorite, gray with silvery sheen on foliation planes, weathers brown; fine – medium grained, highly foliated, cleaves into flat slabs along foliation planes*

ms | mq | ml | mig

METASEDIMENTARY ROCKS

Severely metamorphosed marine sedimentary rocks of inferred Paleozoic (?) age, as small pendant remnants engulfed in plutonic rocks

ms *Biotite schist, dark gray, fine grained foliated, includes minor biotite-quartz-feldspar schist or gneiss, quartzite and calc-silicate hornfels in Riverside area*
mq *Quartzite, light gray, massive to layered, hard but brittle, fractured*
ml *Marble, white to light blue-gray, coarse grained*
mig *Migmatized mixture of biotite schist and tonalitic granitic rocks*

Holocene
Pleistocene
QUATERNARY
Pliocene
?
Miocene
TERTIARY
CRETACEOUS
?
TRIASSIC
TERTIARY

GEOLOGIC SYMBOLS

not all symbols shown on each map

FORMATION CONTACT *dashed where inferred or indefinite, dotted where concealed*
MEMBER CONTACT *between units of a formation* .... **Prominent bed**
CONTACT BETWEEN SURFICIAL SEDIMENTS *located only approximately in places*

FAULT: *Dashed where indefinite or inferred, dotted where concealed, queried where existence is doubtful. Parallel arrows indicate inferred relative lateral movement. Relative vertical movement is shown by U/D (U=upthrown side, D=downthrown side). Short arrow indicates dip of fault plane. Sawteeth are on upper plate of low angle thrust fault.* U D 25 ?

FOLDS: overturned **ANTICLINE** **SYNCLINE**
arrow on axial trace of fold indicates direction of plunge; dotted where concealed by surficial sediments

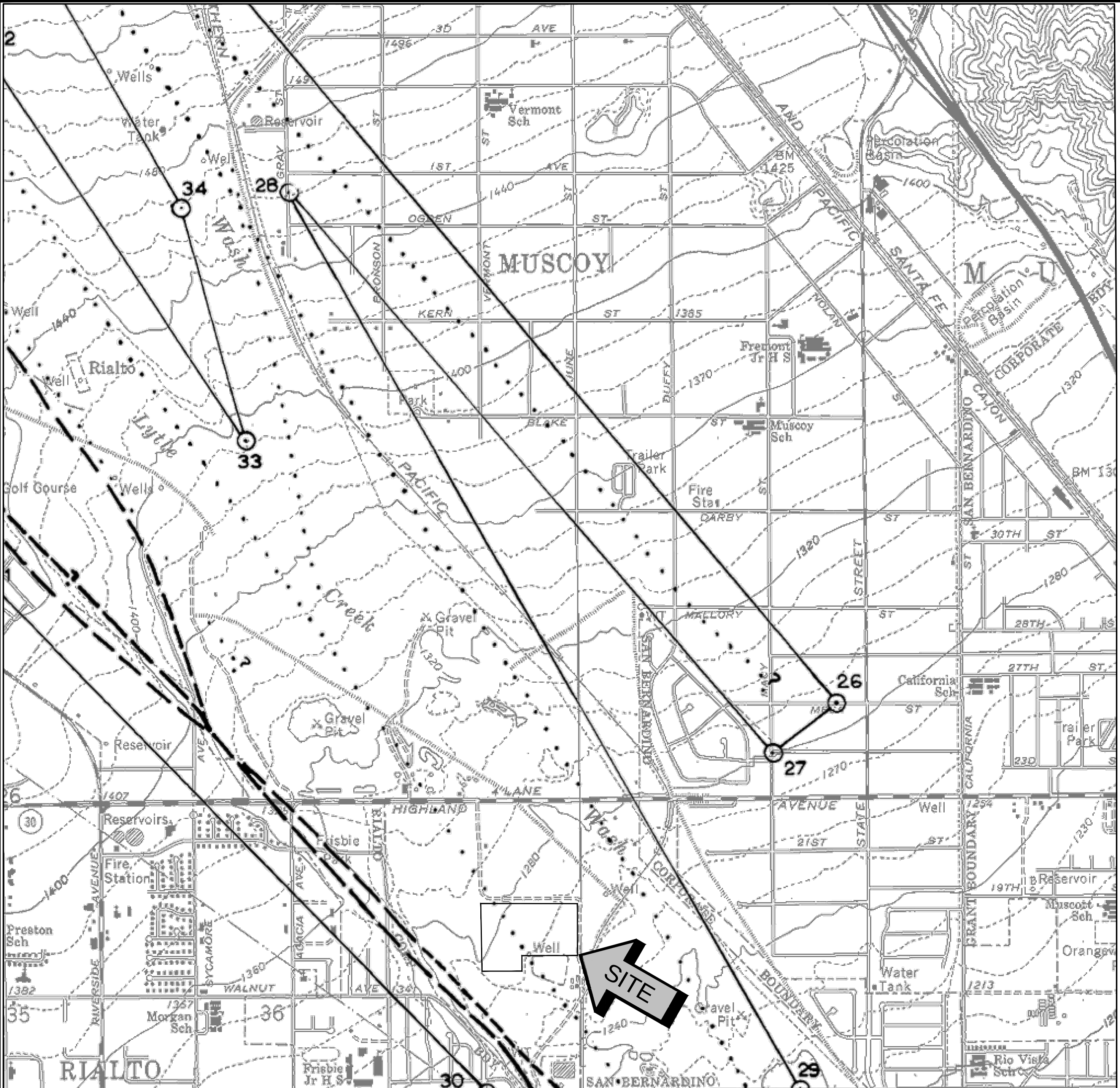
Strike and dip of Sedimentary rocks: 18 *inclined*; 20 *inclined (approximate)*; 80 *overturned*; *horizontal*; *vertical*

Strike and dip of metamorphic or igneous rock foliation or flow banding or compositional layers: 75 *inclined*; *inclined (aproximate)*; *vertical*; 80 *overturned*

OTHER SYMBOLS: *Direction of landslide movement*; *outline of water bodies shown on map*; *water well*; *oil well*

GEOLOGIC MAP OF THE SAN BERNARDINO NORTH / NORTH 1/2 OF SAN BERNARDINO SOUTH QUADRANGLES BY THOMAS W. DIBBLEE, JR. (2004)

GEOLOGIC MAP	
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING	
RIALTO, CALIFORNIA	
SCALE: 1" = 2000'	SOUTHERN CALIFORNIA GEOTECHNICAL
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE 4	



MAP EXPLANATION

Potentially Active Faults

Faults considered to have been active during Quaternary time, solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed, query (?) indicates additional uncertainty Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep

Aerial photo lineaments (not field checked), based on youthful geomorphic and other features believed to be the results of Quaternary faulting

Special Studies Zone Boundaries

These are delineated as straight-line segments that connect consecutively numbered turning points so as to define one or more special studies zone segments

Seaward projection of zone boundary

SOURCE: "STATE OF CALIFORNIA SPECIAL STUDIES ZONES, SAN BERNARDINO NORTH QUADRANGLE" DATED JULY 1, 1974 AND JUNE 1, 1995.

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE MAP

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

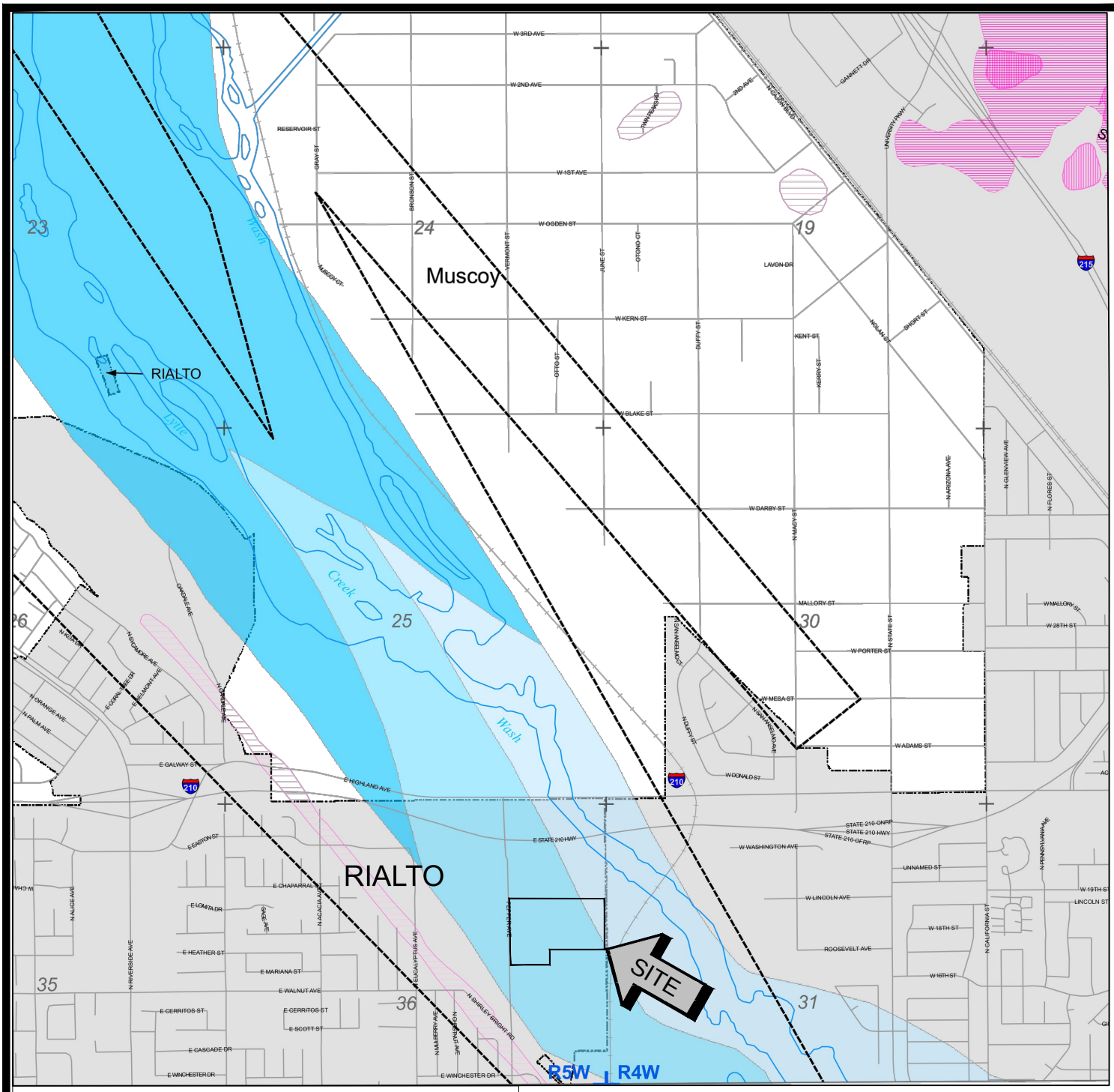
SCALE: 1" = 2,000'

DRAWN: DRK
CHKD: RGT

SCG PROJECT
20G243-2

PLATE 5

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL



Generalized Landslide Susceptibility

- Low to moderate
- Moderate to high
- Mapped, Existing Landslide
- Rockfall/Debris-Flow Hazard Area (Forest Falls Only)

Zone of Suspected Liquefaction Susceptibility

- Zone of Susceptibility

Generalized Liquefaction Susceptibility

- Low
- Medium
- High

Earthquake Fault Zones

- Earthquake Fault Zone Boundary
- County Designated Fault Zones
- Cities

SOURCE: "SAN BERNARDINO COUNTY LAND USE PLAN, GENERAL PLAN, GEOLOGIC HAZARDS OVERLAY, SAN BERNARDINO NORTH QUADRANGLE, FH22"

SAN BERNARDINO COUNTY GEOLOGIC HAZARD MAP

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

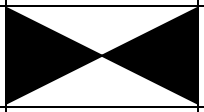
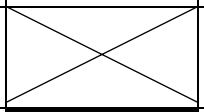
SCALE: 1" = 2,000'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G243-2	
PLATE 6	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

TRENCH LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

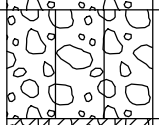
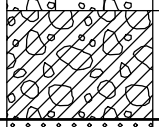
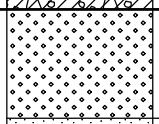
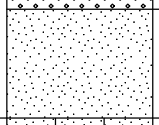
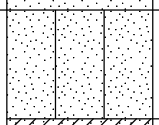
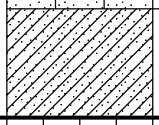
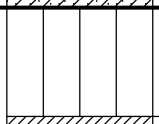
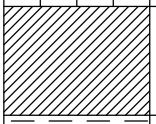
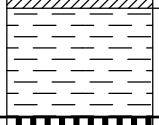
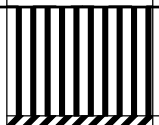
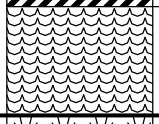
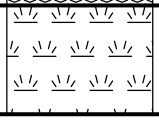
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

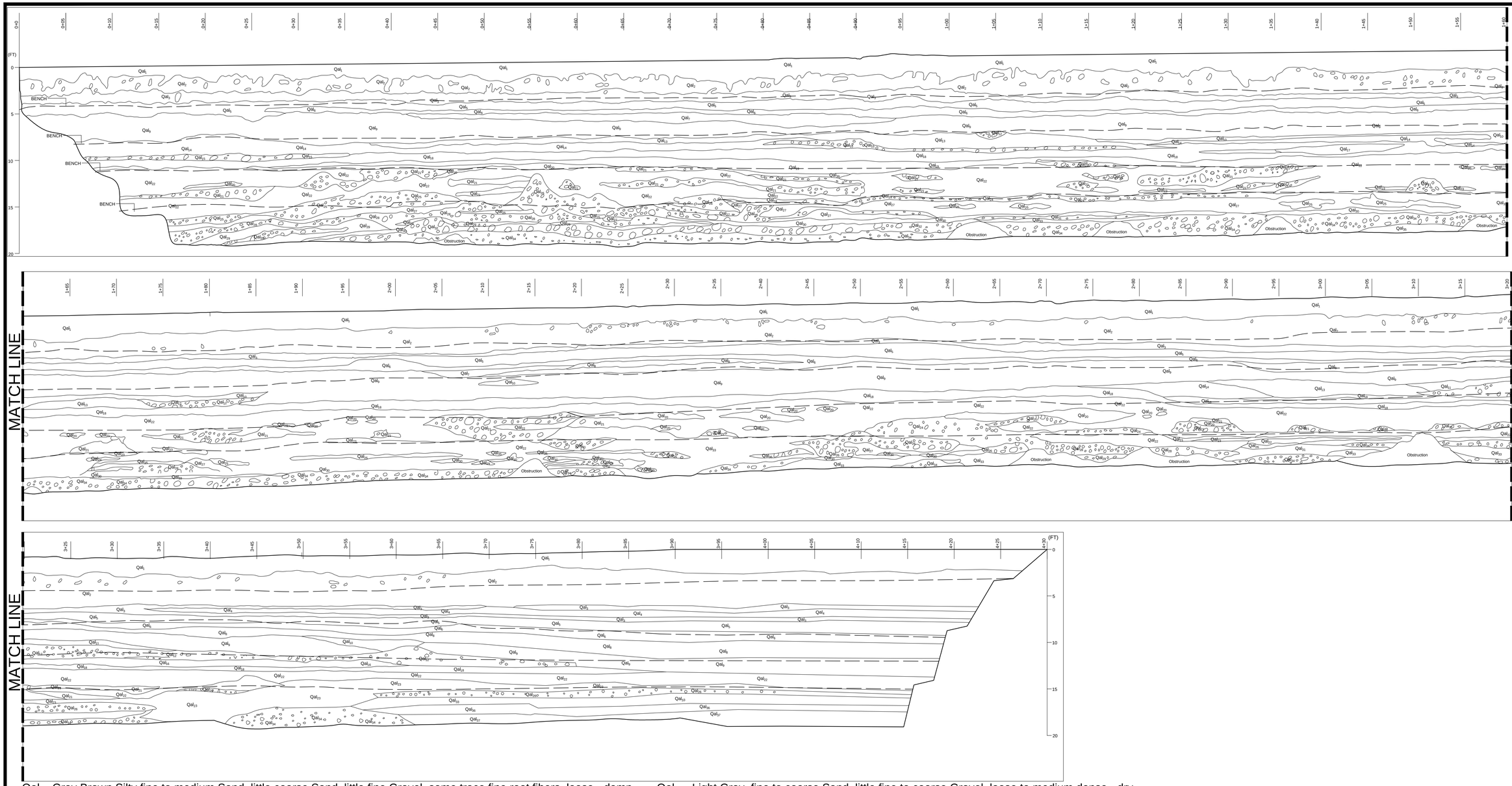
PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



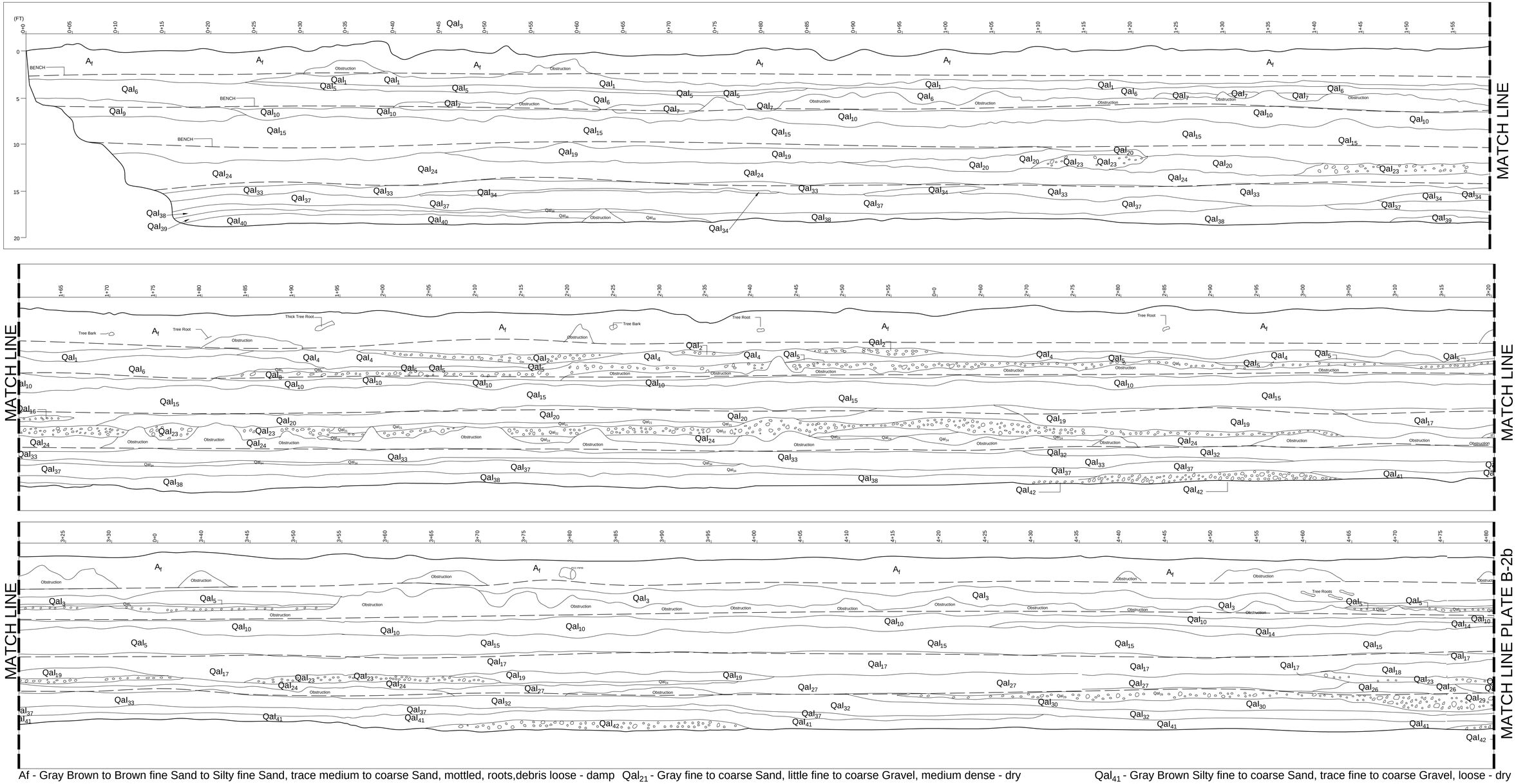
Qal_1 - Gray Brown Silty fine to medium Sand, little coarse Sand, little fine Gravel, some trace fine root fibers, loose - damp
Qal_2 - Light Gray fine Sand, trace to little medium to coarse Sand, little Iron oxide staining, loose - dry to damp
Qal_3 - Light Gray Silty fine Sand, trace fine root fibers, porous, loose to damp
Qal_4 - Light Gray fine Sandy Silt, porous, loose - damp
Qal_5 - Light Gray Brown fine Sand, trace medium to coarse Sand, trace fine Gravel, loose - dry
Qal_6 - Brown Silty fine Sand, pourous, loose - damp
Qal_7 - Gray Brown fine to coarse Sand, trace to little Iron oxide staining, loose - dry
Qal_8 - Gray to Gray Brown fine Sandy Silt, trace to little calcarous veins, porous, loose - damp
Qal_9 - Light Gray Brown Silty fine to coarse Sand, trace fine to coarse Gravel, occasional Cobbles, loose - dry to damp
Qal_{10} - Brown Silty fine Sand, loose - damp
Qal_{11} - Gray fine Sandy Silt, little calcarous veins, porous, loose - dry to damp
Qal_{12} - Gray fine to coarse Sand, some fine to coarse Gravel, occasional Cobbles, loose - dry
Qal_{13} - Gray Brown fine to coarse Sand, trace fine Gravel, loose - dry
Qal_{14} - Gray Brown fine Sand, little Iron oxide staining, loose - dry
Qal_{15} - Light Gray Gravelly fine to coarse Sand, occasional Cobbles, loose to medium dense - dry to damp
Qal_{16} - Light Gray fine Sandy Silt, porous, medium dense - dry
Qal_{17} - Gray fine to coarse Sand, little fine to coarse Gravel, loose - dry
Qal_{18} - Brown to Gray Brown Silty fine Sand, loose to medium dense - damp
Qal_{19} - Brown Silty fine to coarse Sand, trace fine to coarse Gravel, loose - damp
Qal_{20} - Brown Silty fine Sand, loose - damp
Qal_{21} - Light Gray fine to coarse Sand, little fine to coarse Gravel, loose to medium dense - dry
Qal_{22} - Light Gray fine Sand, trace to medium to coarse Sand, trace fine Gravel, little Iron oxide staining, loose to medium dense - damp
Qal_{23} - Brown Silty fine Sand, loose - damp
Qal_{24} - Light Gray Brown fine to coarse Sand, little fine to coarse gravel, medium dense - damp
Qal_{25} - Brown Silty fine Sand, medium dense - damp
Qal_{26} - Gray Gravely fine to coarse Sand, occasional to extensive Cobbles, medium dense - damp
Qal_{27} - Gray fine to medium Sand, trace coarse Sand, trace fine Gravel, medium dense - dry
Qal_{28} - Gray Gravelly fine to coarse Sand, occasional Cobbles, medium dense - dry
Qal_{29} - Light Gray fine to coarse Sand, trace fine to coarse Gravel, medium dense - dry
Qal_{30} - Brown Silty fine Sand, medium dense - damp
Qal_{31} - Gray fine to coarse Sand, medium dense - dry
Qal_{32} - Light Gray Gravelly fine to coarse Sand, extensive Cobbles, medium dense - dry
Qal_{33} - Gray fine Sand, medium dense - dry
Qal_{34} - Gray Gravelly fine to coarse Sand, extensive Cobbles, medium dense - dry
Qal_{35} - Gray fine Sand, trace medium to coarse Sand, trace fine Gravel, medium dense - dry
Qal_{36} - Light Gray fine Sand, trace medium Sand, little Silt, little Iron oxide Staining, loose - damp
Qal_{37} - Light Gray fine Sand, trace Silt, little Iron oxide staining, loose - dry

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A California Corporation
22885 Savi Ranch Parkway
Suite E
Yorba Linda, CA 92887
Phone: (714) 685-1115
Fax: (714) 685-1118
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SCALE: 1" = 5'
DRAWN: DRK
CHKD: RGT
SCG PROJECT
20G234-2

TRENCH T-1
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING
RIALTO, CALIFORNIA

PLATE
B-1



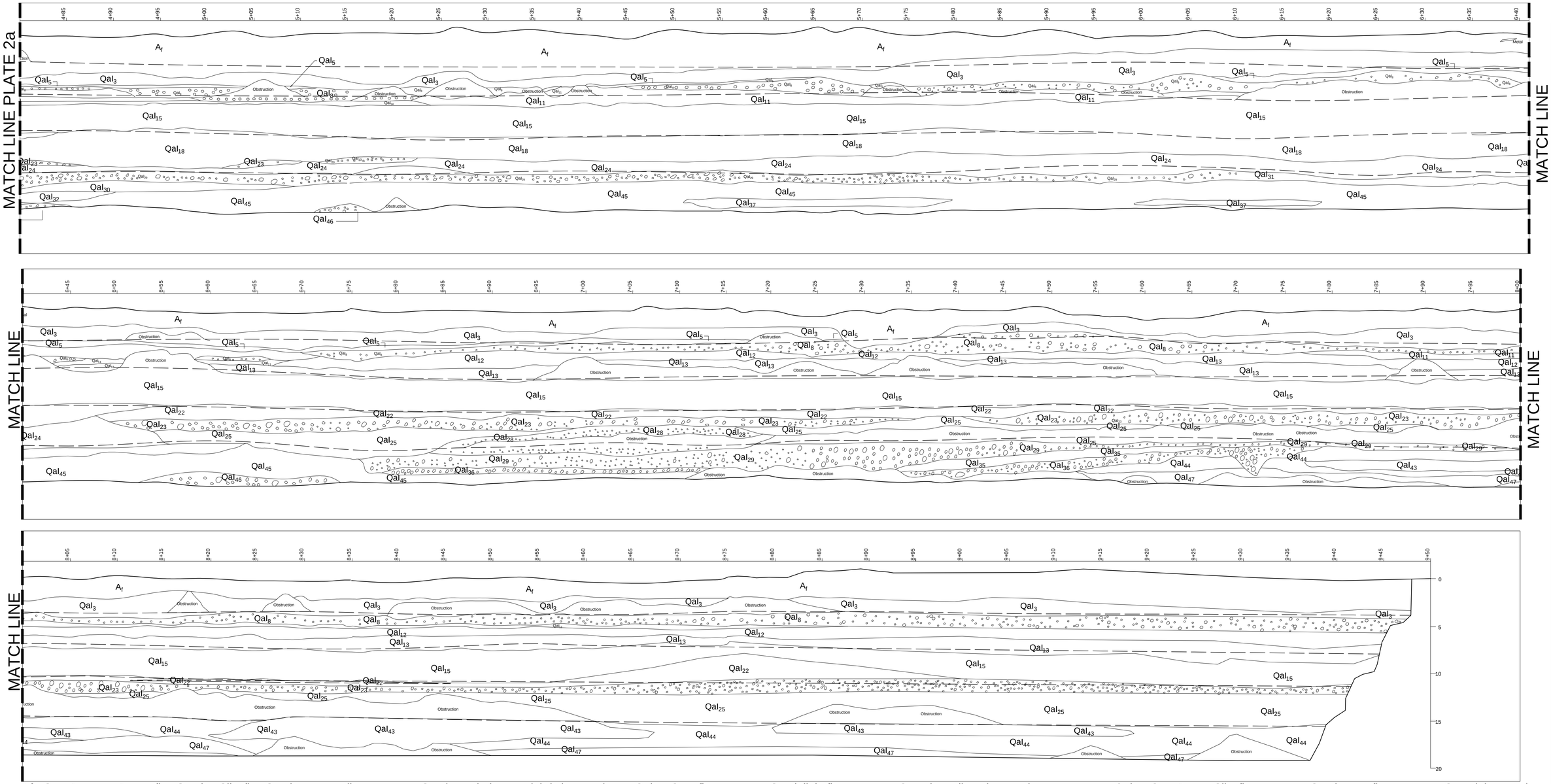
Af - Gray Brown to Brown fine Sand to Silty fine Sand, trace medium to coarse Sand, mottled, roots,debris loose - damp
Qal_1 - Brown Silty fine Sand, trace medium to coarse Sand, loose - dry to damp
Qal_2 - Light Gray Gravelly fine to coarse Sand, occasional to extensive Cobbles, loose - dry
Qal_3 - Gray Silty fine to coarse Sand, trace to little fine to coarse Gravel, loose - dry
Qal_4 - Light Gray fine Sand, trace medium to coarse Sand, trace fine to coarse Gravel, loose - dry
Qal_5 - Dark Gray Brown Silty fine Sand, loose - dry to damp
Qal_6 - Gray Brown fine Sand, trace to little medium to coarse Sand, little Iron oxide staining, loose - dry
Qal_7 - Light Gray fine to coarse Sand, loose - dry
Qal_8 - Light Gray fine to medium Sand, little coarse Sand, trace fine to coarse Gravel, occasional Cobbles, loose - dry
Qal_9 - Gray fine to coarse Sand, little fine to coarse Gravel, occasional Cobbles, loose - dry
Qal_{10} - Gray Brown fine to medium Sand, trace coarse Sand, little Silt, loose - dry to damp
Qal_{11} - Light Gray fine Sand, little medium to coarse Sand, trace fine to coarse Gravel, loose - dry
Qal_{12} - Gray fine Sandy Silt, trace calcareous veining, loose to medium dense - damp
Qal_{13} - Gray Brown Silty fine Sand, loose to medium dense - damp
Qal_{14} - Light Gray fine Sand, little Iron oxide staining, loose - dry
Qal_{15} - Gray Brown Silty fine Sand, little Iron oxide staining, trace Calcareous nodules, loose - dry
Qal_{16} - Light Gray Gravelly fine to coarse Sand, loose - dry
Qal_{17} - Light Gray Brown fine Sand, trace medium to coarse Sand, little Iron oxide staining, loose - dry
Qal_{18} - Light Gray Brown Silty fine Sand, trace medium to coarse Sand, trace fine Gravel, medium dense - damp
Qal_{19} - Light Gray Brown fine to medium Sand, trace coarse Sand, little Iron oxide staining, loose - damp
Qal_{20} - Light Gray fine Sand, extensive Iron oxide staining, loose - dry to damp
Qal_{21} - Gray fine to coarse Sand, little fine to coarse Gravel, medium dense - dry
Qal_{22} - Gray fine Sand, little Iron oxide staining, medium dense - dry
Qal_{23} - Brown Silty fine Sand, loose to medium dense - damp
Qal_{24} - Gray fine to coarse Sand, little fine to coarse Gravel, medium dense - damp
Qal_{25} - Light Gray fine Sand, laminated, Iron oxide staining, loose - dry
Qal_{26} - Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel, occasional Cobbles, loose - dry to damp
Qal_{27} - Light Gray fine Sand, little Iron oxide staining, loose - dry to damp
Qal_{28} - Gray Gravelly fine to coarse Sand, extensive Cobbles, loose - dry
Qal_{29} - Light Gray Brown Gravelly fine to coarse Sand, extensive Cobbles, loose - dry
Qal_{30} - Light Gray Brown fine Sandy Silt, slightly porous, trace organics, medium dense - dry
Qal_{31} - Light Gray fine to medium Sand, little coarse Sand, little fine to coarse Gravel, loose - dry
Qal_{32} - Gray Brown Silty fine to coarse Sand, little Iron oxide staining, loose - dry
Qal_{33} - Light Brown fine Sand, trace to little medium to coarse Sand, little Silt, little Iron oxide Staining, loose - damp
Qal_{34} - Light Gray Brown Silty fine Sand, little Iron oxide Staining. loose - damp
Qal_{35} - Light Gray fine to medium Sand, trace coarse Sand, loose - dry
Qal_{36} - Light Gray Gravelly fine to coarse Sand, extensive Cobbles, loose - dry
Qal_{37} - Light Gray fine to coarse Sand, little Iron oxide staining, loose - dry
Qal_{38} - Light Gray Brown Silty fine Sand, little Iron oxide staining, loose - damp
Qal_{39} - Light Gray fine to medium Sand, trace coarse Sand, little Iron oxide staining, loose - damp
Qal_{40} - Light Gray Brown Silty fine Sand, little Iron oxide staining, loose - damp to moist
Qal_{41} - Gray Brown Silty fine to coarse Sand, trace fine to coarse Gravel, loose - dry
Qal_{42} - Gray Brown Gravelly fine to coarse Sand, extensive Cobbles, loose - dry
Qal_{43} - Light Gray fine to coarse Sand, trace fine Gravel, loose - dry
Qal_{44} - Light Gray Brown fine Sand, trace medium Sand, little Silt, little Iron oxide staining, loose- damp
Qal_{45} - Light Gray Brown Silty fine Sand, trace medium Sand, little Iron oxide staining medium dense - dry
Qal_{46} - Light Gray Gravelly fine to coarse Sand, occasional Cobbles, trace Iron oxide staining, loose - dry
Qal_{47} - Light Gray fine Sand, little Iron oxide staining, loose - dry
Qal_{48} - Light Gray Brown fine Sand, trace Silt, little Iron oxide staining, loose - damp

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A California Corporation
22885 Savi Ranch Parkway
Suite E
Yorba Linda, CA 92887
Phone: (714) 685-1115
Fax: (714) 685-1118
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SCALE: 1" = 5'
DRAWN: DRK
CHKD: RGT
SCG PROJECT 20G234-2

TRENCH T-2
PROPOSED COMMERCAIL/INDUSTRIAL BUILDING
RIALTO, CALIFORNIA

PLATE B-2a



Af - Gray Brown to Brown fine Sand to Silty fine Sand, trace medium to coarse Sand, mottled, roots,debris loose - damp

Qal_1 - Brown Silty fine Sand, trace medium to coarse Sand, loose - dry to damp

Qal_2 - Light Gray Gravelly fine to coarse Sand, occasional to extensive Cobbles, loose - dry

Qal_3 - Gray Silty fine to coarse Sand, trace to little fine to coarse Gravel, loose - dry

Qal_4 - Light Gray fine Sand, trace medium to coarse Sand, trace fine to coarse Gravel, loose - dry

Qal_5 - Dark Gray Brown Silty fine Sand, loose - dry to damp

Qal_6 - Gray Brown fine Sand, trace to little medium to coarse Sand, little Iron oxide staining, loose - dry

Qal_7 - Light Gray fine to coarse Sand, loose - dry

Qal_8 - Light Gray fine to medium Sand, little coarse Sand, trace fine to coarse Gravel, occasional Cobbles, loose - dry

Qal_9 - Gray fine to coarse Sand, little fine to coarse Gravel, occasional Cobbles, loose - dry

Qal_{10} - Gray Brown fine to medium Sand, trace coarse Sand, little Silt, loose - dry to damp

Qal_{11} - Light Gray fine Sand, little medium to coarse Sand, trace fine to coarse Gravel, loose - dry

Qal_{12} - Gray fine Sandy Silt, trace calcareous veining, loose to medium dense - damp

Qal_{13} - Gray Brown Silty fine Sand, loose to medium dense - damp

Qal_{14} - Light Gray fine Sand, little Iron oxide staining, loose - dry

Qal_{15} - Gray Brown Silty fine Sand, little Iron oxide staining, trace Calcareous nodules, loose - dry

Qal_{16} - Light Gray Gravelly fine to coarse Sand, loose - dry

Qal_{17} - Light Gray Brown fine Sand, trace medium to coarse Sand, little Iron oxide staining, loose - dry

Qal_{18} - Light Gray Brown Silty fine Sand, trace medium to coarse Sand, trace fine Gravel, medium dense - damp

Qal_{19} - Light Gray Brown fine to medium Sand, trace coarse Sand, little Iron oxide staining, loose - damp

Qal_{20} - Light Gray fine Sand, extensive Iron oxide staining, loose - dry to damp

Qal_{21} - Gray fine to coarse Sand, little fine to coarse Gravel, medium dense - dry

Qal_{22} - Gray fine Sand, little Iron oxide staining, medium dense - dry

Qal_{23} - Brown Silty fine Sand, loose to medium dense - damp

Qal_{24} - Gray fine to coarse Sand, little fine to coarse Gravel, medium dense - damp

Qal_{25} - Light Gray fine Sand, laminated, Iron oxide staining, loose - dry

Qal_{26} - Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel, occasional Cobbles, loose - dry to damp

Qal_{27} - Light Gray fine Sand, little Iron oxide staining, loose - dry to damp

Qal_{28} - Gray Gravelly fine to coarse Sand, extensive Cobbles, loose - dry

Qal_{29} - Light Gray Brown Gravelly fine to coarse Sand, extensive Cobbles, loose - dry

Qal_{30} - Light Gray Brown fine Sandy Silt, slightly porous, trace organics, medium dense - dry

Qal_{31} - Light Gray fine to medium Sand, little coarse Sand, little fine to coarse Gravel, loose - dry

Qal_{32} - Gray Brown Silty fine to coarse Sand, little Iron oxide staining, loose - dry

Qal_{33} - Light Brown fine Sand, trace to little medium to coarse Sand, little Silt, little Iron oxide Staining, loose - damp

Qal_{34} - Light Gray Brown Silty fine Sand, little Iron oxide Staining. loose - damp

Qal_{35} - Light Gray fine to medium Sand, trace coarse Sand, loose - dry

Qal_{36} - Light Gray Gravelly fine to coarse Sand, extensive Cobbles, loose - dry

Qal_{37} - Light Gray fine to coarse Sand, little Iron oxide staining, loose - dry

Qal_{38} - Light Gray Brown Silty fine Sand, little Iron oxide staining, loose - damp

Qal_{39} - Light Gray fine to medium Sand, trace coarse Sand, little Iron oxide staining, loose - damp

Qal_{40} - Light Gray Brown Silty fine Sand, little Iron oxide staining, loose - damp to moist

Qal_{41} - Gray Brown Silty fine to coarse Sand, trace fine to coarse Gravel, loose - dry

Qal_{42} - Gray Brown Gravelly fine to coarse Sand, extensive Cobbles, loose - dry

Qal_{43} - Light Gray fine to coarse Sand, trace fine Gravel, loose - dry

Qal_{44} - Light Gray Brown fine Sand, trace medium Sand, little Silt, little Iron oxide staining, loose- damp

Qal_{45} - Light Gray Brown Silty fine Sand, trace medium Sand, little Iron oxide staining medium dense - dry

Qal_{46} - Light Gray Gravelly fine to coarse Sand, occasional Cobbles, trace Iron oxide staining, loose - dry

Qal_{47} - Light Gray fine Sand, little Iron oxide staining, loose - dry

Qal_{48} - Light Gray Brown fine Sand, trace Silt, little Iron oxide staining, loose - damp

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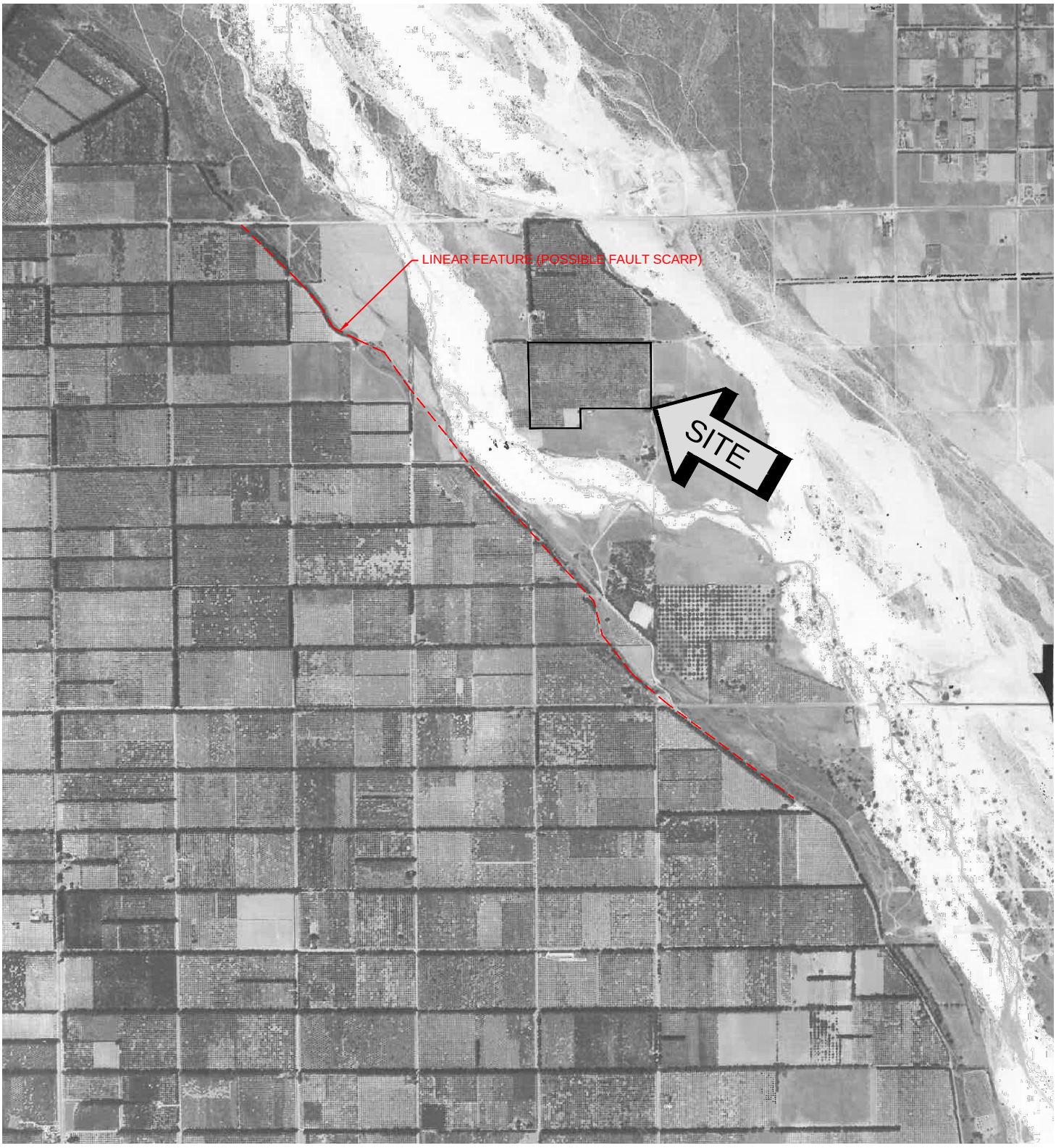
DRAWN: DRK
CHKD: RGT

SCG PROJECT
2GG234-2

TRENCH T-2
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING
RIALTO, CALIFORNIA

PLATE B-2b

APPENDIX C



HISTORICAL PHOTOGRAPH - 1938

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

1" = 1500'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE C-1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



HISTORICAL PHOTOGRAPH - 1969

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

1" = 1500'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE C-2	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



HISTORICAL PHOTOGRAPH - 1978

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

1" = 1500'	
DRAWN: DRK CHKD: RGT	
SCG PROJECT 20G234-2	
PLATE C-3	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX D

(SECURED SERVICE YARD)

OFFICE & MEZZ.

G.D.

(49 DOCK POSITIONS)

TRENCH T-2

TRENCH T-1

PROPOSED INDUSTRIAL BUILDING

1144'

407'

135'

185'

Pepper Avenue

(22 TRAILER PARKING)

(42 TRAILER PARKING)

DETENTION BASIN

POTENTIAL AUTO OR TRAILER PARKING
LA:=114,993SF
2.64 ACRES
206'

GEOTECHNICAL LEGEND

APPROXIMATE TRENCH LOCATION

APPROXIMATE LOCATION OF IN-PLACE DENSITY TEST

NORTH

NOTE: SITE PLAN PREPARED BY ARCHITECTS ORANGE

DENSITY TEST LOCATION PLAN

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 100'

DRAWN: DRK
CHKD: RGT

SCG PROJECT 20G234-2

PLATE 7

SOUTHERN CALIFORNIA GEOTECHNICAL

TABLE 1
SUMMARY OF FIELD DENSITY TESTS

Test No.	*Date*	*Depth (ft)*	*Test Location*	*Soil Type*	*Moisture Content* (%)	*Dry Density (pcf)*	*Relative Compaction* (%)	*Comments*
1	21-Jan-21	-18.0	Trench No. T-1	A	10.1	111.2	90	
2	21-Jan-21	-18.0	Trench No. T-1	A	10.6	111.7	90	
3	21-Jan-21	-18.0	Trench No. T-1	A	10.7	111.8	91	
4	21-Jan-21	-16.0	Trench No. T-1	A	10.5	111.5	90	
5	21-Jan-21	-16.0	Trench No. T-1	A	10.2	111.4	90	
6	21-Jan-21	-16.0	Trench No. T-1	A	10.9	111.9	91	
7	22-Jan-21	-14.0	Trench No. T-1	A	10.2	111.4	90	
8	22-Jan-21	-14.0	Trench No. T-1	A	10.1	111.2	90	
9	22-Jan-21	-14.0	Trench No. T-1	A	10.3	111.3	90	
10	22-Jan-21	-12.0	Trench No. T-1	A	10.1	111.2	90	
11	22-Jan-21	-12.0	Trench No. T-1	A	10.4	111.4	90	
12	22-Jan-21	-12.0	Trench No. T-1	A	10.2	111.3	90	
13	22-Jan-21	-10.0	Trench No. T-1	A	10.5	111.5	90	
14	22-Jan-21	-10.0	Trench No. T-1	A	10.4	111.5	90	
15	26-Jan-21	-8.0	Trench No. T-1	A	11.4	112.1	91	
16	26-Jan-21	-8.0	Trench No. T-1	A	11.6	112.0	91	
17	26-Jan-21	-8.0	Trench No. T-1	A	12.1	112.4	91	
18	26-Jan-21	-8.0	Trench No. T-1	A	11.9	111.9	91	
19	26-Jan-21	-6.0	Trench No. T-1	A	12.4	111.5	90	
20	26-Jan-21	-6.0	Trench No. T-1	A	12.1	111.0	90	
21	26-Jan-21	-4.0	Trench No. T-1	A	11.8	111.3	90	
22	26-Jan-21	-4.0	Trench No. T-1	A	12.0	112.0	91	
23	26-Jan-21	-2.0	Trench No. T-1	A	11.8	111.1	90	
24	26-Jan-21	-2.0	Trench No. T-1	A	12.1	111.4	90	
25	26-Jan-21	-2.0	Trench No. T-1	A	12.0	111.4	90	
26	27-Jan-21	-1.0	Trench No. T-1	A	11.8	111.5	90	
27	27-Jan-21	-1.0	Trench No. T-1	A	11.5	111.3	90	
28	27-Jan-21	-1.0	Trench No. T-1	A	11.7	111.0	90	
29	15-Feb-21	-18.0	Trench No. T-2	B	12.5	111.5	91	
30	15-Feb-21	-18.0	Trench No. T-2	B	12.0	112.0	91	
31	15-Feb-21	-18.0	Trench No. T-2	B	12.4	112.3	91	
32	15-Feb-21	-18.0	Trench No. T-2	B	12.1	111.9	91	
33	15-Feb-21	-18.0	Trench No. T-2	B	10.0	110.0	89	Fail
34	15-Feb-21	-18.0	Trench No. T-2	B	10.7	111.5	91	Retest No. 33
35	15-Feb-21	-18.0	Trench No. T-2	B	10.9	111.8	91	
36	15-Feb-21	-16.0	Trench No. T-2	B	10.9	111.9	91	
37	15-Feb-21	-16.0	Trench No. T-2	B	11.2	112.1	91	
38	15-Feb-21	-16.0	Trench No. T-2	B	11.5	112.0	91	

TABLE 1
SUMMARY OF FIELD DENSITY TESTS

Test No.	*Date*	*Depth (ft)*	*Test Location*	*Soil Type*	*Moisture Content* (%)	*Dry Density (pcf)*	*Relative Compaction* (%)	*Comments*
39	15-Feb-21	-16.0	Trench No. T-2	B	11.3	112.1	91	
40	15-Feb-21	-16.0	Trench No. T-2	B	9.5	109.4	89	Fail
41	15-Feb-21	-16.0	Trench No. T-2	B	10.6	111.6	91	Retest No. 40
42	15-Feb-21	-16.0	Trench No. T-2	B	11.0	111.8	91	
43	15-Feb-21	-14.0	Trench No. T-2	B	11.8	111.9	91	
44	15-Feb-21	-14.0	Trench No. T-2	B	11.4	112.1	91	
45	15-Feb-21	-14.0	Trench No. T-2	B	11.9	112.3	91	
46	15-Feb-21	-14.0	Trench No. T-2	B	10.9	112.0	91	
47	15-Feb-21	-14.0	Trench No. T-2	B	11.3	112.1	91	
48	15-Feb-21	-14.0	Trench No. T-2	B	9.6	109.6	89	Fail
49	15-Feb-21	-14.0	Trench No. T-2	B	10.8	112.0	91	Retest No. 48
50	15-Feb-21	-14.0	Trench No. T-2	B	11.0	111.8	91	
51	16-Feb-21	-12.0	Trench No. T-2	B	12.0	112.2	91	
52	16-Feb-21	-12.0	Trench No. T-2	B	12.2	112.1	91	
53	16-Feb-21	-12.0	Trench No. T-2	B	11.9	111.8	91	
54	16-Feb-21	-12.0	Trench No. T-2	B	10.0	109.4	89	Fail
55	16-Feb-21	-12.0	Trench No. T-2	B	10.2	109.9	89	Fail
56	16-Feb-21	-12.0	Trench No. T-2	B	12.3	110.9	90	Retest No. 54
57	16-Feb-21	-12.0	Trench No. T-2	B	12.1	111.0	90	Retest No. 55
58	16-Feb-21	-10.0	Trench No. T-2	B	11.8	111.2	90	
59	16-Feb-21	-10.0	Trench No. T-2	B	11.7	111.5	91	
60	16-Feb-21	-10.0	Trench No. T-2	B	12.2	111.4	91	
61	16-Feb-21	-10.0	Trench No. T-2	B	10.4	109.4	89	Fail
62	16-Feb-21	-10.0	Trench No. T-2	B	11.5	111.9	91	Restest No. 61
63	16-Feb-21	-10.0	Trench No. T-2	B	11.8	111.7	91	
64	16-Feb-21	-10.0	Trench No. T-2	B	11.0	111.5	91	
65	17-Feb-21	-8.0	Trench No. T-2	B	10.6	110.9	90	
66	17-Feb-21	-8.0	Trench No. T-2	B	10.8	111.0	90	
67	17-Feb-21	-8.0	Trench No. T-2	B	10.9	111.2	90	
68	17-Feb-21	-8.0	Trench No. T-2	B	11.2	110.8	90	
69	17-Feb-21	-8.0	Trench No. T-2	B	10.4	108.3	88	Fail
70	17-Feb-21	-8.0	Trench No. T-2	B	10.9	111.3	90	Retest No. 69
71	17-Feb-21	-6.0	Trench No. T-2	B	11.0	111.3	90	
72	17-Feb-21	-6.0	Trench No. T-2	B	11.2	111.0	90	
73	17-Feb-21	-6.0	Trench No. T-2	B	10.8	111.2	90	
74	17-Feb-21	-6.0	Trench No. T-2	B	10.6	111.1	90	
75	17-Feb-21	-6.0	Trench No. T-2	B	11.2	110.9	90	
76	17-Feb-21	-4.0	Trench No. T-2	B	10.9	110.9	90	

TABLE 1
SUMMARY OF FIELD DENSITY TESTS

Test No.	*Date*	*Depth (ft)*	*Test Location*	*Soil Type*	*Moisture Content* (%)	*Dry Density (pcf)*	*Relative Compaction* (%)	*Comments*
77	17-Feb-21	-4.0	Trench No. T-2	B	11.0	111.2	90	
78	18-Feb-21	-2.0	Trench No. T-2	B	11.8	110.9	90	
79	18-Feb-21	-2.0	Trench No. T-2	B	11.9	111.1	90	
80	18-Feb-21	-4.0	Trench No. T-2	B	11.5	111.0	90	
81	18-Feb-21	-4.0	Trench No. T-2	B	11.8	111.3	90	
82	18-Feb-21	-4.0	Trench No. T-2	B	11.0	108.2	88	
83	18-Feb-21	-4.0	Trench No. T-2	B	12.0	111.2	90	

NOTES: Elevations Referenced To Grade Stakes Set In Field By Others
Retests Performed After Recompaction
All Tests Performed By Nuclear Test Method (ASTM D-6938)

TABLE 2
SUMMARY OF MOISTURE-DENSITY RELATIONSHIPS

Soil Type	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
A	Gray Brown Silty fine Sand, trace medium Sand	123.5	9.5
B	Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel	123.0	10.5

Note: All Moisture-Density Relationships determined per ASTM D-1557 (Modified Proctor)

GEOTECHNICAL FEASIBILITY STUDY
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

Pepper Avenue, South of Foothill Freeway
Rialto, California
for
Howard Industrial Partners



SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

December 15, 2020

Howard Industrial Partners
1944 North Tustin Street, Suite 122
Orange, California 92865

Attention: Mr. Mike Tunney
Vice President

Project No.: **20G234-1**

Subject: **Geotechnical Feasibility Investigation**
Proposed Commercial/Industrial Building
Pepper Avenue, South of Foothill Freeway
Rialto, California

Dear Mr. Tunney:

In accordance with your request, we have conducted a geotechnical feasibility study at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Ricardo Frias, RCE 91772
Staff Engineer

REGISTERED PROFESSIONAL ENGINEER
RICARDO FRIAS
No. 91772
CIVIL
STATE OF CALIFORNIA

Robert G. Trazo, GE 2655
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT TRAZO
No. 2655
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: (1) Addressee

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1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report. It should be noted that this investigation was focused on determining the geotechnical feasibility of the proposed development. **Results found in this report are contingent on the results of the concurrent fault study and should be referred to once they become available. This report is not a design-level investigation. Future studies will be necessary to refine the preliminary design parameters that are presented within this report**.

Geotechnical Design Considerations

- The subject site is not located in a mapped liquefaction hazard zone. However, the subject site is located in a mapped fault zone. A concurrent fault study will be prepared for this site.
- Native alluvial soils were encountered at all of the boring locations, extending at least to the maximum depth explored of 50± feet.
- The near-surface native alluvial soils generally consist of non-expansive loose to medium dense silty sands, sandy silts and well-graded sands.
- Developing this site with a new commercial/industrial building is considered to be feasible, contingent on the results of the concurrent fault study, with respect to the geotechnical conditions encountered at the boring locations at the site. Preliminary remedial grading and foundation design recommendations have been provided herein, based on the preliminary site plan, assumed site grading, and assumed foundation loads.

Preliminary Geotechnical Design Recommendations

- Initial site stripping should include removal of the surficial vegetation from the site. These materials should be properly disposed of off-site.
- Remedial grading will be necessary within the proposed building pad area to remove a portion of the near-surface alluvial soils and replace these materials as compacted structural fill.
- Preliminarily, the overexcavation within the building area is recommended to extend to depths of at least 4 to 6 feet below existing and proposed building pad subgrade elevations. The overexcavation should also extend to a depth of at least 3 to 4 feet below bearing grade within the influence zones of any new foundations. These recommendations may be revised based on the results of a design-level geotechnical investigation.
- Overexcavated soils may be compacted and reused as structural fill.
- Preliminarily, the new parking area subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned to within 0 to 4 percent above the optimum moisture content and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Some overexcavation may be warranted in isolated areas.

Preliminary Foundation Design Recommendations

- Conventional shallow foundations, supported in newly placed compacted structural fill.
- 2,500 to 3,000 lbs/ft^2 maximum allowable soil bearing pressure.
- The design of the foundations will depend on the results of a future design-level geotechnical study. Minimum recommended reinforcement based on geotechnical conditions

is expected to consist of two (2) to four (4) No. 5 rebars in strip footings. Additional reinforcement may be necessary for structural considerations.

Preliminary Floor Slab Design Recommendations

- Conventional slab-on-grade, minimum 6 to 7 inches thick.
- Modulus of Subgrade Reaction: k = 100 to 150 psi/in.
- Reinforcement is not required for geotechnical conditions. The design of the floor slab will depend on the results of a future design-level geotechnical study. The actual thickness and reinforcement of the floor slabs should be determined by the structural engineer.

Preliminary Pavement Design Recommendations

ASPHALT PAVEMENTS (R=50)					
Materials	**Thickness (inches)**				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	3½	4	5	5½
Aggregate Base	3	4	5	5	7
Compacted Subgrade	12	12	12	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS (R=50)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	6½	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in accordance with our Proposal No. 20P409, dated November 12, 2020. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to determine the geotechnical feasibility of the proposed development. This report also contains preliminary design criteria for building foundations, building floor slab, and parking lot pavements. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical feasibility study. **Results found in this report are contingent on the results of the concurrent fault study and should be referred to once they become available.**

It should be noted that additional subsurface exploration, laboratory testing and engineering analysis will be necessary to provide a design-level geotechnical investigation with specific foundation, floor slab, and grading recommendations.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The subject site is located on the east side of Pepper Avenue, approximately 500 feet south of the intersection of Pepper Avenue and the Foothill Freeway (CA-210) in Rialto, California. The site is bounded to the north and east by vacant lots, to the west by Pepper Avenue, and to the south by a vacant lot and a detention basin with an above-ground storage tank (AST). The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

The site consists of an "L"-shaped parcel, 24.23± acres in size. The site is currently vacant and undeveloped. The ground surface cover consists of exposed soil with sparse to moderate native grass and weed growth. Tree trunks and debris are scattered around the northern region of the site.

As part of our research for this project, we reviewed historical aerial photographs, which were readily available from the internet. Based on our review, the site appears to have been previously utilized as an orchard from the years 1938 to 1995. Since then, the site has been cleared of most trees and shrubs.

Topographic information by Inland Aerial Surveys, Inc. was provided by the client. The site topography ranges from 1267± feet mean sea level (msl) located in the southeast corner of the site to 1290± msl in the northwest corner of the site. The site generally slopes downward to the southeast at a gradient of 1½± percent.

3.2 Proposed Development

Based on a conceptual site plan, prepared by Architects Orange (AO), provided to our office by the client, the subject site will be developed with one (1) new commercial/industrial building, 493,000± ft² in size, located in the north-central area of the site. Dock-high doors will be constructed along portions of the north and south building walls. The building will be surrounded by asphaltic concrete pavements in the parking and drive lanes, Portland cement concrete pavements in the loading dock areas, concrete flatwork, and limited areas of landscape planters throughout.

Detailed structural information has not been provided. It is assumed that the new building will be a single-story structure of tilt-up concrete construction, supported on a conventional shallow foundation system with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 80 to 100 kips and 4 to 7 kips per linear foot, respectively.

Grading plans for the proposed development were not available at the time of this report. No significant amounts of below-grade construction such as basements or crawl spaces are

expected to be included in the proposed development. Based on the assumed topography, cuts and fills of 7 to 10± feet are expected to be necessary to achieve the proposed site grades.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this project consisted of four (4) borings advanced to a depth of 50± feet below the existing site grades. All of the borings were logged during drilling by a member of our staff.

The borings were advanced with hollow-stem augers, by a conventional truck-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling. Relatively undisturbed soil samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. In-situ samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings are indicated on the Boring Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs, which illustrate the conditions encountered at the boring locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Alluvium

Native alluvium was encountered beneath at the ground surface at all of the boring locations, extending to at least the maximum depth explored of 50± feet below the existing site grades. The near-surface alluvium generally consists of very loose to medium dense silty sands, sandy silts, gravelly sands, and well-graded sands, with varying silt and gravel content, extending to depths of 7 to 10± feet. The underlying alluvium generally consists of medium dense to dense silty sands, sandy silts, and well graded sands with varying fine gravel and silt content, extending to depths of 15 to 20± feet. At greater depths and extending to the maximum depth explored of 50± feet, the alluvial soils generally consist of dense to very dense silty sands, gravely sands, sandy gravels, and well graded sands, with varying silt, gravel and cobble content.

Groundwater

Free water was not encountered during the drilling of any of the borings. Based on the lack of any water within the borings and the moisture contents of the recovered soil samples, the static groundwater is considered to have existed at a depth in excess of 50± feet at the time of the subsurface exploration.

As part of our research, we reviewed readily available groundwater data in order to determine regional groundwater depths. The primary reference used to determine the groundwater depths in the subject site area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. The nearest monitoring well is located approximately 800 feet southeast from the site. Water level readings within this monitoring well indicates a high groundwater level of 418 feet below the ground surface in September 2020.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. The field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring Logs and are periodically referenced throughout this report.

Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Consolidation

Selected soil samples have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-8 in Appendix C of this report.

Maximum Dry Density and Optimum Moisture Content

One representative bulk sample has been tested for its maximum dry density and optimum moisture content. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557 and are presented on Plate C-9 in Appendix C of this report. This test is generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil types or soil mixes may be necessary at a later date.

Expansion Index

The expansion potential of the on-site soils was determined in general accordance with ASTM D-4829. The testing apparatus is designed to accept a 4-inch diameter, 1-in high, remolded sample. The sample is initially remolded to 50± 1 percent saturation and then loaded with a surcharge equivalent to 144 pounds per square foot. The sample is then inundated with water

and allowed to swell against the surcharge. The resultant swell or consolidation is recorded after a 24-hour period. The results of the EI testing are as follows:

Sample Identification	Expansion Index	Expansive Potential
B-4 @ 5 to 10 feet	0	Non-Expansive

Soluble Sulfates

A representative sample of the near-surface soil was submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Soluble sulfates are naturally present in soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	Sulfate Classification
B-1 @ 0 to 5 feet	0.001	Not Applicable (S0)

Corrosivity Testing

One representative bulk sample of the near-surface soils was submitted to a subcontracted corrosion engineering laboratory to identify potentially corrosive characteristics with respect to common construction materials. The corrosivity testing included a determination of the electrical resistivity, pH, and chloride and nitrate concentrations of the soils, as well as other tests. The results of some of these tests are presented below.

Sample Identification	Saturated Resistivity (ohm-cm)	pH	Chlorides (mg/kg)	Nitrates (mg/kg)
B-1 @ 0 to 5 feet	10,000	7.3	5.1	29

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing, and geotechnical analysis, the proposed development, which will consist of a new commercial/industrial building, is considered feasible from a geotechnical standpoint. **Results found in this report are contingent on the results of the concurrent fault study and should be referred to once they become available.** The recommendations contained in this report should be taken into the design, construction, and grading considerations. The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record.

Based on the preliminary nature of this investigation, further geotechnical investigation will be required prior to construction of the proposed development. The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structure should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is located within an Alquist-Priolo Earthquake Fault Zone. A fault study was not part of this investigation. However, SCG will be perform a concurrent fault study at the site and the results of this investigation will be released at a later date.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

Seismic Design Parameters

The 2019 California Building Code (CBC) provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of the structure including the structural system and height. The seismic design parameters

presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2019 edition of the California Building Code (CBC), which was adopted on January 1, 2020.

The 2019 CBC Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool, a web-based software application available at the website www.seismicmaps.org. This software application calculates seismic design parameters in accordance with several building code reference documents, including ASCE 7-16, upon which the 2019 CBC is based. The application utilizes a database of risk-targeted maximum considered earthquake (MCE_R) site accelerations at 0.01-degree intervals for each of the code documents. The tables below were created using data obtained from the application. The output generated from this program is included as Plate E-1 in Appendix E of this report.

The 2019 CBC requires that a site-specific ground motion study be performed in accordance with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than 0.2. However, Section 11.4.8 of ASCE 7-16 also indicates an exception to the requirement for a site-specific ground motion hazard analysis for certain structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) indicates that "In general, this exception effectively limits the requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." **Based on our understanding of the proposed development, the seismic design parameters presented below were calculated assuming that the exception in Section 11.4.8 applies to the proposed structure at this site. However, the structural engineer should verify that this exception is applicable to the proposed structure.** Based on the exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 16.4.4 of the 2019 CBC.

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	2.425
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.972
Site Class	---	D
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	2.425
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	1.652
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.617
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	1.102

It should be noted that the site coefficient F_v and the parameters S_{M1} and S_{D1} were not included in the SEAOC/OSHPD Seismic Design Maps Tool output for the 2019 CBC. We calculated these parameters-based on Table 1613.2.3(2) in Section 16.4.4 of the 2019 CBC using the value of S_1 obtained from the Seismic Design Maps Tool, assuming that a site-specific ground motion hazards analysis is not required for the proposed building at this site.

Liquefaction

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and plasticity characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Non-sensitive clayey (cohesive) soils which possess a plasticity index of at least 18 (Bray and Sancio, 2006) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The California Geological Survey (CGS) has not yet conducted seismic hazard mapping in the area of the subject site. The San Bernardino County Land Use Plan, Geologic Hazard Overlays, Fontana Quadrangle, FH29C, and the San Bernardino County Land Use Plan, Geologic Hazard Overlays, San Bernardino South, FH30C, indicate that the subject site is not located within a zone of liquefaction susceptibility. Based on the mapping performed by the County of San Bernardino and the subsurface conditions encountered at the boring locations, liquefaction is not considered to be a design concern for this project.

6.2 Geotechnical Design Considerations

General

Based on the subsurface condition encountered at the boring locations, the subject site is underlain by native alluvial soils, extending to the maximum depth explored of 50± feet below the existing site grades. The near-surface alluvium encountered at the boring locations consists of very loose to medium dense silty sands, sandy silts, gravelly sands, and well-graded sands, with varying silt and gravel content. Some of the near-surface native alluvial soils possess moisture contents well below the optimum moisture content for compaction. Based on these conditions, the near-surface alluvial soils, in their present condition, are not considered suitable to support the foundation loads of the new building. At greater depths, the underlying alluvial soils generally consist of high strength, dense to very dense, well graded sands and gravelly sands with varying amounts of silt, and occasional cobbles. Based on these conditions, remedial grading is considered warranted within the proposed building area in order to remove a portion of the near-surface native alluvial soils.

Settlement

Laboratory testing indicates that the upper portion of the near-surface soils possesses a potential for collapse when inundated with water. Some of these soils also possess a potential for consolidation when exposed to load increases in the range of those that will be exerted by the foundations of the new structure. The recommended remedial grading will remove most of these soils from within the zone of influence of the new foundations. The native alluvium that will remain in place below the recommended depth of overexcavation will not be significantly

influenced by the foundation loads of the new structure. Provided that the recommended remedial grading is completed, the post construction settlements of the proposed structure are expected to be within tolerable limits.

Expansion

The results of the EI testing indicate non-expansive potentials for the soils. Based upon the recent laboratory results, no further recommendations with regard to expansive soils are considered warranted at this time.

Soluble Sulfates

The result of the soluble sulfate testing indicates that the selected sample of the on-site soils corresponds to Class S0 with respect to the American Concrete Institute (ACI) Publication 318-05 Building Code Requirements for Structural Concrete and Commentary, Section 4.3. Therefore, specialized concrete mix designs are not considered to be necessary, with regard to sulfate protection purposes. It is, however, recommended that additional soluble sulfate testing be conducted at the completion of rough grading to verify the soluble sulfate concentrations of the soils which are present at pad grade within the building area.

Corrosion Potential

The results of laboratory testing indicate that the tested sample of the on-site soils possesses a saturated resistivity value of 10,000 ohm-cm, and a pH value of 7.3. These test results have been evaluated in accordance with guidelines published by the Ductile Iron Pipe Research Association (DIPRA). The DIPRA guidelines consist of a point system by which characteristics of the soils are used to quantify the corrosivity characteristics of the site. Sulfides, and redox potential are factors that are also used in the evaluation procedure. We have evaluated the corrosivity characteristics of the on-site soils using resistivity, pH, and moisture content. Based on these factors, and utilizing the DIPRA procedure, the on-site soils are not considered to be corrosive to ductile iron pipe. **However, SCG does not practice in the area of corrosion engineering. Therefore, the client may also wish to contact a corrosion engineer to provide a more thorough evaluation.**

A relatively low concentration (5.1 mg/kg) of chlorides was detected in the sample submitted for corrosivity testing. In general, soils possessing chloride concentrations in excess of 500 parts per million (ppm) are considered to be corrosive with respect to steel reinforcement within reinforced concrete. Based on the lack of any significant chlorides in the tested sample, the site is considered to have a C1 chloride exposure in accordance with the American Concrete Institute (ACI) Publication 318 Building Code Requirements for Structural Concrete and Commentary. Therefore, a specialized concrete mix design for reinforced concrete for protection against chloride exposure is not considered warranted.

Nitrates

Nitrates present in soil can be corrosive to copper tubing at concentrations greater than 50 mg/kg. The tested sample possesses a nitrate concentration of 29 mg/kg. Based on this test result, the on-site soils are not considered to be corrosive to copper pipe. Since SCG does not

practice in the area of corrosion engineering, we recommend that the client contact a corrosion engineer to provide a more thorough evaluation.

Shrinkage/Subsidence

Removal and recompaction of the near-surface native soils is estimated to result in an average shrinkage of 9 to 21 percent. Shrinkage estimates for the individual samples range between 4 and 28 percent based on the results of density testing and the assumption that the on-site soils will be compacted to approximately 92 percent of the ASTM D-1557 maximum dry density. It should be noted that the shrinkage estimate is based on the results of dry density testing performed on small-diameter samples of the existing soils taken at the boring locations. If a more accurate and precise shrinkage estimate is desired, SCG can perform a shrinkage study involving several excavated test-pits where in-place densities are determined using in-situ testing methods instead of laboratory density testing on small-diameter samples. Please contact SCG for details and a cost estimate regarding a shrinkage study, if desired.

Minor ground subsidence is expected to occur in the soils below the zone of removal, due to settlement and machinery working. The subsidence is estimated to be 0.1 to 0.15± feet. This estimate may be used for grading in areas that are underlain by native alluvial soils.

These estimates are based on previous experience and the subsurface conditions encountered at the boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

No grading or foundation plans were available at the time of this report. It is therefore recommended that we be provided with copies of the preliminary plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Preliminary Site Grading Recommendations

The preliminary grading recommendations presented below are based on the design details that were available at the time of this report, and the subsurface conditions encountered at our boring locations. These recommendations are general and preliminary in nature, and should be confirmed as part of the future design-level geotechnical investigation.

Site Stripping and Demolition

Initial site stripping should include removal of the surficial vegetation from the site. Stripping should include native grass, weeds, shrubs, trees, tree trunks and debris. Root systems associated with the shrubs and trees should be removed in their entirety, and the resultant excavations should be backfilled with compacted structural fill soils. These materials should be properly disposed of off-site. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered.

Treatment of Existing Soils: Building Pad

Remedial grading will be necessary within the proposed building pad area to remove a portion of the near-surface alluvial soils and replace these materials as compacted structural fill. The depth of overexcavation should be determined during the design-level geotechnical investigation. On a preliminary basis, overexcavation to depths of 4 to 6 feet below existing and proposed building pad grades should be anticipated. Greater overexcavation depths may be expected if loose and/or soft soils are encountered at the bottom of the recommended building overexcavation. Overexcavation within the foundation areas will likely extend to depths of 3 to 4 feet below foundation bearing grades.

Treatment of Existing Soils: Retaining Walls and Site Walls

Although not indicated on the site plan, it may be necessary to construct some small retaining walls or site walls at or near the existing ground surface. Overexcavation will also be necessary in these areas to remove the variable strength alluvium. The overexcavation depth should be expected to be on the order of 2 to 3 feet below proposed foundation bearing grade, and to depths of 3 to 4 feet below existing grade.

Treatment of Existing Soils: Parking and Drive Areas

Based on economic considerations, overexcavation of the existing near-surface soils in the parking and drive areas is not considered warranted, with the exception of areas where lower strength or unstable soils are identified by the geotechnical engineer during grading. Preliminarily, subgrade preparation in the new parking and drive areas should initially consist of removal of all soils disturbed during stripping and demolition operations.

The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. Any such materials should be removed to a level of firm and unyielding soil. The exposed subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 0 to 4 percent above the optimum moisture content, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength surficial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

These preliminary grading recommendations for the proposed parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within the proposed parking and drive areas. The grading recommendations presented above do not completely mitigate the extent of variable-density alluvium that may be present in the parking and drive areas. As such, some settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the flatwork, parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the resulting soils replaced as compacted structural fill.

Fill Placement

- Fill soils should be placed in thin (6-inches), near-horizontal lifts, moisture conditioned to within 0 to 4 percent above the optimum moisture content, and compacted.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2019 CBC and the grading code of the city of Rialto and/or the county of San Bernardino.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Imported Structural Fill

All imported structural fill should consist of very low expansive (EI < 20), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve). Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. It is recommended that materials in excess of 3 inches in size not be used for utility trench backfill. Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by city of Rialto and/or the county of San Bernardino. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Preliminary Construction Considerations

Excavation Considerations

The near-surface soils are predominately granular in composition. These materials will likely be subject to caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, the inclination of temporary slopes should not exceed 2h:1v. Maintaining adequate

moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations.

Groundwater

The static groundwater table at this site is considered to exist at a depth greater than 50± feet. Therefore, groundwater is not expected to impact the grading or foundation construction activities.

6.5 Preliminary Foundation Design Recommendations

Based on the preceding geotechnical design considerations and preliminary grading recommendations, it is assumed that the new building will be underlain by newly placed structural fill soils, extending to depths of at least 3 to 4 feet below foundation bearing grades. Based on this subsurface profile, the proposed structure may be supported on conventional shallow foundations.

The foundation design parameters presented below provide anticipated ranges for the allowable soil bearing pressures. These ranges should be refined during the subsequent design-level geotechnical investigation.

Preliminary Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 to 3,000 lbs/ft^2.
- Minimum longitudinal steel reinforcement within strip footings: Two (2) to four (4) No. 5 rebars.

General Foundation Design Recommendations

The allowable bearing pressures presented above may be increased by one-third when considering short duration wind or seismic loads. Additional reinforcement may be necessary for structural considerations. The actual design of the foundations should be determined by the structural engineer.

Estimated Foundation Settlements

Typically, foundations designed in accordance with the preliminary foundation design parameters presented above will experience total and differential static settlements of less than 1.0 and 0.5 inches, respectively. A detailed settlement analysis should be conducted as part of the design-level geotechnical investigation, once detailed foundation loading information is available.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 250 to 350 lbs/ft^3
- Friction Coefficient: 0.28 to 0.35

6.6 Preliminary Floor Slab Design and Construction

Subgrades which will support the new floor slab should be prepared in accordance with the preliminary recommendations contained in the ***Preliminary Site Grading Recommendations*** section of this report with any additional recommendations provided in the design-level geotechnical report. Preliminarily, the floor of the proposed structure may be constructed as a conventional slab-on-grade supported on newly placed structural fill. Based on geotechnical considerations, the floor slab may be designed as follows:

- Minimum slab thickness: 6 to 7 inches.

- Modulus of Subgrade Reaction: k = 100 to 150 psi/in.

- Minimum slab reinforcement: Not required based on geotechnical considerations. Additional expansion index testing should be performed to confirm this recommendation at the time of the design level investigation. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

- Slab underlayment: If moisture sensitive floor coverings will be used then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire areas of the proposed slabs where floor slab coverings are anticipated. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. A polyolefin material such as Stego® Wrap Vapor Barrier or equivalent will meet these specifications. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview. Where moisture sensitive floor coverings are not anticipated, the vapor barrier may be eliminated.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Preliminary Retaining Wall Design and Construction

Small retaining walls are expected to be necessary in the dock-high areas of the building and may also be required to facilitate the new site grades. Preliminary design parameters recommended for use in the design of these walls are presented below. These recommendations should be refined during the design-level geotechnical investigation.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. We have provided parameters assuming the use of on-site soils for retaining wall backfill. The on-site soils generally consist of silty sands and sandy silts with varying gravel content. Based on their classification, these materials are expected to possess a friction angle of at least 30 degrees.

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

PRELIMINARY RETAINING WALL DESIGN PARAMETERS

Design Parameter		**Soil Type**
		On-Site Silty Sands
Internal Friction Angle (ϕ)		30°
Unit Weight		124 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	41 lbs/ft^3
	Active Condition (2h:1v backfill)	67 lbs/ft^3
	At-Rest Condition (level backfill)	62 lbs/ft^3

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Retaining Wall Foundation Design

The retaining wall foundations should be supported within newly placed compacted structural fill, extending to depths of 2 to 3 feet below the proposed bearing grade. Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Seismic Lateral Earth Pressures

In addition to the lateral earth pressures presented in the previous section, retaining walls which are more than 6 feet in height should be designed for a seismic lateral earth pressure, in accordance with the 2019 CBC. Based on the current site plan, it is not expected that any walls in excess of 6 feet in height will be required for this project. If any such walls are proposed, our office should be contacted for supplementary design recommendations.

Backfill Material

On-site sands and silty sands may be used to backfill the retaining walls. However, all backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved equivalent), which is specifically designed for use behind retaining walls, be placed against the face on the back side of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. A 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils.

All retaining wall backfill should be placed and compacted under engineering controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557-91). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should

be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

6.8 Preliminary Pavement Design Parameters

Presented below are preliminary recommendations for pavements that may be required in the proposed development. Grading recommendations for these pavement areas should be developed during the design level geotechnical investigation.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of scarified, thoroughly moisture conditioned and recompacted existing soils. The near-surface soils generally consist of silty sands and sandy silts. Based on their classification, these materials are expected to possess good pavement support characteristics, with R-values in the range of 50 to 60. Since R-value testing was not included in the scope of services for this feasibility study, the subsequent pavement design is based upon an assumed R-value of 50. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and compacted under engineering controlled conditions. It is recommended that R-value testing be performed during the design-level geotechnical investigation, or at the completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20 year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3
7.0	11
8.0	35
9.0	93

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R=50)					
Materials	**Thickness (inches)**				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	3½	4	5	5½
Aggregate Base	3	4	5	5	7
Compacted Subgrade	12	12	12	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS (R=50)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	6½	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness. The actual joint spacing and reinforcing of the Portland cement concrete pavements should be determined by the structural engineer.

7.0 GENERAL COMMENTS

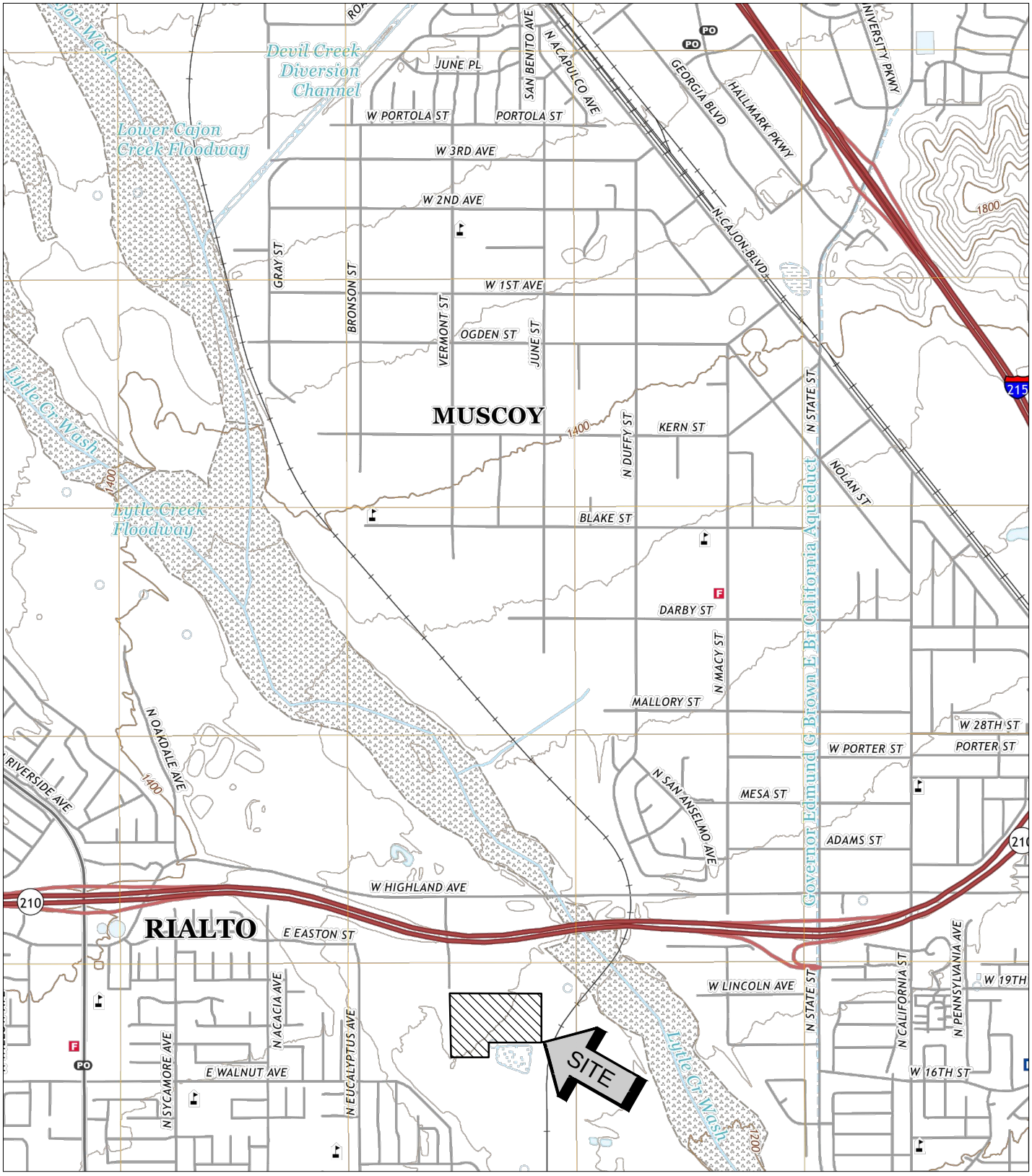
This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein. **Results found in this report are contingent on the results of the concurrent fault study and should be referred to once they become available.**

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

APPENDIX A



SOURCE: USGS TOPOGRAPHIC MAPS OF THE SAN BERNARDINO NORTH QUADRANGLES, SAN BERNARDINO COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

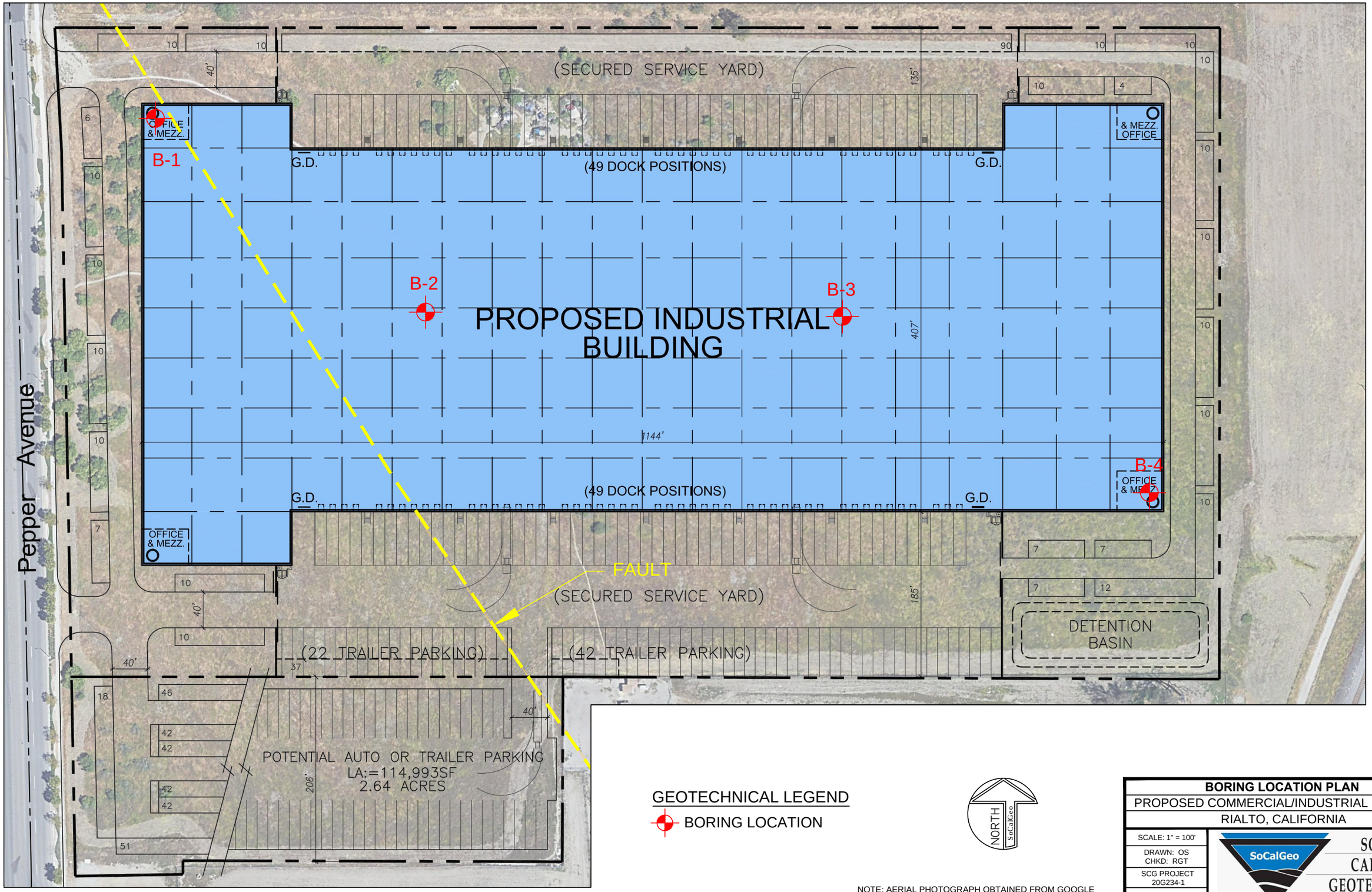
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: OS CHKD: RGT	
SCG PROJECT 20G234-1	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

BORING LOCATION

NORTH

NOTE: AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH. SITE PLAN PROVIDED BY THE CLIENT.

BORING LOCATION PLAN

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

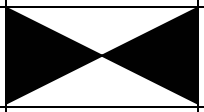
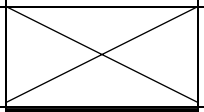
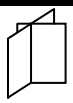
SCALE: 1" = 100'	
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SCG PROJECT 20G234-1	
PLATE 2	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

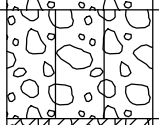
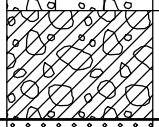
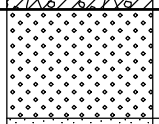
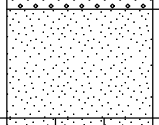
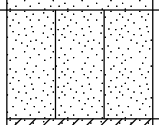
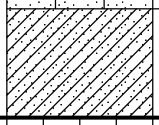
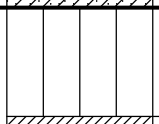
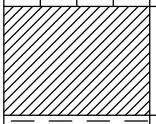
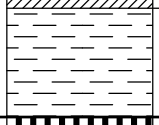
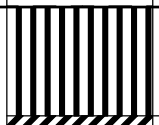
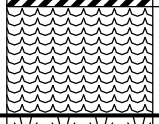
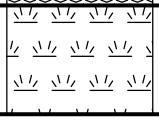
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		6			ALLUVIUM: Gray Brown Silty fine Sand, trace medium to coarse Sand, very loose to loose-damp to moist	98	4					
		6			@ 3 feet, trace fine root fibers	97	9					
5		9			Gray Gravelly fine to coarse Sand, loose to very dense-dry to damp	107	2					
		12					2					Disturbed Sample
		32			@ 9 feet, Silty fine Sand, trace coarse Sand lense, trace iron oxide staining	107	2					
10												
		27					1					
15												
		38			@ 18½ feet, trace Silt		2					
20												
		58					2					
25												
		50/3"			Gray Brown Silty fine to coarse Sand, little fine Gravel, very dense-dry to damp		1					
30												
		50/3"					3					

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-1a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Gray Brown Silty fine to coarse Sand, little fine Gravel, very dense-dry to damp							
		50/6"					2					
40												
		50/5"			@ 43½ feet, occasional Cobbles		1					
45												
		50/3"					3					
50												
					Boring Terminated at 50 feet							

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-1b

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 16 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		4			ALLUVIUM: Gray Brown Silty fine Sand to fine Sandy Silt, trace coarse Sand, trace fine root fibers, very loose to loose-damp		6					
		11			Light Gray Brown fine to coarse Sand, trace Silt, trace fine Gravel, medium dense-damp		3					
5		5			Dark Gray Brown Silty fine Sand to fine Sandy Silt, trace medium Sand, loose-moist		12					
		7					15					
10												
		50/5"			Dark Gray Brown Silty fine Sand, trace coarse Sand, trace fine Gravel, very dense-moist		7					
15												
		36			Light Gray Brown fine to coarse Sand, trace fine Gravel, dense to very dense-dry to damp		2					
20												
		46			@ 23½ feet, trace fine to coarse Gravel		2					
25												
		50/2"			@ 28½ feet, occasional Cobbles		1					
30												
		50/4"			Light Gray Brown Gravelly fine to coarse Sand, trace Silt, very dense-dry		1					

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-2a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 16 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
40		50/6"			Light Gray Brown Gravelly fine to coarse Sand, trace Silt, very dense-dry		1					
45		50/6"					1					
50		50/5"			Gray Brown fine to coarse Sand, little fine to coarse Gravel, trace Silt, very dense-dry to damp		2					
					Boring Terminated at 50 feet							

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG **PLATE B-2b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		4			ALLUVIUM: Gray Brown Silty fine Sand, trace fine Gravel, trace fine root fibers, very loose to medium dense-dry to damp		3					
		25					2					
5		16			Light Gray Brown fine Sandy Silt, trace iron oxide staining, medium dense-damp to very moist		6					
		15					7					
10												
		28					14					
15												
		44			Light Gray Brown fine to coarse Sand, trace fine to coarse Gravel-dense to very dense-dry to damp		3					
20												
		32					3					
25												
		58					2					
30												
		70/9"					3					

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-3a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Light Gray Brown fine to coarse Sand, trace fine to coarse Gravel-dense to very dense-dry to damp							
					Dark Gray Brown Silty fine Sand, trace medium to coarse Sand, trace fine Gravel, very dense-damp							
40		50/6"					4					
45		50/2"					4					
					Dark Gray Brown fine to coarse Sandy Gravel, very dense-damp							
50		50/6"					3					
					Boring Terminated at 50 feet							

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-3b

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 35 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		4			ALLUVIUM: Dark Brown fine Sandy Silt, very loose to loose-moist	109	9					
		10			Light Gray fine Sand, loose to medium dense-damp	82	8					
5		10			Dark Gray Brown fine Sandy Silt, loose to medium dense-moist to very moist	86	10					
		17				92	18					
10		22			Gray Brown fine Sand, trace medium Sand, trace Silt, medium dense-damp	107	4					
		33			Gray Brown Silty fine Sand to fine Sandy Silt, trace medium Sand, dense-damp		5					
15												
		75			Brown Silty fine to coarse Sand, trace fine Gravel, very dense-dry to damp		2					
20												
		74			Gray Brown Gravelly fine to coarse Sand, dense to very dense-dry to damp		2					
25												
		44			@ 28½ feet, occasional Cobbles		2					
30												
		50/2"					2					

TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-4a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 20G234-1
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 11/23/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Oscar Sandoval

WATER DEPTH: Dry
CAVE DEPTH: 35 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
40		50/5"			Gray Brown Gravelly fine to coarse Sand, dense to very dense-dry to damp							
					@ 38½ feet, trace calcareous nodules, trace iron oxide staining		3					
					Dark Gray Brown Silty fine Sand, trace fine Gravel, very dense-damp							
45		50/5"					4					
					Gray Brown Gravelly fine to coarse Sand, very dense-dry to damp							
50		50/4"					2					
					Boring Terminated at 50 feet							

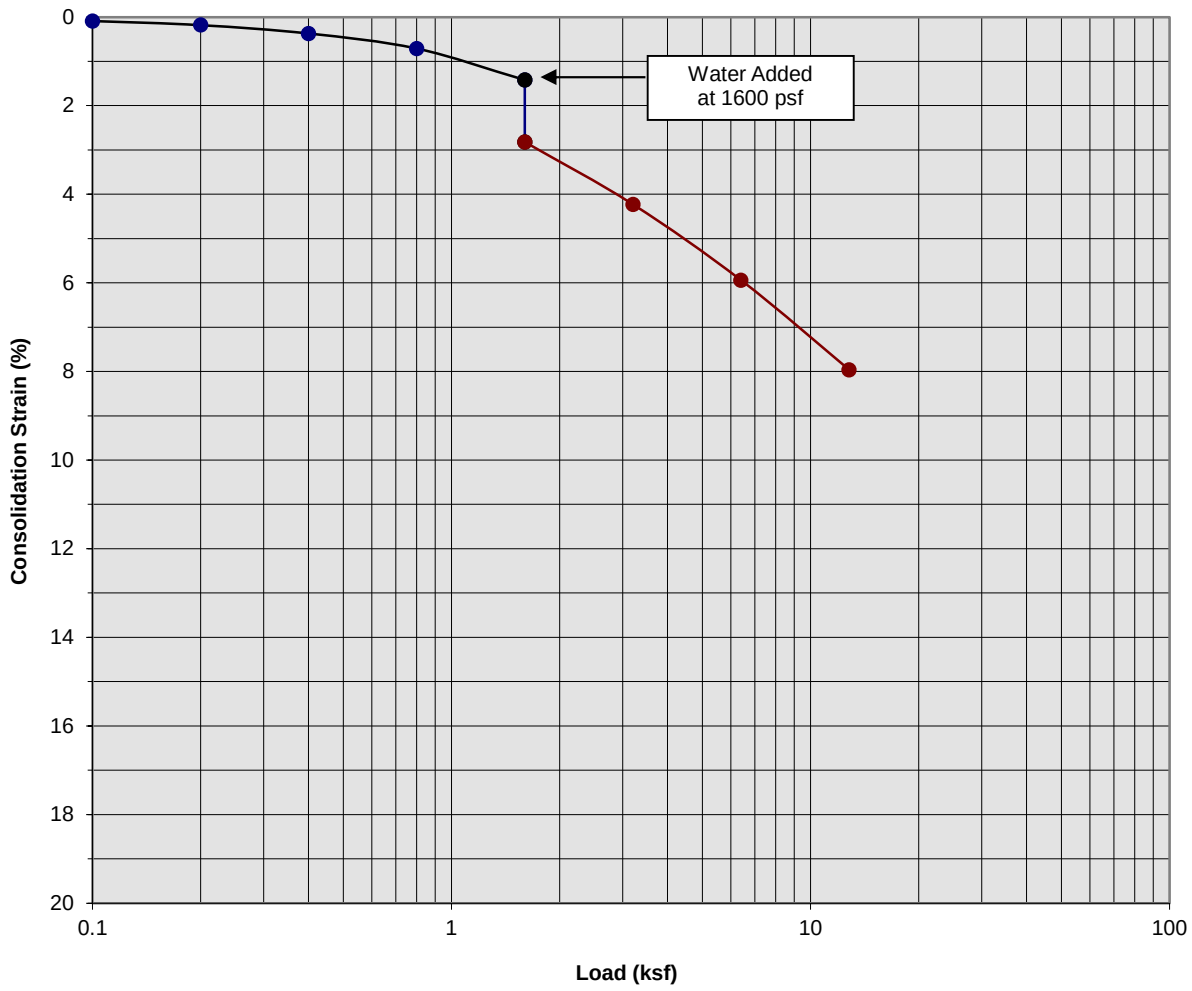
TBL 20G234-1.GPJ SOCALGEO.GDT 12/16/20

TEST BORING LOG

PLATE B-4b

APPENDIX C

Consolidation/Collapse Test Results



Classification: Gray Brown Silty fine Sand, trace medium to coarse Sand

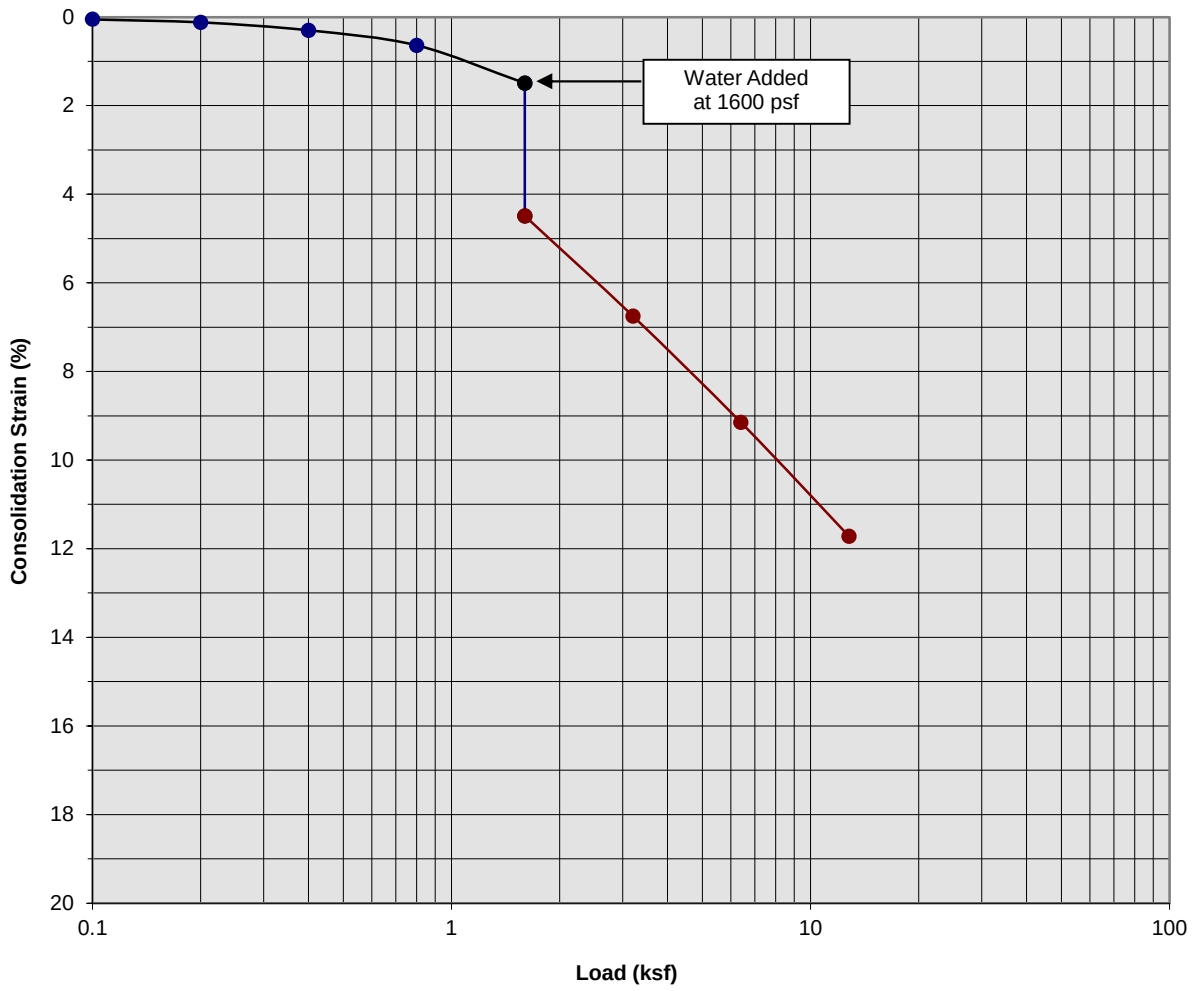
Boring Number:	B-1	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	16
Depth (ft)	1 to 2	Initial Dry Density (pcf)	98.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	106.6
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.40

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Gray Brown Silty fine Sand, trace medium to coarse Sand

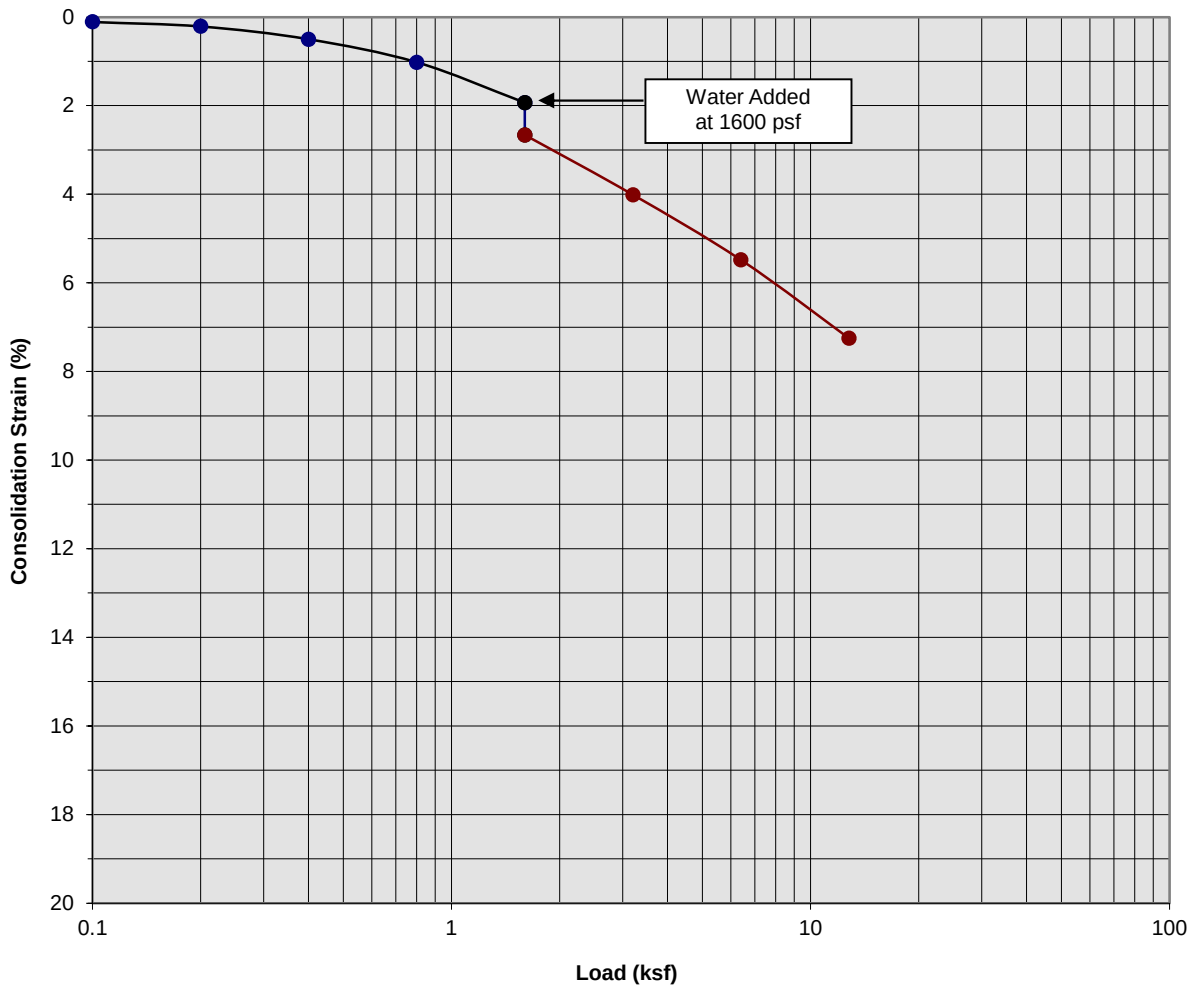
Boring Number:	B-1	Initial Moisture Content (%)	9
Sample Number:	---	Final Moisture Content (%)	21
Depth (ft)	3 to 4	Initial Dry Density (pcf)	97.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	110.2
Specimen Thickness (in)	1.0	Percent Collapse (%)	3.00

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Gray Gravelly fine to coarse Sand

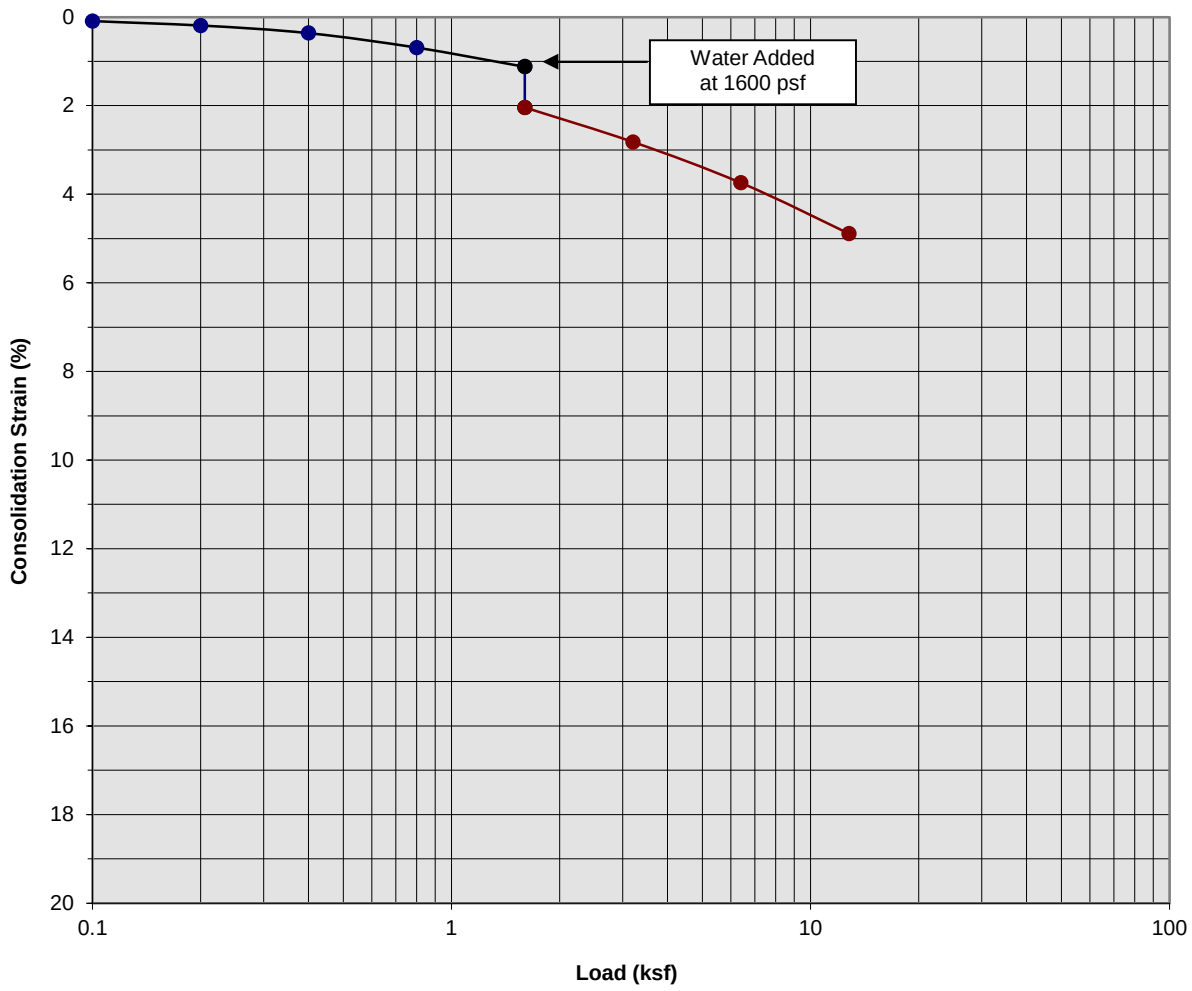
Boring Number:	B-1	Initial Moisture Content (%)	2
Sample Number:	---	Final Moisture Content (%)	26
Depth (ft)	5 to 6	Initial Dry Density (pcf)	107.3
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	115.6
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.73

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Gray Gravelly fine to coarse Sand

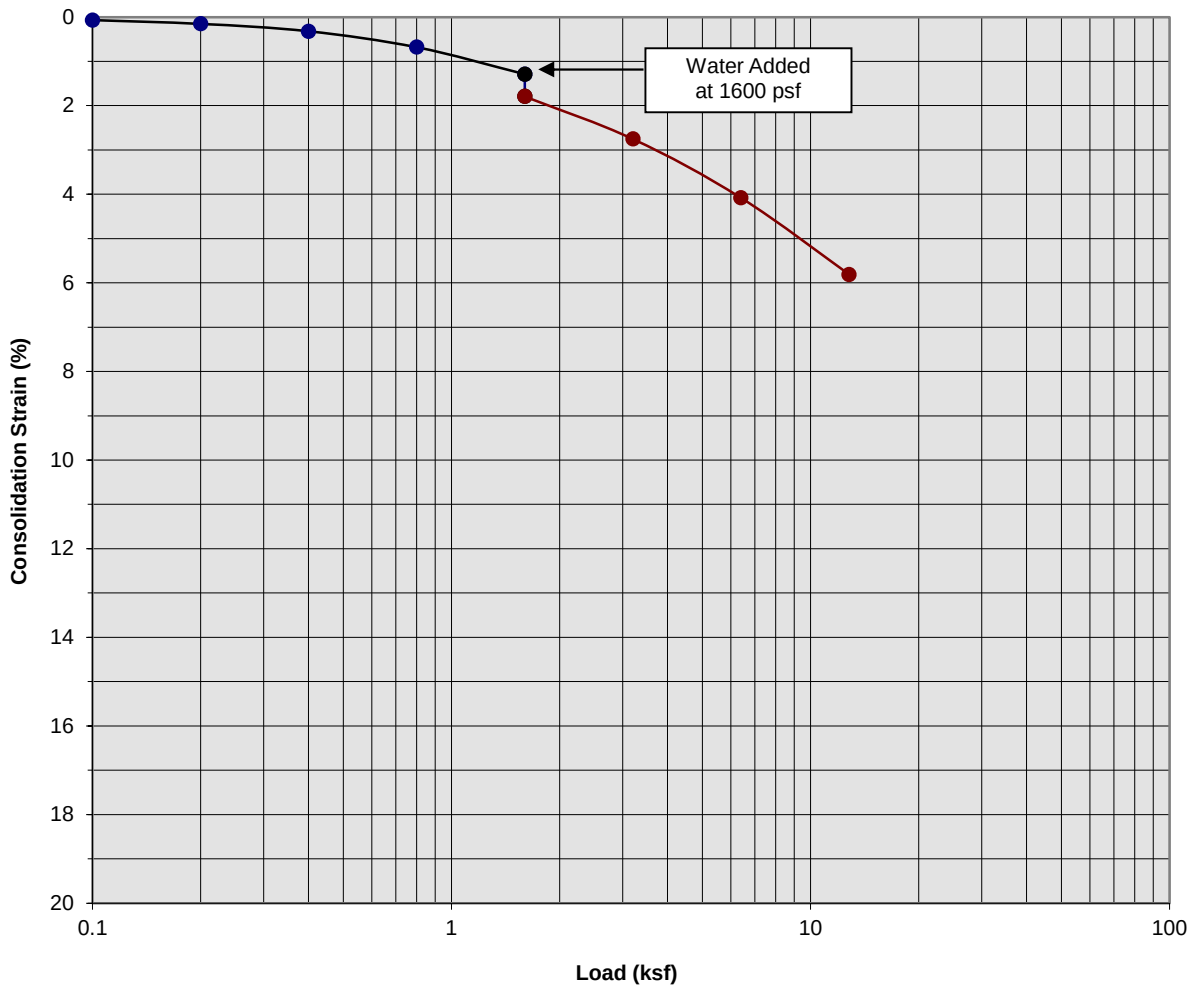
Boring Number:	B-1	Initial Moisture Content (%)	2
Sample Number:	---	Final Moisture Content (%)	19
Depth (ft)	9 to 10	Initial Dry Density (pcf)	107.2
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	112.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.92

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Light Gray fine Sand

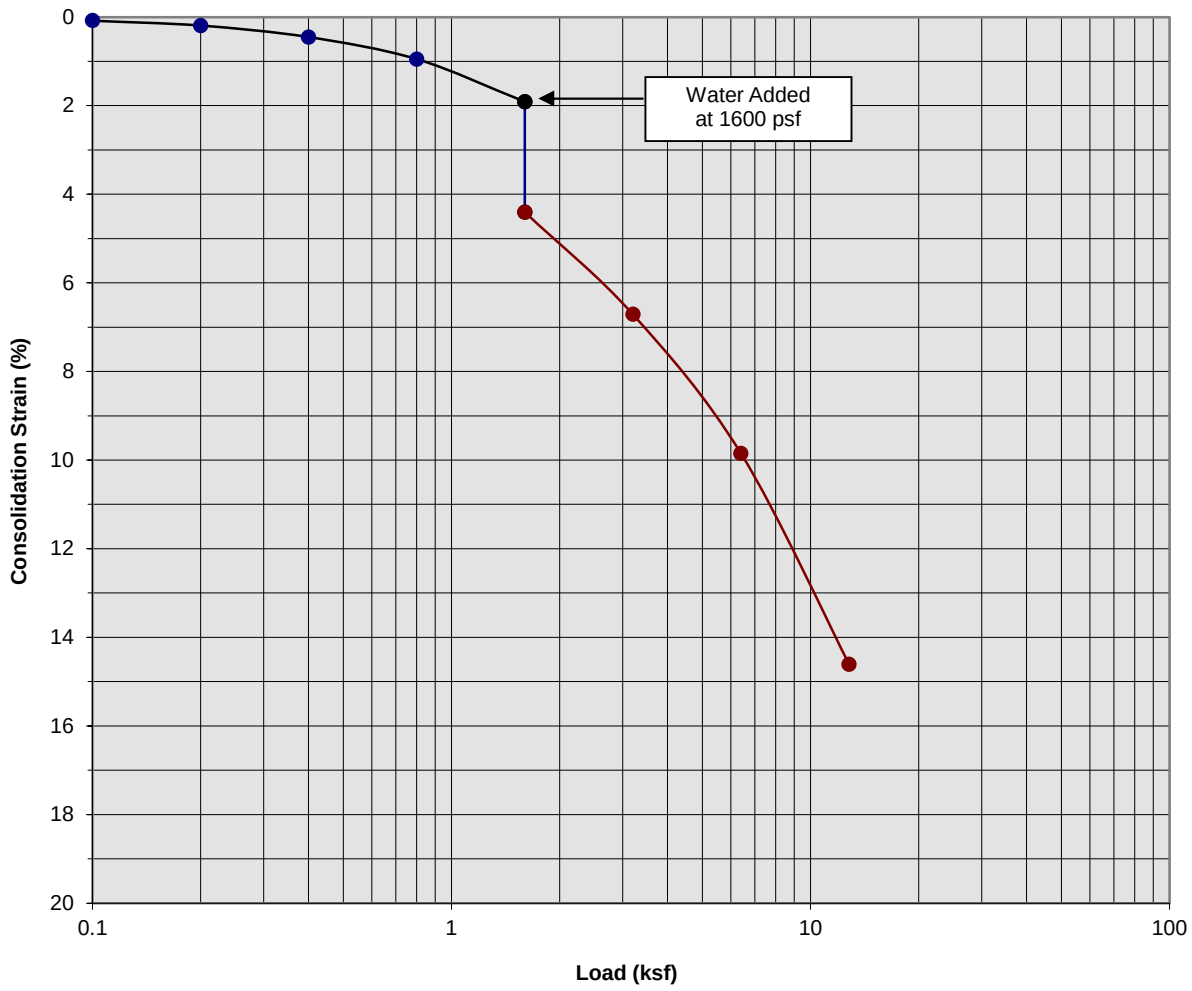
Boring Number:	B-4	Initial Moisture Content (%)	8
Sample Number:	---	Final Moisture Content (%)	28
Depth (ft)	3 to 4	Initial Dry Density (pcf)	82.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	87.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.50

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Dark Gray Brown fine Sandy Silt

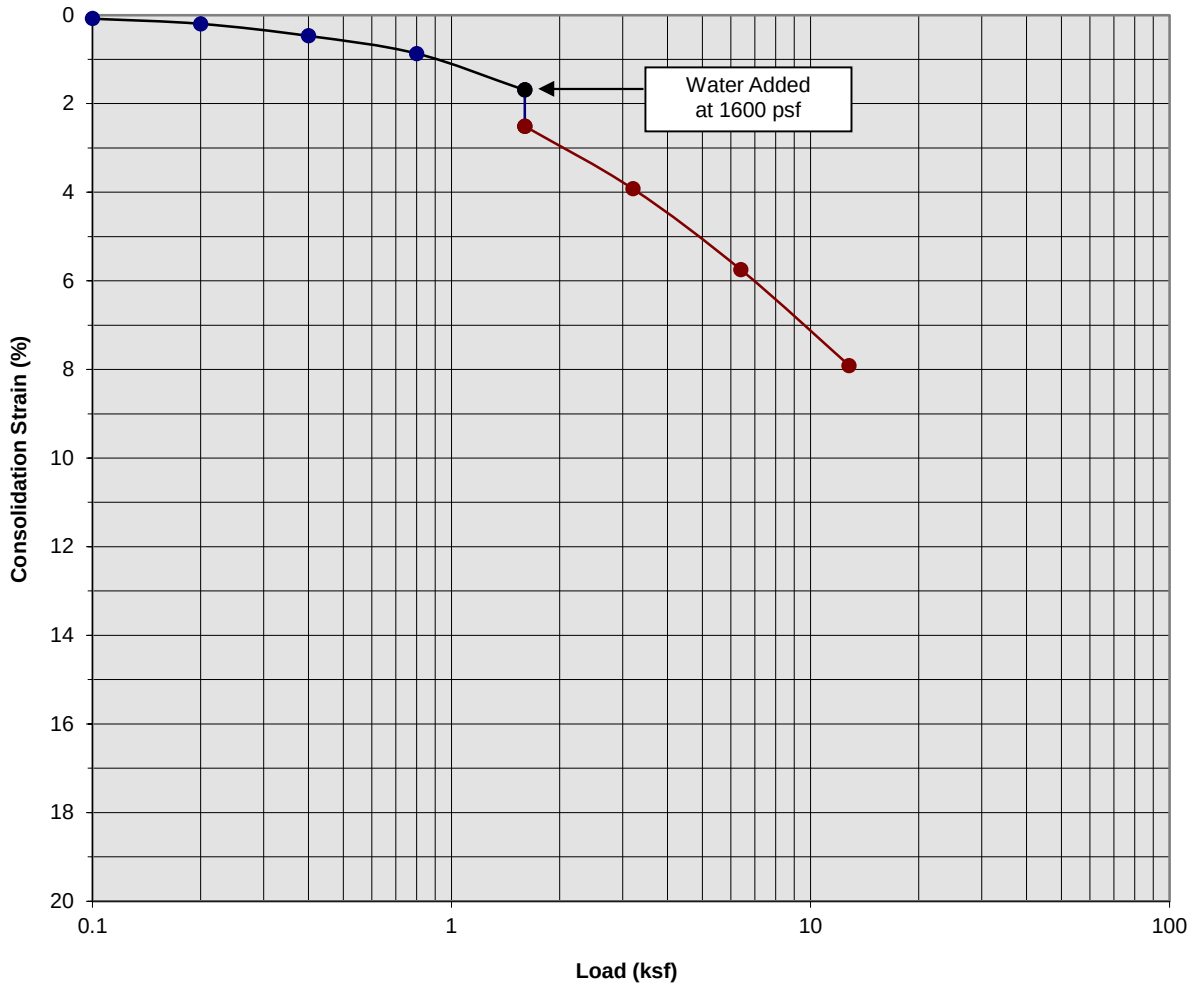
Boring Number:	B-4	Initial Moisture Content (%)	10
Sample Number:	---	Final Moisture Content (%)	29
Depth (ft)	5 to 6	Initial Dry Density (pcf)	86.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	100.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	2.49

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 6

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Dark Gray Brown fine Sand Silt

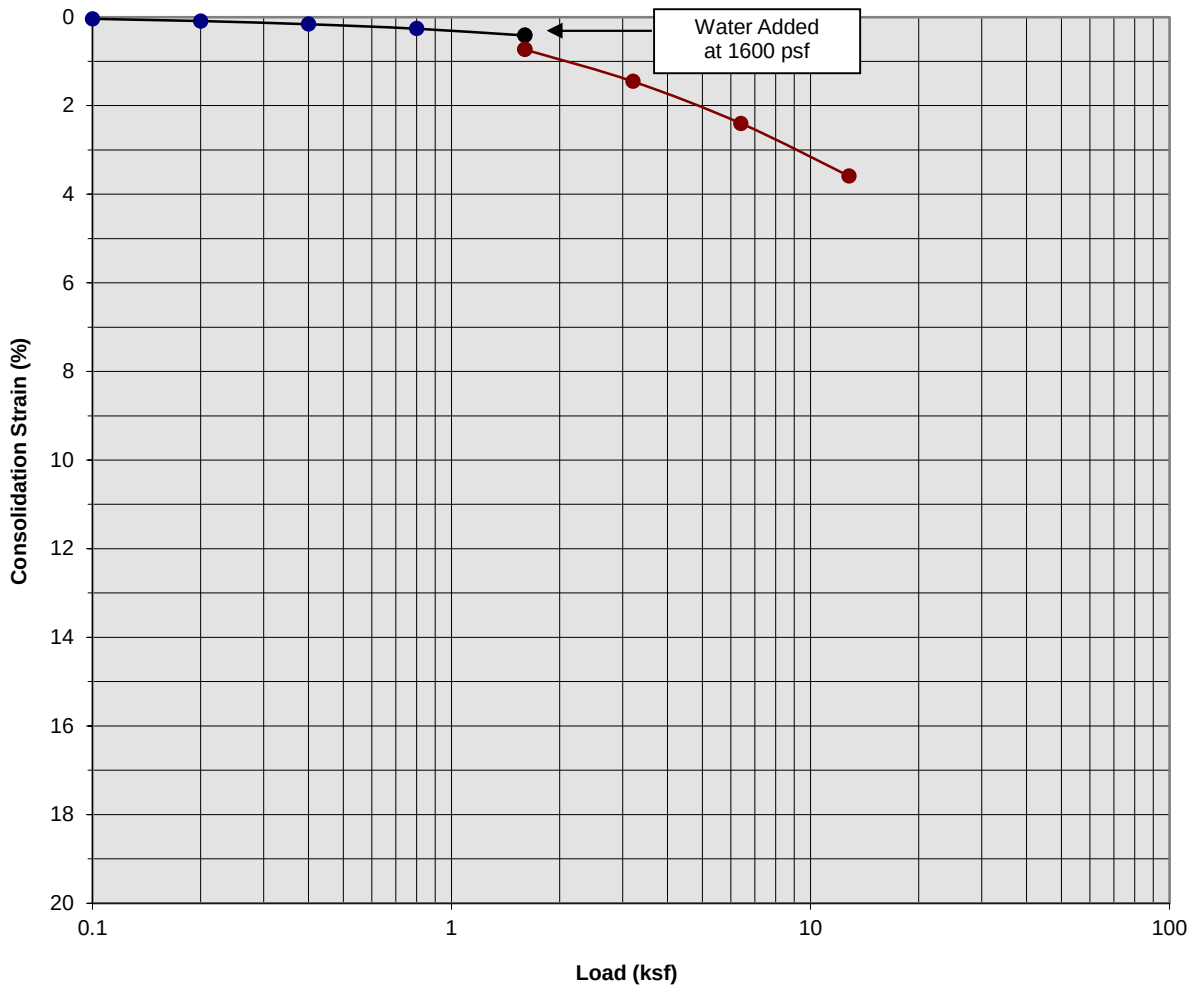
Boring Number:	B-4	Initial Moisture Content (%)	18
Sample Number:	---	Final Moisture Content (%)	31
Depth (ft)	7 to 8	Initial Dry Density (pcf)	91.3
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	99.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.82

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 7

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Gray Brown fine Sand, trace medium Sand, trace Silt

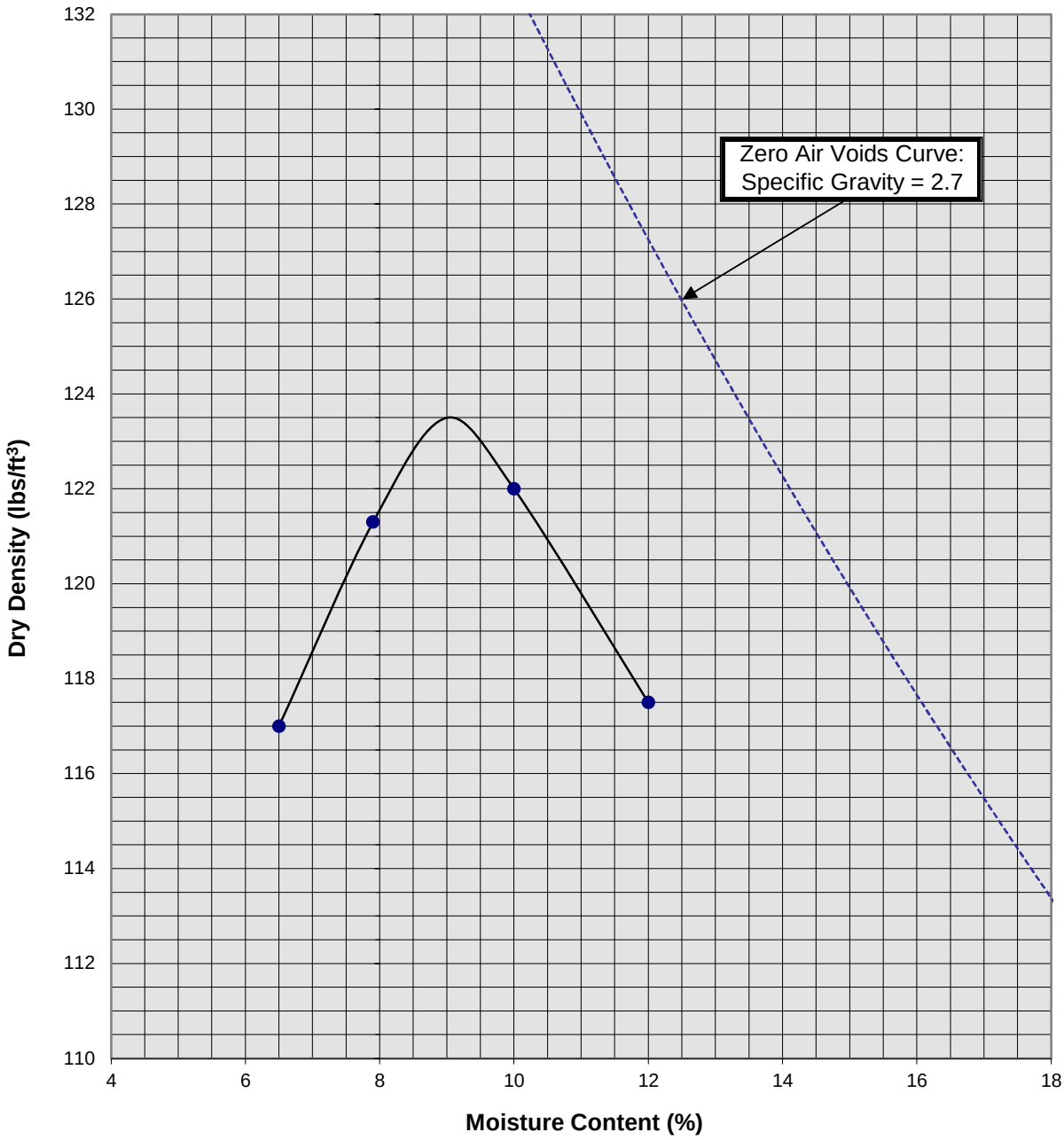
Boring Number:	B-4	Initial Moisture Content (%)	4
Sample Number:	---	Final Moisture Content (%)	16
Depth (ft)	9 to 10	Initial Dry Density (pcf)	107.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	111.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.32

Proposed Commercail/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C- 8

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Moisture/Density Relationship
ASTM D-1557



Soil ID Number	B-1 @ 0 to 5'
Optimum Moisture (%)	9
Maximum Dry Density (pcf)	123.5
Soil Classification	Gray Brown Silty fine Sand, trace medium Sand

Proposed Commercial/Industrial Building
Rialto, California
Project No. 20G234-1

PLATE C-9

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.

- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.

- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.

- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.

- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.

- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.

- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as “contaminated,” and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.

- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.

- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core

- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.

- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.

- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).

- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.

- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.

- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.

- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

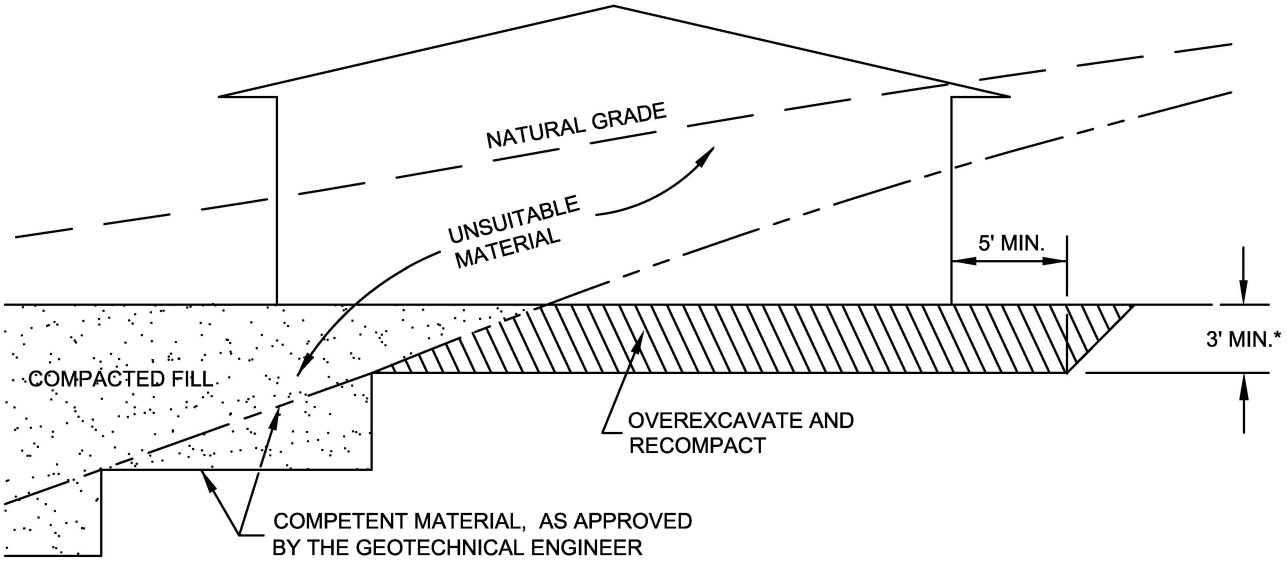
Subdrains

- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

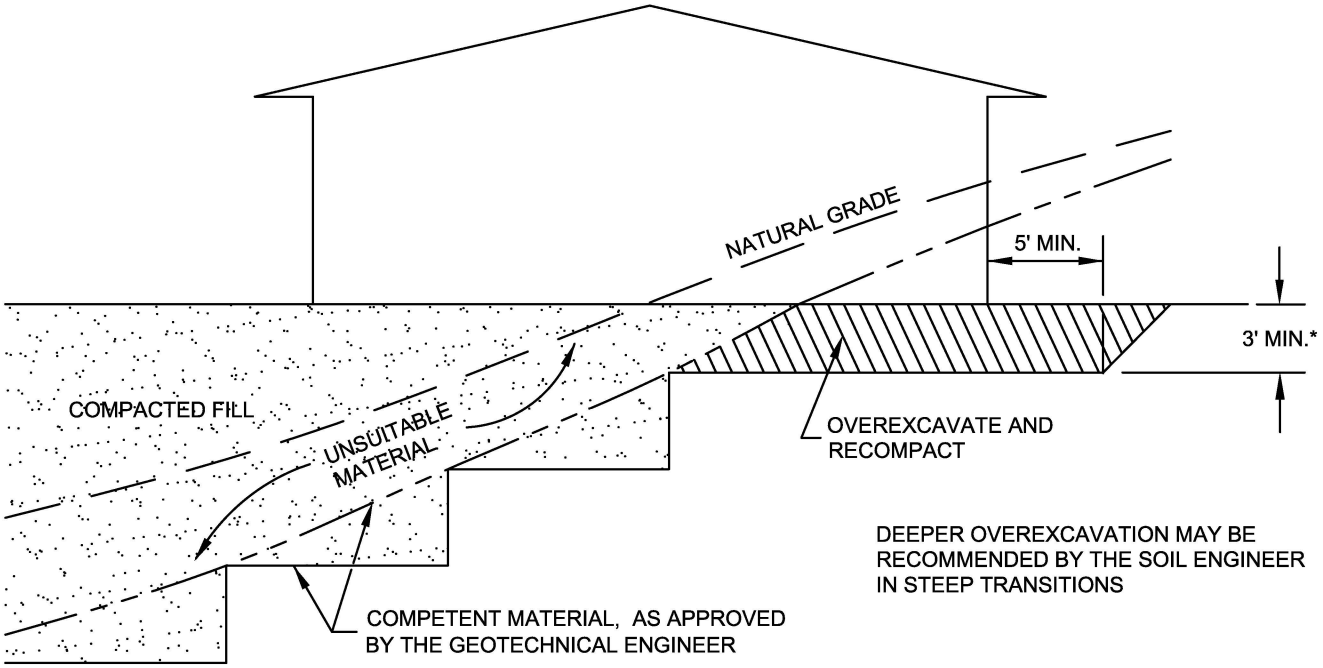
- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.

CUT LOT



CUT/FILL LOT (TRANSITION)



*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION. ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.

TRANSITION LOT DETAIL

GRADING GUIDE SPECIFICATIONS

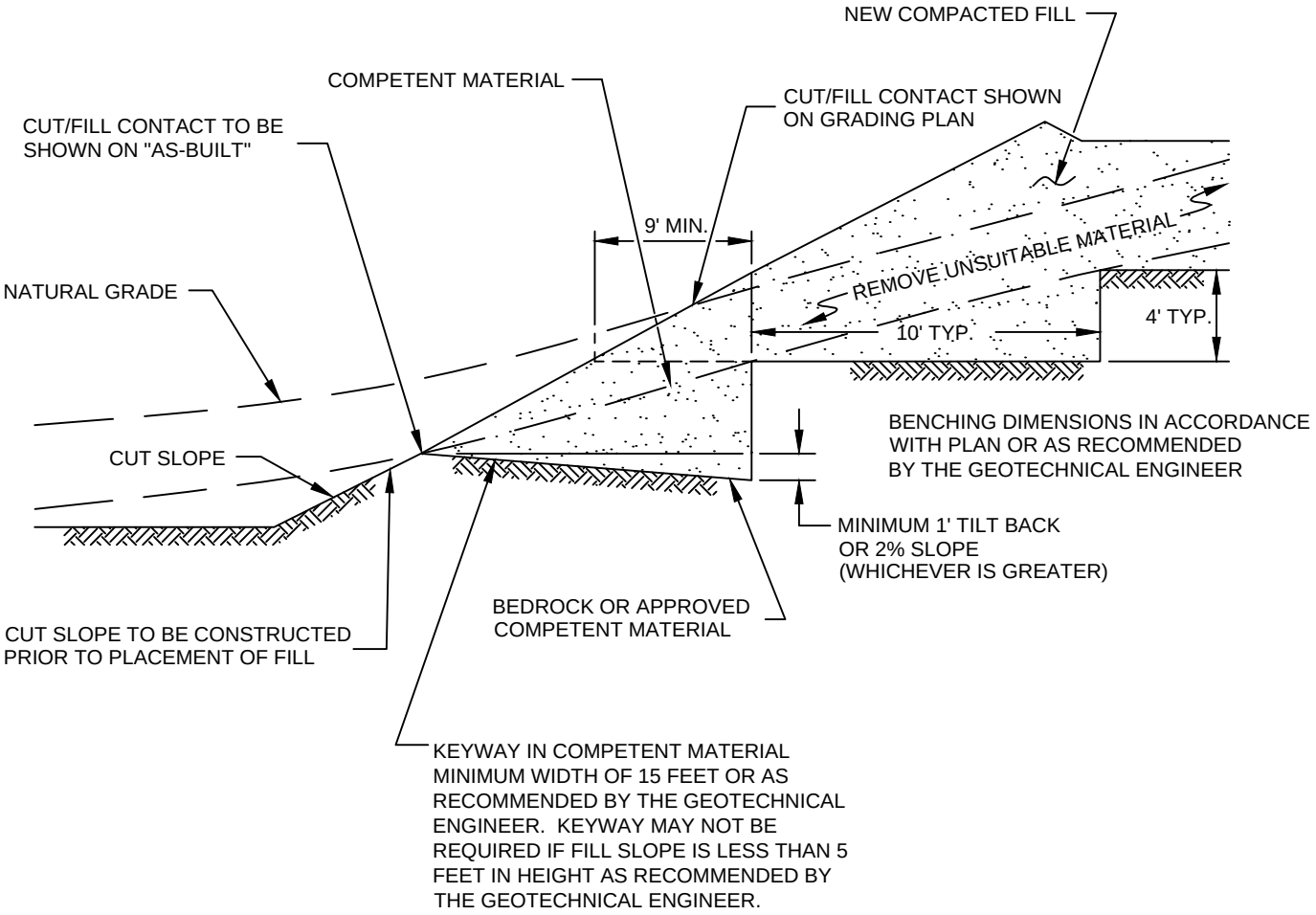
NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-1

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



FILL ABOVE CUT SLOPE DETAIL

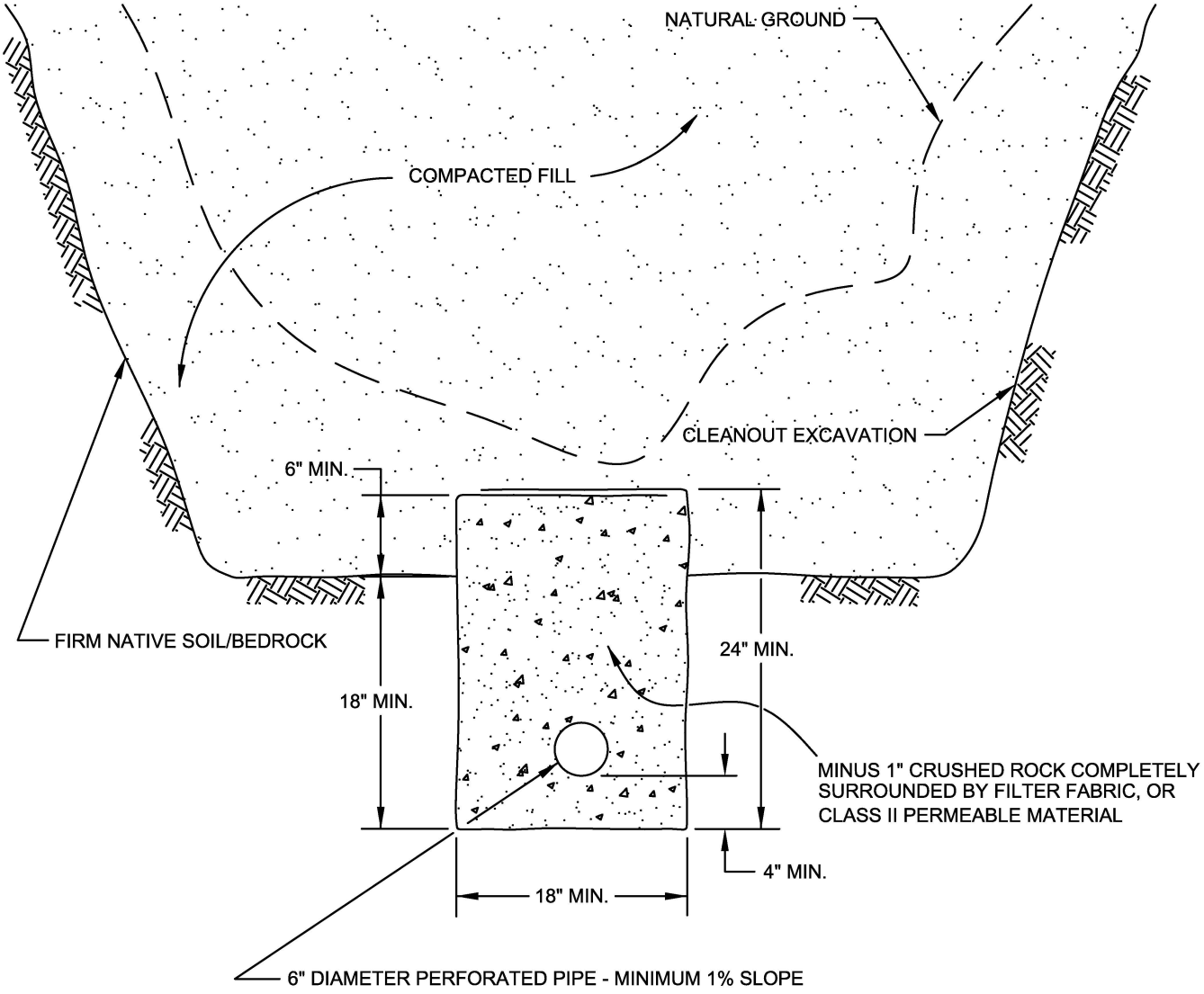
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

SCHEMATIC ONLY
NOT TO SCALE

CANYON SUBDRAIN DETAIL

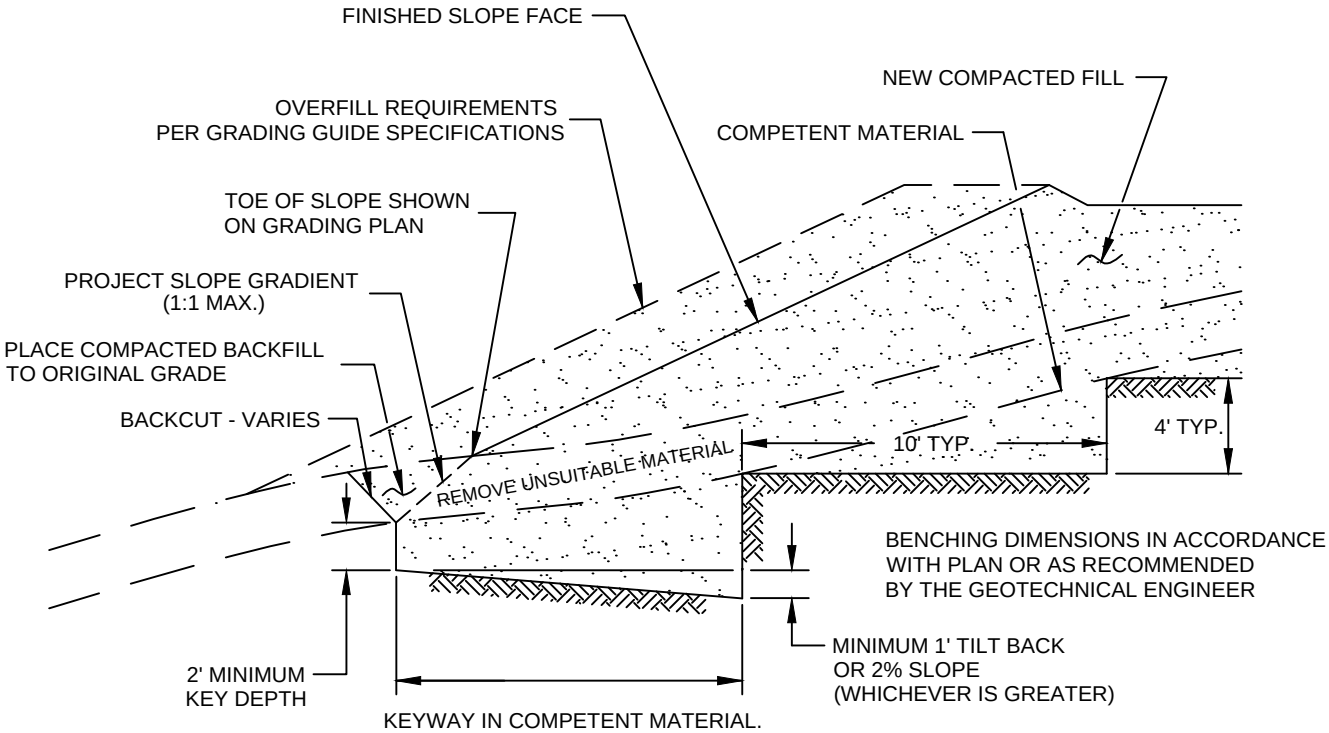
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



NOTE:
BENCHING SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR STEEPER THAN 5:1 OR WHEN RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

FILL ABOVE NATURAL SLOPE DETAIL

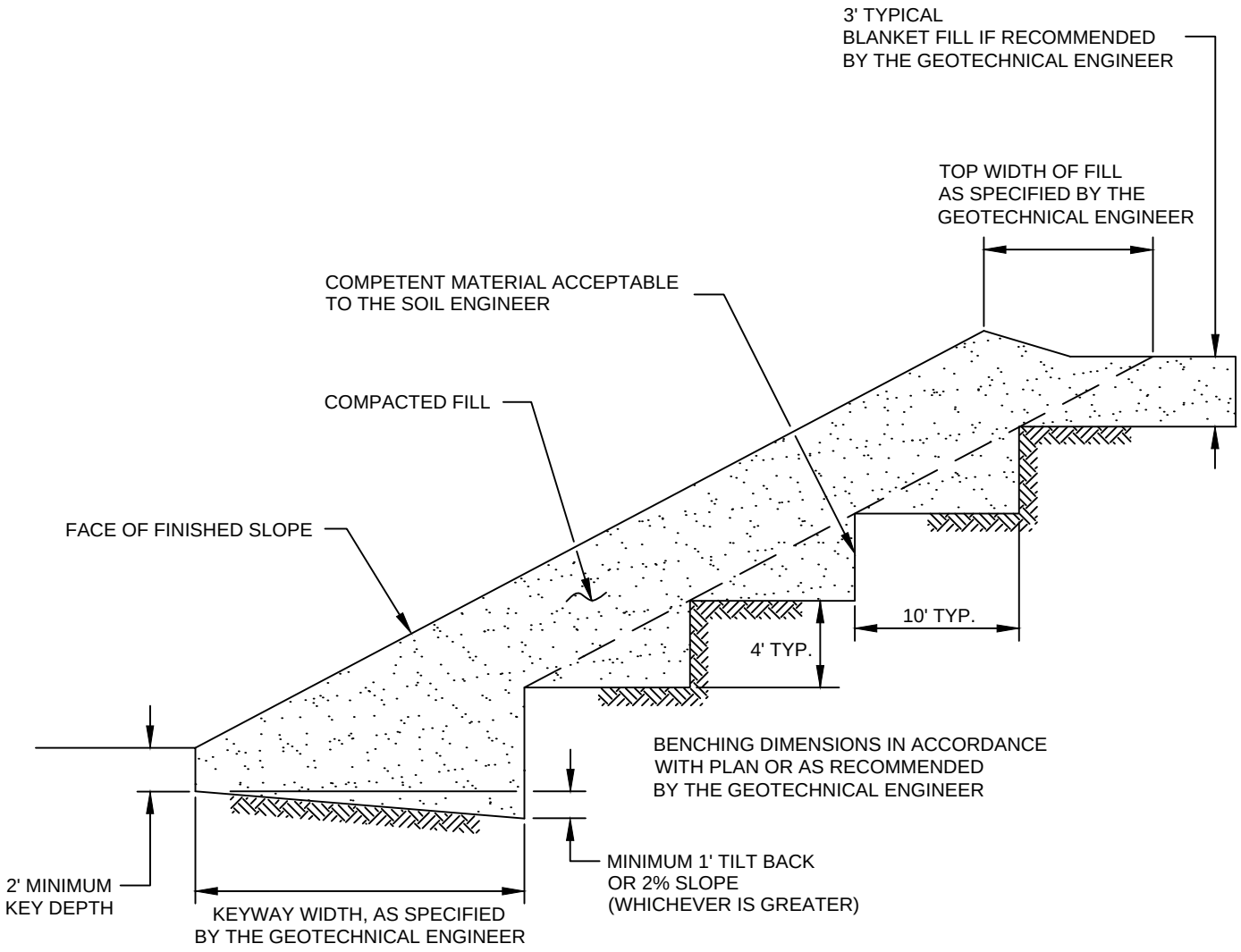
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



STABILIZATION FILL DETAIL

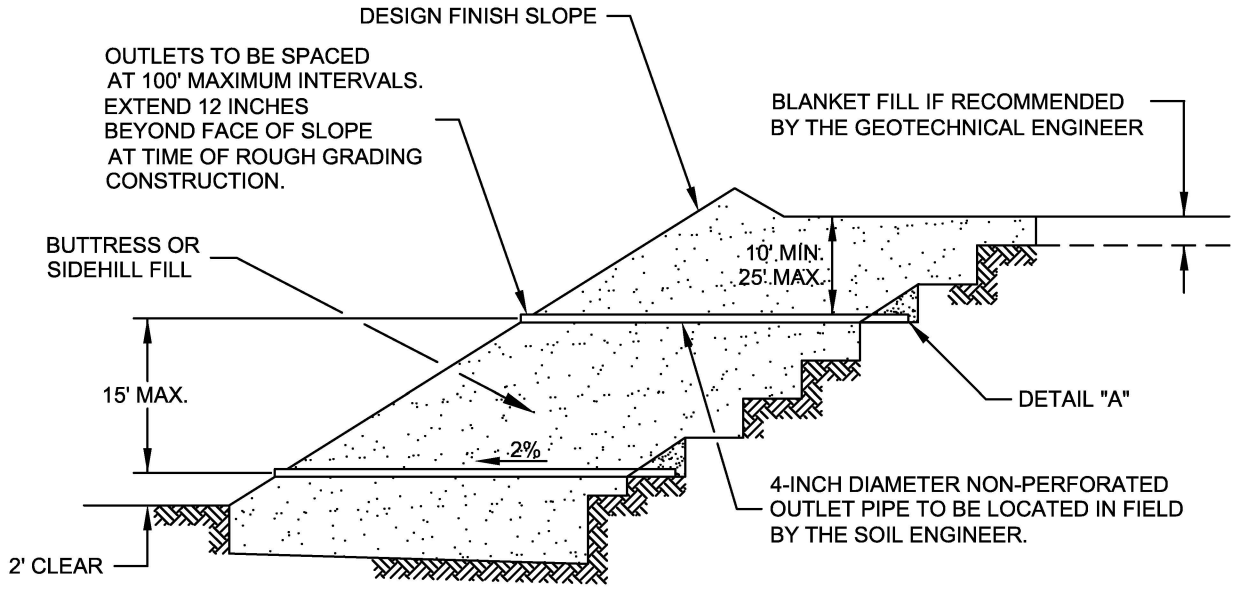
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



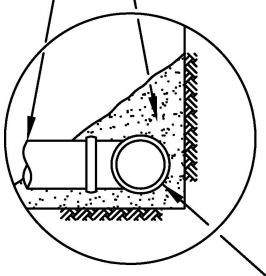
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS

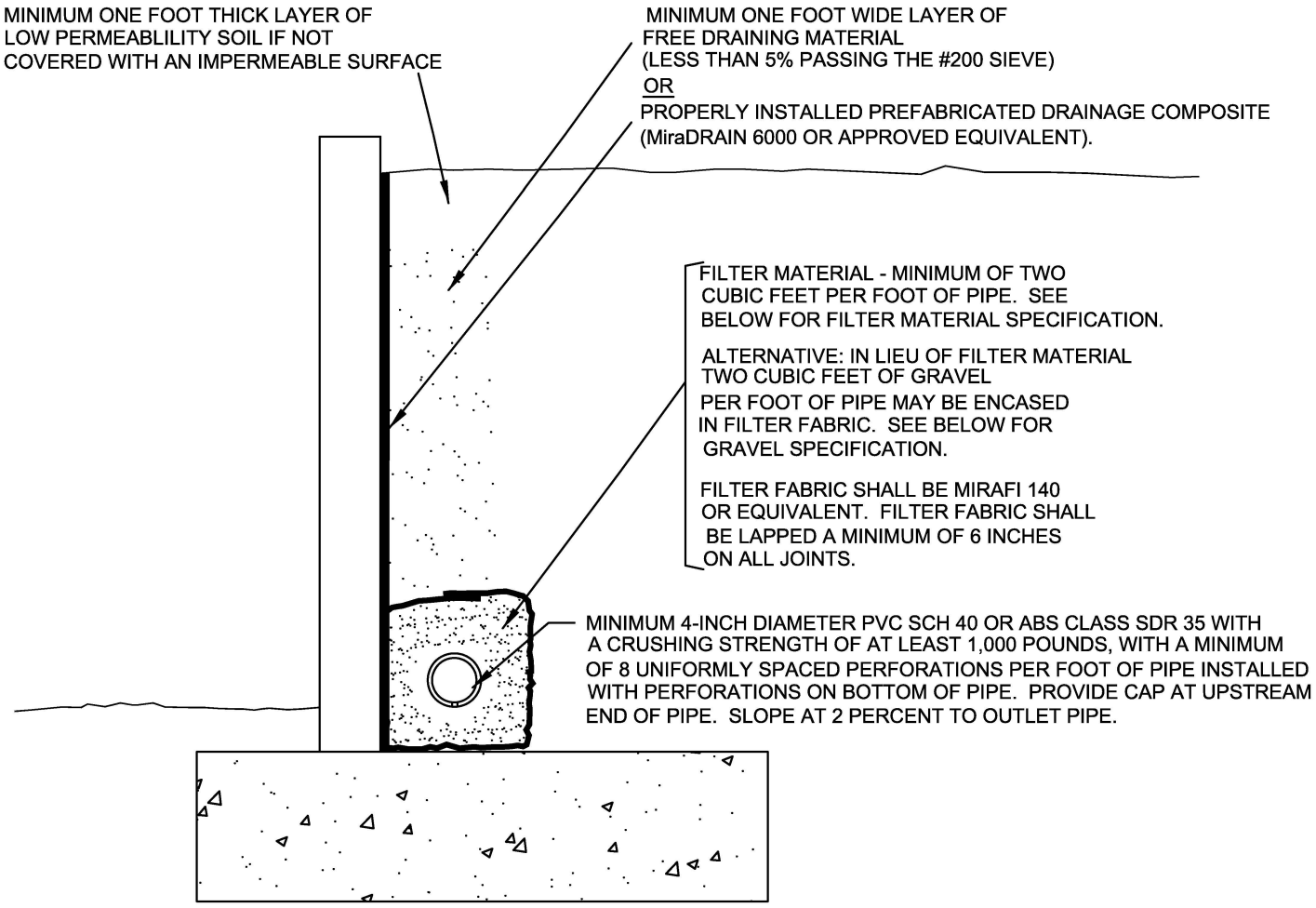
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-6

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50

RETAINING WALL BACKDRAINS

GRADING GUIDE SPECIFICATIONS

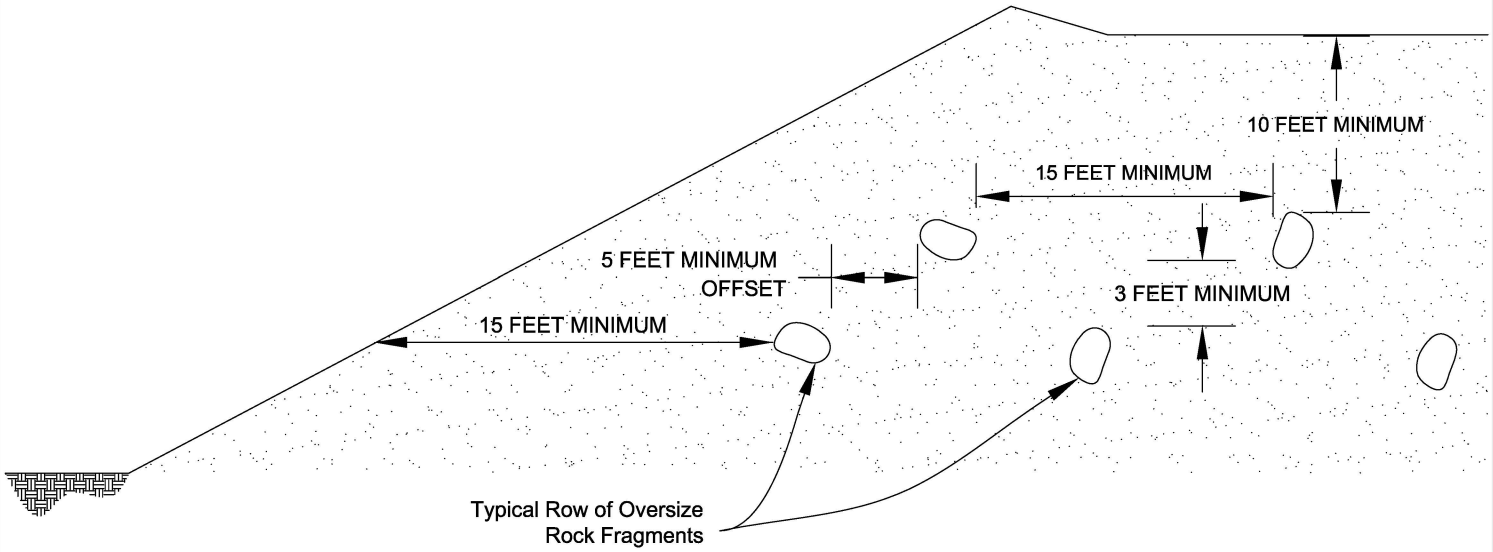
NOT TO SCALE

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CHKD: GKM

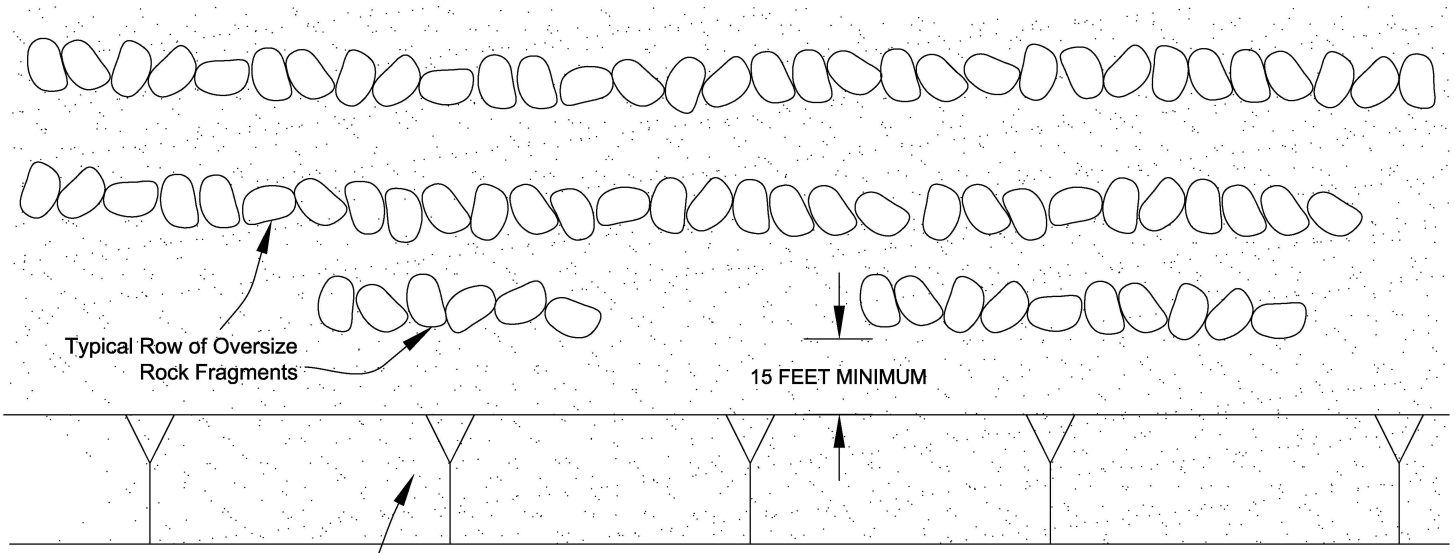
PLATE D-7

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



Section View



Plan View

PLACEMENT OF OVERSIZED MATERIAL

GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: PM
CHKD: GKM

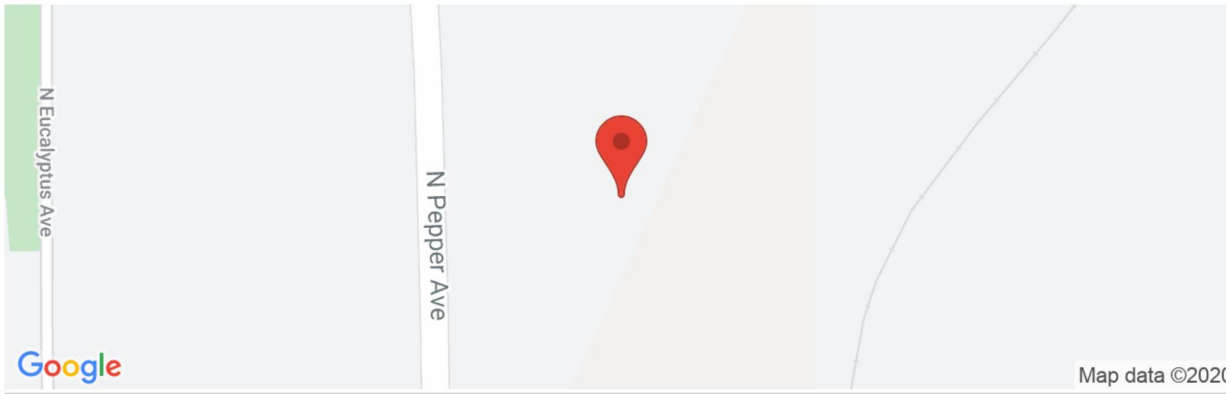
PLATE D-8

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX E

Latitude, Longitude: 34.131107, -117.350948



Date	12/2/2020, 2:44:10 PM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Stiff Soil

Type	Value	Description
S_S	2.425	MCE_R ground motion. (for 0.2 second period)
S_1	0.972	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.425	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.617	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	1.021	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	1.123	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	2.664	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.922	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.425	Factored deterministic acceleration value. (0.2 second)
S1RT	1.082	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.221	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.972	Factored deterministic acceleration value. (1.0 second)
PGAd	1.021	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.912	Mapped value of the risk coefficient at short periods
C_{R1}	0.887	Mapped value of the risk coefficient at a period of 1 s

SOURCE: SEAOC/OSHPD Seismic Design Maps Tool
<https://seismicmaps.org/>

SEISMIC DESIGN PARAMETERS - 2019 CBC

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

DRAWN: OS
CHKD: RGT

SCG PROJECT
20G234-1

PLATE E-1

SOUTHERN CALIFORNIA GEOTECHNICAL

PRELIMINARY DRAINAGE STUDY

PEPPER AVE
APN # 0264-201-26, 05, 06

San Bernardino County, California
August 13, 2021
REVISED: December 12, 2021

Prepared for:

Howard Industrial Partners, LLCs
1944 North Tustin Street, Suite 122
Orange, CA 92865
PH: (714) 769-9155

Report Prepared By:

FM CIVIL ENGINEERS INC.

29995 Technology Drive, Suite 306
Murrieta, CA 92563

Engineer of Work/ Contact Person:
Francisco Martinez Jr., PE, QSD

JN 17-006

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.



12/14/2021

Francisco Martinez RCE Registered Civil Engineer	Date	Seal

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II. PROJECT SITE AND DRAINAGE AREA OVERVIEW 4
III. HYDROLOGY 4
IV. HYDRAULICS 4
V. INCREASED RUNOFF MITIGATION 4
VI. CONCLUSIONS 4
VII. REFERENCES 4

FIGURES

FIGURE 1: VICINITY MAP

FIGURE 2: PRE-PROJECT CONDITION RATIONAL METHOD HYDROLOGY MAP

FIGURE 3: POST-PROJECT CONDITION RATIONAL METHOD HYDROLOGY MAP

FIGURE 4: PROJECT CONCEPTUAL GRADING PLANS

FIGURE 5: OUTLET CONTROL STRUCTURE DETAIL

APPENDICES

APPENDIX A: RATIONAL METHOD HYDROLOGY – EXISTING CONDITION
A.1: PRE-PROJECT CONDITION RATIONAL METHOD ANALYSIS, AREA "A" – 100 YEAR
A.2: PRE-PROJECT CONDITION RATIONAL METHOD ANALYSIS, OFFSITE AREA "X" – 100 YEAR
A.3: PRE-PROJECT CONDITION RATIONAL METHOD ANALYSIS, AREA "A" – 2 YEAR

APPENDIX B: RATIONAL METHOD HYDROLOGY – PROPOSED CONDITION
B.1: POST-PROJECT CONDITION RATIONAL METHOD ANALYSIS, AREA "A" – 100 YEAR
B.2: POST-PROJECT CONDITION RATIONAL METHOD ANALYSIS, OFFSITE AREA "X" – 100 YEAR
B.3: POST-PROJECT CONDITION RATIONAL METHOD ANALYSIS, AREA "A" – 2 YEAR

APPENDIX C: PRE-PROJECT CONDITION UNIT HYDROGRAPH HYDROLOGY
C.1: UNIT HYDROGRAPH ANALYSIS, 100-YEAR, 24-HOUR STORM DURATION, AREA "A"
C.2: UNIT HYDROGRAPH ANALYSIS, 2-YEAR, 24-HOUR STORM DURATION, AREA "A"

APPENDIX D: POST-PROJECT CONDITION UNIT HYDROGRAPH HYDROLOGY
D.1: UNIT HYDROGRAPH ANALYSIS, 100-YEAR, 24-HOUR STORM DURATION, AREA "A"
D.2: UNIT HYDROGRAPH ANALYSIS, 2-YEAR, 24-HOUR STORM DURATION, AREA "A"

APPENDIX E: HYDRAULIC CALCULATIONS
E.1: ONSITE STREET CAPACITY AREA A-3
E.2: ONSITE STREET CAPACITY AREA A-7
E.3: STORM DRAIN PIPE ANALYSIS – SD PIPE #1
E.4: STORM DRAIN PIPE ANALYSIS – SD PIPE #2
E.5: STORM DRAIN PIPE ANALYSIS – SD OUTLET PIPE
E.6: OUTLET CONTROL STRUCTURE WEIR ANALYSIS
E.7: CURB INLET ANALYSIS – INLET #1
E.8: CURB INLET ANALYSIS – INLET #2

APPENDIX F: REFERENCE DATA
F1: HYDROLOGIC SOILS DATA
F2: RAINFALL DATA
F3: OC TGD WORKSHEET H – FACTOR OF SAFETY AND DESIGN INFILTRATION RATE
F4: CONTECH DETENTION SYSTEM SHEETS
F5: BMP DCV CALCULATIONS
F6: FEMA FIRM PANEL NO. 06071C7940J

I. PURPOSE AND SCOPE

The purpose of this study is to determine the necessary drainage improvements and HCOC mitigation required for the Pepper Avenue project and proposed for industrial development.

The scope of this study includes the following:

1. Determination of points of flow concentration and watershed subareas for onsite and offsite areas.
2. Determination of the 100-year peak storm flows based upon the post-project onsite and existing condition offsite areas utilizing the Rational Method as outlined in the San Bernardino County Flood Control Hydrology Manual.
3. Determine the 100-year peak storm flows based upon the pre-project and post-project condition for the 24-hour storm duration utilizing the Unit Hydrograph Method as outlined in the San Bernardino County Flood Control Hydrology Manual.
4. Determine the required underground retention facilities and outlet control structure to mitigate the 100-year peak storm flows for the 24-hour storm duration in the post-project condition to flows less than or equal to the 100-year peak flow rate for existing conditions.
5. Determine the required storm drain infrastructure to flood protect the project site for the 100-year, 1-hour storm event.
6. Determine the required outlet control structure to safely by-pass the 100-year peak storm event.
7. Preparation of a hydrology report, which consist of hydrological and analytical results and exhibits.

II. PROJECT SITE AND DRAINAGE AREA OVERVIEW

The Pepper Avenue project is a proposed industrial building comprised of truck, trailer, car parking, landscape areas, an onsite storm drain system with a retention/infiltration subsurface system. The site is comprised of three parcels that are designated under the specific plan as community commercial with a total acreage of 23.70 acres; located in the City of Rialto, bounded by a vacant lot owned by State Sand & Gravel Company Inc to the north, a vacant lot owned West Valley Water District facility to the south, a Riverside Highland Water Company facility to the east and Pepper Avenue to the west (see Figure 1). Just east of the Riverside Highland Water Company property is a railroad owned by the Southern Pacific Company. This railroad runs along the westerly bank of the Lytle Creek which is also the westerly limits of the floodway, and drains to the Santa Ana River. See FEMA FIRM Map number 06071C7940J, revised September 2, 2016 (see Appendix F).

The project site is currently on undeveloped vacant land with sparse ornamentals, grasslands and shrubs. The site is considered relatively flat, and generally drains in a south east direction. There are no offsite flows entering the site, however, roughly 4.7 acres from the northerly property drains in a southeast direction towards the site, flows are intercepted by an existing earthen ditch that lays more or less along the northerly boundary and convey flows easterly towards the railroad tracks.

III. HYDROLOGY

The San Bernardino County Hydrology Manual (Reference 1) was used to develop the hydrological parameters for the hydrology analyses. The rational method and unit hydrograph method were used for the analyses and the computations were performed using the computer program developed by Civil CADD/Civil Design.

The rainfall depths used in the hydrology calculations for the rational method and the unit hydrograph method are as follows:

Storm Event & Duration	Rainfall (inches)
2-Year, 1-Hour	**0.637**
2-Year, 6-Hour	**1.61**
2-Year, 24-Hour	**2.94**
100-Year, 1-Hour	**1.64**
100-Year, 6-Hour	**3.74**
100-Year, 24-Hour	**6.86**

The rainfall depths were obtained from NOAA Atlas 14, which has been included in Appendix F.

The existing soil classification for the area consists of Hydrologic Soil Group "A", as shown in Appendix F; it is a Soils Map obtained from the USDA Websoil Survey. For 100-year storm events, Antecedent Moisture Condition (AMC) II was utilized.

The hydrology utilized the following land use covers:

Land Use Cover	Runoff Index Number (Soil "A")	Pervious Ratio
Urban Covers – Residential or Commercial landscaping	32	1.0
Commercial	98	0.1

The pre-developed rational method analysis was analyzed as "Urban Covers – Residential or Commercial Landscaping". In the post-development condition, the undisturbed area was analyzed as "Urban Covers – Residential or Commercial landscaping", while the proposed improvements were analyzed using "Commercial" covers.

Rational Method Analyses

The Rational Method analysis for both the existing and proposed conditions considered a single watershed area designated as "A", and on offsite watershed area designated as "X". Both watersheds are tributary to the Lytle Creek. Which ultimately discharges into the Santa Ana River.

The Rational Method Analysis results are shown in table on the following page:

TABLE 1. RATIONAL METHOD - ONSITE (Q_{100} YEAR, 1-HOUR)				
WATERSHED AREA	STORM EVENT (1-HOUR)	EXISTING CONDITIONS Q (CFS)	PROPOSED CONDITIONS Q (CFS)	DELTA Q(CFS)
A	100	21.40	75.50	54.10

Unit Hydrograph Analyses

To determine the increased runoff mitigation required for the project, a Unit Hydrograph calculation was performed for the existing and the proposed onsite conditions. For the existing and proposed conditions area "A" was analyzed.

The unit hydrographs were performed using a lag time that was calculated by the following formula:

Lag (hrs) = TC_{RM} (hrs) x 80%, where TC_{RM} is the corresponding rational method time of concentration.

The pre project unit hydrograph calculations utilized urban residential or commercial landscaping good cover, with a pervious ratio of 1.0 was used for conservative purposes. The post project condition perviousness was calculated using a unit area method to determine the average perviousness for each subarea.

The following tables summarize the unit hydrograph calculations:

TABLE 2. UNIT HYDROGRAPH VOLUME ANALYSIS					
WATERSHED AREA	STORM EVENT	EXISTING PEAK Q (CFS)	PROPOSED PEAK Q (CFS)	EXISTING TOTAL VOLUME (AF)	PROPOSED TOTAL VOLUME (AF)
A	100	26.33	76.78	1.95	12.05

IV. HYDRAULICS

The project will utilize a combination of surface improvements, subsurface storm drain, drainage inlets, swales, and gutters to collect and convey peak flows to an underground detention system. The mitigated storm volume is defined as 95% of the total proposed volume for the 2-year storm, minus the total volume of the existing 2-year storm. The outlet control structure will mitigate for both the water quality volume and the mitigated 2-year storm volume. Flows in excess of the mitigated 2-year storm will pass through the outlet control structure (weir) to control and mitigate storm flows not to exceed the HCOC

maximum allowable discharge (See Table 3). All storm flows in excess of the 100-year storm will be bypassed using a rectangular weir structure and convey the overflow into its natural drainage course, through the culvert system to the east of the project and ultimately into the Lytle Creek.

The offsite area "X" to the north of our project will not make it onsite and will instead bypass the onsite flows. During the existing condition an offsite earthen swale was picking up the flows to the north and conveying them to the east where the flows would exit the project limits and sheet flow to the Lytle Creek. In the proposed condition this earthen swale was regraded in order to improve channelization of flows but still maintained its natural drainage course and tributary area. The offsite bypass system is being proposed in order to maintain the original drainage patterns and to not comingle the offsite and onsite storm drain flows.

For preliminary purposes, two inlets will collect the 100-year peak flow for the developed condition and a storm drain system will convey these flows into a pair of underground detention basins. The proposed underground detention basins are set at the same invert elevation and connected via an equalization pipe. The equalization pipe will be designed to have a high point in order to ensure the water flows into the detention basin in cases of flows in excess of the 100-year storm. A 36" outlet pipe was sized in order to handle the 100-year peak flow in the event that it by-passes the underground chambers. A proposed outlet structure will mitigate and restrict flows in excess of the 2-year mitigated volume to the maximum mitigated storm drain flow rate to its natural drainage course, through a culvert system to the east of the project and ultimately into the Lytle Creek.

V. INCREASED RUNOFF MITIGATION

The project site will utilize an underground detention system to mitigate flows for increased runoff. This system will also serve as the water quality treatment facility for the project site. The water quality calculations and discussion have been provided in the Water Quality Management Plan. The required water quality volume for the project site is 112,165 ft^3 (5.54 acre-ft), and the calculation for the Design Capture Volume (DCV) has been included in Appendix E.

To store the required water quality volume, infiltrate the volume and mitigate for increased runoff, the underground infiltration and retention chambers are set at 7.0 feet deep with a bottom elevation of 1264.8.

Infiltration testing will be performed within the proposed basin location, and referenced as Detention System "A". The area in Detention System "A" provides a rate of approximately 3.9 in/hr, which is the recommendation from the geotechnical report, and after applying a safety factor in accordance with the technical guidance manual, the design infiltration rate is calculated to be 0.80 in/hr, this rate was utilized in the design of the chamber system. A worksheet has been included in Appendix F. To determine a flow rate through the soil that could be utilized in the basin routing calculations (to be performed in the final engineering phase), the infiltration rate was multiplied by the bottom surface area of the subsurface underground infiltration and retention system. The bottom surface area of the infiltration system is 31,784 ft^2, converting the calculated design infiltration rate to the appropriate units and multiplying by the surface area, the equivalent flow rate for the infiltration system is 1.32 ft^3/s. This flow rate will be utilized in the basin routing analyses during the final engineering phase.

Since the water quality volume (DCV) must infiltrate through the detention system bottom, the underground detention outlet structure did not include outlets below the DCV and the hydrologic conditions of concern (HCOC) retention required volume elevations. This would allow the water quality volume to pond and infiltrate through the soil. In addition, the proposed development must also

provide flow rate and volume reduction as mitigation to meet the HCOC requirements. Storm flows above the HCOC retention required volume will be released, and the discharge flow rates will be metered using an outlet control structure so they do not exceed the HCOC maximum allowable; except that the 100-year frequency storm event as previously noted will safely by-pass through the control structures and emergency spillway. The following section provides more detail on how the HCOC flow rate and volume are being estimated.

Stormwater mitigation information for watershed "A" can be seen in the table provided below:

TABLE 3. UNIT HYDROGRAPH VOLUME ANALYSIS

WATERSHED AREA	STORM EVENT	EXISTING PEAK Q (CFS)	EXISTING TOTAL STORM VOLUME (AF)	PROPOSED PEAK Q (CFS)	PROPOSED TOTAL STORM VOLUME (AF)	**HCOC MAXIMUM ALLOWABLE DISCHARGE (CFS)	*HCOC RETENTION REQUIRED VOLUME (AF)	PROPOSED MITIGATED DISCHARGE (CFS)	U/G RETENTION VOLUME (AF)	STORM CAPTURE
A	2	4.61	0.49	27.35	4.89	5.56	4.16	9.41	5.54	100%

*PER WQMP FORM 4.2-3. VOLUME REDUCTION REQUIRED TO MEET HCOCS = 180,880 FT^3

** PER WQMP FORM 4.2-5 (ITEM 14) - (ITEM 15) = MAXIMUM FLOW RATE DISCHARGE TO MEET HCOC'S

The total mitigation volume required for watershed area "A" was determined per the WQMP form 4.2-3, volume reduction required to meet HCOC's. The required retention volume for HCOC's was calculated by subtracting the 2-year, 24-Hour existing condition storm total volume from 95% of the total 2-year, 24-Hour proposed condition storm volume (see Table 4). The maximum discharge flow rate for HCOCs was determined per the WQMP form 4.2-5 by subtracting item 15 form item 14. We then selected the flow rates from the recess limb of the proposed unit hydrograph runs that are equal or less than the "HCOC Retention Required Volume"; and they were compiled and shown in Table 4 under the "Mitigated Discharge" column. The proposed underground detention system has been sized to accommodate this volume which corresponds to the "HCOC Retention Required Volume" column from Table 4 (e.g. underground retention system V= 5.54Acre-ft), thus a conservative approach.

VI. FINDINGS

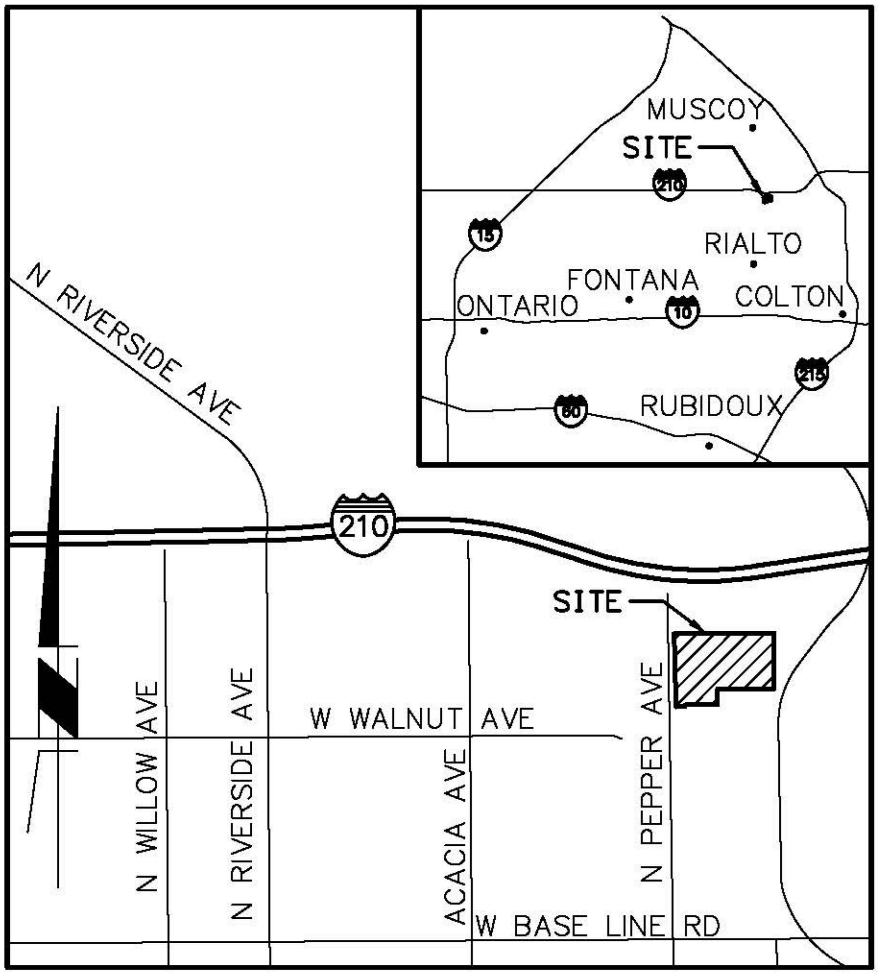
The hydrology analyses evaluated the proposed development to determine the necessary drainage improvements required to mitigate flows for increased runoff. It has been concluded that:

1. The proposed drainage facilities will adequately convey the 100-year flows and provide flood protection to the project site.
2. The proposed retention/infiltration subsurface system will adequately mitigate for water quality and increased runoff.

VII. REFERENCES

1. San Bernardino Flood Control Hydrology Manual, August 1986.
2. Brater, Ernest F., and Horace Williams King. 1976. *Handbook of Hydraulics for the Solution of Hydraulic Engineering Problems.* 6th ed. McGraw-Hill, Inc.
3. San Bernardino Rational Method and Unit Hydrograph modules, CivilDesign Engineering Software Version 9.0.

FIGURE 1:
VICINITY MAP



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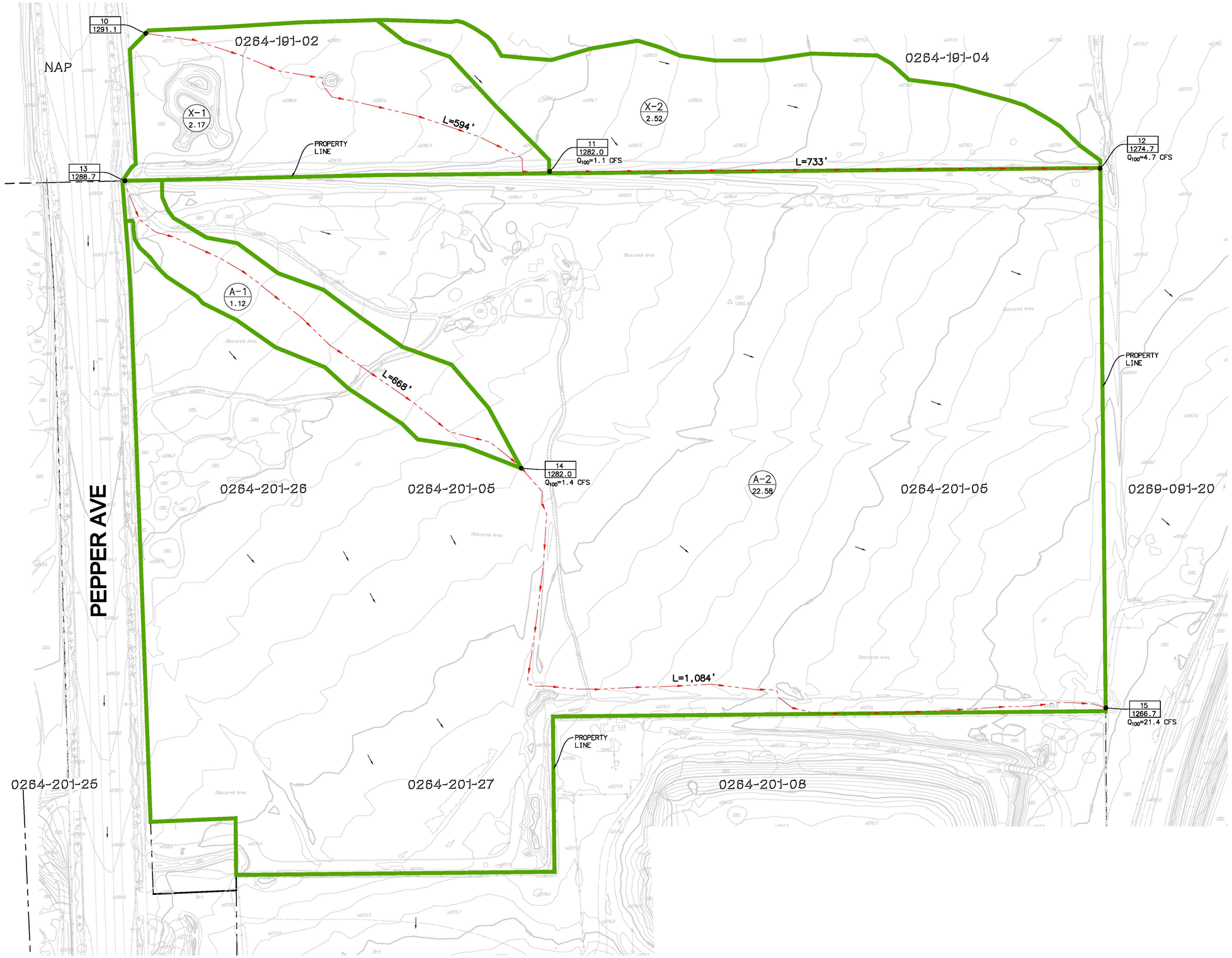
PEPPER AVENUE

FIGURE 1
VICINITY MAP

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FIGURE 2:

EXISTING CONDITION HYDROLOGY MAP

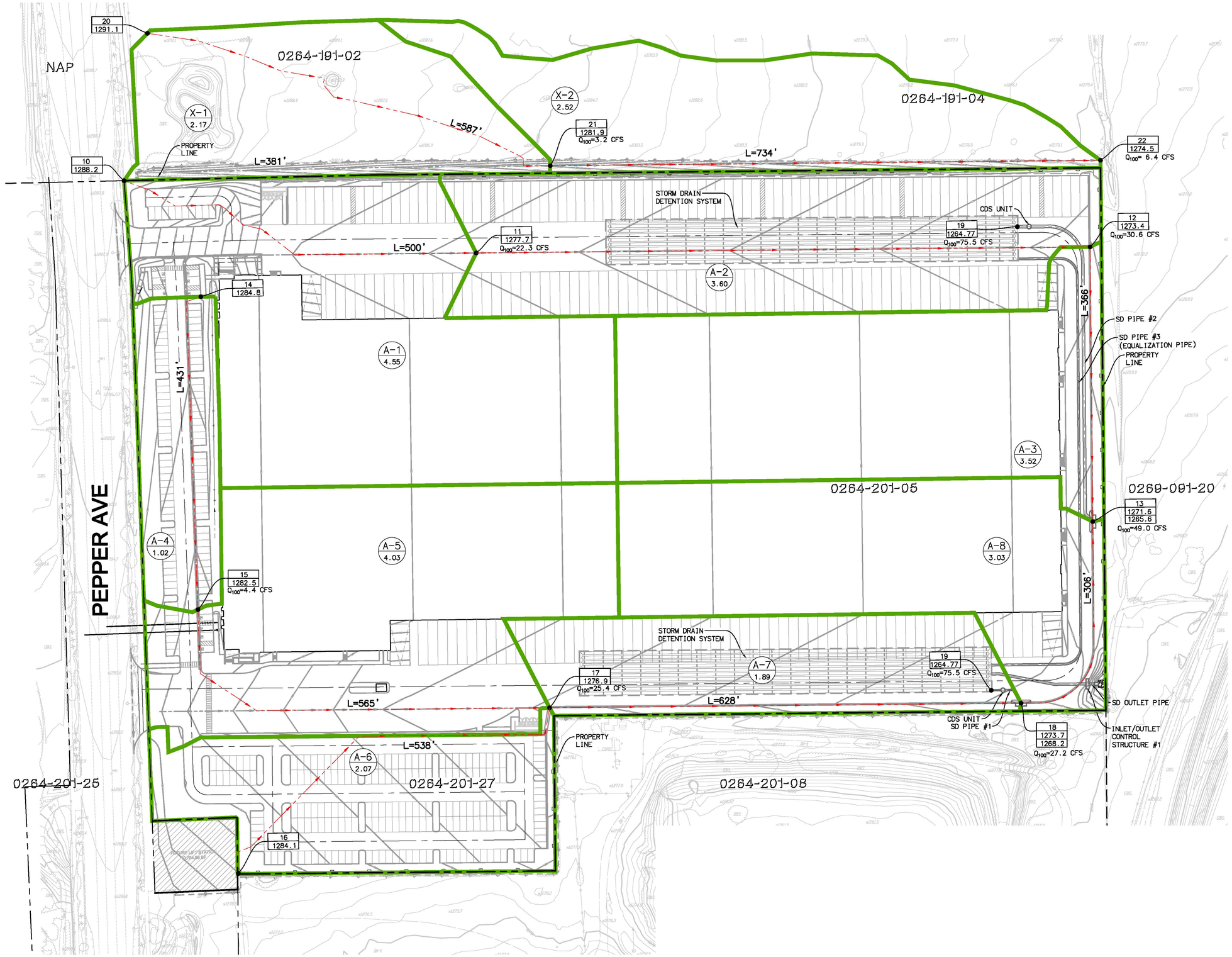


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FIGURE 2 - EXISTING CONDITIONS

FIGURE 3:
PROPOSED CONDITION HYDROLOGY MAP



60 30 0 60 120 180

SCALE: 1"=60'

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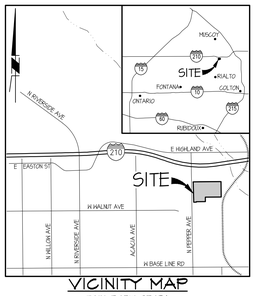
PEPPER AVE

FIGURE 3 - PROPOSED CONDITIONS

FIGURE 4:
PROPOSED CONCEPTUAL GRADING PLANS

CITY OF RIALTO
COUNTY OF SAN BERNARDINO, CALIFORNIA

PEPPER AVENUE INDUSTRIAL BUILDING
CONCEPTUAL GRADING



VICINITY MAP
TOWN, ROSHA, SEC.36
NOT TO SCALE

APPLICANT/OWNER
HOWARD INDUSTRIAL PARTNERS
1144 NORTH TUSTIN STREET, SUITE 122
ORANGE, CA 92865
CONTACT: TIM HOWARD
(TEL)714-769-9155

ARCHITECT
AO ARCHITECTURE
1144 NORTH STREET
ORANGE, CA 92866
CONTACT: STEPHEN PRZYBYLOWSKI
(TEL)714-639-4860

ENGINEER
FMCIVIL ENGINEERS INC.
29985 TECHNOLOGY DRIVE, SUITE 306
MURRIETA, CA 92563
CONTACT: FRANCISCO MARTINEZ
(TEL)951-331-4873

PROJECT DESCRIPTION
AN INDUSTRIAL WAREHOUSE FACILITY CONSISTING OF A WAREHOUSE TOTALING 432,000 SQUARE FEET ON 23.82 ACRES.

SITE PLAN KEYNOTES

1. PAINTED CONCRETE TILT-UP WAREHOUSE / OFFICE / MANUFACTURING FACILITY. BUILDING TO BE DESIGNED PER ARCHITECT'S PLANS
2. ON SITE ACCESSIBLE SIDEWALK AND CURB RAMPS.
3. CONCRETE CURB
4. CONCRETE CURB & GUTTER
5. STANDARD PARKING STALL MIN. 9' X 18' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
6. HANDICAP PARKING STALL MIN. 9' X 18' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
7. TRAILER PARKING STALL MIN. 12' X 50' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
8. ACCESSIBLE BUILDING ENTRY WITH ADJACENT BICYCLE RACKS PER ARCHITECT'S PLANS
9. PORTLAND CONC. CEMENT (PCC) PAVED TRUCK YARD ARCHITECT'S PLANS
10. POROUS ASPHALT PAVED PARKING PER ARCHITECT'S PLANS
11. DOCK HIGH TRUCK DOOR PER ARCHITECT'S PLANS
12. GRADE LEVEL RAMP DOOR PER ARCHITECT'S PLANS
13. EXTERIOR MAN DOOR AND STAIRS W/GUARD POST PER ARCHITECT'S PLANS
14. COMMERCIAL DRIVEWAY APPROACH PER SAN BERNARDINO COUNTY STD. 129B, LOCATED PER STD. 130, WITH DECORATIVE CONCRETE PAVING PER ARCHITECT'S PLANS
15. DETENTION BASIN
16. UNDERGROUND STORM WATER CHAMBER SYSTEM
17. LANDSCAPE AREA PER LANDSCAPE ARCHITECT'S PLANS
18. APPROXIMATE LOCATION OF TRASH ENCLOSURE PER ARCHITECT'S PLANS
19. METAL, MANUAL OPERATED SECURITY GATE WITH KNOX-PAD LOCK FOR FIRE DEPARTMENT ACCESS PER ARCHITECT'S PLANS
20. CONCRETE SCREEN WALL PER ARCHITECT'S PLANS
21. COMBINATION SCREEN & RETAINING WALL PER ARCHITECT'S PLANS
22. COMBINATION RETAINING WALL & TUBE STEEL FENCE PER ARCHITECT'S PLANS
23. TUBE STEEL FENCE PER ARCHITECT'S PLANS
24. RETAINING WALL
25. PROPOSED LOCATION OF FUTURE SEWER LIFT STATION (BY OTHERS)

LEGEND

- 1025 — INDEX CONTOUR
- RETAINING WALL
- FENCE
- EDGE OF PAVEMENT
- SIGN
- MH — MANHOLE
- RIGHT OF WAY
- EASEMENT
- PARCEL LINE
- PARCEL MAP BOUNDARY
- STREET CENTER LINE
- SCREEN WALL
- COMBINATION SCREEN/RETAINING WALL
- EXISTING LOT LINE
- RIDGE LINE
- RIBBON GUTTER
- FLOW ARROW
- PROPOSED EDGE OF PAVEMENT
- EX W — EXISTING WATER LINE
- EX SS — EXISTING SNR LINE
- SD — EXISTING STORM DRAIN PIPE
- SD — PROPOSED STORM DRAIN PIPE
- CUT/FILL LINE
- SLOPE SYMBOL
- PROPOSED STREET AC PAVEMENT
- GRIND AND OVERLAY
- POROUS PAVEMENT

SEWER

EXISTING SEWER:
PUBLIC SEWER

PROPOSED SEWER:
PRIVATE & PUBLIC SEWER

UTILITY COMPANIES:

WATER:	WEST VALLEY WATER DISTRICT PHONE: (909) 875-1322 RIALTO WATER SERVICES PHONE: (909) 820-2546
ELECTRIC:	SOUTHERN CALIFORNIA EDISON PHONE: (800) 655-4555
TELEPHONE:	AT&T PHONE: (800) 288-2020
CABLE:	SPECTRUM PHONE: (855) 243-8892
GAS:	SOUTHERN CALIFORNIA GAS COMPANY PHONE: (800) 427-2200
SCHOOL:	RIALTO UNIFIED SCHOOL DISTRICT PHONE: (909) 820-7700
SEWER:	RIALTO WATER SERVICES PHONE: (909) 820-2546

EARTHWORK ESTIMATE:

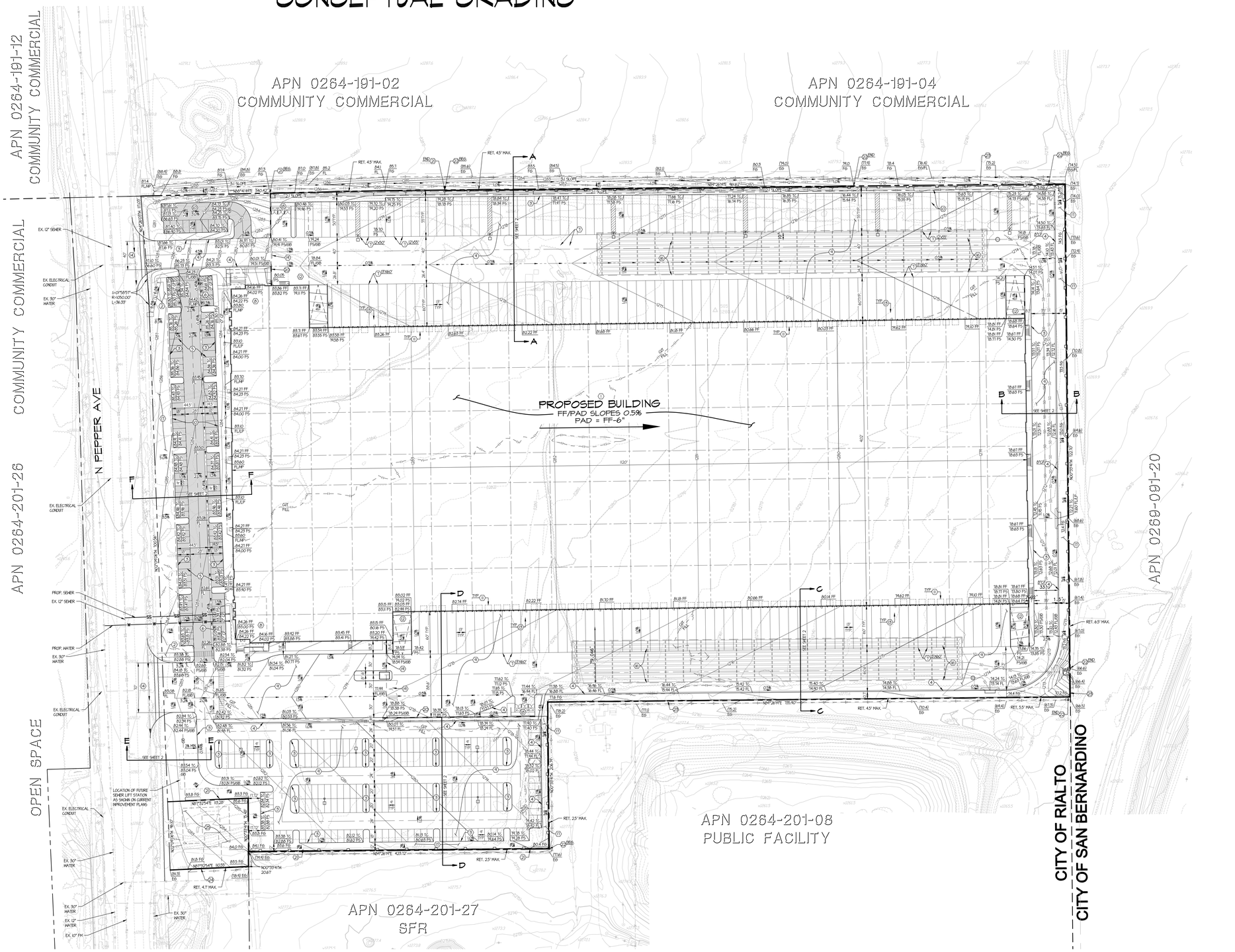
RAW CUT:	62,230 CY
RAW FILL:	49,740 CY
NET:	12,490 CY EXPORT

HAUL TRIPS:
ASSUMED (13 CY PER TRIP) = 961

ZONING ORDINANCE

EXISTING ZONING:
PEPPER AVENUE SPECIFIC PLAN COMMUNITY COMMERCIAL

PROPOSED ZONING:
PEPPER AVENUE SPECIFIC PLAN COMMUNITY COMMERCIAL (ALLOWING WAREHOUSE & LOGISTICS USES)



SCALE: 1"=50'

50 25 0 50 100 150
SCALE: 1"=50'

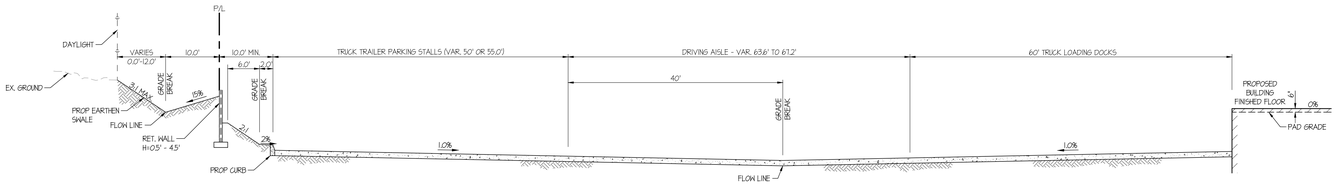
SAN BERNARDINO COUNTY	
PEPPER AVENUE INDUSTRIAL BUILDING CONCEPTUAL GRADING	
SCALE: AS SHOWN	SHEET 1
DATE: DEC. 2021	
DESIGNED: AJ	
CHECKED: FM	
PLN CK REF:	OF 2 SHEETS

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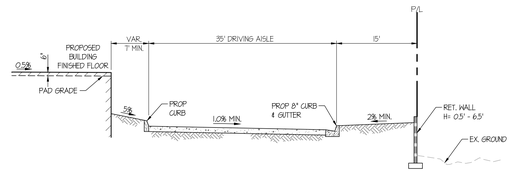
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CITY OF RIALTO
COUNTY OF SAN BERNARDINO, CALIFORNIA

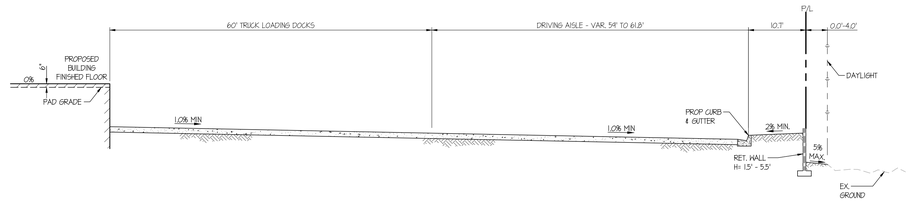
PEPPER AVENUE INDUSTRIAL BUILDING
CONCEPTUAL GRADING



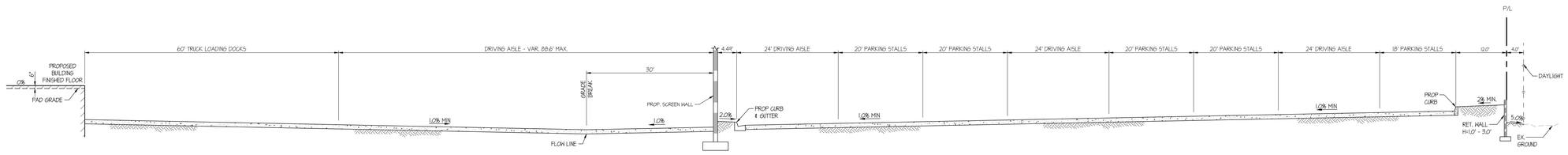
SECTION A-A
HOR. SCALE: 1"=10'



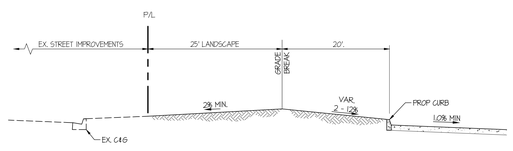
SECTION B-B
HOR. SCALE: 1"=10'



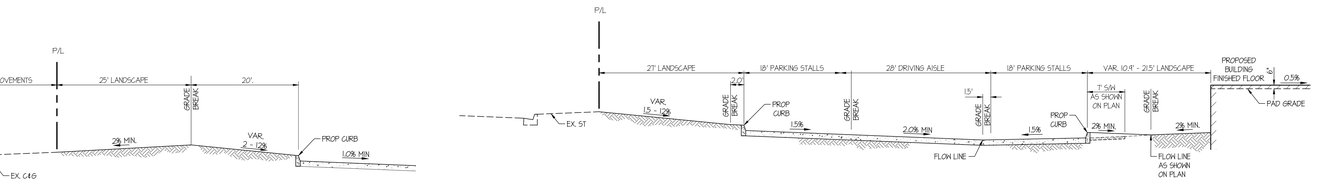
SECTION C-C
HOR. SCALE: 1"=10'



SECTION D-D
HOR. SCALE: 1"=10'



SECTION E-E
HOR. SCALE: 1"=10'



SECTION F-F
HOR. SCALE: 1"=10'

SAN BERNARDINO COUNTY

PEPPER AVENUE
INDUSTRIAL BUILDING
TYPICAL SECTIONS

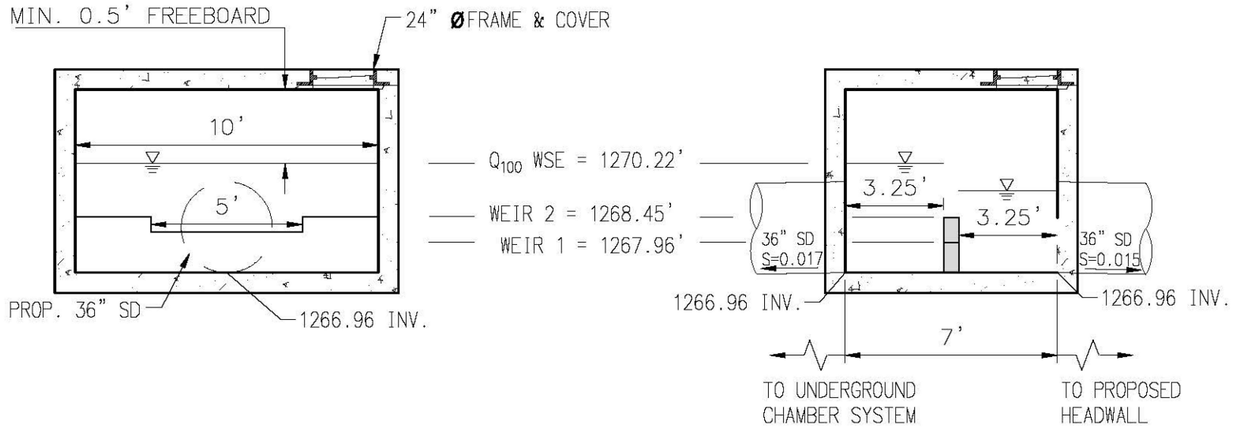
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SHEET 2 OF 2 SHEETS

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FIGURE 5:
OUTLET CONTROL STRUCTURE DETAIL



OUTLET CONTROL STRUCTURE

UNDERGROUND CHAMBER SYSTEM BOTTOM = 1264.77

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PEPPER AVE

OUTLET CONTROL STRUCTURE DETAIL

1

OF 1 SHEETS

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APPENDIX A

RATIONAL METHOD HYDROLOGY – EXISTING CONDITION

A.1: PRE-PROJECT CONDITION, AREA “A” - 100 YR

A.2: PRE-PROJECT CONDITION, OFFSITE AREA “X” – 100 YR

A.3: PRE-PROJECT CONDITION, AREA “A” - 2 YR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
EXISTING CONDITION
100-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.640 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 13.000 to Point/Station 14.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.978(In/Hr)
Initial subarea data:
Initial area flow distance = 668.000(Ft.)
Top (of initial area) elevation = 1288.700(Ft.)
Bottom (of initial area) elevation = 1282.000(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.01003 s(%)= 1.00
TC = k(0.950)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 32.164 min.
Rainfall intensity = 2.384(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.531
Subarea runoff = 1.417(CFS)
Total initial stream area = 1.120(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.978(In/Hr)

++
Process from Point/Station 14.000 to Point/Station 15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

```
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.272(Ft.), Average velocity =   1.554(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2            100.00              0.00
      3            200.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     11.460(CFS)
  '     '    flow top width =     54.305(Ft.)
  '     '    velocity=    1.554(Ft/s)
  '     '    area =      7.372(Sq.Ft)
  '     '    Froude number =     0.743

Upstream point elevation =  1282.000(Ft.)
Downstream point elevation =  1266.700(Ft.)
Flow length =  1084.000(Ft.)
Travel time  =   11.62 min.
Time of concentration =   43.79 min.
Depth of flow =   0.272(Ft.)
Average velocity =   1.554(Ft/s)
Total irregular channel flow =    11.460(CFS)
Irregular channel normal depth above invert elev. =   0.272(Ft.)
Average velocity of channel(s) =   1.554(Ft/s)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.978(In/Hr)
Rainfall intensity =      1.981(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.456
Subarea runoff =     19.985(CFS) for   22.580(Ac.)
Total runoff =     21.402(CFS)
Effective area this stream =       23.70(Ac.)
Total Study Area (Main Stream No. 1) =       23.70(Ac.)
Area averaged Fm value =    0.978(In/Hr)
Depth of flow =   0.343(Ft.), Average velocity =   1.817(Ft/s)
End of computations, Total Study Area =           23.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
EXISTING CONDITION
100-YEAR STORM EVENT ANALYSIS - OFFSITE WATERSHED X

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.640 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.978(In/Hr)
Initial subarea data:
Initial area flow distance = 594.000(Ft.)
Top (of initial area) elevation = 1291.100(Ft.)
Bottom (of initial area) elevation = 1282.000(Ft.)
Difference in elevation = 9.100(Ft.)
Slope = 0.01532 s(%)= 1.53
TC = k(0.950)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 28.196 min.
Rainfall intensity = 2.580(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.559
Subarea runoff = 3.129(CFS)
Total initial stream area = 2.170(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.978(In/Hr)

++
Process from Point/Station 11.000 to Point/Station 12.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

```
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.195(Ft.), Average velocity =   1.046(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2            100.00              0.00
      3            200.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      3.962(CFS)
  '     '    flow top width =     38.927(Ft.)
  '     '    velocity=    1.046(Ft/s)
  '     '    area =      3.788(Sq.Ft)
  '     '    Froude number =     0.591

Upstream point elevation =  1282.000(Ft.)
Downstream point elevation =  1274.700(Ft.)
Flow length =   733.000(Ft.)
Travel time  =   11.68 min.
Time of concentration =   39.88 min.
Depth of flow =   0.195(Ft.)
Average velocity =   1.046(Ft/s)
Total irregular channel flow =     3.962(CFS)
Irregular channel normal depth above invert elev. =   0.195(Ft.)
Average velocity of channel(s) =   1.046(Ft/s)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.978(In/Hr)
Rainfall intensity =      2.096(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.480
Subarea runoff =      1.589(CFS) for    2.520(Ac.)
Total runoff =      4.718(CFS)
Effective area this stream =        4.69(Ac.)
Total Study Area (Main Stream No. 1) =        4.69(Ac.)
Area averaged Fm value =    0.978(In/Hr)
Depth of flow =   0.208(Ft.), Average velocity =   1.092(Ft/s)
End of computations, Total Study Area =            4.69 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
EXISTING CONDITION
2-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.637 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 13.000 to Point/Station 14.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Initial subarea data:
Initial area flow distance = 668.000(Ft.)
Top (of initial area) elevation = 1288.700(Ft.)
Bottom (of initial area) elevation = 1282.000(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.01003 s(%)= 1.00
TC = k(0.950)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 32.164 min.
Rainfall intensity = 0.926(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.113
Subarea runoff = 0.117(CFS)
Total initial stream area = 1.120(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.810(In/Hr)

++
Process from Point/Station 14.000 to Point/Station 15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

```
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.054(Ft.), Average velocity =   0.530(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2            100.00              0.00
      3            200.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.154(CFS)
  '     '    flow top width =     10.799(Ft.)
  '     '    velocity=    0.530(Ft/s)
  '     '    area =      0.292(Sq.Ft)
  '     '    Froude number =     0.568

Upstream point elevation =  1282.000(Ft.)
Downstream point elevation =  1266.700(Ft.)
Flow length =  1084.000(Ft.)
Travel time  =   34.12 min.
Time of concentration =   66.28 min.
Depth of flow =   0.054(Ft.)
Average velocity =   0.530(Ft/s)
Total irregular channel flow =     0.154(CFS)
Irregular channel normal depth above invert elev. =   0.054(Ft.)
Average velocity of channel(s) =   0.530(Ft/s)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 50.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.810(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =      0.000(CFS)
therefore the upstream flow rate of Q =      0.117(CFS) is being used
Rainfall intensity =      0.600(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.000
Subarea runoff =      0.000(CFS) for   22.580(Ac.)
Total runoff =      0.117(CFS)
Effective area this stream =       23.70(Ac.)
Total Study Area (Main Stream No. 1) =       23.70(Ac.)
Area averaged Fm value =    0.810(In/Hr)
Depth of flow =   0.049(Ft.), Average velocity =   0.495(Ft/s)
End of computations, Total Study Area =           23.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  50.0
```

APPENDIX B

RATIONAL METHOD HYDROLOGY – PROPOSED CONDITION

B.1: POST-PROJECT CONDITION, AREA “A” -100 YR

B.2: POST-PROJECT CONDITION, OFFSITE AREA “X” – 100 YR

B.3: POST-PROJECT CONDITION, AREA “A” – 2 YR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
PROPOSED CONDITION
100-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.640 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.098(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 1288.200(Ft.)
Bottom (of initial area) elevation = 1277.700(Ft.)
Difference in elevation = 10.500(Ft.)
Slope = 0.02100 s(%)= 2.10
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.907 min.
Rainfall intensity = 5.533(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 22.255(CFS)
Total initial stream area = 4.550(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.098(In/Hr)

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       12.000
**** IMPROVED CHANNEL TRAVEL TIME ****
_____________________________________________________________________________
Upstream point elevation =  1277.700(Ft.)
Downstream point elevation =  1273.400(Ft.)
Channel length thru subarea  =   818.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  23.330
Slope or 'Z' of right channel bank =  23.330
Estimated mean flow rate at midpoint of channel =     26.480(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    4.500(Ft.)
Flow(q) thru subarea =     26.480(CFS)
Depth of flow =   0.595(Ft.), Average velocity =   3.201(Ft/s)
Channel flow top width =   27.786(Ft.)
Flow Velocity =    3.20(Ft/s)
Travel time  =    4.26 min.
Time of concentration =   12.17 min.
Critical depth =      0.602(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      4.272(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      8.363(CFS) for    3.600(Ac.)
Total runoff =     30.618(CFS)
Effective area this stream =        8.15(Ac.)
Total Study Area (Main Stream No. 1) =        8.15(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.629(Ft.), Average velocity =   3.319(Ft/s)
Critical depth =      0.641(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** IMPROVED CHANNEL TRAVEL TIME ****
_____________________________________________________________________________
Upstream point elevation =  1273.400(Ft.)
Downstream point elevation =  1271.600(Ft.)
Channel length thru subarea  =   366.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =     34.790(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.300(Ft.)
Flow(q) thru subarea =     34.790(CFS)
Depth of flow =   0.387(Ft.), Average velocity =   2.324(Ft/s)
Channel flow top width =   77.385(Ft.)
Flow Velocity =    2.32(Ft/s)
```

```
Travel time  =    2.62 min.
Time of concentration =   14.79 min.
Critical depth =      0.375(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      3.800(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =      8.261(CFS) for    3.520(Ac.)
Total runoff =     38.879(CFS)
Effective area this stream =       11.67(Ac.)
Total Study Area (Main Stream No. 1) =       11.67(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.403(Ft.), Average velocity =   2.389(Ft/s)
Critical depth =      0.395(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     11.670(Ac.)
Runoff from this stream =     38.879(CFS)
Time of concentration =   14.79 min.
Rainfall intensity =     3.800(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   306.000(Ft.)
Top (of initial area) elevation =  1273.700(Ft.)
Bottom (of initial area) elevation =  1271.600(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00686  s(%)=       0.69
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.126 min.
Rainfall intensity =      5.443(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
```

```
Subarea runoff =     14.576(CFS)
Total initial stream area =        3.030(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.030(Ac.)
Runoff from this stream =     14.576(CFS)
Time of concentration =    8.13 min.
Rainfall intensity =     5.443(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     38.88    11.670     14.79    0.098      3.800
2     14.58     3.030      8.13    0.098      5.443
Qmax(1) =
         1.000 *    1.000 *    38.879) +
         0.693 *    1.000 *    14.576) + =      48.974
Qmax(2) =
         1.444 *    0.549 *    38.879) +
         1.000 *    1.000 *    14.576) + =      45.415

Total of 2 streams to confluence:
Flow rates before confluence point:
      38.879      14.576
Maximum flow rates at confluence using above data:
       48.974       45.415
Area of streams before confluence:
       11.670        3.030
Effective area values after confluence:
       14.700        9.441
Results of confluence:
Total flow rate =     48.974(CFS)
Time of concentration =    14.792 min.
Effective stream area after confluence =     14.700(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =      14.70(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1265.600(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
Pipe length  =   465.00(Ft.)   Manning's N = 0.013
```

```
No. of pipes = 1  Required pipe flow  =    48.974(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    48.974(CFS)
Normal flow depth in pipe =   35.34(In.)
Flow top width inside pipe =   36.95(In.)
Critical Depth =   25.70(In.)
Pipe flow velocity =      5.27(Ft/s)
Travel time through pipe =    1.47 min.
Time of concentration (TC) =    16.26 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.700(Ac.)
Runoff from this stream =     48.974(CFS)
Time of concentration =   16.26 min.
Rainfall intensity =     3.589(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   431.000(Ft.)
Top (of initial area) elevation =  1284.800(Ft.)
Bottom (of initial area) elevation =  1282.500(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00534  s(%)=       0.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.800 min.
Rainfall intensity =      4.864(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      4.376(CFS)
Total initial stream area =        1.020(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       17.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
```

```
Upstream point elevation =  1282.500(Ft.)
Downstream point elevation =  1276.900(Ft.)
Channel length thru subarea  =   565.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  48.300
Slope or 'Z' of right channel bank =  48.300
Estimated mean flow rate at midpoint of channel =     11.224(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =     11.224(CFS)
Depth of flow =   0.292(Ft.), Average velocity =   2.732(Ft/s)
Channel flow top width =   28.173(Ft.)
Flow Velocity =    2.73(Ft/s)
Travel time  =    3.45 min.
Time of concentration =   13.25 min.
Critical depth =      0.320(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      4.060(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.878
Subarea runoff =     13.631(CFS) for    4.030(Ac.)
Total runoff =     18.006(CFS)
Effective area this stream =        5.05(Ac.)
Total Study Area (Main Stream No. 2) =       19.75(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.348(Ft.), Average velocity =   3.075(Ft/s)
Critical depth =      0.387(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.050(Ac.)
Runoff from this stream =     18.006(CFS)
Time of concentration =   13.25 min.
Rainfall intensity =     4.060(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
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Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   538.000(Ft.)
Top (of initial area) elevation =  1284.100(Ft.)
Bottom (of initial area) elevation =  1276.900(Ft.)
Difference in elevation =     7.200(Ft.)
Slope =    0.01338  s(%)=       1.34
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.910 min.
Rainfall intensity =      5.150(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =      9.412(CFS)
Total initial stream area =        2.070(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.070(Ac.)
Runoff from this stream =      9.412(CFS)
Time of concentration =    8.91 min.
Rainfall intensity =     5.150(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     18.01     5.050     13.25    0.098      4.060
2      9.41     2.070      8.91    0.098      5.150
Qmax(1) =
         1.000 *    1.000 *    18.006) +
         0.784 *    1.000 *     9.412) + =      25.387
Qmax(2) =
         1.275 *    0.673 *    18.006) +
         1.000 *    1.000 *     9.412) + =      24.857

Total of 2 streams to confluence:
Flow rates before confluence point:
      18.006       9.412
Maximum flow rates at confluence using above data:
       25.387       24.857
Area of streams before confluence:
        5.050        2.070
Effective area values after confluence:
        7.120        5.467
Results of confluence:
Total flow rate =     25.387(CFS)
Time of concentration =    13.247 min.
```

```
Effective stream area after confluence =      7.120(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =       7.12(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       17.000 to Point/Station       18.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1276.900(Ft.)
Downstream point elevation =  1273.700(Ft.)
Channel length thru subarea  =   628.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank =  12.500
Estimated mean flow rate at midpoint of channel =     26.326(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =     26.326(CFS)
Depth of flow =   0.430(Ft.), Average velocity =   2.536(Ft/s)
Channel flow top width =   48.332(Ft.)
Flow Velocity =    2.54(Ft/s)
Travel time  =    4.13 min.
Time of concentration =   17.37 min.
Critical depth =      0.422(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      3.450(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.874
Subarea runoff =      1.795(CFS) for    1.890(Ac.)
Total runoff =     27.181(CFS)
Effective area this stream =        9.01(Ac.)
Total Study Area (Main Stream No. 2) =       23.71(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.435(Ft.), Average velocity =   2.556(Ft/s)
Critical depth =      0.430(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1268.200(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
Pipe length  =    50.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.181(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    27.181(CFS)
Normal flow depth in pipe =   14.55(In.)
```

```
Flow top width inside pipe =   14.16(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.75(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    17.42 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.010(Ac.)
Runoff from this stream =     27.181(CFS)
Time of concentration =   17.42 min.
Rainfall intensity =     3.444(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     48.97    14.700     16.26    0.098      3.589
2     27.18     9.010     17.42    0.098      3.444
Qmax(1) =
         1.000 *    1.000 *    48.974) +
         1.043 *    0.934 *    27.181) + =      75.449
Qmax(2) =
         0.958 *    1.000 *    48.974) +
         1.000 *    1.000 *    27.181) + =      74.119

Total of 2 main streams to confluence:
Flow rates before confluence point:
      49.974      28.181
Maximum flow rates at confluence using above data:
       75.449       74.119
Area of streams before confluence:
       14.700        9.010
Effective area values after confluence:
       23.111       23.710


Results of confluence:
Total flow rate =     75.449(CFS)
Time of concentration =    16.263 min.
Effective stream area after confluence  =     23.111(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total =      23.71(Ac.)
End of computations, Total Study Area =           23.71 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.
```

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 32.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
PROPOSED CONDITION
100-YEAR STORM EVENT ANALYSIS - OFFSITE WATERSHED X

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.640 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 20.000 to Point/Station 21.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.978(In/Hr)
Initial subarea data:
Initial area flow distance = 587.000(Ft.)
Top (of initial area) elevation = 1291.100(Ft.)
Bottom (of initial area) elevation = 1281.900(Ft.)
Difference in elevation = 9.200(Ft.)
Slope = 0.01567 s(%)= 1.57
TC = k(0.950)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 27.935 min.
Rainfall intensity = 2.594(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.561
Subarea runoff = 3.157(CFS)
Total initial stream area = 2.170(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.978(In/Hr)

++
Process from Point/Station 21.000 to Point/Station 22.000

**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1281.900(Ft.)
Downstream point elevation = 1274.500(Ft.)
Channel length thru subarea = 734.000(Ft.)
Channel base width = 5.000(Ft.)
Slope or 'Z' of left channel bank = 0.000
Slope or 'Z' of right channel bank = 0.000
Estimated mean flow rate at midpoint of channel = 4.853(CFS)
Manning's 'N' = 0.005
Maximum depth of channel = 2.500(Ft.)
Flow(q) thru subarea = 4.853(CFS)
Depth of flow = 0.131(Ft.), Average velocity = 7.427(Ft/s)
Channel flow top width = 5.000(Ft.)
Flow Velocity = 7.43(Ft/s)
Travel time = 1.65 min.
Time of concentration = 29.58 min.
Critical depth = 0.309(Ft.)
Adding area flow to channel
Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.978(In/Hr)
Rainfall intensity = 2.507(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.549
Subarea runoff = 3.297(CFS) for 2.520(Ac.)
Total runoff = 6.454(CFS)
Effective area this stream = 4.69(Ac.)
Total Study Area (Main Stream No. 1) = 4.69(Ac.)
Area averaged Fm value = 0.978(In/Hr)
Depth of flow = 0.156(Ft.), Average velocity = 8.293(Ft/s)
Critical depth = 0.375(Ft.)
End of computations, Total Study Area = 4.69 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 32.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
PROPOSED CONDITION
2-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.637 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.098(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 1288.200(Ft.)
Bottom (of initial area) elevation = 1277.700(Ft.)
Difference in elevation = 10.500(Ft.)
Slope = 0.02100 s(%)= 2.10
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.907 min.
Rainfall intensity = 2.149(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.859
Subarea runoff = 8.399(CFS)
Total initial stream area = 4.550(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.098(In/Hr)

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Process from Point/Station       11.000 to Point/Station       12.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1277.700(Ft.)
Downstream point elevation =  1273.400(Ft.)
Channel length thru subarea  =   818.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  23.330
Slope or 'Z' of right channel bank =  23.330
Estimated mean flow rate at midpoint of channel =      9.626(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    4.500(Ft.)
Flow(q) thru subarea =      9.626(CFS)
Depth of flow =   0.407(Ft.), Average velocity =   2.485(Ft/s)
Channel flow top width =   19.011(Ft.)
Flow Velocity =    2.49(Ft/s)
Travel time  =    5.49 min.
Time of concentration =   13.39 min.
Critical depth =      0.402(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.566(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.844
Subarea runoff =      2.373(CFS) for    3.600(Ac.)
Total runoff =     10.772(CFS)
Effective area this stream =        8.15(Ac.)
Total Study Area (Main Stream No. 1) =        8.15(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.425(Ft.), Average velocity =   2.556(Ft/s)
Critical depth =      0.422(Ft.)


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Process from Point/Station       12.000 to Point/Station       13.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1273.400(Ft.)
Downstream point elevation =  1271.600(Ft.)
Channel length thru subarea  =   366.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =     12.085(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.300(Ft.)
Flow(q) thru subarea =     12.085(CFS)
Depth of flow =   0.260(Ft.), Average velocity =   1.784(Ft/s)
Channel flow top width =   52.054(Ft.)
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Flow Velocity =    1.78(Ft/s)
Travel time  =    3.42 min.
Time of concentration =   16.81 min.
Critical depth =      0.246(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.367(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.836
Subarea runoff =      2.555(CFS) for    3.520(Ac.)
Total runoff =     13.327(CFS)
Effective area this stream =       11.67(Ac.)
Total Study Area (Main Stream No. 1) =       11.67(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.270(Ft.), Average velocity =   1.828(Ft/s)
Critical depth =      0.256(Ft.)


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Process from Point/Station       12.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     11.670(Ac.)
Runoff from this stream =     13.327(CFS)
Time of concentration =   16.81 min.
Rainfall intensity =     1.367(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


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Process from Point/Station       18.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   306.000(Ft.)
Top (of initial area) elevation =  1273.700(Ft.)
Bottom (of initial area) elevation =  1271.600(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00686  s(%)=       0.69
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.126 min.
Rainfall intensity =      2.114(In/Hr) for a     2.0 year storm
```

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Effective runoff coefficient used for area (Q=KCIA) is C = 0.858
Subarea runoff =      5.498(CFS)
Total initial stream area =        3.030(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


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Process from Point/Station       18.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.030(Ac.)
Runoff from this stream =      5.498(CFS)
Time of concentration =    8.13 min.
Rainfall intensity =     2.114(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.33    11.670     16.81    0.098      1.367
2      5.50     3.030      8.13    0.098      2.114
Qmax(1) =
         1.000 *    1.000 *    13.327) +
         0.629 *    1.000 *     5.498) + =      16.787
Qmax(2) =
         1.589 *    0.483 *    13.327) +
         1.000 *    1.000 *     5.498) + =      15.734

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.327       5.498
Maximum flow rates at confluence using above data:
       16.787       15.734
Area of streams before confluence:
       11.670        3.030
Effective area values after confluence:
       14.700        8.670
Results of confluence:
Total flow rate =     16.787(CFS)
Time of concentration =    16.812 min.
Effective stream area after confluence =     14.700(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =      14.70(Ac.)


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Process from Point/Station       13.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1265.600(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
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Pipe length  =   465.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.787(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    16.787(CFS)
Normal flow depth in pipe =   23.77(In.)
Flow top width inside pipe =   24.34(In.)
Critical Depth =   16.62(In.)
Pipe flow velocity =      4.02(Ft/s)
Travel time through pipe =    1.93 min.
Time of concentration (TC) =    18.74 min.


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Process from Point/Station       13.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.700(Ac.)
Runoff from this stream =     16.787(CFS)
Time of concentration =   18.74 min.
Rainfall intensity =     1.281(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


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Process from Point/Station       14.000 to Point/Station       15.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   431.000(Ft.)
Top (of initial area) elevation =  1284.800(Ft.)
Bottom (of initial area) elevation =  1282.500(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00534  s(%)=       0.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.800 min.
Rainfall intensity =      1.889(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff =      1.645(CFS)
Total initial stream area =        1.020(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


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Process from Point/Station       15.000 to Point/Station       17.000
**** IMPROVED CHANNEL TRAVEL TIME ****
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Upstream point elevation =  1282.500(Ft.)
Downstream point elevation =  1276.900(Ft.)
Channel length thru subarea  =   565.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  48.300
Slope or 'Z' of right channel bank =  48.300
Estimated mean flow rate at midpoint of channel =      4.062(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =      4.062(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   2.119(Ft/s)
Channel flow top width =   19.244(Ft.)
Flow Velocity =    2.12(Ft/s)
Travel time  =    4.44 min.
Time of concentration =   14.24 min.
Critical depth =      0.213(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.510(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.842
Subarea runoff =      4.772(CFS) for    4.030(Ac.)
Total runoff =      6.417(CFS)
Effective area this stream =        5.05(Ac.)
Total Study Area (Main Stream No. 2) =       19.75(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.236(Ft.), Average velocity =   2.376(Ft/s)
Critical depth =      0.256(Ft.)


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Process from Point/Station       15.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.050(Ac.)
Runoff from this stream =      6.417(CFS)
Time of concentration =   14.24 min.
Rainfall intensity =     1.510(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   538.000(Ft.)
Top (of initial area) elevation =  1284.100(Ft.)
Bottom (of initial area) elevation =  1276.900(Ft.)
Difference in elevation =     7.200(Ft.)
Slope =    0.01338  s(%)=       1.34
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.910 min.
Rainfall intensity =      2.000(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.856
Subarea runoff =      3.544(CFS)
Total initial stream area =        2.070(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.070(Ac.)
Runoff from this stream =      3.544(CFS)
Time of concentration =    8.91 min.
Rainfall intensity =     2.000(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      6.42     5.050     14.24    0.098      1.510
2      3.54     2.070      8.91    0.098      2.000
Qmax(1) =
         1.000 *    1.000 *     6.417) +
         0.742 *    1.000 *     3.544) + =       9.047
Qmax(2) =
         1.348 *    0.626 *     6.417) +
         1.000 *    1.000 *     3.544) + =       8.954

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.417       3.544
Maximum flow rates at confluence using above data:
        9.047        8.954
Area of streams before confluence:
        5.050        2.070
Effective area values after confluence:
        7.120        5.229
Results of confluence:
Total flow rate =      9.047(CFS)
```

```
Time of concentration =    14.244 min.
Effective stream area after confluence =      7.120(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =       7.12(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       17.000 to Point/Station       18.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1276.900(Ft.)
Downstream point elevation =  1273.700(Ft.)
Channel length thru subarea  =   628.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank =  12.500
Estimated mean flow rate at midpoint of channel =      9.216(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =      9.216(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   1.950(Ft/s)
Channel flow top width =   32.605(Ft.)
Flow Velocity =    1.95(Ft/s)
Travel time  =    5.37 min.
Time of concentration =   19.61 min.
Critical depth =      0.277(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.246(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =      0.265(CFS) for    1.890(Ac.)
Total runoff =      9.312(CFS)
Effective area this stream =        9.01(Ac.)
Total Study Area (Main Stream No. 2) =       23.71(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.291(Ft.), Average velocity =   1.956(Ft/s)
Critical depth =      0.279(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1268.200(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
Pipe length  =    50.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.312(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.312(CFS)
```

```
Normal flow depth in pipe =    9.82(In.)
Flow top width inside pipe =    9.25(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.54(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    19.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.010(Ac.)
Runoff from this stream =      9.312(CFS)
Time of concentration =   19.67 min.
Rainfall intensity =     1.244(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     16.79    14.700     18.74    0.098      1.281
2      9.31     9.010     19.67    0.098      1.244
Qmax(1) =
         1.000 *    1.000 *    16.787) +
         1.032 *    0.953 *     9.312) + =      25.942
Qmax(2) =
         0.969 *    1.000 *    16.787) +
         1.000 *    1.000 *     9.312) + =      25.577

Total of 2 main streams to confluence:
Flow rates before confluence point:
      17.787      10.312
Maximum flow rates at confluence using above data:
       25.942       25.577
Area of streams before confluence:
       14.700        9.010
Effective area values after confluence:
       23.283       23.710


Results of confluence:
Total flow rate =     25.942(CFS)
Time of concentration =    18.739 min.
Effective stream area after confluence  =     23.283(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total =      23.71(Ac.)
End of computations, Total Study Area =           23.71 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
```

effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 32.0

APPENDIX C

PRE – PROJECT CONDITION UNIT HYDROGRAPH HYDROLOGY

C.1: UNIT HYDROGRAPH ANALYSIS, 100 YEAR, 24 HOUR STORM DURATION, WATERSHED “A”

C.2: UNIT HYDROGRAPH ANALYSIS, 2 YEAR, 24 HOUR STORM DURATION, WATERSHED “A”

U n i t H y d r o g r a p h A n a l y s i s

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Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE EXISTING CONDITION
100-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
23.70	1	1.64
Rainfall data for year 100		
23.70	6	3.74
Rainfall data for year 100		
23.70	24	6.86

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	23.70	1.000	0.978	1.000	0.978

Area-averaged adjusted loss rate Fm (In/Hr) = 0.978

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
23.70	1.000	32.0	32.0	21.25	0.042

Area-averaged catchment yield fraction, Y = 0.042
Area-averaged low loss fraction, Yb = 0.958
User entry of time of concentration = 0.730 (hours)
++
Watershed area = 23.70(Ac.)
Catchment Lag time = 0.584 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 14.2733
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.978(In/Hr)
Average low loss rate fraction (Yb) = 0.958 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.607(In)
Computed peak 30-minute rainfall = 1.243(In)
Specified peak 1-hour rainfall = 1.640(In)
Computed peak 3-hour rainfall = 2.719(In)
Specified peak 6-hour rainfall = 3.740(In)
Specified peak 24-hour rainfall = 6.860(In)

Rainfall depth area reduction factors:
Using a total area of 23.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.606(In)
30-minute factor = 0.999 Adjusted rainfall = 1.242(In)
1-hour factor = 0.999 Adjusted rainfall = 1.638(In)
3-hour factor = 1.000 Adjusted rainfall = 2.718(In)
6-hour factor = 1.000 Adjusted rainfall = 3.740(In)
24-hour factor = 1.000 Adjusted rainfall = 6.860(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 286.62 (CFS))		
1	0.818	2.345
2	2.823	5.746
3	6.629	10.910
4	13.405	19.419
5	21.858	24.228
6	31.546	27.770
7	43.048	32.967

8	55.777	36.485
9	68.287	35.855
10	76.124	22.461
11	82.388	17.955
12	88.038	16.195
13	90.934	8.299
14	93.639	7.754
15	95.598	5.614
16	96.922	3.797
17	97.865	2.701
18	98.296	1.236
19	98.553	0.736
20	98.810	0.736
21	99.067	0.736
22	99.324	0.736
23	99.581	0.736
24	99.833	0.724
25	100.000	0.478

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6063	0.6063
2	0.8000	0.1937
3	0.9409	0.1409
4	1.0556	0.1147
5	1.1542	0.0986
6	1.2415	0.0873
7	1.3205	0.0790
8	1.3929	0.0724
9	1.4601	0.0672
10	1.5230	0.0629
11	1.5821	0.0592
12	1.6382	0.0560
13	1.6998	0.0616
14	1.7588	0.0591
15	1.8157	0.0568
16	1.8705	0.0548
17	1.9235	0.0530
18	1.9749	0.0514
19	2.0247	0.0498
20	2.0731	0.0484
21	2.1203	0.0472
22	2.1663	0.0460
23	2.2111	0.0448
24	2.2549	0.0438
25	2.2978	0.0428
26	2.3397	0.0419
27	2.3807	0.0411
28	2.4210	0.0402
29	2.4605	0.0395
30	2.4992	0.0388
31	2.5373	0.0381
32	2.5747	0.0374
33	2.6115	0.0368
34	2.6477	0.0362
35	2.6833	0.0356
36	2.7184	0.0351

37	2.7528	0.0345
38	2.7868	0.0340
39	2.8204	0.0335
40	2.8534	0.0331
41	2.8860	0.0326
42	2.9182	0.0322
43	2.9500	0.0318
44	2.9813	0.0314
45	3.0123	0.0310
46	3.0430	0.0306
47	3.0732	0.0303
48	3.1032	0.0299
49	3.1327	0.0296
50	3.1620	0.0293
51	3.1909	0.0289
52	3.2196	0.0286
53	3.2479	0.0283
54	3.2760	0.0281
55	3.3038	0.0278
56	3.3313	0.0275
57	3.3585	0.0272
58	3.3855	0.0270
59	3.4123	0.0267
60	3.4387	0.0265
61	3.4650	0.0263
62	3.4910	0.0260
63	3.5168	0.0258
64	3.5424	0.0256
65	3.5678	0.0254
66	3.5929	0.0252
67	3.6179	0.0250
68	3.6426	0.0248
69	3.6672	0.0246
70	3.6916	0.0244
71	3.7157	0.0242
72	3.7397	0.0240
73	3.7624	0.0226
74	3.7848	0.0225
75	3.8071	0.0223
76	3.8293	0.0221
77	3.8512	0.0220
78	3.8730	0.0218
79	3.8947	0.0217
80	3.9162	0.0215
81	3.9375	0.0213
82	3.9587	0.0212
83	3.9798	0.0211
84	4.0007	0.0209
85	4.0215	0.0208
86	4.0421	0.0206
87	4.0626	0.0205
88	4.0830	0.0204
89	4.1032	0.0202
90	4.1233	0.0201
91	4.1433	0.0200
92	4.1632	0.0199
93	4.1829	0.0197

94	4.2026	0.0196
95	4.2221	0.0195
96	4.2415	0.0194
97	4.2607	0.0193
98	4.2799	0.0192
99	4.2990	0.0191
100	4.3179	0.0189
101	4.3367	0.0188
102	4.3555	0.0187
103	4.3741	0.0186
104	4.3927	0.0185
105	4.4111	0.0184
106	4.4294	0.0183
107	4.4477	0.0182
108	4.4658	0.0181
109	4.4839	0.0180
110	4.5018	0.0180
111	4.5197	0.0179
112	4.5374	0.0178
113	4.5551	0.0177
114	4.5727	0.0176
115	4.5902	0.0175
116	4.6077	0.0174
117	4.6250	0.0173
118	4.6423	0.0173
119	4.6594	0.0172
120	4.6765	0.0171
121	4.6936	0.0170
122	4.7105	0.0169
123	4.7273	0.0169
124	4.7441	0.0168
125	4.7608	0.0167
126	4.7775	0.0166
127	4.7940	0.0166
128	4.8105	0.0165
129	4.8269	0.0164
130	4.8432	0.0163
131	4.8595	0.0163
132	4.8757	0.0162
133	4.8918	0.0161
134	4.9079	0.0161
135	4.9239	0.0160
136	4.9398	0.0159
137	4.9557	0.0159
138	4.9715	0.0158
139	4.9872	0.0157
140	5.0029	0.0157
141	5.0185	0.0156
142	5.0340	0.0155
143	5.0495	0.0155
144	5.0650	0.0154
145	5.0803	0.0154
146	5.0956	0.0153
147	5.1109	0.0152
148	5.1260	0.0152
149	5.1412	0.0151
150	5.1562	0.0151

151	5.1713	0.0150
152	5.1862	0.0150
153	5.2011	0.0149
154	5.2160	0.0148
155	5.2308	0.0148
156	5.2455	0.0147
157	5.2602	0.0147
158	5.2748	0.0146
159	5.2894	0.0146
160	5.3040	0.0145
161	5.3184	0.0145
162	5.3329	0.0144
163	5.3472	0.0144
164	5.3616	0.0143
165	5.3759	0.0143
166	5.3901	0.0142
167	5.4043	0.0142
168	5.4184	0.0141
169	5.4325	0.0141
170	5.4466	0.0140
171	5.4605	0.0140
172	5.4745	0.0140
173	5.4884	0.0139
174	5.5023	0.0139
175	5.5161	0.0138
176	5.5299	0.0138
177	5.5436	0.0137
178	5.5573	0.0137
179	5.5709	0.0136
180	5.5845	0.0136
181	5.5981	0.0136
182	5.6116	0.0135
183	5.6250	0.0135
184	5.6385	0.0134
185	5.6519	0.0134
186	5.6652	0.0133
187	5.6785	0.0133
188	5.6918	0.0133
189	5.7050	0.0132
190	5.7182	0.0132
191	5.7314	0.0132
192	5.7445	0.0131
193	5.7576	0.0131
194	5.7706	0.0130
195	5.7836	0.0130
196	5.7965	0.0130
197	5.8095	0.0129
198	5.8224	0.0129
199	5.8352	0.0129
200	5.8480	0.0128
201	5.8608	0.0128
202	5.8735	0.0127
203	5.8863	0.0127
204	5.8989	0.0127
205	5.9116	0.0126
206	5.9242	0.0126
207	5.9367	0.0126

208	5.9493	0.0125
209	5.9618	0.0125
210	5.9742	0.0125
211	5.9867	0.0124
212	5.9991	0.0124
213	6.0114	0.0124
214	6.0238	0.0123
215	6.0361	0.0123
216	6.0483	0.0123
217	6.0606	0.0122
218	6.0728	0.0122
219	6.0850	0.0122
220	6.0971	0.0121
221	6.1092	0.0121
222	6.1213	0.0121
223	6.1333	0.0121
224	6.1454	0.0120
225	6.1574	0.0120
226	6.1693	0.0120
227	6.1812	0.0119
228	6.1932	0.0119
229	6.2050	0.0119
230	6.2169	0.0118
231	6.2287	0.0118
232	6.2405	0.0118
233	6.2522	0.0118
234	6.2640	0.0117
235	6.2757	0.0117
236	6.2873	0.0117
237	6.2990	0.0116
238	6.3106	0.0116
239	6.3222	0.0116
240	6.3337	0.0116
241	6.3453	0.0115
242	6.3568	0.0115
243	6.3683	0.0115
244	6.3797	0.0115
245	6.3911	0.0114
246	6.4026	0.0114
247	6.4139	0.0114
248	6.4253	0.0114
249	6.4366	0.0113
250	6.4479	0.0113
251	6.4592	0.0113
252	6.4704	0.0112
253	6.4817	0.0112
254	6.4929	0.0112
255	6.5040	0.0112
256	6.5152	0.0111
257	6.5263	0.0111
258	6.5374	0.0111
259	6.5485	0.0111
260	6.5595	0.0111
261	6.5706	0.0110
262	6.5816	0.0110
263	6.5925	0.0110
264	6.6035	0.0110

265	6.6144	0.0109
266	6.6253	0.0109
267	6.6362	0.0109
268	6.6471	0.0109
269	6.6579	0.0108
270	6.6688	0.0108
271	6.6796	0.0108
272	6.6903	0.0108
273	6.7011	0.0108
274	6.7118	0.0107
275	6.7225	0.0107
276	6.7332	0.0107
277	6.7439	0.0107
278	6.7545	0.0106
279	6.7651	0.0106
280	6.7757	0.0106
281	6.7863	0.0106
282	6.7969	0.0106
283	6.8074	0.0105
284	6.8179	0.0105
285	6.8284	0.0105
286	6.8389	0.0105
287	6.8494	0.0105
288	6.8598	0.0104

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0104	0.0100	0.0004
2	0.0105	0.0100	0.0004
3	0.0105	0.0101	0.0004
4	0.0105	0.0101	0.0004
5	0.0106	0.0101	0.0004
6	0.0106	0.0101	0.0004
7	0.0106	0.0102	0.0004
8	0.0106	0.0102	0.0004
9	0.0107	0.0102	0.0004
10	0.0107	0.0103	0.0004
11	0.0108	0.0103	0.0004
12	0.0108	0.0103	0.0004
13	0.0108	0.0104	0.0005
14	0.0108	0.0104	0.0005
15	0.0109	0.0104	0.0005
16	0.0109	0.0105	0.0005
17	0.0110	0.0105	0.0005
18	0.0110	0.0105	0.0005
19	0.0110	0.0106	0.0005
20	0.0111	0.0106	0.0005
21	0.0111	0.0106	0.0005
22	0.0111	0.0107	0.0005
23	0.0112	0.0107	0.0005
24	0.0112	0.0107	0.0005
25	0.0112	0.0108	0.0005
26	0.0113	0.0108	0.0005
27	0.0113	0.0109	0.0005
28	0.0114	0.0109	0.0005

29	0.0114	0.0109	0.0005
30	0.0114	0.0110	0.0005
31	0.0115	0.0110	0.0005
32	0.0115	0.0110	0.0005
33	0.0116	0.0111	0.0005
34	0.0116	0.0111	0.0005
35	0.0116	0.0112	0.0005
36	0.0117	0.0112	0.0005
37	0.0117	0.0112	0.0005
38	0.0118	0.0113	0.0005
39	0.0118	0.0113	0.0005
40	0.0118	0.0114	0.0005
41	0.0119	0.0114	0.0005
42	0.0119	0.0114	0.0005
43	0.0120	0.0115	0.0005
44	0.0120	0.0115	0.0005
45	0.0121	0.0116	0.0005
46	0.0121	0.0116	0.0005
47	0.0122	0.0117	0.0005
48	0.0122	0.0117	0.0005
49	0.0123	0.0118	0.0005
50	0.0123	0.0118	0.0005
51	0.0124	0.0119	0.0005
52	0.0124	0.0119	0.0005
53	0.0125	0.0119	0.0005
54	0.0125	0.0120	0.0005
55	0.0126	0.0120	0.0005
56	0.0126	0.0121	0.0005
57	0.0127	0.0121	0.0005
58	0.0127	0.0122	0.0005
59	0.0128	0.0122	0.0005
60	0.0128	0.0123	0.0005
61	0.0129	0.0124	0.0005
62	0.0129	0.0124	0.0005
63	0.0130	0.0125	0.0005
64	0.0130	0.0125	0.0005
65	0.0131	0.0126	0.0005
66	0.0132	0.0126	0.0005
67	0.0132	0.0127	0.0006
68	0.0133	0.0127	0.0006
69	0.0133	0.0128	0.0006
70	0.0134	0.0128	0.0006
71	0.0135	0.0129	0.0006
72	0.0135	0.0130	0.0006
73	0.0136	0.0130	0.0006
74	0.0136	0.0131	0.0006
75	0.0137	0.0132	0.0006
76	0.0138	0.0132	0.0006
77	0.0139	0.0133	0.0006
78	0.0139	0.0133	0.0006
79	0.0140	0.0134	0.0006
80	0.0140	0.0135	0.0006
81	0.0141	0.0135	0.0006
82	0.0142	0.0136	0.0006
83	0.0143	0.0137	0.0006
84	0.0143	0.0137	0.0006
85	0.0144	0.0138	0.0006

86	0.0145	0.0139	0.0006
87	0.0146	0.0140	0.0006
88	0.0146	0.0140	0.0006
89	0.0147	0.0141	0.0006
90	0.0148	0.0142	0.0006
91	0.0149	0.0143	0.0006
92	0.0150	0.0143	0.0006
93	0.0151	0.0144	0.0006
94	0.0151	0.0145	0.0006
95	0.0152	0.0146	0.0006
96	0.0153	0.0147	0.0006
97	0.0154	0.0148	0.0006
98	0.0155	0.0148	0.0006
99	0.0156	0.0150	0.0006
100	0.0157	0.0150	0.0007
101	0.0158	0.0151	0.0007
102	0.0159	0.0152	0.0007
103	0.0160	0.0153	0.0007
104	0.0161	0.0154	0.0007
105	0.0162	0.0155	0.0007
106	0.0163	0.0156	0.0007
107	0.0164	0.0157	0.0007
108	0.0165	0.0158	0.0007
109	0.0166	0.0159	0.0007
110	0.0167	0.0160	0.0007
111	0.0169	0.0162	0.0007
112	0.0169	0.0162	0.0007
113	0.0171	0.0164	0.0007
114	0.0172	0.0165	0.0007
115	0.0173	0.0166	0.0007
116	0.0174	0.0167	0.0007
117	0.0176	0.0169	0.0007
118	0.0177	0.0169	0.0007
119	0.0179	0.0171	0.0007
120	0.0180	0.0172	0.0007
121	0.0181	0.0174	0.0008
122	0.0182	0.0175	0.0008
123	0.0184	0.0177	0.0008
124	0.0185	0.0178	0.0008
125	0.0187	0.0180	0.0008
126	0.0188	0.0181	0.0008
127	0.0191	0.0183	0.0008
128	0.0192	0.0184	0.0008
129	0.0194	0.0186	0.0008
130	0.0195	0.0187	0.0008
131	0.0197	0.0189	0.0008
132	0.0199	0.0190	0.0008
133	0.0201	0.0193	0.0008
134	0.0202	0.0194	0.0008
135	0.0205	0.0196	0.0009
136	0.0206	0.0198	0.0009
137	0.0209	0.0200	0.0009
138	0.0211	0.0202	0.0009
139	0.0213	0.0205	0.0009
140	0.0215	0.0206	0.0009
141	0.0218	0.0209	0.0009
142	0.0220	0.0211	0.0009

143	0.0223	0.0214	0.0009
144	0.0225	0.0215	0.0009
145	0.0240	0.0230	0.0010
146	0.0242	0.0232	0.0010
147	0.0246	0.0235	0.0010
148	0.0248	0.0237	0.0010
149	0.0252	0.0241	0.0010
150	0.0254	0.0243	0.0011
151	0.0258	0.0247	0.0011
152	0.0260	0.0249	0.0011
153	0.0265	0.0254	0.0011
154	0.0267	0.0256	0.0011
155	0.0272	0.0261	0.0011
156	0.0275	0.0264	0.0011
157	0.0281	0.0269	0.0012
158	0.0283	0.0272	0.0012
159	0.0289	0.0277	0.0012
160	0.0293	0.0280	0.0012
161	0.0299	0.0287	0.0012
162	0.0303	0.0290	0.0013
163	0.0310	0.0297	0.0013
164	0.0314	0.0301	0.0013
165	0.0322	0.0308	0.0013
166	0.0326	0.0313	0.0014
167	0.0335	0.0321	0.0014
168	0.0340	0.0326	0.0014
169	0.0351	0.0336	0.0015
170	0.0356	0.0341	0.0015
171	0.0368	0.0353	0.0015
172	0.0374	0.0359	0.0016
173	0.0388	0.0371	0.0016
174	0.0395	0.0378	0.0016
175	0.0411	0.0394	0.0017
176	0.0419	0.0402	0.0017
177	0.0438	0.0420	0.0018
178	0.0448	0.0430	0.0019
179	0.0472	0.0452	0.0020
180	0.0484	0.0464	0.0020
181	0.0514	0.0492	0.0021
182	0.0530	0.0508	0.0022
183	0.0568	0.0545	0.0024
184	0.0591	0.0566	0.0025
185	0.0560	0.0537	0.0023
186	0.0592	0.0567	0.0025
187	0.0672	0.0644	0.0028
188	0.0724	0.0694	0.0030
189	0.0873	0.0815	0.0058
190	0.0986	0.0815	0.0171
191	0.1409	0.0815	0.0594
192	0.1937	0.0815	0.1122
193	0.6063	0.0815	0.5248
194	0.1147	0.0815	0.0333
195	0.0790	0.0757	0.0033
196	0.0629	0.0602	0.0026
197	0.0616	0.0590	0.0026
198	0.0548	0.0525	0.0023
199	0.0498	0.0478	0.0021

200	0.0460	0.0440	0.0019
201	0.0428	0.0411	0.0018
202	0.0402	0.0386	0.0017
203	0.0381	0.0365	0.0016
204	0.0362	0.0347	0.0015
205	0.0345	0.0331	0.0014
206	0.0331	0.0317	0.0014
207	0.0318	0.0304	0.0013
208	0.0306	0.0293	0.0013
209	0.0296	0.0284	0.0012
210	0.0286	0.0275	0.0012
211	0.0278	0.0266	0.0012
212	0.0270	0.0259	0.0011
213	0.0263	0.0252	0.0011
214	0.0256	0.0245	0.0011
215	0.0250	0.0239	0.0010
216	0.0244	0.0233	0.0010
217	0.0226	0.0217	0.0009
218	0.0221	0.0212	0.0009
219	0.0217	0.0208	0.0009
220	0.0212	0.0203	0.0009
221	0.0208	0.0199	0.0009
222	0.0204	0.0195	0.0008
223	0.0200	0.0192	0.0008
224	0.0196	0.0188	0.0008
225	0.0193	0.0185	0.0008
226	0.0189	0.0182	0.0008
227	0.0186	0.0179	0.0008
228	0.0183	0.0176	0.0008
229	0.0180	0.0173	0.0008
230	0.0178	0.0170	0.0007
231	0.0175	0.0168	0.0007
232	0.0173	0.0165	0.0007
233	0.0170	0.0163	0.0007
234	0.0168	0.0161	0.0007
235	0.0166	0.0159	0.0007
236	0.0163	0.0157	0.0007
237	0.0161	0.0155	0.0007
238	0.0159	0.0153	0.0007
239	0.0157	0.0151	0.0007
240	0.0155	0.0149	0.0006
241	0.0154	0.0147	0.0006
242	0.0152	0.0146	0.0006
243	0.0150	0.0144	0.0006
244	0.0148	0.0142	0.0006
245	0.0147	0.0141	0.0006
246	0.0145	0.0139	0.0006
247	0.0144	0.0138	0.0006
248	0.0142	0.0136	0.0006
249	0.0141	0.0135	0.0006
250	0.0140	0.0134	0.0006
251	0.0138	0.0132	0.0006
252	0.0137	0.0131	0.0006
253	0.0136	0.0130	0.0006
254	0.0134	0.0129	0.0006
255	0.0133	0.0128	0.0006
256	0.0132	0.0126	0.0005

257	0.0131	0.0125	0.0005
258	0.0130	0.0124	0.0005
259	0.0129	0.0123	0.0005
260	0.0127	0.0122	0.0005
261	0.0126	0.0121	0.0005
262	0.0125	0.0120	0.0005
263	0.0124	0.0119	0.0005
264	0.0123	0.0118	0.0005
265	0.0122	0.0117	0.0005
266	0.0121	0.0116	0.0005
267	0.0121	0.0115	0.0005
268	0.0120	0.0115	0.0005
269	0.0119	0.0114	0.0005
270	0.0118	0.0113	0.0005
271	0.0117	0.0112	0.0005
272	0.0116	0.0111	0.0005
273	0.0115	0.0111	0.0005
274	0.0115	0.0110	0.0005
275	0.0114	0.0109	0.0005
276	0.0113	0.0108	0.0005
277	0.0112	0.0108	0.0005
278	0.0111	0.0107	0.0005
279	0.0111	0.0106	0.0005
280	0.0110	0.0105	0.0005
281	0.0109	0.0105	0.0005
282	0.0109	0.0104	0.0005
283	0.0108	0.0103	0.0004
284	0.0107	0.0103	0.0004
285	0.0107	0.0102	0.0004
286	0.0106	0.0102	0.0004
287	0.0105	0.0101	0.0004
288	0.0105	0.0100	0.0004

Total soil rain loss = 5.87(In)
Total effective rainfall = 0.99(In)
Peak flow rate in flood hydrograph = 26.34(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

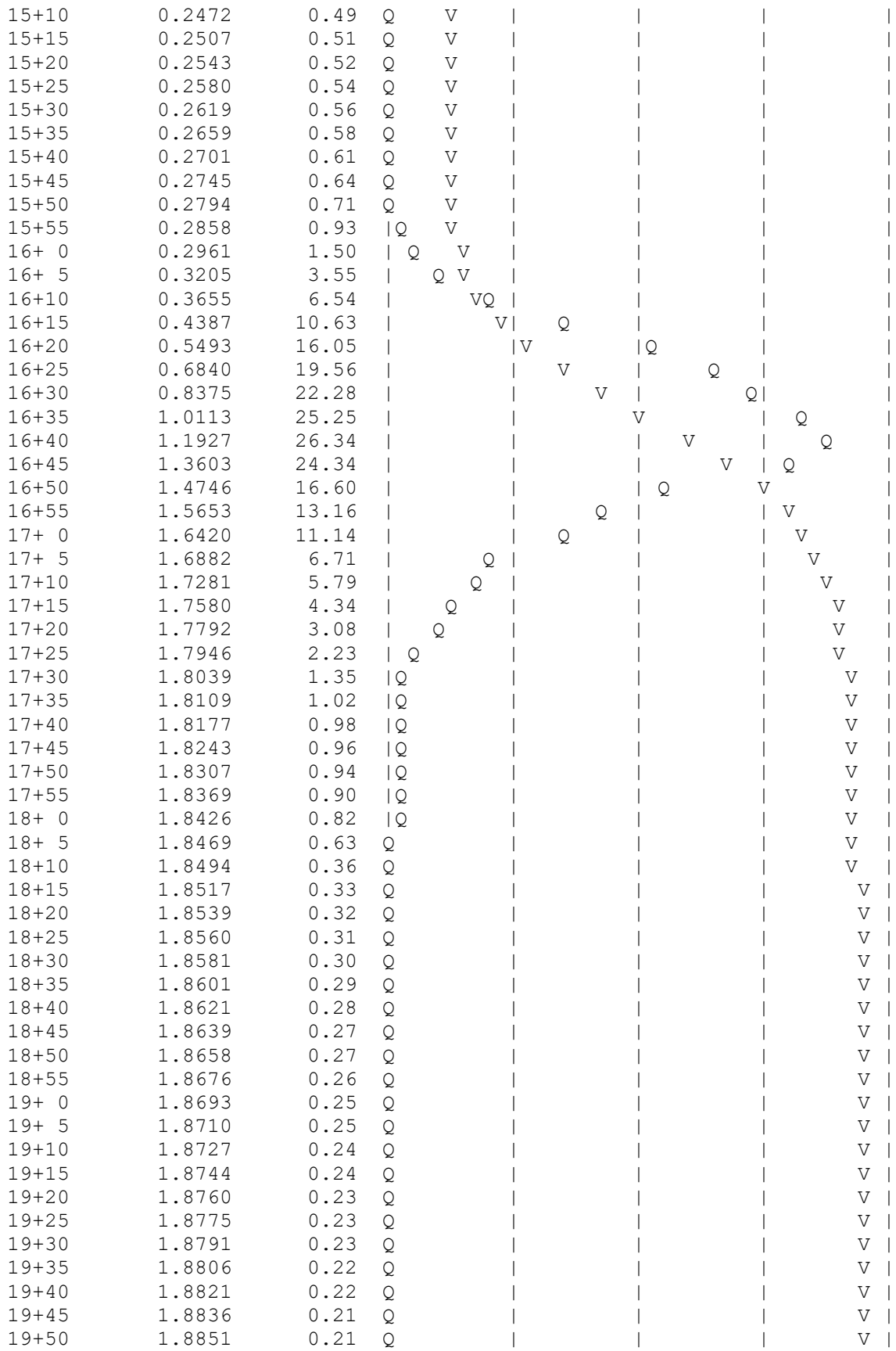
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0002	0.02	Q	|	|	|	|
0+25	0.0004	0.03	Q	|	|	|	|
0+30	0.0007	0.04	Q	|	|	|	|
0+35	0.0010	0.05	Q	|	|	|	|
0+40	0.0015	0.07	Q	|	|	|	|
0+45	0.0021	0.09	Q	|	|	|	|
0+50	0.0028	0.10	Q	|	|	|	|

0+55	0.0035	0.10	Q				
1+ 0	0.0042	0.11	Q				
1+ 5	0.0050	0.11	Q				
1+10	0.0059	0.12	Q				
1+15	0.0067	0.12	Q				
1+20	0.0075	0.12	Q				
1+25	0.0084	0.13	Q				
1+30	0.0093	0.13	Q				
1+35	0.0101	0.13	Q				
1+40	0.0110	0.13	Q				
1+45	0.0119	0.13	Q				
1+50	0.0128	0.13	Q				
1+55	0.0137	0.13	Q				
2+ 0	0.0146	0.13	Q				
2+ 5	0.0155	0.13	Q				
2+10	0.0164	0.13	Q				
2+15	0.0173	0.13	Q				
2+20	0.0182	0.13	Q				
2+25	0.0191	0.13	Q				
2+30	0.0200	0.13	Q				
2+35	0.0209	0.13	Q				
2+40	0.0219	0.13	Q				
2+45	0.0228	0.13	Q				
2+50	0.0237	0.13	Q				
2+55	0.0247	0.14	Q				
3+ 0	0.0256	0.14	Q				
3+ 5	0.0265	0.14	Q				
3+10	0.0275	0.14	Q				
3+15	0.0284	0.14	Q				
3+20	0.0294	0.14	Q				
3+25	0.0303	0.14	Q				
3+30	0.0313	0.14	Q				
3+35	0.0322	0.14	Q				
3+40	0.0332	0.14	Q				
3+45	0.0342	0.14	Q				
3+50	0.0351	0.14	Q				
3+55	0.0361	0.14	Q				
4+ 0	0.0371	0.14	Q				
4+ 5	0.0381	0.14	Q				
4+10	0.0390	0.14	Q				
4+15	0.0400	0.14	Q				
4+20	0.0410	0.14	Q				
4+25	0.0420	0.14	Q				
4+30	0.0430	0.14	Q				
4+35	0.0440	0.15	Q				
4+40	0.0450	0.15	Q				
4+45	0.0460	0.15	Q				
4+50	0.0470	0.15	Q				
4+55	0.0481	0.15	Q				
5+ 0	0.0491	0.15	QV				
5+ 5	0.0501	0.15	QV				
5+10	0.0511	0.15	QV				
5+15	0.0522	0.15	QV				
5+20	0.0532	0.15	QV				
5+25	0.0543	0.15	QV				
5+30	0.0553	0.15	QV				
5+35	0.0564	0.15	QV				

5+40	0.0574	0.15	QV				
5+45	0.0585	0.15	QV				
5+50	0.0595	0.15	QV				
5+55	0.0606	0.16	QV				
6+ 0	0.0617	0.16	QV				
6+ 5	0.0628	0.16	QV				
6+10	0.0638	0.16	QV				
6+15	0.0649	0.16	QV				
6+20	0.0660	0.16	QV				
6+25	0.0671	0.16	QV				
6+30	0.0682	0.16	QV				
6+35	0.0693	0.16	QV				
6+40	0.0705	0.16	QV				
6+45	0.0716	0.16	QV				
6+50	0.0727	0.16	QV				
6+55	0.0738	0.16	QV				
7+ 0	0.0750	0.16	QV				
7+ 5	0.0761	0.17	QV				
7+10	0.0773	0.17	QV				
7+15	0.0784	0.17	QV				
7+20	0.0796	0.17	QV				
7+25	0.0807	0.17	QV				
7+30	0.0819	0.17	QV				
7+35	0.0831	0.17	QV				
7+40	0.0843	0.17	QV				
7+45	0.0855	0.17	QV				
7+50	0.0866	0.17	QV				
7+55	0.0878	0.17	QV				
8+ 0	0.0891	0.18	QV				
8+ 5	0.0903	0.18	QV				
8+10	0.0915	0.18	QV				
8+15	0.0927	0.18	QV				
8+20	0.0940	0.18	QV				
8+25	0.0952	0.18	QV				
8+30	0.0964	0.18	QV				
8+35	0.0977	0.18	Q V				
8+40	0.0990	0.18	Q V				
8+45	0.1002	0.18	Q V				
8+50	0.1015	0.19	Q V				
8+55	0.1028	0.19	Q V				
9+ 0	0.1041	0.19	Q V				
9+ 5	0.1054	0.19	Q V				
9+10	0.1067	0.19	Q V				
9+15	0.1080	0.19	Q V				
9+20	0.1094	0.19	Q V				
9+25	0.1107	0.19	Q V				
9+30	0.1120	0.20	Q V				
9+35	0.1134	0.20	Q V				
9+40	0.1147	0.20	Q V				
9+45	0.1161	0.20	Q V				
9+50	0.1175	0.20	Q V				
9+55	0.1189	0.20	Q V				
10+ 0	0.1203	0.20	Q V				
10+ 5	0.1217	0.20	Q V				
10+10	0.1231	0.21	Q V				
10+15	0.1246	0.21	Q V				
10+20	0.1260	0.21	Q V				

10+25	0.1274	0.21	Q	V			
10+30	0.1289	0.21	Q	V			
10+35	0.1304	0.21	Q	V			
10+40	0.1319	0.22	Q	V			
10+45	0.1334	0.22	Q	V			
10+50	0.1349	0.22	Q	V			
10+55	0.1364	0.22	Q	V			
11+ 0	0.1379	0.22	Q	V			
11+ 5	0.1395	0.22	Q	V			
11+10	0.1410	0.23	Q	V			
11+15	0.1426	0.23	Q	V			
11+20	0.1442	0.23	Q	V			
11+25	0.1458	0.23	Q	V			
11+30	0.1474	0.23	Q	V			
11+35	0.1490	0.24	Q	V			
11+40	0.1507	0.24	Q	V			
11+45	0.1524	0.24	Q	V			
11+50	0.1540	0.24	Q	V			
11+55	0.1557	0.25	Q	V			
12+ 0	0.1574	0.25	Q	V			
12+ 5	0.1592	0.25	Q	V			
12+10	0.1609	0.25	Q	V			
12+15	0.1627	0.26	Q	V			
12+20	0.1645	0.26	Q	V			
12+25	0.1663	0.27	Q	V			
12+30	0.1682	0.27	Q	V			
12+35	0.1701	0.27	Q	V			
12+40	0.1720	0.28	Q	V			
12+45	0.1739	0.28	Q	V			
12+50	0.1759	0.29	Q	V			
12+55	0.1779	0.29	Q	V			
13+ 0	0.1800	0.30	Q	V			
13+ 5	0.1821	0.30	Q	V			
13+10	0.1842	0.31	Q	V			
13+15	0.1863	0.31	Q	V			
13+20	0.1885	0.31	Q	V			
13+25	0.1907	0.32	Q	V			
13+30	0.1929	0.32	Q	V			
13+35	0.1951	0.33	Q	V			
13+40	0.1974	0.33	Q	V			
13+45	0.1998	0.34	Q	V			
13+50	0.2021	0.34	Q	V			
13+55	0.2045	0.35	Q	V			
14+ 0	0.2070	0.36	Q	V			
14+ 5	0.2095	0.36	Q	V			
14+10	0.2120	0.37	Q	V			
14+15	0.2146	0.38	Q	V			
14+20	0.2172	0.38	Q	V			
14+25	0.2199	0.39	Q	V			
14+30	0.2227	0.40	Q	V			
14+35	0.2255	0.41	Q	V			
14+40	0.2283	0.42	Q	V			
14+45	0.2313	0.43	Q	V			
14+50	0.2343	0.44	Q	V			
14+55	0.2374	0.45	Q	V			
15+ 0	0.2405	0.46	Q	V			
15+ 5	0.2438	0.47	Q	V			



19+55	1.8865	0.21	Q	|	|	|	V |
20+ 0	1.8879	0.21	Q	|	|	|	V |
20+ 5	1.8893	0.20	Q	|	|	|	V |
20+10	1.8907	0.20	Q	|	|	|	V |
20+15	1.8920	0.20	Q	|	|	|	V |
20+20	1.8934	0.19	Q	|	|	|	V |
20+25	1.8947	0.19	Q	|	|	|	V |
20+30	1.8960	0.19	Q	|	|	|	V |
20+35	1.8973	0.19	Q	|	|	|	V |
20+40	1.8985	0.18	Q	|	|	|	V|
20+45	1.8998	0.18	Q	|	|	|	V|
20+50	1.9010	0.18	Q	|	|	|	V|
20+55	1.9023	0.18	Q	|	|	|	V|
21+ 0	1.9035	0.18	Q	|	|	|	V|
21+ 5	1.9047	0.17	Q	|	|	|	V|
21+10	1.9059	0.17	Q	|	|	|	V|
21+15	1.9071	0.17	Q	|	|	|	V|
21+20	1.9082	0.17	Q	|	|	|	V|
21+25	1.9094	0.17	Q	|	|	|	V|
21+30	1.9105	0.17	Q	|	|	|	V|
21+35	1.9116	0.16	Q	|	|	|	V|
21+40	1.9128	0.16	Q	|	|	|	V|
21+45	1.9139	0.16	Q	|	|	|	V|
21+50	1.9150	0.16	Q	|	|	|	V|
21+55	1.9161	0.16	Q	|	|	|	V|
22+ 0	1.9171	0.16	Q	|	|	|	V|
22+ 5	1.9182	0.16	Q	|	|	|	V|
22+10	1.9193	0.15	Q	|	|	|	V|
22+15	1.9203	0.15	Q	|	|	|	V|
22+20	1.9214	0.15	Q	|	|	|	V|
22+25	1.9224	0.15	Q	|	|	|	V|
22+30	1.9234	0.15	Q	|	|	|	V|
22+35	1.9244	0.15	Q	|	|	|	V|
22+40	1.9255	0.15	Q	|	|	|	V|
22+45	1.9265	0.15	Q	|	|	|	V|
22+50	1.9275	0.14	Q	|	|	|	V|
22+55	1.9284	0.14	Q	|	|	|	V|
23+ 0	1.9294	0.14	Q	|	|	|	V|
23+ 5	1.9304	0.14	Q	|	|	|	V|
23+10	1.9314	0.14	Q	|	|	|	V|
23+15	1.9323	0.14	Q	|	|	|	V|
23+20	1.9333	0.14	Q	|	|	|	V|
23+25	1.9342	0.14	Q	|	|	|	V|
23+30	1.9351	0.14	Q	|	|	|	V|
23+35	1.9361	0.14	Q	|	|	|	V|
23+40	1.9370	0.13	Q	|	|	|	V|
23+45	1.9379	0.13	Q	|	|	|	V|
23+50	1.9388	0.13	Q	|	|	|	V|
23+55	1.9397	0.13	Q	|	|	|	V|
24+ 0	1.9406	0.13	Q	|	|	|	V|
24+ 5	1.9415	0.13	Q	|	|	|	V|
24+10	1.9424	0.13	Q	|	|	|	V|
24+15	1.9432	0.12	Q	|	|	|	V|
24+20	1.9440	0.11	Q	|	|	|	V|
24+25	1.9447	0.10	Q	|	|	|	V|
24+30	1.9453	0.09	Q	|	|	|	V|
24+35	1.9458	0.07	Q	|	|	|	V|

24+40	1.9462	0.06	Q	|	|	|	V|
24+45	1.9464	0.04	Q	|	|	|	V|
24+50	1.9467	0.03	Q	|	|	|	V|
24+55	1.9468	0.02	Q	|	|	|	V|
25+ 0	1.9469	0.02	Q	|	|	|	V|
25+ 5	1.9470	0.01	Q	|	|	|	V|
25+10	1.9470	0.01	Q	|	|	|	V|
25+15	1.9471	0.01	Q	|	|	|	V|
25+20	1.9471	0.00	Q	|	|	|	V|
25+25	1.9471	0.00	Q	|	|	|	V|
25+30	1.9471	0.00	Q	|	|	|	V|
25+35	1.9472	0.00	Q	|	|	|	V|
25+40	1.9472	0.00	Q	|	|	|	V|
25+45	1.9472	0.00	Q	|	|	|	V|
25+50	1.9472	0.00	Q	|	|	|	V|
25+55	1.9472	0.00	Q	|	|	|	V|
26+ 0	1.9472	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE EXISTING CONDITION
2-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
23.70	1	0.64
Rainfall data for year 2		
23.70	6	1.61
Rainfall data for year 2		
23.70	24	2.94

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	50.0	23.70	1.000	0.810	1.000	0.810

Area-averaged adjusted loss rate Fm (In/Hr) = 0.810

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
23.70	1.000	50.0	50.0	10.00	0.027

Area-averaged catchment yield fraction, Y = 0.027
Area-averaged low loss fraction, Yb = 0.973
User entry of time of concentration = 1.105 (hours)
++
Watershed area = 23.70(Ac.)
Catchment Lag time = 0.884 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 9.4294
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.810(In/Hr)
Average low loss rate fraction (Yb) = 0.973 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.485(In)
Specified peak 1-hour rainfall = 0.640(In)
Computed peak 3-hour rainfall = 1.127(In)
Specified peak 6-hour rainfall = 1.610(In)
Specified peak 24-hour rainfall = 2.940(In)

Rainfall depth area reduction factors:
Using a total area of 23.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.237(In)
30-minute factor = 0.999 Adjusted rainfall = 0.484(In)
1-hour factor = 0.999 Adjusted rainfall = 0.639(In)
3-hour factor = 1.000 Adjusted rainfall = 1.127(In)
6-hour factor = 1.000 Adjusted rainfall = 1.610(In)
24-hour factor = 1.000 Adjusted rainfall = 2.940(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 286.62 (CFS))		
1	0.523	1.499
2	1.693	3.353
3	3.183	4.270
4	5.639	7.041
5	9.431	10.866
6	14.420	14.302
7	19.986	15.953

8	26.068	17.431
9	32.724	19.077
10	40.175	21.357
11	48.728	24.515
12	56.898	23.417
13	65.685	25.186
14	72.345	19.087
15	76.562	12.088
16	80.671	11.778
17	85.064	12.592
18	88.357	9.438
19	90.095	4.982
20	92.065	5.645
21	93.765	4.873
22	95.112	3.861
23	96.154	2.986
24	96.954	2.295
25	97.603	1.860
26	98.104	1.437
27	98.298	0.555
28	98.468	0.487
29	98.637	0.487
30	98.807	0.487
31	98.977	0.487
32	99.147	0.486
33	99.316	0.486
34	99.486	0.486
35	99.656	0.487
36	99.825	0.486
37	99.948	0.351
38	100.000	0.150

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2366	0.2366
2	0.3122	0.0756
3	0.3672	0.0550
4	0.4120	0.0448
5	0.4504	0.0385
6	0.4845	0.0341
7	0.5153	0.0308
8	0.5436	0.0283
9	0.5698	0.0262
10	0.5943	0.0245
11	0.6174	0.0231
12	0.6393	0.0219
13	0.6662	0.0269
14	0.6922	0.0260
15	0.7173	0.0251
16	0.7415	0.0243
17	0.7651	0.0236
18	0.7880	0.0229
19	0.8103	0.0223
20	0.8320	0.0217
21	0.8532	0.0212
22	0.8739	0.0207
23	0.8942	0.0203

24	0.9140	0.0198
25	0.9335	0.0194
26	0.9525	0.0191
27	0.9713	0.0187
28	0.9897	0.0184
29	1.0077	0.0181
30	1.0255	0.0178
31	1.0430	0.0175
32	1.0602	0.0172
33	1.0772	0.0170
34	1.0939	0.0167
35	1.1104	0.0165
36	1.1266	0.0163
37	1.1426	0.0160
38	1.1584	0.0158
39	1.1740	0.0156
40	1.1894	0.0154
41	1.2046	0.0152
42	1.2197	0.0150
43	1.2346	0.0149
44	1.2493	0.0147
45	1.2638	0.0145
46	1.2782	0.0144
47	1.2924	0.0142
48	1.3065	0.0141
49	1.3205	0.0139
50	1.3343	0.0138
51	1.3479	0.0137
52	1.3615	0.0135
53	1.3749	0.0134
54	1.3882	0.0133
55	1.4014	0.0132
56	1.4145	0.0131
57	1.4274	0.0130
58	1.4402	0.0128
59	1.4530	0.0127
60	1.4656	0.0126
61	1.4781	0.0125
62	1.4906	0.0124
63	1.5029	0.0123
64	1.5151	0.0122
65	1.5273	0.0121
66	1.5393	0.0121
67	1.5513	0.0120
68	1.5632	0.0119
69	1.5750	0.0118
70	1.5867	0.0117
71	1.5983	0.0116
72	1.6099	0.0116
73	1.6196	0.0097
74	1.6292	0.0096
75	1.6387	0.0095
76	1.6481	0.0095
77	1.6575	0.0094
78	1.6668	0.0093
79	1.6761	0.0092
80	1.6853	0.0092

81	1.6944	0.0091
82	1.7035	0.0091
83	1.7124	0.0090
84	1.7214	0.0089
85	1.7302	0.0089
86	1.7391	0.0088
87	1.7478	0.0088
88	1.7565	0.0087
89	1.7652	0.0086
90	1.7737	0.0086
91	1.7823	0.0085
92	1.7908	0.0085
93	1.7992	0.0084
94	1.8076	0.0084
95	1.8159	0.0083
96	1.8242	0.0083
97	1.8324	0.0082
98	1.8406	0.0082
99	1.8487	0.0081
100	1.8568	0.0081
101	1.8649	0.0080
102	1.8729	0.0080
103	1.8808	0.0080
104	1.8887	0.0079
105	1.8966	0.0079
106	1.9044	0.0078
107	1.9122	0.0078
108	1.9199	0.0077
109	1.9277	0.0077
110	1.9353	0.0077
111	1.9429	0.0076
112	1.9505	0.0076
113	1.9581	0.0075
114	1.9656	0.0075
115	1.9730	0.0075
116	1.9805	0.0074
117	1.9879	0.0074
118	1.9952	0.0074
119	2.0026	0.0073
120	2.0099	0.0073
121	2.0171	0.0073
122	2.0243	0.0072
123	2.0315	0.0072
124	2.0387	0.0072
125	2.0458	0.0071
126	2.0529	0.0071
127	2.0600	0.0071
128	2.0670	0.0070
129	2.0740	0.0070
130	2.0810	0.0070
131	2.0879	0.0069
132	2.0948	0.0069
133	2.1017	0.0069
134	2.1086	0.0069
135	2.1154	0.0068
136	2.1222	0.0068
137	2.1289	0.0068

138	2.1357	0.0067
139	2.1424	0.0067
140	2.1491	0.0067
141	2.1557	0.0067
142	2.1623	0.0066
143	2.1689	0.0066
144	2.1755	0.0066
145	2.1821	0.0066
146	2.1886	0.0065
147	2.1951	0.0065
148	2.2016	0.0065
149	2.2080	0.0064
150	2.2144	0.0064
151	2.2208	0.0064
152	2.2272	0.0064
153	2.2336	0.0064
154	2.2399	0.0063
155	2.2462	0.0063
156	2.2525	0.0063
157	2.2588	0.0063
158	2.2650	0.0062
159	2.2712	0.0062
160	2.2774	0.0062
161	2.2836	0.0062
162	2.2897	0.0062
163	2.2959	0.0061
164	2.3020	0.0061
165	2.3081	0.0061
166	2.3141	0.0061
167	2.3202	0.0060
168	2.3262	0.0060
169	2.3322	0.0060
170	2.3382	0.0060
171	2.3442	0.0060
172	2.3501	0.0059
173	2.3560	0.0059
174	2.3619	0.0059
175	2.3678	0.0059
176	2.3737	0.0059
177	2.3795	0.0058
178	2.3854	0.0058
179	2.3912	0.0058
180	2.3970	0.0058
181	2.4027	0.0058
182	2.4085	0.0058
183	2.4142	0.0057
184	2.4200	0.0057
185	2.4257	0.0057
186	2.4314	0.0057
187	2.4370	0.0057
188	2.4427	0.0057
189	2.4483	0.0056
190	2.4539	0.0056
191	2.4595	0.0056
192	2.4651	0.0056
193	2.4707	0.0056
194	2.4762	0.0056

195	2.4818	0.0055
196	2.4873	0.0055
197	2.4928	0.0055
198	2.4983	0.0055
199	2.5038	0.0055
200	2.5092	0.0055
201	2.5147	0.0054
202	2.5201	0.0054
203	2.5255	0.0054
204	2.5309	0.0054
205	2.5363	0.0054
206	2.5417	0.0054
207	2.5470	0.0054
208	2.5523	0.0053
209	2.5577	0.0053
210	2.5630	0.0053
211	2.5683	0.0053
212	2.5736	0.0053
213	2.5788	0.0053
214	2.5841	0.0053
215	2.5893	0.0052
216	2.5945	0.0052
217	2.5997	0.0052
218	2.6049	0.0052
219	2.6101	0.0052
220	2.6153	0.0052
221	2.6205	0.0052
222	2.6256	0.0051
223	2.6307	0.0051
224	2.6359	0.0051
225	2.6410	0.0051
226	2.6460	0.0051
227	2.6511	0.0051
228	2.6562	0.0051
229	2.6613	0.0051
230	2.6663	0.0050
231	2.6713	0.0050
232	2.6763	0.0050
233	2.6813	0.0050
234	2.6863	0.0050
235	2.6913	0.0050
236	2.6963	0.0050
237	2.7012	0.0050
238	2.7062	0.0049
239	2.7111	0.0049
240	2.7160	0.0049
241	2.7210	0.0049
242	2.7259	0.0049
243	2.7307	0.0049
244	2.7356	0.0049
245	2.7405	0.0049
246	2.7453	0.0049
247	2.7502	0.0048
248	2.7550	0.0048
249	2.7598	0.0048
250	2.7646	0.0048
251	2.7694	0.0048

252	2.7742	0.0048
253	2.7790	0.0048
254	2.7838	0.0048
255	2.7885	0.0048
256	2.7933	0.0047
257	2.7980	0.0047
258	2.8027	0.0047
259	2.8074	0.0047
260	2.8121	0.0047
261	2.8168	0.0047
262	2.8215	0.0047
263	2.8262	0.0047
264	2.8309	0.0047
265	2.8355	0.0047
266	2.8402	0.0046
267	2.8448	0.0046
268	2.8494	0.0046
269	2.8540	0.0046
270	2.8586	0.0046
271	2.8632	0.0046
272	2.8678	0.0046
273	2.8724	0.0046
274	2.8770	0.0046
275	2.8815	0.0046
276	2.8861	0.0045
277	2.8906	0.0045
278	2.8951	0.0045
279	2.8996	0.0045
280	2.9042	0.0045
281	2.9087	0.0045
282	2.9131	0.0045
283	2.9176	0.0045
284	2.9221	0.0045
285	2.9266	0.0045
286	2.9310	0.0045
287	2.9355	0.0044
288	2.9399	0.0044

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0043	0.0001
2	0.0044	0.0043	0.0001
3	0.0045	0.0043	0.0001
4	0.0045	0.0044	0.0001
5	0.0045	0.0044	0.0001
6	0.0045	0.0044	0.0001
7	0.0045	0.0044	0.0001
8	0.0045	0.0044	0.0001
9	0.0045	0.0044	0.0001
10	0.0046	0.0044	0.0001
11	0.0046	0.0044	0.0001
12	0.0046	0.0045	0.0001
13	0.0046	0.0045	0.0001
14	0.0046	0.0045	0.0001
15	0.0046	0.0045	0.0001

16	0.0046	0.0045	0.0001
17	0.0047	0.0045	0.0001
18	0.0047	0.0045	0.0001
19	0.0047	0.0046	0.0001
20	0.0047	0.0046	0.0001
21	0.0047	0.0046	0.0001
22	0.0047	0.0046	0.0001
23	0.0048	0.0046	0.0001
24	0.0048	0.0046	0.0001
25	0.0048	0.0047	0.0001
26	0.0048	0.0047	0.0001
27	0.0048	0.0047	0.0001
28	0.0048	0.0047	0.0001
29	0.0049	0.0047	0.0001
30	0.0049	0.0047	0.0001
31	0.0049	0.0048	0.0001
32	0.0049	0.0048	0.0001
33	0.0049	0.0048	0.0001
34	0.0049	0.0048	0.0001
35	0.0050	0.0048	0.0001
36	0.0050	0.0048	0.0001
37	0.0050	0.0049	0.0001
38	0.0050	0.0049	0.0001
39	0.0050	0.0049	0.0001
40	0.0050	0.0049	0.0001
41	0.0051	0.0049	0.0001
42	0.0051	0.0049	0.0001
43	0.0051	0.0050	0.0001
44	0.0051	0.0050	0.0001
45	0.0051	0.0050	0.0001
46	0.0052	0.0050	0.0001
47	0.0052	0.0050	0.0001
48	0.0052	0.0051	0.0001
49	0.0052	0.0051	0.0001
50	0.0052	0.0051	0.0001
51	0.0053	0.0051	0.0001
52	0.0053	0.0051	0.0001
53	0.0053	0.0052	0.0001
54	0.0053	0.0052	0.0001
55	0.0054	0.0052	0.0001
56	0.0054	0.0052	0.0001
57	0.0054	0.0052	0.0001
58	0.0054	0.0053	0.0001
59	0.0054	0.0053	0.0001
60	0.0055	0.0053	0.0001
61	0.0055	0.0053	0.0002
62	0.0055	0.0054	0.0002
63	0.0055	0.0054	0.0002
64	0.0056	0.0054	0.0002
65	0.0056	0.0054	0.0002
66	0.0056	0.0054	0.0002
67	0.0056	0.0055	0.0002
68	0.0057	0.0055	0.0002
69	0.0057	0.0055	0.0002
70	0.0057	0.0055	0.0002
71	0.0057	0.0056	0.0002
72	0.0058	0.0056	0.0002

73	0.0058	0.0056	0.0002
74	0.0058	0.0057	0.0002
75	0.0058	0.0057	0.0002
76	0.0059	0.0057	0.0002
77	0.0059	0.0057	0.0002
78	0.0059	0.0058	0.0002
79	0.0060	0.0058	0.0002
80	0.0060	0.0058	0.0002
81	0.0060	0.0059	0.0002
82	0.0060	0.0059	0.0002
83	0.0061	0.0059	0.0002
84	0.0061	0.0059	0.0002
85	0.0062	0.0060	0.0002
86	0.0062	0.0060	0.0002
87	0.0062	0.0060	0.0002
88	0.0062	0.0061	0.0002
89	0.0063	0.0061	0.0002
90	0.0063	0.0061	0.0002
91	0.0064	0.0062	0.0002
92	0.0064	0.0062	0.0002
93	0.0064	0.0062	0.0002
94	0.0064	0.0063	0.0002
95	0.0065	0.0063	0.0002
96	0.0065	0.0063	0.0002
97	0.0066	0.0064	0.0002
98	0.0066	0.0064	0.0002
99	0.0067	0.0065	0.0002
100	0.0067	0.0065	0.0002
101	0.0067	0.0066	0.0002
102	0.0068	0.0066	0.0002
103	0.0068	0.0066	0.0002
104	0.0069	0.0067	0.0002
105	0.0069	0.0067	0.0002
106	0.0069	0.0067	0.0002
107	0.0070	0.0068	0.0002
108	0.0070	0.0068	0.0002
109	0.0071	0.0069	0.0002
110	0.0071	0.0069	0.0002
111	0.0072	0.0070	0.0002
112	0.0072	0.0070	0.0002
113	0.0073	0.0071	0.0002
114	0.0073	0.0071	0.0002
115	0.0074	0.0072	0.0002
116	0.0074	0.0072	0.0002
117	0.0075	0.0073	0.0002
118	0.0075	0.0073	0.0002
119	0.0076	0.0074	0.0002
120	0.0077	0.0075	0.0002
121	0.0077	0.0075	0.0002
122	0.0078	0.0076	0.0002
123	0.0079	0.0077	0.0002
124	0.0079	0.0077	0.0002
125	0.0080	0.0078	0.0002
126	0.0080	0.0078	0.0002
127	0.0081	0.0079	0.0002
128	0.0082	0.0080	0.0002

129	0.0083	0.0081	0.0002
130	0.0083	0.0081	0.0002
131	0.0084	0.0082	0.0002
132	0.0085	0.0082	0.0002
133	0.0086	0.0084	0.0002
134	0.0086	0.0084	0.0002
135	0.0088	0.0085	0.0002
136	0.0088	0.0086	0.0002
137	0.0089	0.0087	0.0002
138	0.0090	0.0087	0.0002
139	0.0091	0.0089	0.0003
140	0.0092	0.0089	0.0003
141	0.0093	0.0091	0.0003
142	0.0094	0.0091	0.0003
143	0.0095	0.0093	0.0003
144	0.0096	0.0093	0.0003
145	0.0116	0.0112	0.0003
146	0.0116	0.0113	0.0003
147	0.0118	0.0115	0.0003
148	0.0119	0.0116	0.0003
149	0.0121	0.0117	0.0003
150	0.0121	0.0118	0.0003
151	0.0123	0.0120	0.0003
152	0.0124	0.0121	0.0003
153	0.0126	0.0123	0.0003
154	0.0127	0.0124	0.0003
155	0.0130	0.0126	0.0004
156	0.0131	0.0127	0.0004
157	0.0133	0.0129	0.0004
158	0.0134	0.0131	0.0004
159	0.0137	0.0133	0.0004
160	0.0138	0.0134	0.0004
161	0.0141	0.0137	0.0004
162	0.0142	0.0138	0.0004
163	0.0145	0.0141	0.0004
164	0.0147	0.0143	0.0004
165	0.0150	0.0146	0.0004
166	0.0152	0.0148	0.0004
167	0.0156	0.0152	0.0004
168	0.0158	0.0154	0.0004
169	0.0163	0.0158	0.0004
170	0.0165	0.0160	0.0005
171	0.0170	0.0165	0.0005
172	0.0172	0.0167	0.0005
173	0.0178	0.0173	0.0005
174	0.0181	0.0176	0.0005
175	0.0187	0.0182	0.0005
176	0.0191	0.0186	0.0005
177	0.0198	0.0193	0.0005
178	0.0203	0.0197	0.0006
179	0.0212	0.0206	0.0006
180	0.0217	0.0211	0.0006
181	0.0229	0.0223	0.0006
182	0.0236	0.0229	0.0006
183	0.0251	0.0244	0.0007
184	0.0260	0.0252	0.0007
185	0.0219	0.0213	0.0006

186	0.0231	0.0225	0.0006
187	0.0262	0.0255	0.0007
188	0.0283	0.0275	0.0008
189	0.0341	0.0331	0.0009
190	0.0385	0.0374	0.0011
191	0.0550	0.0535	0.0015
192	0.0756	0.0675	0.0081
193	0.2366	0.0675	0.1691
194	0.0448	0.0435	0.0012
195	0.0308	0.0300	0.0008
196	0.0245	0.0239	0.0007
197	0.0269	0.0262	0.0007
198	0.0243	0.0236	0.0007
199	0.0223	0.0217	0.0006
200	0.0207	0.0201	0.0006
201	0.0194	0.0189	0.0005
202	0.0184	0.0179	0.0005
203	0.0175	0.0170	0.0005
204	0.0167	0.0163	0.0005
205	0.0160	0.0156	0.0004
206	0.0154	0.0150	0.0004
207	0.0149	0.0145	0.0004
208	0.0144	0.0140	0.0004
209	0.0139	0.0136	0.0004
210	0.0135	0.0132	0.0004
211	0.0132	0.0128	0.0004
212	0.0128	0.0125	0.0004
213	0.0125	0.0122	0.0003
214	0.0122	0.0119	0.0003
215	0.0120	0.0116	0.0003
216	0.0117	0.0114	0.0003
217	0.0097	0.0094	0.0003
218	0.0095	0.0092	0.0003
219	0.0092	0.0090	0.0003
220	0.0091	0.0088	0.0002
221	0.0089	0.0086	0.0002
222	0.0087	0.0085	0.0002
223	0.0085	0.0083	0.0002
224	0.0084	0.0081	0.0002
225	0.0082	0.0080	0.0002
226	0.0081	0.0079	0.0002
227	0.0080	0.0077	0.0002
228	0.0078	0.0076	0.0002
229	0.0077	0.0075	0.0002
230	0.0076	0.0074	0.0002
231	0.0075	0.0073	0.0002
232	0.0074	0.0072	0.0002
233	0.0073	0.0071	0.0002
234	0.0072	0.0070	0.0002
235	0.0071	0.0069	0.0002
236	0.0070	0.0068	0.0002
237	0.0069	0.0067	0.0002
238	0.0068	0.0066	0.0002
239	0.0067	0.0065	0.0002
240	0.0066	0.0064	0.0002
241	0.0066	0.0064	0.0002
242	0.0065	0.0063	0.0002

243	0.0064	0.0062	0.0002
244	0.0063	0.0062	0.0002
245	0.0063	0.0061	0.0002
246	0.0062	0.0060	0.0002
247	0.0061	0.0060	0.0002
248	0.0061	0.0059	0.0002
249	0.0060	0.0058	0.0002
250	0.0059	0.0058	0.0002
251	0.0059	0.0057	0.0002
252	0.0058	0.0057	0.0002
253	0.0058	0.0056	0.0002
254	0.0057	0.0056	0.0002
255	0.0057	0.0055	0.0002
256	0.0056	0.0055	0.0002
257	0.0056	0.0054	0.0002
258	0.0055	0.0054	0.0002
259	0.0055	0.0053	0.0002
260	0.0054	0.0053	0.0001
261	0.0054	0.0052	0.0001
262	0.0053	0.0052	0.0001
263	0.0053	0.0051	0.0001
264	0.0053	0.0051	0.0001
265	0.0052	0.0051	0.0001
266	0.0052	0.0050	0.0001
267	0.0051	0.0050	0.0001
268	0.0051	0.0050	0.0001
269	0.0051	0.0049	0.0001
270	0.0050	0.0049	0.0001
271	0.0050	0.0048	0.0001
272	0.0049	0.0048	0.0001
273	0.0049	0.0048	0.0001
274	0.0049	0.0047	0.0001
275	0.0048	0.0047	0.0001
276	0.0048	0.0047	0.0001
277	0.0048	0.0046	0.0001
278	0.0047	0.0046	0.0001
279	0.0047	0.0046	0.0001
280	0.0047	0.0046	0.0001
281	0.0047	0.0045	0.0001
282	0.0046	0.0045	0.0001
283	0.0046	0.0045	0.0001
284	0.0046	0.0044	0.0001
285	0.0045	0.0044	0.0001
286	0.0045	0.0044	0.0001
287	0.0045	0.0044	0.0001
288	0.0045	0.0043	0.0001

Total soil rain loss = 2.69(In)
Total effective rainfall = 0.25(In)
Peak flow rate in flood hydrograph = 4.61(CFS)

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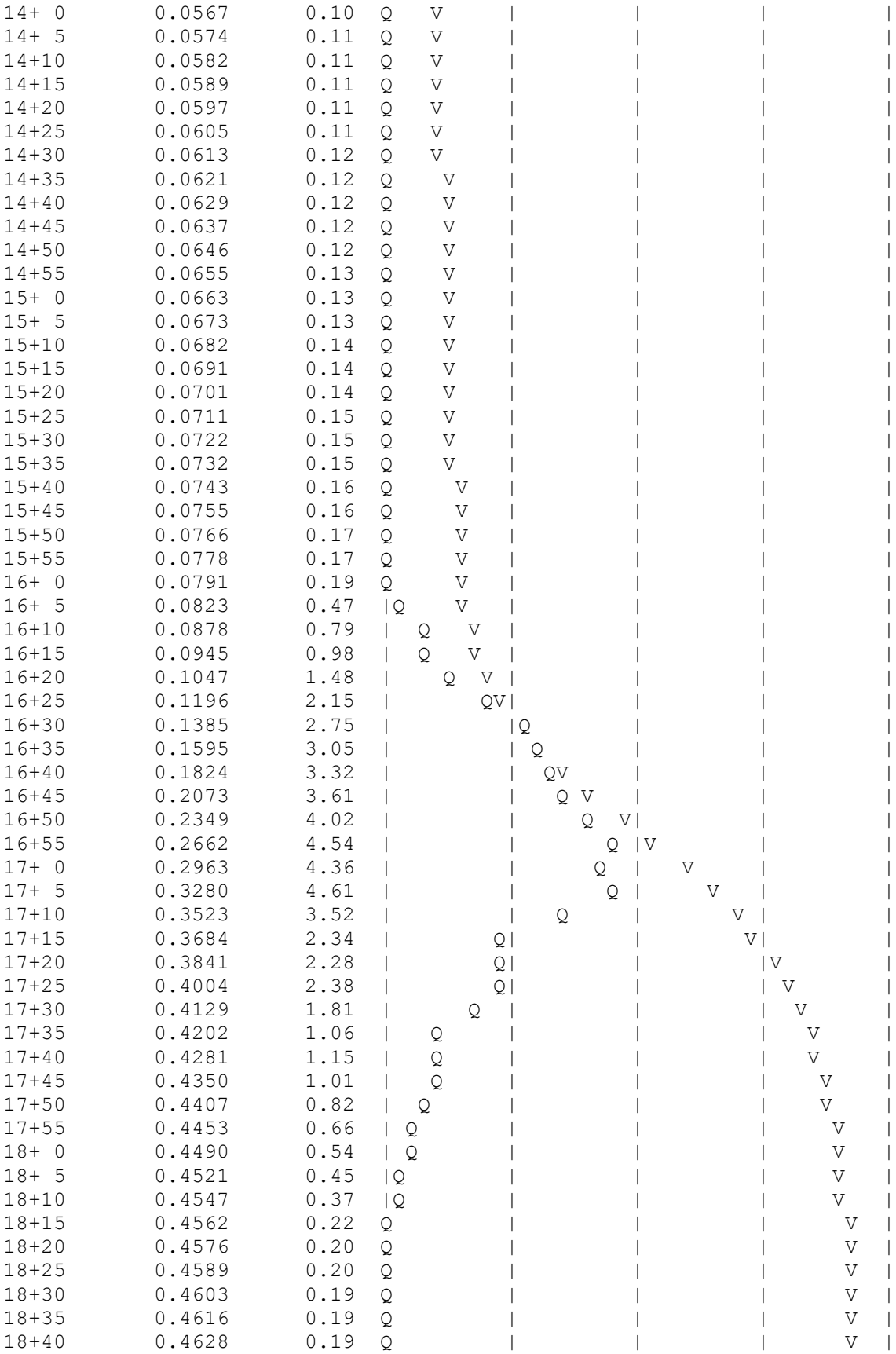
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0000	0.00	Q	|	|	|	|
0+20	0.0000	0.00	Q	|	|	|	|
0+25	0.0000	0.00	Q	|	|	|	|
0+30	0.0001	0.01	Q	|	|	|	|
0+35	0.0001	0.01	Q	|	|	|	|
0+40	0.0002	0.01	Q	|	|	|	|
0+45	0.0003	0.01	Q	|	|	|	|
0+50	0.0004	0.01	Q	|	|	|	|
0+55	0.0005	0.02	Q	|	|	|	|
1+ 0	0.0006	0.02	Q	|	|	|	|
1+ 5	0.0008	0.02	Q	|	|	|	|
1+10	0.0010	0.03	Q	|	|	|	|
1+15	0.0012	0.03	Q	|	|	|	|
1+20	0.0014	0.03	Q	|	|	|	|
1+25	0.0016	0.03	Q	|	|	|	|
1+30	0.0018	0.03	Q	|	|	|	|
1+35	0.0020	0.03	Q	|	|	|	|
1+40	0.0022	0.03	Q	|	|	|	|
1+45	0.0025	0.03	Q	|	|	|	|
1+50	0.0027	0.03	Q	|	|	|	|
1+55	0.0029	0.03	Q	|	|	|	|
2+ 0	0.0032	0.04	Q	|	|	|	|
2+ 5	0.0034	0.04	Q	|	|	|	|
2+10	0.0037	0.04	Q	|	|	|	|
2+15	0.0039	0.04	Q	|	|	|	|
2+20	0.0042	0.04	Q	|	|	|	|
2+25	0.0044	0.04	Q	|	|	|	|
2+30	0.0047	0.04	Q	|	|	|	|
2+35	0.0049	0.04	Q	|	|	|	|
2+40	0.0052	0.04	Q	|	|	|	|
2+45	0.0054	0.04	Q	|	|	|	|
2+50	0.0057	0.04	Q	|	|	|	|
2+55	0.0059	0.04	Q	|	|	|	|
3+ 0	0.0062	0.04	Q	|	|	|	|
3+ 5	0.0065	0.04	Q	|	|	|	|
3+10	0.0067	0.04	Q	|	|	|	|
3+15	0.0070	0.04	Q	|	|	|	|
3+20	0.0072	0.04	Q	|	|	|	|
3+25	0.0075	0.04	Q	|	|	|	|
3+30	0.0078	0.04	Q	|	|	|	|
3+35	0.0080	0.04	Q	|	|	|	|
3+40	0.0083	0.04	Q	|	|	|	|
3+45	0.0086	0.04	Q	|	|	|	|
3+50	0.0088	0.04	Q	|	|	|	|
3+55	0.0091	0.04	Q	|	|	|	|
4+ 0	0.0094	0.04	Q	|	|	|	|
4+ 5	0.0097	0.04	Q	|	|	|	|
4+10	0.0099	0.04	Q	|	|	|	|
4+15	0.0102	0.04	Q	|	|	|	|
4+20	0.0105	0.04	Q	|	|	|	|
4+25	0.0108	0.04	Q	|	|	|	|

4+30	0.0110	0.04	Q				
4+35	0.0113	0.04	Q				
4+40	0.0116	0.04	Q				
4+45	0.0119	0.04	Q				
4+50	0.0121	0.04	Q				
4+55	0.0124	0.04	QV				
5+ 0	0.0127	0.04	QV				
5+ 5	0.0130	0.04	QV				
5+10	0.0133	0.04	QV				
5+15	0.0136	0.04	QV				
5+20	0.0139	0.04	QV				
5+25	0.0141	0.04	QV				
5+30	0.0144	0.04	QV				
5+35	0.0147	0.04	QV				
5+40	0.0150	0.04	QV				
5+45	0.0153	0.04	QV				
5+50	0.0156	0.04	QV				
5+55	0.0159	0.04	QV				
6+ 0	0.0162	0.04	QV				
6+ 5	0.0165	0.04	QV				
6+10	0.0168	0.04	QV				
6+15	0.0171	0.04	QV				
6+20	0.0174	0.04	QV				
6+25	0.0177	0.04	QV				
6+30	0.0180	0.04	QV				
6+35	0.0183	0.04	QV				
6+40	0.0186	0.04	QV				
6+45	0.0189	0.04	QV				
6+50	0.0192	0.05	QV				
6+55	0.0196	0.05	QV				
7+ 0	0.0199	0.05	QV				
7+ 5	0.0202	0.05	QV				
7+10	0.0205	0.05	QV				
7+15	0.0208	0.05	QV				
7+20	0.0211	0.05	QV				
7+25	0.0215	0.05	QV				
7+30	0.0218	0.05	QV				
7+35	0.0221	0.05	QV				
7+40	0.0224	0.05	QV				
7+45	0.0228	0.05	QV				
7+50	0.0231	0.05	QV				
7+55	0.0234	0.05	QV				
8+ 0	0.0238	0.05	QV				
8+ 5	0.0241	0.05	QV				
8+10	0.0244	0.05	QV				
8+15	0.0248	0.05	Q V				
8+20	0.0251	0.05	Q V				
8+25	0.0255	0.05	Q V				
8+30	0.0258	0.05	Q V				
8+35	0.0261	0.05	Q V				
8+40	0.0265	0.05	Q V				
8+45	0.0268	0.05	Q V				
8+50	0.0272	0.05	Q V				
8+55	0.0276	0.05	Q V				
9+ 0	0.0279	0.05	Q V				
9+ 5	0.0283	0.05	Q V				
9+10	0.0286	0.05	Q V				

9+15	0.0290	0.05	Q	V			
9+20	0.0294	0.05	Q	V			
9+25	0.0297	0.05	Q	V			
9+30	0.0301	0.05	Q	V			
9+35	0.0305	0.05	Q	V			
9+40	0.0308	0.05	Q	V			
9+45	0.0312	0.05	Q	V			
9+50	0.0316	0.06	Q	V			
9+55	0.0320	0.06	Q	V			
10+ 0	0.0324	0.06	Q	V			
10+ 5	0.0327	0.06	Q	V			
10+10	0.0331	0.06	Q	V			
10+15	0.0335	0.06	Q	V			
10+20	0.0339	0.06	Q	V			
10+25	0.0343	0.06	Q	V			
10+30	0.0347	0.06	Q	V			
10+35	0.0351	0.06	Q	V			
10+40	0.0355	0.06	Q	V			
10+45	0.0359	0.06	Q	V			
10+50	0.0364	0.06	Q	V			
10+55	0.0368	0.06	Q	V			
11+ 0	0.0372	0.06	Q	V			
11+ 5	0.0376	0.06	Q	V			
11+10	0.0380	0.06	Q	V			
11+15	0.0385	0.06	Q	V			
11+20	0.0389	0.06	Q	V			
11+25	0.0393	0.06	Q	V			
11+30	0.0398	0.06	Q	V			
11+35	0.0402	0.06	Q	V			
11+40	0.0407	0.07	Q	V			
11+45	0.0411	0.07	Q	V			
11+50	0.0416	0.07	Q	V			
11+55	0.0421	0.07	Q	V			
12+ 0	0.0425	0.07	Q	V			
12+ 5	0.0430	0.07	Q	V			
12+10	0.0435	0.07	Q	V			
12+15	0.0440	0.07	Q	V			
12+20	0.0444	0.07	Q	V			
12+25	0.0449	0.07	Q	V			
12+30	0.0454	0.07	Q	V			
12+35	0.0460	0.08	Q	V			
12+40	0.0465	0.08	Q	V			
12+45	0.0470	0.08	Q	V			
12+50	0.0476	0.08	Q	V			
12+55	0.0482	0.08	Q	V			
13+ 0	0.0488	0.08	Q	V			
13+ 5	0.0494	0.09	Q	V			
13+10	0.0500	0.09	Q	V			
13+15	0.0506	0.09	Q	V			
13+20	0.0512	0.09	Q	V			
13+25	0.0519	0.09	Q	V			
13+30	0.0525	0.10	Q	V			
13+35	0.0532	0.10	Q	V			
13+40	0.0539	0.10	Q	V			
13+45	0.0546	0.10	Q	V			
13+50	0.0553	0.10	Q	V			
13+55	0.0560	0.10	Q	V			



18+45	0.4641	0.18	Q	|	|	|	V |
18+50	0.4653	0.18	Q	|	|	|	V |
18+55	0.4665	0.17	Q	|	|	|	V |
19+ 0	0.4677	0.17	Q	|	|	|	V |
19+ 5	0.4687	0.14	Q	|	|	|	V |
19+10	0.4694	0.11	Q	|	|	|	V |
19+15	0.4699	0.08	Q	|	|	|	V |
19+20	0.4705	0.07	Q	|	|	|	V |
19+25	0.4710	0.07	Q	|	|	|	V |
19+30	0.4714	0.07	Q	|	|	|	V |
19+35	0.4719	0.07	Q	|	|	|	V |
19+40	0.4724	0.07	Q	|	|	|	V |
19+45	0.4728	0.07	Q	|	|	|	V |
19+50	0.4733	0.06	Q	|	|	|	V |
19+55	0.4737	0.06	Q	|	|	|	V |
20+ 0	0.4741	0.06	Q	|	|	|	V |
20+ 5	0.4746	0.06	Q	|	|	|	V |
20+10	0.4750	0.06	Q	|	|	|	V |
20+15	0.4754	0.06	Q	|	|	|	V |
20+20	0.4758	0.06	Q	|	|	|	V |
20+25	0.4762	0.06	Q	|	|	|	V |
20+30	0.4766	0.06	Q	|	|	|	V |
20+35	0.4770	0.06	Q	|	|	|	V |
20+40	0.4773	0.05	Q	|	|	|	V |
20+45	0.4777	0.05	Q	|	|	|	V |
20+50	0.4781	0.05	Q	|	|	|	V |
20+55	0.4784	0.05	Q	|	|	|	V |
21+ 0	0.4788	0.05	Q	|	|	|	V |
21+ 5	0.4792	0.05	Q	|	|	|	V |
21+10	0.4795	0.05	Q	|	|	|	V |
21+15	0.4799	0.05	Q	|	|	|	V |
21+20	0.4802	0.05	Q	|	|	|	V|
21+25	0.4805	0.05	Q	|	|	|	V|
21+30	0.4809	0.05	Q	|	|	|	V|
21+35	0.4812	0.05	Q	|	|	|	V|
21+40	0.4815	0.05	Q	|	|	|	V|
21+45	0.4819	0.05	Q	|	|	|	V|
21+50	0.4822	0.05	Q	|	|	|	V|
21+55	0.4825	0.05	Q	|	|	|	V|
22+ 0	0.4828	0.05	Q	|	|	|	V|
22+ 5	0.4831	0.05	Q	|	|	|	V|
22+10	0.4834	0.04	Q	|	|	|	V|
22+15	0.4837	0.04	Q	|	|	|	V|
22+20	0.4840	0.04	Q	|	|	|	V|
22+25	0.4843	0.04	Q	|	|	|	V|
22+30	0.4846	0.04	Q	|	|	|	V|
22+35	0.4849	0.04	Q	|	|	|	V|
22+40	0.4852	0.04	Q	|	|	|	V|
22+45	0.4855	0.04	Q	|	|	|	V|
22+50	0.4858	0.04	Q	|	|	|	V|
22+55	0.4861	0.04	Q	|	|	|	V|
23+ 0	0.4864	0.04	Q	|	|	|	V|
23+ 5	0.4867	0.04	Q	|	|	|	V|
23+10	0.4869	0.04	Q	|	|	|	V|
23+15	0.4872	0.04	Q	|	|	|	V|
23+20	0.4875	0.04	Q	|	|	|	V|
23+25	0.4878	0.04	Q	|	|	|	V|

23+30	0.4880	0.04	Q	|	|	|	V|
23+35	0.4883	0.04	Q	|	|	|	V|
23+40	0.4886	0.04	Q	|	|	|	V|
23+45	0.4888	0.04	Q	|	|	|	V|
23+50	0.4891	0.04	Q	|	|	|	V|
23+55	0.4894	0.04	Q	|	|	|	V|
24+ 0	0.4896	0.04	Q	|	|	|	V|
24+ 5	0.4899	0.04	Q	|	|	|	V|
24+10	0.4901	0.04	Q	|	|	|	V|
24+15	0.4904	0.04	Q	|	|	|	V|
24+20	0.4906	0.03	Q	|	|	|	V|
24+25	0.4908	0.03	Q	|	|	|	V|
24+30	0.4911	0.03	Q	|	|	|	V|
24+35	0.4913	0.03	Q	|	|	|	V|
24+40	0.4915	0.03	Q	|	|	|	V|
24+45	0.4916	0.02	Q	|	|	|	V|
24+50	0.4918	0.02	Q	|	|	|	V|
24+55	0.4919	0.02	Q	|	|	|	V|
25+ 0	0.4920	0.02	Q	|	|	|	V|
25+ 5	0.4921	0.01	Q	|	|	|	V|
25+10	0.4922	0.01	Q	|	|	|	V|
25+15	0.4922	0.01	Q	|	|	|	V|
25+20	0.4923	0.01	Q	|	|	|	V|
25+25	0.4923	0.01	Q	|	|	|	V|
25+30	0.4923	0.00	Q	|	|	|	V|
25+35	0.4924	0.00	Q	|	|	|	V|
25+40	0.4924	0.00	Q	|	|	|	V|
25+45	0.4924	0.00	Q	|	|	|	V|
25+50	0.4924	0.00	Q	|	|	|	V|
25+55	0.4924	0.00	Q	|	|	|	V|
26+ 0	0.4924	0.00	Q	|	|	|	V|
26+ 5	0.4924	0.00	Q	|	|	|	V|
26+10	0.4924	0.00	Q	|	|	|	V|
26+15	0.4924	0.00	Q	|	|	|	V|
26+20	0.4924	0.00	Q	|	|	|	V|
26+25	0.4924	0.00	Q	|	|	|	V|
26+30	0.4924	0.00	Q	|	|	|	V|
26+35	0.4924	0.00	Q	|	|	|	V|
26+40	0.4924	0.00	Q	|	|	|	V|
26+45	0.4924	0.00	Q	|	|	|	V|
26+50	0.4924	0.00	Q	|	|	|	V|
26+55	0.4924	0.00	Q	|	|	|	V|
27+ 0	0.4925	0.00	Q	|	|	|	V|
27+ 5	0.4925	0.00	Q	|	|	|	V|

APPENDIX D

POST – PROJECT CONDITION UNIT HYDROGRAPH HYDROLOGY

D.1: UNIT HYDROGRAPH ANALYSIS, 100 YEAR, 24 HOUR STORM DURATION, WATERSHED “A”

D.2: UNIT HYDROGRAPH ANALYSIS, 2 YEAR, 24 HOUR STORM DURATION, WATERSHED “A”

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE PROPOSED CONDITION
100-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
23.71	1	1.64
Rainfall data for year 100		
23.71	6	3.74
Rainfall data for year 100		
23.71	24	6.86

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	23.71	1.000	0.978	0.100	0.098

Area-averaged adjusted loss rate Fm (In/Hr) = 0.098

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.37	0.100	32.0	32.0	21.25	0.042
21.34	0.900	98.0	98.0	0.20	0.965

Area-averaged catchment yield fraction, Y = 0.873
Area-averaged low loss fraction, Yb = 0.127
User entry of time of concentration = 0.271 (hours)
++
Watershed area = 23.71(Ac.)
Catchment Lag time = 0.217 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 38.4379
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.098(In/Hr)
Average low loss rate fraction (Yb) = 0.127 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.607(In)
Computed peak 30-minute rainfall = 1.243(In)
Specified peak 1-hour rainfall = 1.640(In)
Computed peak 3-hour rainfall = 2.719(In)
Specified peak 6-hour rainfall = 3.740(In)
Specified peak 24-hour rainfall = 6.860(In)

Rainfall depth area reduction factors:
Using a total area of 23.71(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.606(In)
30-minute factor = 0.999 Adjusted rainfall = 1.242(In)
1-hour factor = 0.999 Adjusted rainfall = 1.638(In)
3-hour factor = 1.000 Adjusted rainfall = 2.718(In)
6-hour factor = 1.000 Adjusted rainfall = 3.740(In)
24-hour factor = 1.000 Adjusted rainfall = 6.860(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 286.74 (CFS))	
1	2.845	8.159
2	18.129	43.826
3	46.195	80.477
4	75.173	83.091
5	89.709	41.683
6	95.923	17.818

7	98.257	6.693
8	98.989	2.099
9	99.675	1.967
10	100.000	0.932

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6063	0.6063
2	0.8000	0.1937
3	0.9409	0.1409
4	1.0556	0.1147
5	1.1542	0.0986
6	1.2415	0.0873
7	1.3205	0.0790
8	1.3929	0.0724
9	1.4601	0.0672
10	1.5230	0.0629
11	1.5821	0.0592
12	1.6382	0.0560
13	1.6998	0.0616
14	1.7588	0.0591
15	1.8157	0.0568
16	1.8705	0.0548
17	1.9235	0.0530
18	1.9749	0.0514
19	2.0247	0.0498
20	2.0731	0.0484
21	2.1203	0.0472
22	2.1663	0.0460
23	2.2111	0.0448
24	2.2549	0.0438
25	2.2978	0.0428
26	2.3397	0.0419
27	2.3807	0.0411
28	2.4210	0.0402
29	2.4605	0.0395
30	2.4992	0.0388
31	2.5373	0.0381
32	2.5747	0.0374
33	2.6115	0.0368
34	2.6477	0.0362
35	2.6833	0.0356
36	2.7184	0.0351
37	2.7528	0.0345
38	2.7868	0.0340
39	2.8204	0.0335
40	2.8534	0.0331
41	2.8860	0.0326
42	2.9182	0.0322
43	2.9500	0.0318
44	2.9813	0.0314
45	3.0123	0.0310
46	3.0430	0.0306
47	3.0732	0.0303
48	3.1032	0.0299
49	3.1327	0.0296
50	3.1620	0.0293

51	3.1909	0.0289
52	3.2196	0.0286
53	3.2479	0.0283
54	3.2760	0.0281
55	3.3038	0.0278
56	3.3313	0.0275
57	3.3585	0.0272
58	3.3855	0.0270
59	3.4123	0.0267
60	3.4387	0.0265
61	3.4650	0.0263
62	3.4910	0.0260
63	3.5168	0.0258
64	3.5424	0.0256
65	3.5678	0.0254
66	3.5929	0.0252
67	3.6179	0.0250
68	3.6426	0.0248
69	3.6672	0.0246
70	3.6916	0.0244
71	3.7157	0.0242
72	3.7397	0.0240
73	3.7624	0.0226
74	3.7848	0.0225
75	3.8071	0.0223
76	3.8293	0.0221
77	3.8512	0.0220
78	3.8730	0.0218
79	3.8947	0.0217
80	3.9162	0.0215
81	3.9375	0.0213
82	3.9587	0.0212
83	3.9798	0.0211
84	4.0007	0.0209
85	4.0215	0.0208
86	4.0421	0.0206
87	4.0626	0.0205
88	4.0830	0.0204
89	4.1032	0.0202
90	4.1233	0.0201
91	4.1433	0.0200
92	4.1632	0.0199
93	4.1829	0.0197
94	4.2026	0.0196
95	4.2221	0.0195
96	4.2415	0.0194
97	4.2607	0.0193
98	4.2799	0.0192
99	4.2990	0.0191
100	4.3179	0.0189
101	4.3367	0.0188
102	4.3555	0.0187
103	4.3741	0.0186
104	4.3927	0.0185
105	4.4111	0.0184
106	4.4294	0.0183
107	4.4477	0.0182

108	4.4658	0.0181
109	4.4839	0.0180
110	4.5018	0.0180
111	4.5197	0.0179
112	4.5374	0.0178
113	4.5551	0.0177
114	4.5727	0.0176
115	4.5902	0.0175
116	4.6077	0.0174
117	4.6250	0.0173
118	4.6423	0.0173
119	4.6594	0.0172
120	4.6765	0.0171
121	4.6936	0.0170
122	4.7105	0.0169
123	4.7273	0.0169
124	4.7441	0.0168
125	4.7608	0.0167
126	4.7775	0.0166
127	4.7940	0.0166
128	4.8105	0.0165
129	4.8269	0.0164
130	4.8432	0.0163
131	4.8595	0.0163
132	4.8757	0.0162
133	4.8918	0.0161
134	4.9079	0.0161
135	4.9239	0.0160
136	4.9398	0.0159
137	4.9557	0.0159
138	4.9715	0.0158
139	4.9872	0.0157
140	5.0029	0.0157
141	5.0185	0.0156
142	5.0340	0.0155
143	5.0495	0.0155
144	5.0650	0.0154
145	5.0803	0.0154
146	5.0956	0.0153
147	5.1109	0.0152
148	5.1260	0.0152
149	5.1412	0.0151
150	5.1562	0.0151
151	5.1713	0.0150
152	5.1862	0.0150
153	5.2011	0.0149
154	5.2160	0.0148
155	5.2308	0.0148
156	5.2455	0.0147
157	5.2602	0.0147
158	5.2748	0.0146
159	5.2894	0.0146
160	5.3040	0.0145
161	5.3184	0.0145
162	5.3329	0.0144
163	5.3472	0.0144
164	5.3616	0.0143

165	5.3759	0.0143
166	5.3901	0.0142
167	5.4043	0.0142
168	5.4184	0.0141
169	5.4325	0.0141
170	5.4466	0.0140
171	5.4605	0.0140
172	5.4745	0.0140
173	5.4884	0.0139
174	5.5023	0.0139
175	5.5161	0.0138
176	5.5299	0.0138
177	5.5436	0.0137
178	5.5573	0.0137
179	5.5709	0.0136
180	5.5845	0.0136
181	5.5981	0.0136
182	5.6116	0.0135
183	5.6250	0.0135
184	5.6385	0.0134
185	5.6519	0.0134
186	5.6652	0.0133
187	5.6785	0.0133
188	5.6918	0.0133
189	5.7050	0.0132
190	5.7182	0.0132
191	5.7314	0.0132
192	5.7445	0.0131
193	5.7576	0.0131
194	5.7706	0.0130
195	5.7836	0.0130
196	5.7965	0.0130
197	5.8095	0.0129
198	5.8224	0.0129
199	5.8352	0.0129
200	5.8480	0.0128
201	5.8608	0.0128
202	5.8735	0.0127
203	5.8863	0.0127
204	5.8989	0.0127
205	5.9116	0.0126
206	5.9242	0.0126
207	5.9367	0.0126
208	5.9493	0.0125
209	5.9618	0.0125
210	5.9742	0.0125
211	5.9867	0.0124
212	5.9991	0.0124
213	6.0114	0.0124
214	6.0238	0.0123
215	6.0361	0.0123
216	6.0483	0.0123
217	6.0606	0.0122
218	6.0728	0.0122
219	6.0850	0.0122
220	6.0971	0.0121
221	6.1092	0.0121

222	6.1213	0.0121
223	6.1333	0.0121
224	6.1454	0.0120
225	6.1574	0.0120
226	6.1693	0.0120
227	6.1812	0.0119
228	6.1932	0.0119
229	6.2050	0.0119
230	6.2169	0.0118
231	6.2287	0.0118
232	6.2405	0.0118
233	6.2522	0.0118
234	6.2640	0.0117
235	6.2757	0.0117
236	6.2873	0.0117
237	6.2990	0.0116
238	6.3106	0.0116
239	6.3222	0.0116
240	6.3337	0.0116
241	6.3453	0.0115
242	6.3568	0.0115
243	6.3683	0.0115
244	6.3797	0.0115
245	6.3911	0.0114
246	6.4026	0.0114
247	6.4139	0.0114
248	6.4253	0.0114
249	6.4366	0.0113
250	6.4479	0.0113
251	6.4592	0.0113
252	6.4704	0.0112
253	6.4817	0.0112
254	6.4929	0.0112
255	6.5040	0.0112
256	6.5152	0.0111
257	6.5263	0.0111
258	6.5374	0.0111
259	6.5485	0.0111
260	6.5595	0.0111
261	6.5706	0.0110
262	6.5816	0.0110
263	6.5925	0.0110
264	6.6035	0.0110
265	6.6144	0.0109
266	6.6253	0.0109
267	6.6362	0.0109
268	6.6471	0.0109
269	6.6579	0.0108
270	6.6688	0.0108
271	6.6796	0.0108
272	6.6903	0.0108
273	6.7011	0.0108
274	6.7118	0.0107
275	6.7225	0.0107
276	6.7332	0.0107
277	6.7439	0.0107
278	6.7545	0.0106

279	6.7651	0.0106
280	6.7757	0.0106
281	6.7863	0.0106
282	6.7969	0.0106
283	6.8074	0.0105
284	6.8179	0.0105
285	6.8284	0.0105
286	6.8389	0.0105
287	6.8494	0.0105
288	6.8598	0.0104

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0104	0.0013	0.0091
2	0.0105	0.0013	0.0091
3	0.0105	0.0013	0.0092
4	0.0105	0.0013	0.0092
5	0.0106	0.0013	0.0092
6	0.0106	0.0013	0.0092
7	0.0106	0.0014	0.0093
8	0.0106	0.0014	0.0093
9	0.0107	0.0014	0.0093
10	0.0107	0.0014	0.0093
11	0.0108	0.0014	0.0094
12	0.0108	0.0014	0.0094
13	0.0108	0.0014	0.0094
14	0.0108	0.0014	0.0095
15	0.0109	0.0014	0.0095
16	0.0109	0.0014	0.0095
17	0.0110	0.0014	0.0096
18	0.0110	0.0014	0.0096
19	0.0110	0.0014	0.0096
20	0.0111	0.0014	0.0096
21	0.0111	0.0014	0.0097
22	0.0111	0.0014	0.0097
23	0.0112	0.0014	0.0098
24	0.0112	0.0014	0.0098
25	0.0112	0.0014	0.0098
26	0.0113	0.0014	0.0098
27	0.0113	0.0014	0.0099
28	0.0114	0.0014	0.0099
29	0.0114	0.0015	0.0100
30	0.0114	0.0015	0.0100
31	0.0115	0.0015	0.0100
32	0.0115	0.0015	0.0100
33	0.0116	0.0015	0.0101
34	0.0116	0.0015	0.0101
35	0.0116	0.0015	0.0102
36	0.0117	0.0015	0.0102
37	0.0117	0.0015	0.0102
38	0.0118	0.0015	0.0103
39	0.0118	0.0015	0.0103
40	0.0118	0.0015	0.0103
41	0.0119	0.0015	0.0104
42	0.0119	0.0015	0.0104

43	0.0120	0.0015	0.0105
44	0.0120	0.0015	0.0105
45	0.0121	0.0015	0.0105
46	0.0121	0.0015	0.0106
47	0.0122	0.0015	0.0106
48	0.0122	0.0016	0.0107
49	0.0123	0.0016	0.0107
50	0.0123	0.0016	0.0107
51	0.0124	0.0016	0.0108
52	0.0124	0.0016	0.0108
53	0.0125	0.0016	0.0109
54	0.0125	0.0016	0.0109
55	0.0126	0.0016	0.0110
56	0.0126	0.0016	0.0110
57	0.0127	0.0016	0.0111
58	0.0127	0.0016	0.0111
59	0.0128	0.0016	0.0112
60	0.0128	0.0016	0.0112
61	0.0129	0.0016	0.0112
62	0.0129	0.0016	0.0113
63	0.0130	0.0017	0.0113
64	0.0130	0.0017	0.0114
65	0.0131	0.0017	0.0114
66	0.0132	0.0017	0.0115
67	0.0132	0.0017	0.0115
68	0.0133	0.0017	0.0116
69	0.0133	0.0017	0.0117
70	0.0134	0.0017	0.0117
71	0.0135	0.0017	0.0118
72	0.0135	0.0017	0.0118
73	0.0136	0.0017	0.0119
74	0.0136	0.0017	0.0119
75	0.0137	0.0017	0.0120
76	0.0138	0.0018	0.0120
77	0.0139	0.0018	0.0121
78	0.0139	0.0018	0.0121
79	0.0140	0.0018	0.0122
80	0.0140	0.0018	0.0123
81	0.0141	0.0018	0.0123
82	0.0142	0.0018	0.0124
83	0.0143	0.0018	0.0125
84	0.0143	0.0018	0.0125
85	0.0144	0.0018	0.0126
86	0.0145	0.0018	0.0126
87	0.0146	0.0019	0.0127
88	0.0146	0.0019	0.0128
89	0.0147	0.0019	0.0129
90	0.0148	0.0019	0.0129
91	0.0149	0.0019	0.0130
92	0.0150	0.0019	0.0131
93	0.0151	0.0019	0.0132
94	0.0151	0.0019	0.0132
95	0.0152	0.0019	0.0133
96	0.0153	0.0019	0.0134
97	0.0154	0.0020	0.0135
98	0.0155	0.0020	0.0135
99	0.0156	0.0020	0.0136

100	0.0157	0.0020	0.0137
101	0.0158	0.0020	0.0138
102	0.0159	0.0020	0.0138
103	0.0160	0.0020	0.0140
104	0.0161	0.0020	0.0140
105	0.0162	0.0021	0.0141
106	0.0163	0.0021	0.0142
107	0.0164	0.0021	0.0143
108	0.0165	0.0021	0.0144
109	0.0166	0.0021	0.0145
110	0.0167	0.0021	0.0146
111	0.0169	0.0021	0.0147
112	0.0169	0.0022	0.0148
113	0.0171	0.0022	0.0149
114	0.0172	0.0022	0.0150
115	0.0173	0.0022	0.0151
116	0.0174	0.0022	0.0152
117	0.0176	0.0022	0.0154
118	0.0177	0.0022	0.0154
119	0.0179	0.0023	0.0156
120	0.0180	0.0023	0.0157
121	0.0181	0.0023	0.0158
122	0.0182	0.0023	0.0159
123	0.0184	0.0023	0.0161
124	0.0185	0.0024	0.0162
125	0.0187	0.0024	0.0164
126	0.0188	0.0024	0.0164
127	0.0191	0.0024	0.0166
128	0.0192	0.0024	0.0167
129	0.0194	0.0025	0.0169
130	0.0195	0.0025	0.0170
131	0.0197	0.0025	0.0172
132	0.0199	0.0025	0.0173
133	0.0201	0.0026	0.0176
134	0.0202	0.0026	0.0177
135	0.0205	0.0026	0.0179
136	0.0206	0.0026	0.0180
137	0.0209	0.0027	0.0183
138	0.0211	0.0027	0.0184
139	0.0213	0.0027	0.0186
140	0.0215	0.0027	0.0188
141	0.0218	0.0028	0.0190
142	0.0220	0.0028	0.0192
143	0.0223	0.0028	0.0195
144	0.0225	0.0029	0.0196
145	0.0240	0.0031	0.0209
146	0.0242	0.0031	0.0211
147	0.0246	0.0031	0.0214
148	0.0248	0.0031	0.0216
149	0.0252	0.0032	0.0220
150	0.0254	0.0032	0.0221
151	0.0258	0.0033	0.0225
152	0.0260	0.0033	0.0227
153	0.0265	0.0034	0.0231
154	0.0267	0.0034	0.0233
155	0.0272	0.0035	0.0238
156	0.0275	0.0035	0.0240

157	0.0281	0.0036	0.0245
158	0.0283	0.0036	0.0247
159	0.0289	0.0037	0.0253
160	0.0293	0.0037	0.0255
161	0.0299	0.0038	0.0261
162	0.0303	0.0038	0.0264
163	0.0310	0.0039	0.0271
164	0.0314	0.0040	0.0274
165	0.0322	0.0041	0.0281
166	0.0326	0.0041	0.0285
167	0.0335	0.0043	0.0293
168	0.0340	0.0043	0.0297
169	0.0351	0.0045	0.0306
170	0.0356	0.0045	0.0311
171	0.0368	0.0047	0.0321
172	0.0374	0.0048	0.0327
173	0.0388	0.0049	0.0338
174	0.0395	0.0050	0.0345
175	0.0411	0.0052	0.0358
176	0.0419	0.0053	0.0366
177	0.0438	0.0056	0.0382
178	0.0448	0.0057	0.0391
179	0.0472	0.0060	0.0412
180	0.0484	0.0062	0.0423
181	0.0514	0.0065	0.0448
182	0.0530	0.0067	0.0463
183	0.0568	0.0072	0.0496
184	0.0591	0.0075	0.0516
185	0.0560	0.0071	0.0489
186	0.0592	0.0075	0.0517
187	0.0672	0.0081	0.0590
188	0.0724	0.0081	0.0643
189	0.0873	0.0081	0.0792
190	0.0986	0.0081	0.0904
191	0.1409	0.0081	0.1327
192	0.1937	0.0081	0.1856
193	0.6063	0.0081	0.5982
194	0.1147	0.0081	0.1066
195	0.0790	0.0081	0.0708
196	0.0629	0.0080	0.0549
197	0.0616	0.0078	0.0537
198	0.0548	0.0070	0.0479
199	0.0498	0.0063	0.0435
200	0.0460	0.0058	0.0401
201	0.0428	0.0054	0.0374
202	0.0402	0.0051	0.0351
203	0.0381	0.0048	0.0332
204	0.0362	0.0046	0.0316
205	0.0345	0.0044	0.0301
206	0.0331	0.0042	0.0288
207	0.0318	0.0040	0.0277
208	0.0306	0.0039	0.0267
209	0.0296	0.0038	0.0258
210	0.0286	0.0036	0.0250
211	0.0278	0.0035	0.0242
212	0.0270	0.0034	0.0236
213	0.0263	0.0033	0.0229

214	0.0256	0.0033	0.0223
215	0.0250	0.0032	0.0218
216	0.0244	0.0031	0.0213
217	0.0226	0.0029	0.0198
218	0.0221	0.0028	0.0193
219	0.0217	0.0028	0.0189
220	0.0212	0.0027	0.0185
221	0.0208	0.0026	0.0181
222	0.0204	0.0026	0.0178
223	0.0200	0.0025	0.0174
224	0.0196	0.0025	0.0171
225	0.0193	0.0025	0.0168
226	0.0189	0.0024	0.0165
227	0.0186	0.0024	0.0163
228	0.0183	0.0023	0.0160
229	0.0180	0.0023	0.0158
230	0.0178	0.0023	0.0155
231	0.0175	0.0022	0.0153
232	0.0173	0.0022	0.0151
233	0.0170	0.0022	0.0149
234	0.0168	0.0021	0.0146
235	0.0166	0.0021	0.0145
236	0.0163	0.0021	0.0143
237	0.0161	0.0021	0.0141
238	0.0159	0.0020	0.0139
239	0.0157	0.0020	0.0137
240	0.0155	0.0020	0.0136
241	0.0154	0.0020	0.0134
242	0.0152	0.0019	0.0133
243	0.0150	0.0019	0.0131
244	0.0148	0.0019	0.0130
245	0.0147	0.0019	0.0128
246	0.0145	0.0018	0.0127
247	0.0144	0.0018	0.0126
248	0.0142	0.0018	0.0124
249	0.0141	0.0018	0.0123
250	0.0140	0.0018	0.0122
251	0.0138	0.0018	0.0121
252	0.0137	0.0017	0.0119
253	0.0136	0.0017	0.0118
254	0.0134	0.0017	0.0117
255	0.0133	0.0017	0.0116
256	0.0132	0.0017	0.0115
257	0.0131	0.0017	0.0114
258	0.0130	0.0016	0.0113
259	0.0129	0.0016	0.0112
260	0.0127	0.0016	0.0111
261	0.0126	0.0016	0.0110
262	0.0125	0.0016	0.0109
263	0.0124	0.0016	0.0109
264	0.0123	0.0016	0.0108
265	0.0122	0.0016	0.0107
266	0.0121	0.0015	0.0106
267	0.0121	0.0015	0.0105
268	0.0120	0.0015	0.0104
269	0.0119	0.0015	0.0104
270	0.0118	0.0015	0.0103

271	0.0117	0.0015	0.0102
272	0.0116	0.0015	0.0101
273	0.0115	0.0015	0.0101
274	0.0115	0.0015	0.0100
275	0.0114	0.0014	0.0099
276	0.0113	0.0014	0.0099
277	0.0112	0.0014	0.0098
278	0.0111	0.0014	0.0097
279	0.0111	0.0014	0.0097
280	0.0110	0.0014	0.0096
281	0.0109	0.0014	0.0095
282	0.0109	0.0014	0.0095
283	0.0108	0.0014	0.0094
284	0.0107	0.0014	0.0094
285	0.0107	0.0014	0.0093
286	0.0106	0.0013	0.0093
287	0.0105	0.0013	0.0092
288	0.0105	0.0013	0.0091

Total soil rain loss = 0.76(In)
Total effective rainfall = 6.10(In)
Peak flow rate in flood hydrograph = 76.78(CFS)

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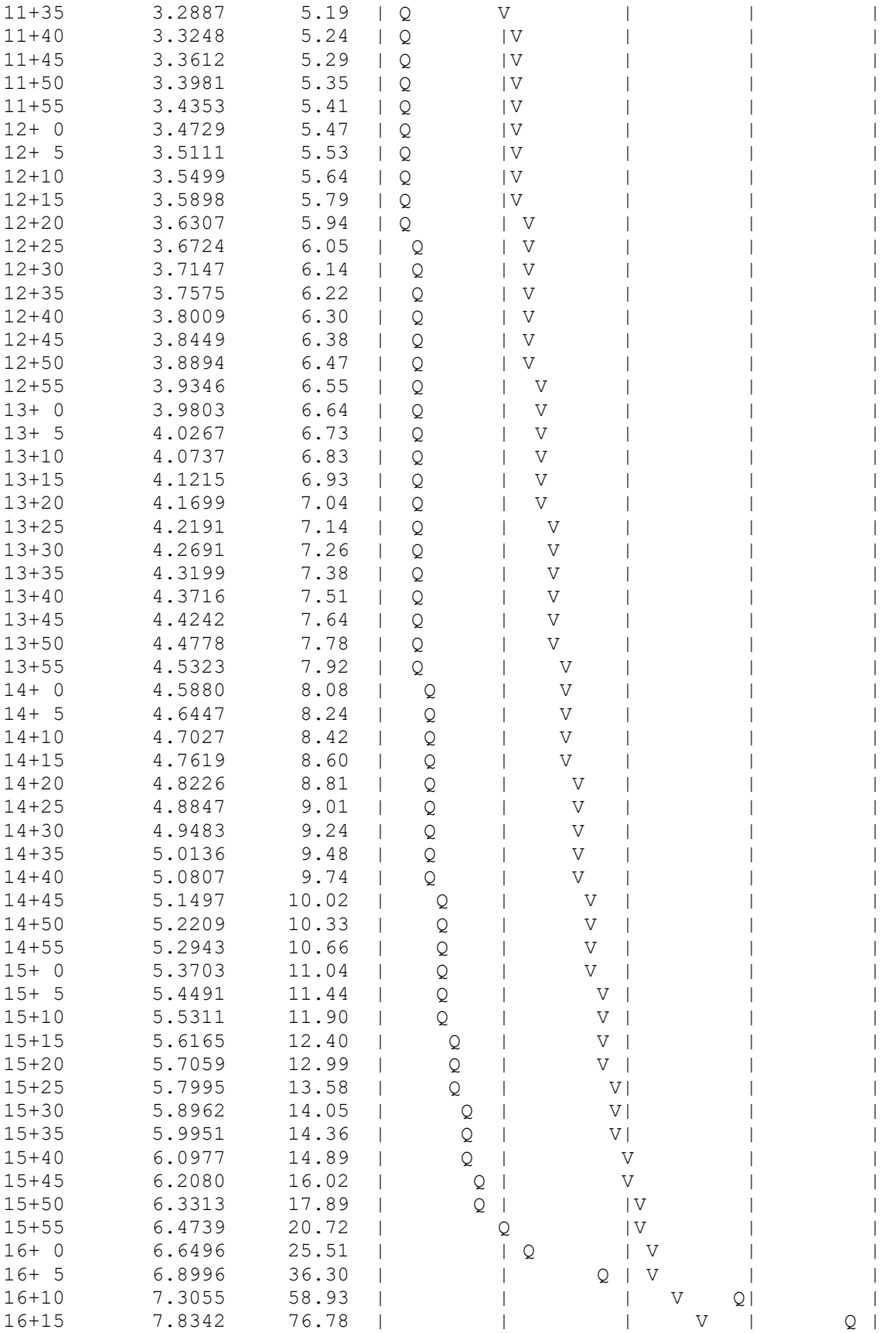
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

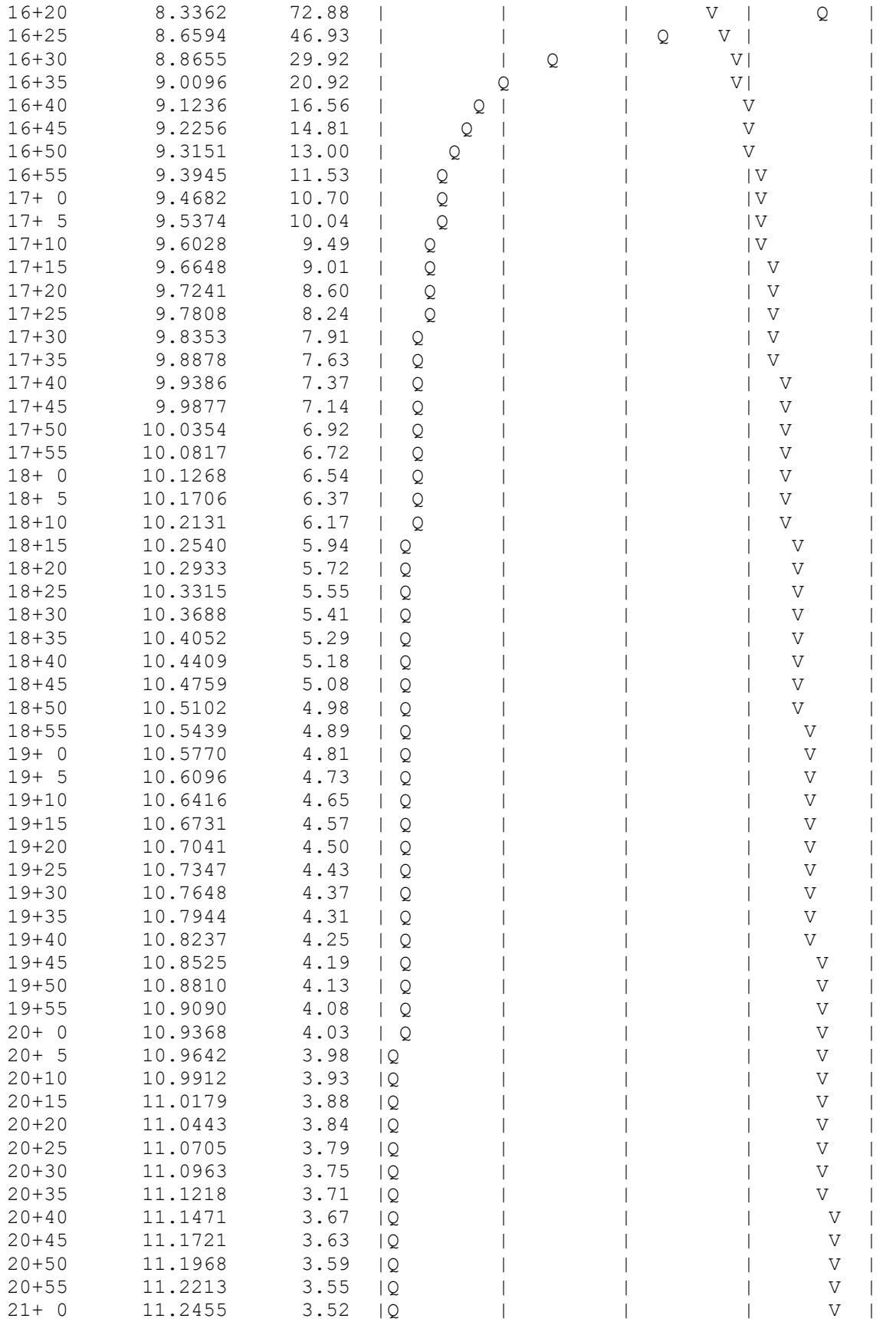
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0005	0.07	Q				
0+10	0.0038	0.47	Q				
0+15	0.0121	1.21	Q				
0+20	0.0256	1.97	Q				
0+25	0.0418	2.35	VQ				
0+30	0.0592	2.52	VQ				
0+35	0.0770	2.59	VQ				
0+40	0.0951	2.62	VQ				
0+45	0.1133	2.64	VQ				
0+50	0.1316	2.66	VQ				
0+55	0.1499	2.67	VQ				
1+ 0	0.1684	2.68	VQ				
1+ 5	0.1869	2.68	VQ				
1+10	0.2054	2.69	VQ				
1+15	0.2240	2.70	VQ				
1+20	0.2426	2.71	VQ				
1+25	0.2614	2.72	VQ				
1+30	0.2801	2.73	VQ				
1+35	0.2990	2.73	VQ				
1+40	0.3179	2.74	|Q				
1+45	0.3368	2.75	|Q				
1+50	0.3558	2.76	|Q				
1+55	0.3749	2.77	|Q				
2+ 0	0.3940	2.78	|Q				

2+ 5	0.4132	2.79	|Q	|	|	|	|
2+10	0.4325	2.80	|Q	|	|	|	|
2+15	0.4518	2.81	|Q	|	|	|	|
2+20	0.4712	2.82	|Q	|	|	|	|
2+25	0.4907	2.83	|Q	|	|	|	|
2+30	0.5102	2.84	|Q	|	|	|	|
2+35	0.5298	2.84	|Q	|	|	|	|
2+40	0.5495	2.85	|Q	|	|	|	|
2+45	0.5692	2.86	|Q	|	|	|	|
2+50	0.5890	2.87	|Q	|	|	|	|
2+55	0.6089	2.88	|QV	|	|	|	|
3+ 0	0.6288	2.89	|QV	|	|	|	|
3+ 5	0.6488	2.90	|QV	|	|	|	|
3+10	0.6689	2.92	|QV	|	|	|	|
3+15	0.6890	2.93	|QV	|	|	|	|
3+20	0.7093	2.94	|QV	|	|	|	|
3+25	0.7296	2.95	|QV	|	|	|	|
3+30	0.7499	2.96	|QV	|	|	|	|
3+35	0.7704	2.97	|QV	|	|	|	|
3+40	0.7909	2.98	|QV	|	|	|	|
3+45	0.8115	2.99	|QV	|	|	|	|
3+50	0.8322	3.00	|QV	|	|	|	|
3+55	0.8529	3.01	|QV	|	|	|	|
4+ 0	0.8738	3.02	|QV	|	|	|	|
4+ 5	0.8947	3.04	|QV	|	|	|	|
4+10	0.9157	3.05	|Q V	|	|	|	|
4+15	0.9367	3.06	|Q V	|	|	|	|
4+20	0.9579	3.07	|Q V	|	|	|	|
4+25	0.9791	3.08	|Q V	|	|	|	|
4+30	1.0005	3.10	|Q V	|	|	|	|
4+35	1.0219	3.11	|Q V	|	|	|	|
4+40	1.0434	3.12	|Q V	|	|	|	|
4+45	1.0649	3.13	|Q V	|	|	|	|
4+50	1.0866	3.15	|Q V	|	|	|	|
4+55	1.1084	3.16	|Q V	|	|	|	|
5+ 0	1.1302	3.17	|Q V	|	|	|	|
5+ 5	1.1522	3.19	|Q V	|	|	|	|
5+10	1.1742	3.20	|Q V	|	|	|	|
5+15	1.1963	3.21	|Q V	|	|	|	|
5+20	1.2185	3.23	|Q V	|	|	|	|
5+25	1.2409	3.24	|Q V	|	|	|	|
5+30	1.2633	3.25	|Q V	|	|	|	|
5+35	1.2858	3.27	|Q V	|	|	|	|
5+40	1.3084	3.28	|Q V	|	|	|	|
5+45	1.3311	3.30	|Q V	|	|	|	|
5+50	1.3539	3.31	|Q V	|	|	|	|
5+55	1.3768	3.33	|Q V	|	|	|	|
6+ 0	1.3999	3.34	|Q V	|	|	|	|
6+ 5	1.4230	3.36	|Q V	|	|	|	|
6+10	1.4462	3.37	|Q V	|	|	|	|
6+15	1.4696	3.39	|Q V	|	|	|	|
6+20	1.4930	3.40	|Q V	|	|	|	|
6+25	1.5166	3.42	|Q V	|	|	|	|
6+30	1.5402	3.44	|Q V	|	|	|	|
6+35	1.5640	3.45	|Q V	|	|	|	|
6+40	1.5879	3.47	|Q V	|	|	|	|
6+45	1.6119	3.49	|Q V	|	|	|	|

6+50	1.6361	3.50	Q V			
6+55	1.6603	3.52	Q V			
7+ 0	1.6847	3.54	Q V			
7+ 5	1.7092	3.56	Q V			
7+10	1.7339	3.58	Q V			
7+15	1.7586	3.59	Q V			
7+20	1.7835	3.61	Q V			
7+25	1.8085	3.63	Q V			
7+30	1.8337	3.65	Q V			
7+35	1.8590	3.67	Q V			
7+40	1.8844	3.69	Q V			
7+45	1.9099	3.71	Q V			
7+50	1.9356	3.73	Q V			
7+55	1.9615	3.75	Q V			
8+ 0	1.9875	3.77	Q V			
8+ 5	2.0136	3.80	Q V			
8+10	2.0399	3.82	Q V			
8+15	2.0664	3.84	Q V			
8+20	2.0930	3.86	Q V			
8+25	2.1197	3.88	Q V			
8+30	2.1466	3.91	Q V			
8+35	2.1737	3.93	Q V			
8+40	2.2010	3.96	Q V			
8+45	2.2284	3.98	Q V			
8+50	2.2560	4.01	Q V			
8+55	2.2837	4.03	Q V			
9+ 0	2.3117	4.06	Q V			
9+ 5	2.3398	4.08	Q V			
9+10	2.3681	4.11	Q V			
9+15	2.3966	4.14	Q V			
9+20	2.4253	4.17	Q V			
9+25	2.4541	4.19	Q V			
9+30	2.4832	4.22	Q V			
9+35	2.5125	4.25	Q V			
9+40	2.5420	4.28	Q V			
9+45	2.5717	4.31	Q V			
9+50	2.6016	4.34	Q V			
9+55	2.6317	4.37	Q V			
10+ 0	2.6621	4.41	Q V			
10+ 5	2.6927	4.44	Q V			
10+10	2.7235	4.47	Q V			
10+15	2.7545	4.51	Q V			
10+20	2.7858	4.54	Q V			
10+25	2.8174	4.58	Q V			
10+30	2.8492	4.62	Q V			
10+35	2.8812	4.66	Q V			
10+40	2.9136	4.69	Q V			
10+45	2.9462	4.73	Q V			
10+50	2.9790	4.77	Q V			
10+55	3.0122	4.82	Q V			
11+ 0	3.0457	4.86	Q V			
11+ 5	3.0794	4.90	Q V			
11+10	3.1135	4.95	Q V			
11+15	3.1478	4.99	Q V			
11+20	3.1826	5.04	Q V			
11+25	3.2176	5.09	Q V			
11+30	3.2530	5.14	Q V			





21+ 5	11.2695	3.48	|Q	|	|	|	V |
21+10	11.2933	3.45	|Q	|	|	|	V |
21+15	11.3168	3.42	|Q	|	|	|	V |
21+20	11.3401	3.39	|Q	|	|	|	V |
21+25	11.3632	3.35	|Q	|	|	|	V |
21+30	11.3861	3.32	|Q	|	|	|	V |
21+35	11.4088	3.29	|Q	|	|	|	V |
21+40	11.4313	3.27	|Q	|	|	|	V |
21+45	11.4536	3.24	|Q	|	|	|	V |
21+50	11.4757	3.21	|Q	|	|	|	V |
21+55	11.4976	3.18	|Q	|	|	|	V |
22+ 0	11.5194	3.16	|Q	|	|	|	V |
22+ 5	11.5409	3.13	|Q	|	|	|	V |
22+10	11.5623	3.11	|Q	|	|	|	V |
22+15	11.5835	3.08	|Q	|	|	|	V |
22+20	11.6046	3.06	|Q	|	|	|	V |
22+25	11.6255	3.03	|Q	|	|	|	V |
22+30	11.6462	3.01	|Q	|	|	|	V |
22+35	11.6668	2.99	|Q	|	|	|	V |
22+40	11.6872	2.97	|Q	|	|	|	V |
22+45	11.7075	2.94	|Q	|	|	|	V |
22+50	11.7277	2.92	|Q	|	|	|	V |
22+55	11.7476	2.90	|Q	|	|	|	V|
23+ 0	11.7675	2.88	|Q	|	|	|	V|
23+ 5	11.7872	2.86	|Q	|	|	|	V|
23+10	11.8068	2.84	|Q	|	|	|	V|
23+15	11.8262	2.82	|Q	|	|	|	V|
23+20	11.8455	2.80	|Q	|	|	|	V|
23+25	11.8647	2.79	|Q	|	|	|	V|
23+30	11.8838	2.77	|Q	|	|	|	V|
23+35	11.9027	2.75	|Q	|	|	|	V|
23+40	11.9216	2.73	|Q	|	|	|	V|
23+45	11.9403	2.72	|Q	|	|	|	V|
23+50	11.9588	2.70	|Q	|	|	|	V|
23+55	11.9773	2.68	|Q	|	|	|	V|
24+ 0	11.9957	2.67	|Q	|	|	|	V|
24+ 5	12.0134	2.58	|Q	|	|	|	V|
24+10	12.0283	2.16	|Q	|	|	|	V|
24+15	12.0381	1.42	Q	|	|	|	V|
24+20	12.0426	0.65	Q	|	|	|	V|
24+25	12.0444	0.27	Q	|	|	|	V|
24+30	12.0452	0.11	Q	|	|	|	V|
24+35	12.0455	0.05	Q	|	|	|	V|
24+40	12.0457	0.03	Q	|	|	|	V|
24+45	12.0457	0.01	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE PROPOSED CONDITION
2-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
23.71	1	0.64
Rainfall data for year 2		
23.71	6	1.61
Rainfall data for year 2		
23.71	24	2.94

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	23.71	1.000	0.978	0.100	0.098

Area-averaged adjusted loss rate Fm (In/Hr) = 0.098

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.37	0.100	32.0	32.0	14.70	0.000
21.34	0.900	98.0	98.0	0.20	0.921

Area-averaged catchment yield fraction, Y = 0.829
Area-averaged low loss fraction, Yb = 0.171
User entry of time of concentration = 0.312 (hours)
++
Watershed area = 23.71(Ac.)
Catchment Lag time = 0.250 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 33.3547
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.098(In/Hr)
Average low loss rate fraction (Yb) = 0.171 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.485(In)
Specified peak 1-hour rainfall = 0.640(In)
Computed peak 3-hour rainfall = 1.127(In)
Specified peak 6-hour rainfall = 1.610(In)
Specified peak 24-hour rainfall = 2.940(In)

Rainfall depth area reduction factors:
Using a total area of 23.71(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.237(In)
30-minute factor = 0.999 Adjusted rainfall = 0.484(In)
1-hour factor = 0.999 Adjusted rainfall = 0.639(In)
3-hour factor = 1.000 Adjusted rainfall = 1.127(In)
6-hour factor = 1.000 Adjusted rainfall = 1.610(In)
24-hour factor = 1.000 Adjusted rainfall = 2.940(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 286.74 (CFS))	
1	2.273	6.516
2	13.730	32.854
3	35.629	62.793
4	63.903	81.075
5	82.434	53.136
6	91.872	27.062

7	96.479	13.210
8	98.283	5.174
9	98.903	1.778
10	99.504	1.721
11	100.000	1.423

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2366	0.2366
2	0.3122	0.0756
3	0.3672	0.0550
4	0.4120	0.0448
5	0.4504	0.0385
6	0.4845	0.0341
7	0.5153	0.0308
8	0.5436	0.0283
9	0.5698	0.0262
10	0.5943	0.0245
11	0.6174	0.0231
12	0.6393	0.0219
13	0.6662	0.0269
14	0.6922	0.0260
15	0.7173	0.0251
16	0.7415	0.0243
17	0.7651	0.0236
18	0.7880	0.0229
19	0.8103	0.0223
20	0.8320	0.0217
21	0.8532	0.0212
22	0.8739	0.0207
23	0.8942	0.0203
24	0.9140	0.0198
25	0.9335	0.0194
26	0.9525	0.0191
27	0.9713	0.0187
28	0.9897	0.0184
29	1.0077	0.0181
30	1.0255	0.0178
31	1.0430	0.0175
32	1.0602	0.0172
33	1.0772	0.0170
34	1.0939	0.0167
35	1.1104	0.0165
36	1.1266	0.0163
37	1.1426	0.0160
38	1.1584	0.0158
39	1.1740	0.0156
40	1.1894	0.0154
41	1.2046	0.0152
42	1.2197	0.0150
43	1.2346	0.0149
44	1.2493	0.0147
45	1.2638	0.0145
46	1.2782	0.0144
47	1.2924	0.0142
48	1.3065	0.0141
49	1.3205	0.0139

50	1.3343	0.0138
51	1.3479	0.0137
52	1.3615	0.0135
53	1.3749	0.0134
54	1.3882	0.0133
55	1.4014	0.0132
56	1.4145	0.0131
57	1.4274	0.0130
58	1.4402	0.0128
59	1.4530	0.0127
60	1.4656	0.0126
61	1.4781	0.0125
62	1.4906	0.0124
63	1.5029	0.0123
64	1.5151	0.0122
65	1.5273	0.0121
66	1.5393	0.0121
67	1.5513	0.0120
68	1.5632	0.0119
69	1.5750	0.0118
70	1.5867	0.0117
71	1.5983	0.0116
72	1.6099	0.0116
73	1.6196	0.0097
74	1.6292	0.0096
75	1.6387	0.0095
76	1.6481	0.0095
77	1.6575	0.0094
78	1.6668	0.0093
79	1.6761	0.0092
80	1.6853	0.0092
81	1.6944	0.0091
82	1.7035	0.0091
83	1.7124	0.0090
84	1.7214	0.0089
85	1.7302	0.0089
86	1.7391	0.0088
87	1.7478	0.0088
88	1.7565	0.0087
89	1.7652	0.0086
90	1.7737	0.0086
91	1.7823	0.0085
92	1.7908	0.0085
93	1.7992	0.0084
94	1.8076	0.0084
95	1.8159	0.0083
96	1.8242	0.0083
97	1.8324	0.0082
98	1.8406	0.0082
99	1.8487	0.0081
100	1.8568	0.0081
101	1.8649	0.0080
102	1.8729	0.0080
103	1.8808	0.0080
104	1.8887	0.0079
105	1.8966	0.0079
106	1.9044	0.0078

107	1.9122	0.0078
108	1.9199	0.0077
109	1.9277	0.0077
110	1.9353	0.0077
111	1.9429	0.0076
112	1.9505	0.0076
113	1.9581	0.0075
114	1.9656	0.0075
115	1.9730	0.0075
116	1.9805	0.0074
117	1.9879	0.0074
118	1.9952	0.0074
119	2.0026	0.0073
120	2.0099	0.0073
121	2.0171	0.0073
122	2.0243	0.0072
123	2.0315	0.0072
124	2.0387	0.0072
125	2.0458	0.0071
126	2.0529	0.0071
127	2.0600	0.0071
128	2.0670	0.0070
129	2.0740	0.0070
130	2.0810	0.0070
131	2.0879	0.0069
132	2.0948	0.0069
133	2.1017	0.0069
134	2.1086	0.0069
135	2.1154	0.0068
136	2.1222	0.0068
137	2.1289	0.0068
138	2.1357	0.0067
139	2.1424	0.0067
140	2.1491	0.0067
141	2.1557	0.0067
142	2.1623	0.0066
143	2.1689	0.0066
144	2.1755	0.0066
145	2.1821	0.0066
146	2.1886	0.0065
147	2.1951	0.0065
148	2.2016	0.0065
149	2.2080	0.0064
150	2.2144	0.0064
151	2.2208	0.0064
152	2.2272	0.0064
153	2.2336	0.0064
154	2.2399	0.0063
155	2.2462	0.0063
156	2.2525	0.0063
157	2.2588	0.0063
158	2.2650	0.0062
159	2.2712	0.0062
160	2.2774	0.0062
161	2.2836	0.0062
162	2.2897	0.0062
163	2.2959	0.0061

164	2.3020	0.0061
165	2.3081	0.0061
166	2.3141	0.0061
167	2.3202	0.0060
168	2.3262	0.0060
169	2.3322	0.0060
170	2.3382	0.0060
171	2.3442	0.0060
172	2.3501	0.0059
173	2.3560	0.0059
174	2.3619	0.0059
175	2.3678	0.0059
176	2.3737	0.0059
177	2.3795	0.0058
178	2.3854	0.0058
179	2.3912	0.0058
180	2.3970	0.0058
181	2.4027	0.0058
182	2.4085	0.0058
183	2.4142	0.0057
184	2.4200	0.0057
185	2.4257	0.0057
186	2.4314	0.0057
187	2.4370	0.0057
188	2.4427	0.0057
189	2.4483	0.0056
190	2.4539	0.0056
191	2.4595	0.0056
192	2.4651	0.0056
193	2.4707	0.0056
194	2.4762	0.0056
195	2.4818	0.0055
196	2.4873	0.0055
197	2.4928	0.0055
198	2.4983	0.0055
199	2.5038	0.0055
200	2.5092	0.0055
201	2.5147	0.0054
202	2.5201	0.0054
203	2.5255	0.0054
204	2.5309	0.0054
205	2.5363	0.0054
206	2.5417	0.0054
207	2.5470	0.0054
208	2.5523	0.0053
209	2.5577	0.0053
210	2.5630	0.0053
211	2.5683	0.0053
212	2.5736	0.0053
213	2.5788	0.0053
214	2.5841	0.0053
215	2.5893	0.0052
216	2.5945	0.0052
217	2.5997	0.0052
218	2.6049	0.0052
219	2.6101	0.0052
220	2.6153	0.0052

221	2.6205	0.0052
222	2.6256	0.0051
223	2.6307	0.0051
224	2.6359	0.0051
225	2.6410	0.0051
226	2.6460	0.0051
227	2.6511	0.0051
228	2.6562	0.0051
229	2.6613	0.0051
230	2.6663	0.0050
231	2.6713	0.0050
232	2.6763	0.0050
233	2.6813	0.0050
234	2.6863	0.0050
235	2.6913	0.0050
236	2.6963	0.0050
237	2.7012	0.0050
238	2.7062	0.0049
239	2.7111	0.0049
240	2.7160	0.0049
241	2.7210	0.0049
242	2.7259	0.0049
243	2.7307	0.0049
244	2.7356	0.0049
245	2.7405	0.0049
246	2.7453	0.0049
247	2.7502	0.0048
248	2.7550	0.0048
249	2.7598	0.0048
250	2.7646	0.0048
251	2.7694	0.0048
252	2.7742	0.0048
253	2.7790	0.0048
254	2.7838	0.0048
255	2.7885	0.0048
256	2.7933	0.0047
257	2.7980	0.0047
258	2.8027	0.0047
259	2.8074	0.0047
260	2.8121	0.0047
261	2.8168	0.0047
262	2.8215	0.0047
263	2.8262	0.0047
264	2.8309	0.0047
265	2.8355	0.0047
266	2.8402	0.0046
267	2.8448	0.0046
268	2.8494	0.0046
269	2.8540	0.0046
270	2.8586	0.0046
271	2.8632	0.0046
272	2.8678	0.0046
273	2.8724	0.0046
274	2.8770	0.0046
275	2.8815	0.0046
276	2.8861	0.0045
277	2.8906	0.0045

278	2.8951	0.0045
279	2.8996	0.0045
280	2.9042	0.0045
281	2.9087	0.0045
282	2.9131	0.0045
283	2.9176	0.0045
284	2.9221	0.0045
285	2.9266	0.0045
286	2.9310	0.0045
287	2.9355	0.0044
288	2.9399	0.0044

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0008	0.0037
2	0.0044	0.0008	0.0037
3	0.0045	0.0008	0.0037
4	0.0045	0.0008	0.0037
5	0.0045	0.0008	0.0037
6	0.0045	0.0008	0.0037
7	0.0045	0.0008	0.0037
8	0.0045	0.0008	0.0038
9	0.0045	0.0008	0.0038
10	0.0046	0.0008	0.0038
11	0.0046	0.0008	0.0038
12	0.0046	0.0008	0.0038
13	0.0046	0.0008	0.0038
14	0.0046	0.0008	0.0038
15	0.0046	0.0008	0.0038
16	0.0046	0.0008	0.0038
17	0.0047	0.0008	0.0039
18	0.0047	0.0008	0.0039
19	0.0047	0.0008	0.0039
20	0.0047	0.0008	0.0039
21	0.0047	0.0008	0.0039
22	0.0047	0.0008	0.0039
23	0.0048	0.0008	0.0039
24	0.0048	0.0008	0.0040
25	0.0048	0.0008	0.0040
26	0.0048	0.0008	0.0040
27	0.0048	0.0008	0.0040
28	0.0048	0.0008	0.0040
29	0.0049	0.0008	0.0040
30	0.0049	0.0008	0.0040
31	0.0049	0.0008	0.0041
32	0.0049	0.0008	0.0041
33	0.0049	0.0008	0.0041
34	0.0049	0.0008	0.0041
35	0.0050	0.0008	0.0041
36	0.0050	0.0008	0.0041
37	0.0050	0.0009	0.0041
38	0.0050	0.0009	0.0042
39	0.0050	0.0009	0.0042
40	0.0050	0.0009	0.0042
41	0.0051	0.0009	0.0042

42	0.0051	0.0009	0.0042
43	0.0051	0.0009	0.0042
44	0.0051	0.0009	0.0042
45	0.0051	0.0009	0.0043
46	0.0052	0.0009	0.0043
47	0.0052	0.0009	0.0043
48	0.0052	0.0009	0.0043
49	0.0052	0.0009	0.0043
50	0.0052	0.0009	0.0043
51	0.0053	0.0009	0.0044
52	0.0053	0.0009	0.0044
53	0.0053	0.0009	0.0044
54	0.0053	0.0009	0.0044
55	0.0054	0.0009	0.0044
56	0.0054	0.0009	0.0045
57	0.0054	0.0009	0.0045
58	0.0054	0.0009	0.0045
59	0.0054	0.0009	0.0045
60	0.0055	0.0009	0.0045
61	0.0055	0.0009	0.0046
62	0.0055	0.0009	0.0046
63	0.0055	0.0009	0.0046
64	0.0056	0.0009	0.0046
65	0.0056	0.0010	0.0046
66	0.0056	0.0010	0.0046
67	0.0056	0.0010	0.0047
68	0.0057	0.0010	0.0047
69	0.0057	0.0010	0.0047
70	0.0057	0.0010	0.0047
71	0.0057	0.0010	0.0048
72	0.0058	0.0010	0.0048
73	0.0058	0.0010	0.0048
74	0.0058	0.0010	0.0048
75	0.0058	0.0010	0.0048
76	0.0059	0.0010	0.0049
77	0.0059	0.0010	0.0049
78	0.0059	0.0010	0.0049
79	0.0060	0.0010	0.0049
80	0.0060	0.0010	0.0050
81	0.0060	0.0010	0.0050
82	0.0060	0.0010	0.0050
83	0.0061	0.0010	0.0050
84	0.0061	0.0010	0.0051
85	0.0062	0.0011	0.0051
86	0.0062	0.0011	0.0051
87	0.0062	0.0011	0.0052
88	0.0062	0.0011	0.0052
89	0.0063	0.0011	0.0052
90	0.0063	0.0011	0.0052
91	0.0064	0.0011	0.0053
92	0.0064	0.0011	0.0053
93	0.0064	0.0011	0.0053
94	0.0064	0.0011	0.0053
95	0.0065	0.0011	0.0054
96	0.0065	0.0011	0.0054
97	0.0066	0.0011	0.0055
98	0.0066	0.0011	0.0055

99	0.0067	0.0011	0.0055
100	0.0067	0.0011	0.0055
101	0.0067	0.0012	0.0056
102	0.0068	0.0012	0.0056
103	0.0068	0.0012	0.0057
104	0.0069	0.0012	0.0057
105	0.0069	0.0012	0.0057
106	0.0069	0.0012	0.0058
107	0.0070	0.0012	0.0058
108	0.0070	0.0012	0.0058
109	0.0071	0.0012	0.0059
110	0.0071	0.0012	0.0059
111	0.0072	0.0012	0.0060
112	0.0072	0.0012	0.0060
113	0.0073	0.0012	0.0060
114	0.0073	0.0013	0.0061
115	0.0074	0.0013	0.0061
116	0.0074	0.0013	0.0062
117	0.0075	0.0013	0.0062
118	0.0075	0.0013	0.0063
119	0.0076	0.0013	0.0063
120	0.0077	0.0013	0.0064
121	0.0077	0.0013	0.0064
122	0.0078	0.0013	0.0065
123	0.0079	0.0013	0.0065
124	0.0079	0.0014	0.0066
125	0.0080	0.0014	0.0066
126	0.0080	0.0014	0.0067
127	0.0081	0.0014	0.0067
128	0.0082	0.0014	0.0068
129	0.0083	0.0014	0.0069
130	0.0083	0.0014	0.0069
131	0.0084	0.0014	0.0070
132	0.0085	0.0014	0.0070
133	0.0086	0.0015	0.0071
134	0.0086	0.0015	0.0072
135	0.0088	0.0015	0.0073
136	0.0088	0.0015	0.0073
137	0.0089	0.0015	0.0074
138	0.0090	0.0015	0.0075
139	0.0091	0.0016	0.0076
140	0.0092	0.0016	0.0076
141	0.0093	0.0016	0.0077
142	0.0094	0.0016	0.0078
143	0.0095	0.0016	0.0079
144	0.0096	0.0016	0.0080
145	0.0116	0.0020	0.0096
146	0.0116	0.0020	0.0096
147	0.0118	0.0020	0.0098
148	0.0119	0.0020	0.0099
149	0.0121	0.0021	0.0100
150	0.0121	0.0021	0.0101
151	0.0123	0.0021	0.0102
152	0.0124	0.0021	0.0103
153	0.0126	0.0022	0.0105
154	0.0127	0.0022	0.0106
155	0.0130	0.0022	0.0107

156	0.0131	0.0022	0.0108
157	0.0133	0.0023	0.0110
158	0.0134	0.0023	0.0111
159	0.0137	0.0023	0.0113
160	0.0138	0.0024	0.0114
161	0.0141	0.0024	0.0117
162	0.0142	0.0024	0.0118
163	0.0145	0.0025	0.0121
164	0.0147	0.0025	0.0122
165	0.0150	0.0026	0.0125
166	0.0152	0.0026	0.0126
167	0.0156	0.0027	0.0129
168	0.0158	0.0027	0.0131
169	0.0163	0.0028	0.0135
170	0.0165	0.0028	0.0137
171	0.0170	0.0029	0.0141
172	0.0172	0.0029	0.0143
173	0.0178	0.0030	0.0147
174	0.0181	0.0031	0.0150
175	0.0187	0.0032	0.0155
176	0.0191	0.0033	0.0158
177	0.0198	0.0034	0.0165
178	0.0203	0.0035	0.0168
179	0.0212	0.0036	0.0176
180	0.0217	0.0037	0.0180
181	0.0229	0.0039	0.0190
182	0.0236	0.0040	0.0195
183	0.0251	0.0043	0.0208
184	0.0260	0.0044	0.0215
185	0.0219	0.0037	0.0181
186	0.0231	0.0039	0.0191
187	0.0262	0.0045	0.0217
188	0.0283	0.0048	0.0234
189	0.0341	0.0058	0.0283
190	0.0385	0.0066	0.0319
191	0.0550	0.0081	0.0468
192	0.0756	0.0081	0.0674
193	0.2366	0.0081	0.2285
194	0.0448	0.0077	0.0371
195	0.0308	0.0053	0.0255
196	0.0245	0.0042	0.0203
197	0.0269	0.0046	0.0223
198	0.0243	0.0041	0.0201
199	0.0223	0.0038	0.0185
200	0.0207	0.0035	0.0172
201	0.0194	0.0033	0.0161
202	0.0184	0.0031	0.0152
203	0.0175	0.0030	0.0145
204	0.0167	0.0029	0.0139
205	0.0160	0.0027	0.0133
206	0.0154	0.0026	0.0128
207	0.0149	0.0025	0.0123
208	0.0144	0.0025	0.0119
209	0.0139	0.0024	0.0116
210	0.0135	0.0023	0.0112
211	0.0132	0.0023	0.0109
212	0.0128	0.0022	0.0106

213	0.0125	0.0021	0.0104
214	0.0122	0.0021	0.0101
215	0.0120	0.0020	0.0099
216	0.0117	0.0020	0.0097
217	0.0097	0.0017	0.0080
218	0.0095	0.0016	0.0078
219	0.0092	0.0016	0.0077
220	0.0091	0.0015	0.0075
221	0.0089	0.0015	0.0074
222	0.0087	0.0015	0.0072
223	0.0085	0.0015	0.0071
224	0.0084	0.0014	0.0069
225	0.0082	0.0014	0.0068
226	0.0081	0.0014	0.0067
227	0.0080	0.0014	0.0066
228	0.0078	0.0013	0.0065
229	0.0077	0.0013	0.0064
230	0.0076	0.0013	0.0063
231	0.0075	0.0013	0.0062
232	0.0074	0.0013	0.0061
233	0.0073	0.0012	0.0060
234	0.0072	0.0012	0.0059
235	0.0071	0.0012	0.0059
236	0.0070	0.0012	0.0058
237	0.0069	0.0012	0.0057
238	0.0068	0.0012	0.0056
239	0.0067	0.0011	0.0056
240	0.0066	0.0011	0.0055
241	0.0066	0.0011	0.0054
242	0.0065	0.0011	0.0054
243	0.0064	0.0011	0.0053
244	0.0063	0.0011	0.0052
245	0.0063	0.0011	0.0052
246	0.0062	0.0011	0.0051
247	0.0061	0.0010	0.0051
248	0.0061	0.0010	0.0050
249	0.0060	0.0010	0.0050
250	0.0059	0.0010	0.0049
251	0.0059	0.0010	0.0049
252	0.0058	0.0010	0.0048
253	0.0058	0.0010	0.0048
254	0.0057	0.0010	0.0047
255	0.0057	0.0010	0.0047
256	0.0056	0.0010	0.0047
257	0.0056	0.0010	0.0046
258	0.0055	0.0009	0.0046
259	0.0055	0.0009	0.0045
260	0.0054	0.0009	0.0045
261	0.0054	0.0009	0.0045
262	0.0053	0.0009	0.0044
263	0.0053	0.0009	0.0044
264	0.0053	0.0009	0.0044
265	0.0052	0.0009	0.0043
266	0.0052	0.0009	0.0043
267	0.0051	0.0009	0.0043
268	0.0051	0.0009	0.0042
269	0.0051	0.0009	0.0042

270	0.0050	0.0009	0.0042
271	0.0050	0.0009	0.0041
272	0.0049	0.0008	0.0041
273	0.0049	0.0008	0.0041
274	0.0049	0.0008	0.0040
275	0.0048	0.0008	0.0040
276	0.0048	0.0008	0.0040
277	0.0048	0.0008	0.0040
278	0.0047	0.0008	0.0039
279	0.0047	0.0008	0.0039
280	0.0047	0.0008	0.0039
281	0.0047	0.0008	0.0039
282	0.0046	0.0008	0.0038
283	0.0046	0.0008	0.0038
284	0.0046	0.0008	0.0038
285	0.0045	0.0008	0.0038
286	0.0045	0.0008	0.0037
287	0.0045	0.0008	0.0037
288	0.0045	0.0008	0.0037

Total soil rain loss = 0.46(In)
Total effective rainfall = 2.48(In)
Peak flow rate in flood hydrograph = 27.35(CFS)

++

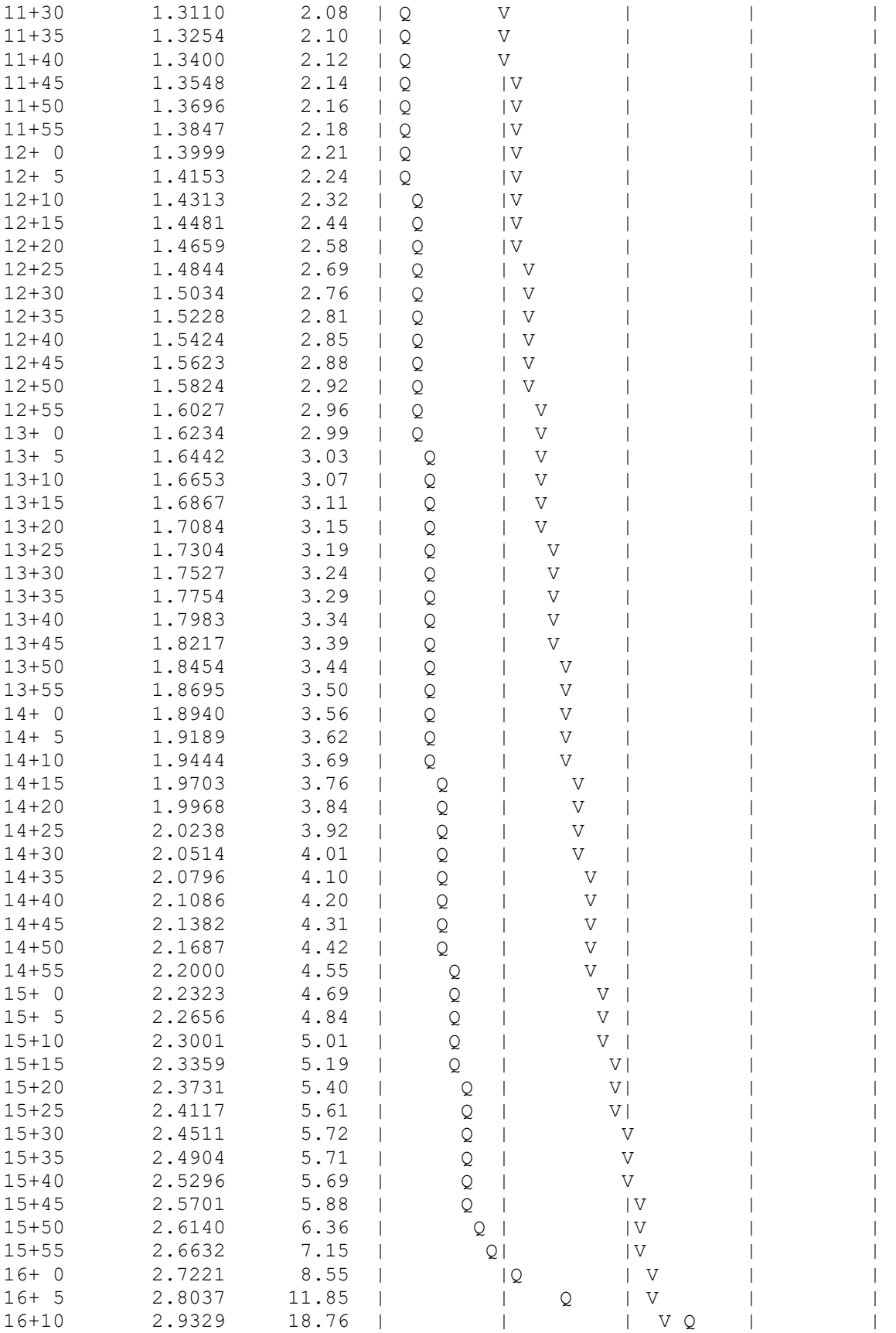
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

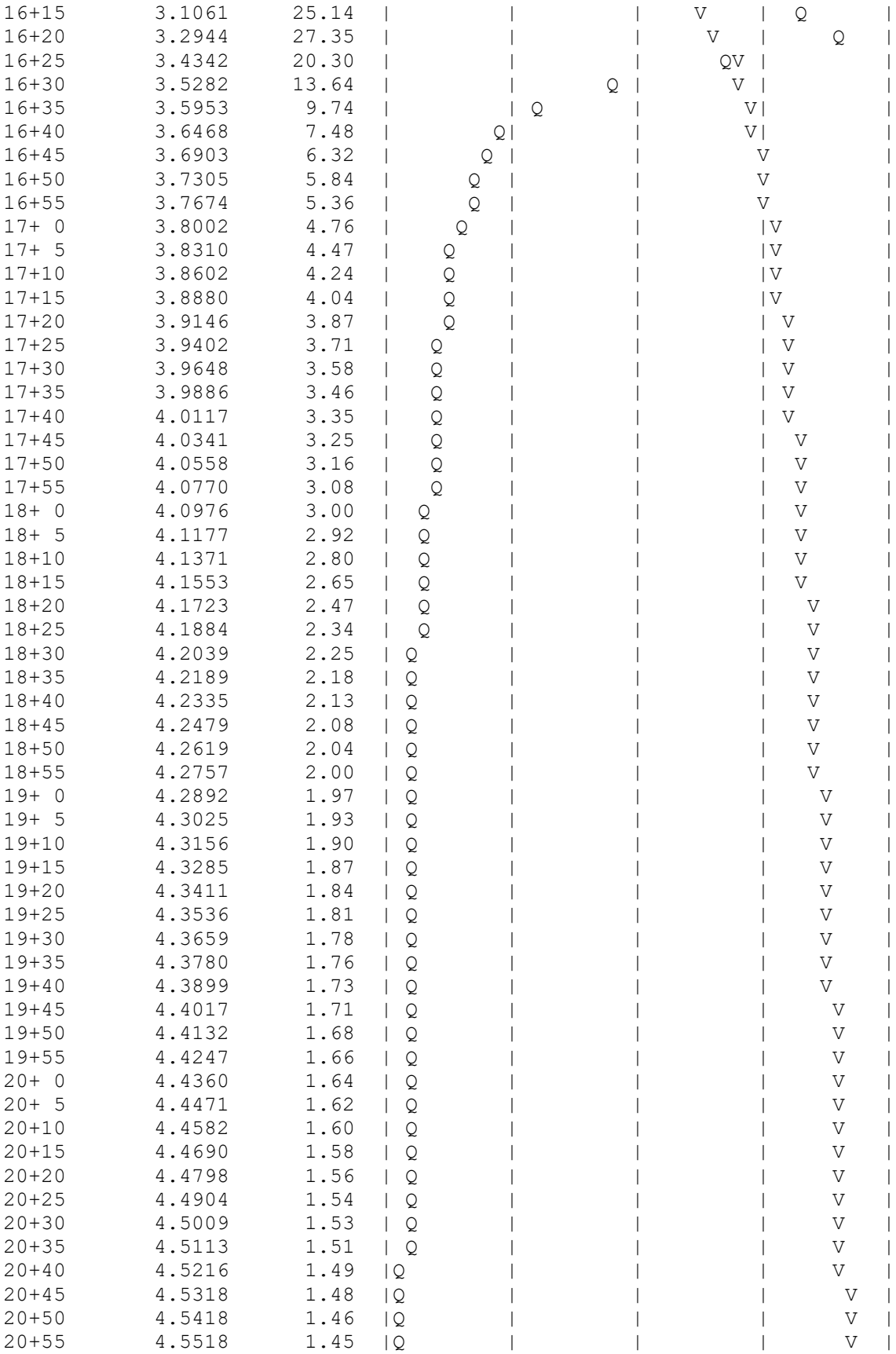
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.02	Q				
0+10	0.0012	0.14	Q				
0+15	0.0038	0.38	Q				
0+20	0.0084	0.68	Q				
0+25	0.0144	0.87	VQ				
0+30	0.0211	0.98	VQ				
0+35	0.0282	1.03	VQ				
0+40	0.0354	1.05	VQ				
0+45	0.0427	1.06	VQ				
0+50	0.0501	1.07	VQ				
0+55	0.0575	1.08	VQ				
1+ 0	0.0649	1.08	VQ				
1+ 5	0.0724	1.08	VQ				
1+10	0.0799	1.09	VQ				
1+15	0.0874	1.09	VQ				
1+20	0.0949	1.09	VQ				
1+25	0.1025	1.10	VQ				
1+30	0.1101	1.10	VQ				
1+35	0.1177	1.10	VQ				
1+40	0.1253	1.11	|Q				
1+45	0.1329	1.11	|Q				
1+50	0.1406	1.11	|Q				
1+55	0.1483	1.12	|Q				

2+ 0	0.1560	1.12	|Q	|	|	|	|
2+ 5	0.1638	1.13	|Q	|	|	|	|
2+10	0.1716	1.13	|Q	|	|	|	|
2+15	0.1794	1.13	|Q	|	|	|	|
2+20	0.1872	1.14	|Q	|	|	|	|
2+25	0.1951	1.14	|Q	|	|	|	|
2+30	0.2030	1.14	|Q	|	|	|	|
2+35	0.2109	1.15	|Q	|	|	|	|
2+40	0.2188	1.15	|Q	|	|	|	|
2+45	0.2268	1.16	|Q	|	|	|	|
2+50	0.2348	1.16	|Q	|	|	|	|
2+55	0.2428	1.16	|Q	|	|	|	|
3+ 0	0.2508	1.17	|QV	|	|	|	|
3+ 5	0.2589	1.17	|QV	|	|	|	|
3+10	0.2670	1.18	|QV	|	|	|	|
3+15	0.2752	1.18	|QV	|	|	|	|
3+20	0.2833	1.19	|QV	|	|	|	|
3+25	0.2915	1.19	|QV	|	|	|	|
3+30	0.2997	1.19	|QV	|	|	|	|
3+35	0.3080	1.20	|QV	|	|	|	|
3+40	0.3163	1.20	|QV	|	|	|	|
3+45	0.3246	1.21	|QV	|	|	|	|
3+50	0.3330	1.21	|QV	|	|	|	|
3+55	0.3413	1.22	|QV	|	|	|	|
4+ 0	0.3497	1.22	|QV	|	|	|	|
4+ 5	0.3582	1.23	|QV	|	|	|	|
4+10	0.3667	1.23	|QV	|	|	|	|
4+15	0.3752	1.24	|Q V	|	|	|	|
4+20	0.3837	1.24	|Q V	|	|	|	|
4+25	0.3923	1.25	|Q V	|	|	|	|
4+30	0.4009	1.25	|Q V	|	|	|	|
4+35	0.4096	1.26	|Q V	|	|	|	|
4+40	0.4182	1.26	|Q V	|	|	|	|
4+45	0.4270	1.27	|Q V	|	|	|	|
4+50	0.4357	1.27	|Q V	|	|	|	|
4+55	0.4445	1.28	|Q V	|	|	|	|
5+ 0	0.4533	1.28	|Q V	|	|	|	|
5+ 5	0.4622	1.29	|Q V	|	|	|	|
5+10	0.4711	1.29	|Q V	|	|	|	|
5+15	0.4800	1.30	|Q V	|	|	|	|
5+20	0.4890	1.30	|Q V	|	|	|	|
5+25	0.4980	1.31	|Q V	|	|	|	|
5+30	0.5071	1.31	|Q V	|	|	|	|
5+35	0.5162	1.32	|Q V	|	|	|	|
5+40	0.5253	1.33	|Q V	|	|	|	|
5+45	0.5345	1.33	|Q V	|	|	|	|
5+50	0.5437	1.34	|Q V	|	|	|	|
5+55	0.5529	1.34	|Q V	|	|	|	|
6+ 0	0.5622	1.35	|Q V	|	|	|	|
6+ 5	0.5716	1.36	|Q V	|	|	|	|
6+10	0.5810	1.36	|Q V	|	|	|	|
6+15	0.5904	1.37	|Q V	|	|	|	|
6+20	0.5999	1.38	|Q V	|	|	|	|
6+25	0.6094	1.38	|Q V	|	|	|	|
6+30	0.6189	1.39	|Q V	|	|	|	|
6+35	0.6286	1.40	|Q V	|	|	|	|
6+40	0.6382	1.40	|Q V	|	|	|	|

6+45	0.6479	1.41	|Q V |	|	|	|
6+50	0.6577	1.42	|Q V |	|	|	|
6+55	0.6675	1.42	|Q V |	|	|	|
7+ 0	0.6773	1.43	|Q V |	|	|	|
7+ 5	0.6872	1.44	|Q V |	|	|	|
7+10	0.6972	1.44	|Q V |	|	|	|
7+15	0.7072	1.45	|Q V |	|	|	|
7+20	0.7172	1.46	|Q V |	|	|	|
7+25	0.7273	1.47	|Q V |	|	|	|
7+30	0.7375	1.48	|Q V |	|	|	|
7+35	0.7477	1.48	|Q V |	|	|	|
7+40	0.7580	1.49	|Q V |	|	|	|
7+45	0.7683	1.50	|Q V |	|	|	|
7+50	0.7787	1.51	| Q V |	|	|	|
7+55	0.7891	1.52	| Q V |	|	|	|
8+ 0	0.7996	1.52	| Q V |	|	|	|
8+ 5	0.8102	1.53	| Q V |	|	|	|
8+10	0.8208	1.54	| Q V |	|	|	|
8+15	0.8315	1.55	| Q V |	|	|	|
8+20	0.8423	1.56	| Q V |	|	|	|
8+25	0.8531	1.57	| Q V |	|	|	|
8+30	0.8639	1.58	| Q V |	|	|	|
8+35	0.8749	1.59	| Q V |	|	|	|
8+40	0.8859	1.60	| Q V |	|	|	|
8+45	0.8970	1.61	| Q V |	|	|	|
8+50	0.9081	1.62	| Q V |	|	|	|
8+55	0.9193	1.63	| Q V |	|	|	|
9+ 0	0.9306	1.64	| Q V |	|	|	|
9+ 5	0.9420	1.65	| Q V |	|	|	|
9+10	0.9534	1.66	| Q V |	|	|	|
9+15	0.9649	1.67	| Q V |	|	|	|
9+20	0.9765	1.68	| Q V |	|	|	|
9+25	0.9882	1.69	| Q V |	|	|	|
9+30	1.0000	1.71	| Q V |	|	|	|
9+35	1.0118	1.72	| Q V |	|	|	|
9+40	1.0237	1.73	| Q V |	|	|	|
9+45	1.0357	1.74	| Q V |	|	|	|
9+50	1.0478	1.76	| Q V |	|	|	|
9+55	1.0600	1.77	| Q V |	|	|	|
10+ 0	1.0722	1.78	| Q V |	|	|	|
10+ 5	1.0846	1.79	| Q V |	|	|	|
10+10	1.0970	1.81	| Q V |	|	|	|
10+15	1.1096	1.82	| Q V|	|	|	|
10+20	1.1222	1.84	| Q V|	|	|	|
10+25	1.1350	1.85	| Q V|	|	|	|
10+30	1.1478	1.87	| Q V|	|	|	|
10+35	1.1608	1.88	| Q V|	|	|	|
10+40	1.1739	1.90	| Q V|	|	|	|
10+45	1.1870	1.91	| Q V|	|	|	|
10+50	1.2003	1.93	| Q V|	|	|	|
10+55	1.2137	1.95	| Q V|	|	|	|
11+ 0	1.2272	1.96	| Q V |	|	|	|
11+ 5	1.2409	1.98	| Q V |	|	|	|
11+10	1.2546	2.00	| Q V |	|	|	|
11+15	1.2685	2.02	| Q V |	|	|	|
11+20	1.2826	2.04	| Q V |	|	|	|
11+25	1.2967	2.06	| Q V |	|	|	|





21+ 0	4.5616	1.43	|Q	|	|	|	V |
21+ 5	4.5714	1.42	|Q	|	|	|	V |
21+10	4.5810	1.40	|Q	|	|	|	V |
21+15	4.5906	1.39	|Q	|	|	|	V |
21+20	4.6001	1.38	|Q	|	|	|	V |
21+25	4.6095	1.36	|Q	|	|	|	V |
21+30	4.6188	1.35	|Q	|	|	|	V |
21+35	4.6280	1.34	|Q	|	|	|	V |
21+40	4.6371	1.33	|Q	|	|	|	V |
21+45	4.6462	1.31	|Q	|	|	|	V |
21+50	4.6552	1.30	|Q	|	|	|	V |
21+55	4.6641	1.29	|Q	|	|	|	V |
22+ 0	4.6729	1.28	|Q	|	|	|	V |
22+ 5	4.6816	1.27	|Q	|	|	|	V |
22+10	4.6903	1.26	|Q	|	|	|	V |
22+15	4.6989	1.25	|Q	|	|	|	V |
22+20	4.7075	1.24	|Q	|	|	|	V |
22+25	4.7160	1.23	|Q	|	|	|	V |
22+30	4.7244	1.22	|Q	|	|	|	V |
22+35	4.7327	1.21	|Q	|	|	|	V |
22+40	4.7410	1.20	|Q	|	|	|	V |
22+45	4.7492	1.19	|Q	|	|	|	V |
22+50	4.7574	1.19	|Q	|	|	|	V |
22+55	4.7655	1.18	|Q	|	|	|	V |
23+ 0	4.7736	1.17	|Q	|	|	|	V|
23+ 5	4.7816	1.16	|Q	|	|	|	V|
23+10	4.7895	1.15	|Q	|	|	|	V|
23+15	4.7974	1.14	|Q	|	|	|	V|
23+20	4.8052	1.14	|Q	|	|	|	V|
23+25	4.8130	1.13	|Q	|	|	|	V|
23+30	4.8207	1.12	|Q	|	|	|	V|
23+35	4.8284	1.11	|Q	|	|	|	V|
23+40	4.8360	1.11	|Q	|	|	|	V|
23+45	4.8436	1.10	|Q	|	|	|	V|
23+50	4.8511	1.09	|Q	|	|	|	V|
23+55	4.8586	1.09	|Q	|	|	|	V|
24+ 0	4.8661	1.08	|Q	|	|	|	V|
24+ 5	4.8733	1.05	|Q	|	|	|	V|
24+10	4.8797	0.92	|Q	|	|	|	V|
24+15	4.8844	0.69	Q	|	|	|	V|
24+20	4.8870	0.38	Q	|	|	|	V|
24+25	4.8883	0.19	Q	|	|	|	V|
24+30	4.8889	0.09	Q	|	|	|	V|
24+35	4.8892	0.04	Q	|	|	|	V|
24+40	4.8893	0.02	Q	|	|	|	V|
24+45	4.8894	0.01	Q	|	|	|	V|
24+50	4.8894	0.01	Q	|	|	|	V

APPENDIX E

HYDRAULIC CALCULATIONS

E.1: ONSITE STREET CAPACITY – SUBAREA “A-3”
E.2: ONSITE STREET CAPACITY – SUBAREA “A-7”
E.3: STORM DRAIN PIPE ANALYSIS – SD PIPE NO. 1
E.4: STORM DRAIN PIPE ANALYSIS – SD PIPE NO. 2
E.5: STORM DRAIN PIPE ANALYSIS – SD OUTLET PIPE
E.6: OUTLET CONTROL STRUCTURE – WEIR ANALYSIS
E.7: CURB INLET ANALYSIS – INLET #1
E.8: CURB INLET ANALYSIS – INLET #2

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: Channel Analysis-A3

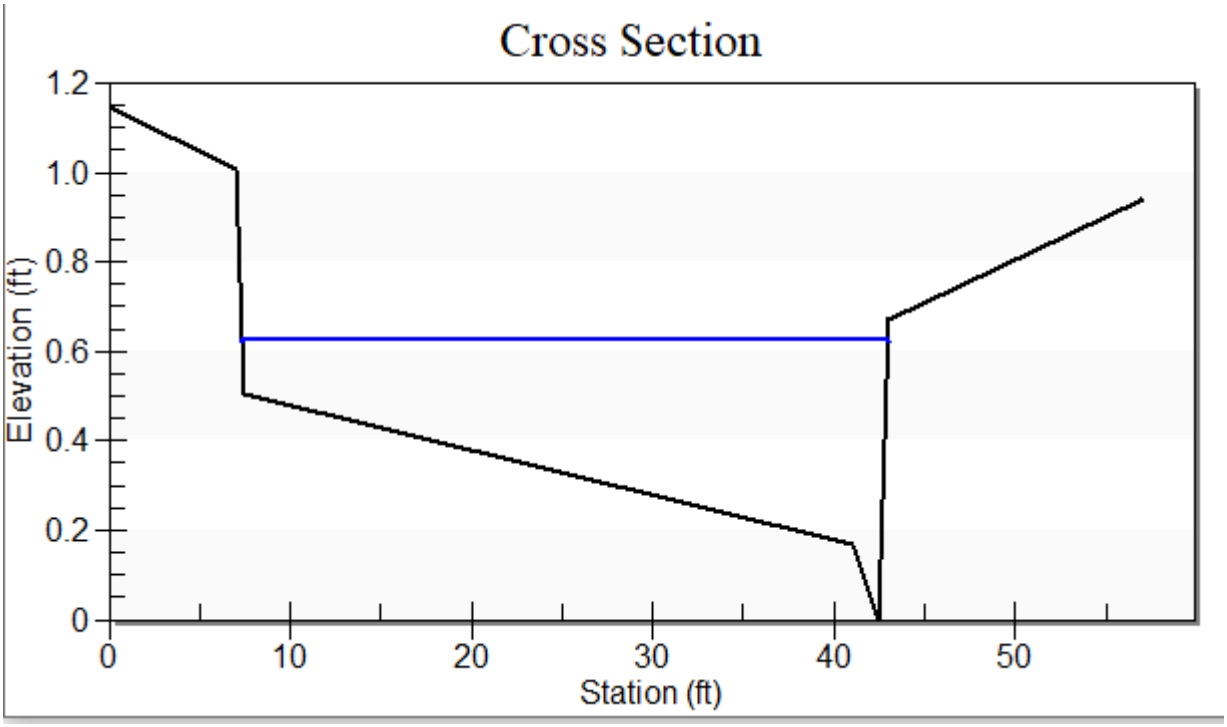
Notes:

Input Parameters

Channel Type: Custom Cross Section

Cross Section Data

Elevation (ft)	Elevation (ft)	Manning's n
0.00	1.15	0.0100
7.00	1.00	0.0100
7.50	0.51	0.0100
41.00	0.17	0.0120
42.50	0.00	0.0120
43.00	0.67	0.0100
57.00	0.94	-----



Longitudinal Slope: 0.0050 ft/ft

Flow: 49.0000 cfs

Result Parameters

Depth: 0.6263 ft

Area of Flow: 10.6387 ft^2

Wetted Perimeter: 35.9642 ft

Hydraulic Radius: 0.2958 ft

Average Velocity: 4.6058 ft/s

Top Width: 35.5886 ft

Froude Number: 1.4845

Critical Depth: 0.7244 ft

Critical Velocity: 3.4464 ft/s

Critical Slope: 0.0019 ft/ft

Critical Top Width: 38.54 ft

Calculated Max Shear Stress: 0.1954 lb/ft^2

Calculated Avg Shear Stress: 0.0923 lb/ft^2

Composite Manning's n Equation: Lotter method

Manning's n: 0.0101

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: Channel Analysis-A7

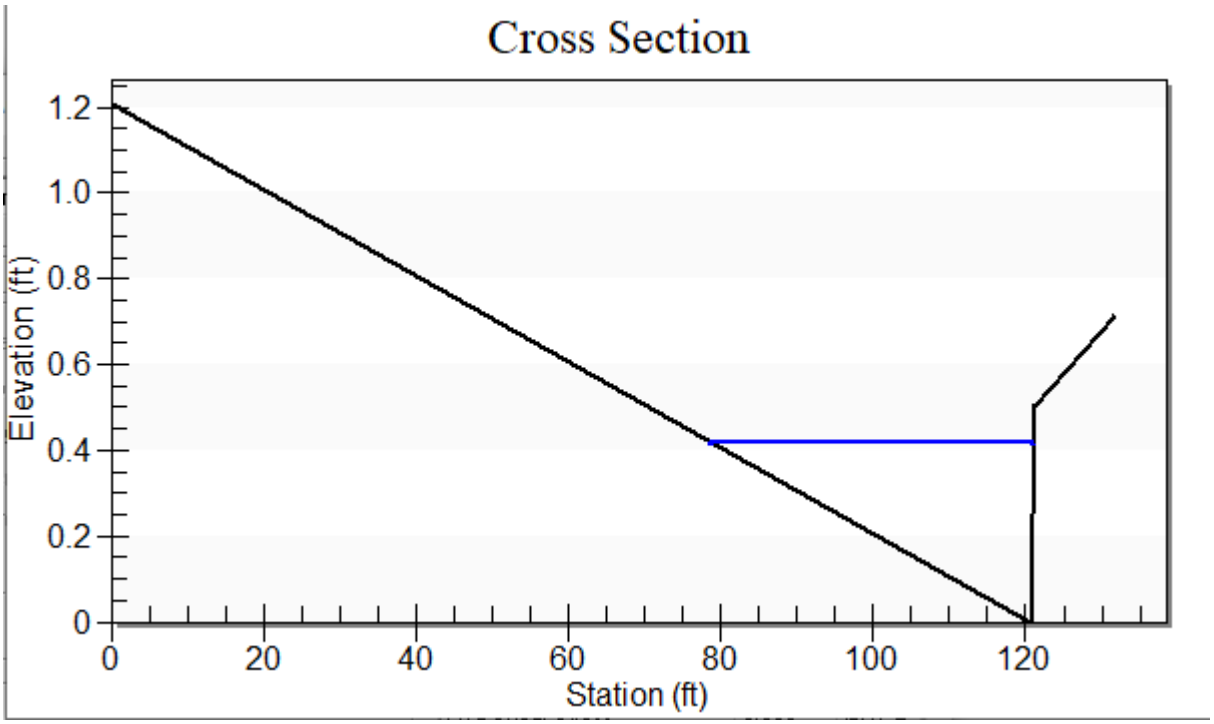
Notes:

Input Parameters

Channel Type: Custom Cross Section

Cross Section Data

Elevation (ft)	Elevation (ft)	Manning's n
0.00	1.21	0.0120
120.60	0.00	0.0120
121.10	0.50	0.0100
131.80	0.71	-----



Longitudinal Slope: 0.0050 ft/ft

Flow: 27.2000 cfs

Result Parameters

Depth: 0.4184 ft

Area of Flow: 8.8394 ft^2

Wetted Perimeter: 42.4312 ft

Hydraulic Radius: 0.2083 ft

Average Velocity: 3.0771 ft/s

Top Width: 42.2558 ft

Froude Number: 1.1856

Critical Depth: 0.4479 ft

Critical Velocity: 2.6853 ft/s

Critical Slope: 0.0035 ft/ft

Critical Top Width: 45.23 ft

Calculated Max Shear Stress: 0.1305 lb/ft^2

Calculated Avg Shear Stress: 0.0650 lb/ft^2

Composite Manning's n Equation: Lotter method

Manning's n: 0.0120

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: SD PIPE #1

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter: 2.0000 ft

Longitudinal Slope: 0.0686 ft/ft

Manning's n: 0.0150

Flow: 27.2000 cfs

Result Parameters

Depth: 1.0349 ft

Area of Flow: 1.6405 ft^2

Wetted Perimeter: 3.2113 ft

Hydraulic Radius: 0.5108 ft

Average Velocity: 16.5805 ft/s

Top Width: 1.9988 ft

Froude Number: 3.2253

Critical Depth: 1.8125 ft

Critical Velocity: 9.0882 ft/s

Critical Slope: 0.0169 ft/ft

Critical Top Width: 1.17 ft

Calculated Max Shear Stress: 4.4298 lb/ft^2

Calculated Avg Shear Stress: 2.1867 lb/ft^2

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: SD PIPE #2

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter: 3.5000 ft

Longitudinal Slope: 0.0050 ft/ft

Manning's n: 0.0150

Flow: 49.0000 cfs

Result Parameters

Depth: 2.3567 ft

Area of Flow: 6.8907 ft^2

Wetted Perimeter: 6.7369 ft

Hydraulic Radius: 1.0228 ft

Average Velocity: 7.1111 ft/s

Top Width: 3.2829 ft

Froude Number: 0.8650

Critical Depth: 2.1875 ft

Critical Velocity: 7.7462 ft/s

Critical Slope: 0.0062 ft/ft

Critical Top Width: 3.39 ft

Calculated Max Shear Stress: 0.7353 lb/ft^2

Calculated Avg Shear Stress: 0.3191 lb/ft^2

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: OUTLET SD PIPE

Notes:

Input Parameters

Channel Type: Circular

Pipe Diameter: 3.0000 ft

Longitudinal Slope: 0.0150 ft/ft

Manning's n: 0.0150

Flow: 75.5000 cfs

Result Parameters

Depth: 2.7040 ft

Area of Flow: 6.7079 ft^2

Wetted Perimeter: 7.5076 ft

Hydraulic Radius: 0.8935 ft

Average Velocity: 11.2554 ft/s

Top Width: 1.7893 ft

Froude Number: 1.0244

Critical Depth: 2.7246 ft

Critical Velocity: 11.1948 ft/s

Critical Slope: 0.0149 ft/ft

Critical Top Width: 1.73 ft

Calculated Max Shear Stress: 2.5309 lb/ft^2

Calculated Avg Shear Stress: 0.8363 lb/ft^2

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Weir Analysis: OUTLET CONTROL STRUCTURE-HCOC

Notes:

Input Parameters

Weir Type: Rectangular

Coefficient: 3.2000

Length: 5.0000 ft

Flow: 5.5600 cfs

Result Parameters

Head: 0.4943 ft

Weir Analysis: OUTLET CONTROL STRUCTURE-100yr-Bypass

Notes:

Input Parameters

Weir Type: Rectangular

Coefficient: 3.2000

Length: 10.0000 ft

Flow: 75.5000 cfs

Result Parameters

Head: 1.7723 ft

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: INLET #1

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0100 ft/ft

Cross-Slope of Pavement: 0.0500 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 2.0000 ft

Width of Spread: 14.2256 ft

Gutter Result Parameters

Design Flow: 30.1000 cfs

Gutter Depression: 0.0000 in

Area of Flow: 5.0592 ft^2

Eo (Gutter Flow to Total Flow): 0.3327

Gutter Depth at Curb: 8.5353 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Curb Opening

Length of Inlet: 14.0000 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 14.0000 ft

Effective Perimeter: 14.0000 ft

Area: 11.6667 ft^2

Effective Area: 11.6667 ft^2

Depth at curb face (upstream of local depression): 0.8008 ft

Computed Width of Spread at Sag: 16.0168 ft

Flow type: Weir Flow

Efficiency: 1.0000

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, July 2, 2021

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: INLET #2

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0080 ft/ft

Cross-Slope of Pavement: 0.0050 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 2.0000 ft

Width of Spread: 64.5997 ft

Gutter Result Parameters

Design Flow: 32.8000 cfs

Gutter Depression: 0.0000 in

Area of Flow: 10.4328 ft^2

Eo (Gutter Flow to Total Flow): 0.0805

Gutter Depth at Curb: 3.8760 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Curb Opening

Length of Inlet: 14.0000 ft

Curb opening height: 8.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 14.0000 ft

Effective Perimeter: 14.0000 ft

Area: 14.0000 ft^2

Effective Area: 14.0000 ft^2

Depth at curb face (upstream of local depression): 0.8480 ft

Computed Width of Spread at Sag: 169.6080 ft

Flow type: Weir Flow

Efficiency: 1.0000

APPENDIX F

REFERENCE DATA

F.1: HYDROLOGIC SOILS DATA

F.2: RAINFALL DATA

F.3: OC TGD WORKSHEET H – FACTOR OF SAFETY AND DESIGN INFILTRATION RATE

F.4: CONTECH DETENTION SYSTEM SHEETS

F.5: BMP DCV CALCULATIONS

F.6: FEMA FIRM PANEL NO. 06071C7940J

Curve (1) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	71	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	25	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

Figure C-3 (1 of 2)

R1W R2W R7W

T4N T3N T2N T1N T1S

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

PROJECT SITE

LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

INDEX MAP

Scale 1:250,000

CONTOUR INTERVAL 200 FEET

WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 11

1985 MAGNETIC DECLINATION FROM TRUE NORTH VARIES FROM 1 5/6° (280 MILS) EASTERLY FOR THE CENTER OF THE WEST EDGE TO 15° (270 MILS) EASTERLY FOR THE CENTER OF THE EAST EDGE

BASE MAP REPRODUCED FROM U.S.G.S. "SAN BERNARDINO" TOPOGRAPHIC MAP

SCALE REDUCED BY 1/2

LOCATION DIAGRAM

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP FOR SOUTHCENTRAL AREA

FIGURE C-11

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Bernardino County Southwestern Part, California

Pepper Avenue Industrial Building



May 31, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	15.8	65.7%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	8.3	34.3%
Totals for Area of Interest		**24.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino County Southwestern Part, California

Gr—Grangeville fine sandy loam, warm MAAT, MLRA 19

Map Unit Setting

National map unit symbol: 2vncy
Elevation: 490 to 1,430 feet
Mean annual precipitation: 11 to 17 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 271 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Grangeville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grangeville

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 12 inches: fine sandy loam
C - 12 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water capacity: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

San emigdio, fine sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains

Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 5 percent
Landform: Alluvial fans, depressions, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Chino

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

TuB—Tujunga loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2sx6y
Elevation: 650 to 3,110 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 325 to 365 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tujunga, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga, Loamy Sand

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 6 inches: loamy sand
C1 - 6 to 18 inches: loamy sand
C2 - 18 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Tujunga, gravelly loamy sand

Percent of map unit: 10 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hanford, sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

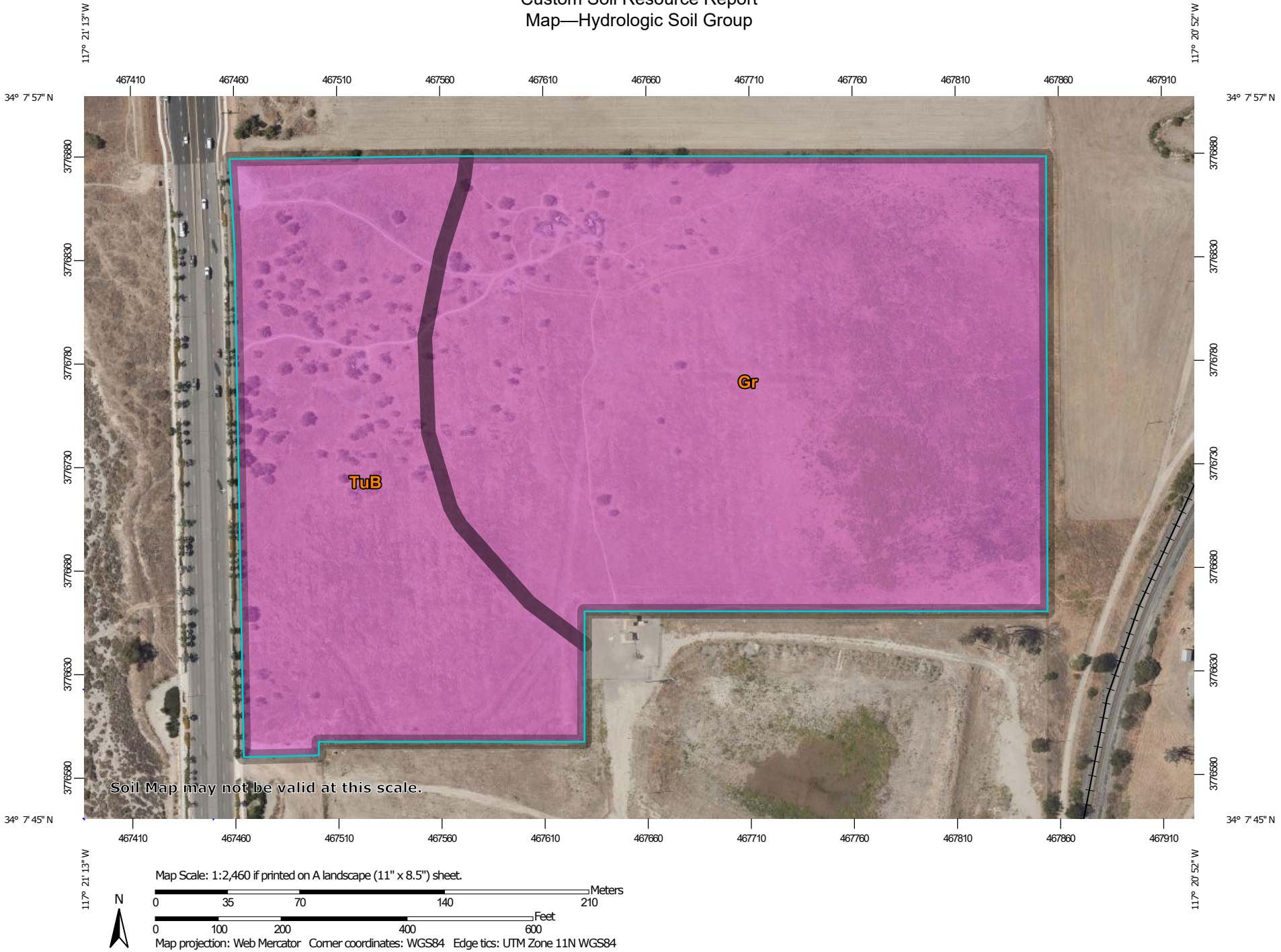
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:2,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	A	15.8	65.7%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	A	8.3	34.3%
Totals for Area of Interest			**24.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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NOAA Atlas 14, Volume 6, Version 2
Location name: Rialto, California, USA*
Latitude: 34.1311°, Longitude: -117.3509°
Elevation: 1275.95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.129 (0.107-0.156)	0.169 (0.141-0.206)	0.224 (0.186-0.273)	0.269 (0.221-0.331)	0.332 (0.264-0.423)	0.382 (0.297-0.497)	0.435 (0.329-0.579)	0.490 (0.361-0.672)	0.567 (0.400-0.812)	0.630 (0.429-0.934)
10-min	0.184 (0.153-0.224)	0.243 (0.202-0.295)	0.321 (0.266-0.391)	0.386 (0.317-0.474)	0.477 (0.378-0.606)	0.548 (0.426-0.713)	0.623 (0.472-0.830)	0.702 (0.517-0.963)	0.813 (0.574-1.16)	0.903 (0.615-1.34)
15-min	0.223 (0.186-0.271)	0.294 (0.244-0.357)	0.388 (0.322-0.473)	0.467 (0.384-0.574)	0.576 (0.458-0.733)	0.663 (0.515-0.862)	0.753 (0.571-1.00)	0.849 (0.625-1.17)	0.984 (0.694-1.41)	1.09 (0.744-1.62)
30-min	0.330 (0.275-0.401)	0.435 (0.361-0.529)	0.575 (0.476-0.701)	0.691 (0.568-0.850)	0.854 (0.678-1.09)	0.982 (0.763-1.28)	1.12 (0.846-1.49)	1.26 (0.926-1.73)	1.46 (1.03-2.09)	1.62 (1.10-2.40)
60-min	0.484 (0.403-0.588)	0.637 (0.530-0.775)	0.842 (0.698-1.03)	1.01 (0.832-1.25)	1.25 (0.993-1.59)	1.44 (1.12-1.87)	1.64 (1.24-2.18)	1.84 (1.36-2.53)	2.13 (1.51-3.06)	2.37 (1.61-3.51)
2-hr	0.710 (0.590-0.862)	0.917 (0.762-1.11)	1.19 (0.987-1.45)	1.42 (1.17-1.74)	1.73 (1.37-2.20)	1.97 (1.53-2.57)	2.23 (1.69-2.97)	2.49 (1.83-3.41)	2.85 (2.01-4.08)	3.14 (2.14-4.66)
3-hr	0.884 (0.735-1.07)	1.13 (0.942-1.38)	1.46 (1.21-1.78)	1.73 (1.42-2.13)	2.11 (1.67-2.68)	2.39 (1.86-3.11)	2.69 (2.04-3.59)	3.00 (2.21-4.11)	3.42 (2.42-4.90)	3.76 (2.56-5.57)
6-hr	1.26 (1.05-1.54)	1.61 (1.34-1.96)	2.07 (1.72-2.52)	2.44 (2.01-3.00)	2.95 (2.34-3.75)	3.34 (2.60-4.34)	3.74 (2.83-4.98)	4.15 (3.06-5.69)	4.71 (3.32-6.74)	5.14 (3.50-7.63)
12-hr	1.69 (1.41-2.05)	2.17 (1.80-2.63)	2.79 (2.31-3.40)	3.29 (2.70-4.04)	3.96 (3.14-5.04)	4.47 (3.48-5.81)	4.99 (3.78-6.65)	5.52 (4.07-7.57)	6.23 (4.40-8.92)	6.79 (4.62-10.1)
24-hr	2.26 (2.01-2.61)	2.94 (2.60-3.39)	3.81 (3.36-4.40)	4.50 (3.94-5.25)	5.44 (4.61-6.55)	6.15 (5.10-7.56)	6.86 (5.56-8.64)	7.58 (5.98-9.82)	8.55 (6.47-11.5)	9.30 (6.80-13.0)
2-day	2.77 (2.45-3.19)	3.65 (3.23-4.22)	4.81 (4.24-5.56)	5.75 (5.03-6.70)	7.02 (5.94-8.46)	7.99 (6.63-9.83)	8.97 (7.27-11.3)	9.99 (7.87-12.9)	11.4 (8.59-15.3)	12.4 (9.08-17.3)
3-day	2.94 (2.61-3.39)	3.95 (3.50-4.56)	5.29 (4.66-6.12)	6.39 (5.59-7.45)	7.89 (6.68-9.51)	9.06 (7.52-11.1)	10.3 (8.31-12.9)	11.5 (9.07-14.9)	13.2 (10.0-17.8)	14.6 (10.7-20.3)
4-day	3.14 (2.78-3.61)	4.26 (3.76-4.91)	5.75 (5.07-6.65)	6.98 (6.11-8.14)	8.69 (7.36-10.5)	10.0 (8.32-12.3)	11.4 (9.25-14.4)	12.9 (10.1-16.7)	14.9 (11.3-20.1)	16.5 (12.0-23.0)
7-day	3.55 (3.14-4.09)	4.87 (4.30-5.61)	6.63 (5.85-7.67)	8.10 (7.09-9.44)	10.1 (8.59-12.2)	11.8 (9.76-14.5)	13.4 (10.9-16.9)	15.2 (12.0-19.7)	17.7 (13.4-23.8)	19.6 (14.3-27.4)
10-day	3.86 (3.42-4.45)	5.33 (4.71-6.14)	7.30 (6.44-8.44)	8.95 (7.83-10.4)	11.2 (9.53-13.6)	13.1 (10.8-16.1)	15.0 (12.1-18.9)	17.0 (13.4-22.0)	19.8 (15.0-26.7)	22.0 (16.1-30.8)
20-day	4.71 (4.18-5.43)	6.58 (5.82-7.59)	9.10 (8.03-10.5)	11.2 (9.82-13.1)	14.2 (12.0-17.1)	16.6 (13.8-20.4)	19.1 (15.5-24.0)	21.7 (17.1-28.2)	25.5 (19.3-34.4)	28.5 (20.8-39.8)
30-day	5.56 (4.92-6.41)	7.77 (6.87-8.97)	10.8 (9.51-12.5)	13.3 (11.7-15.5)	16.9 (14.3-20.4)	19.8 (16.4-24.3)	22.8 (18.5-28.7)	26.0 (20.5-33.7)	30.6 (23.1-41.3)	34.3 (25.1-47.8)
45-day	6.66 (5.90-7.67)	9.27 (8.20-10.7)	12.8 (11.3-14.8)	15.9 (13.9-18.5)	20.1 (17.0-24.2)	23.6 (19.5-29.0)	27.2 (22.0-34.2)	31.1 (24.5-40.2)	36.5 (27.7-49.3)	41.0 (30.0-57.2)
60-day	7.78 (6.89-8.96)	10.7 (9.51-12.4)	14.8 (13.1-17.1)	18.2 (16.0-21.3)	23.1 (19.6-27.8)	27.0 (22.4-33.2)	31.2 (25.2-39.3)	35.6 (28.1-46.1)	41.9 (31.7-56.5)	47.1 (34.4-65.7)

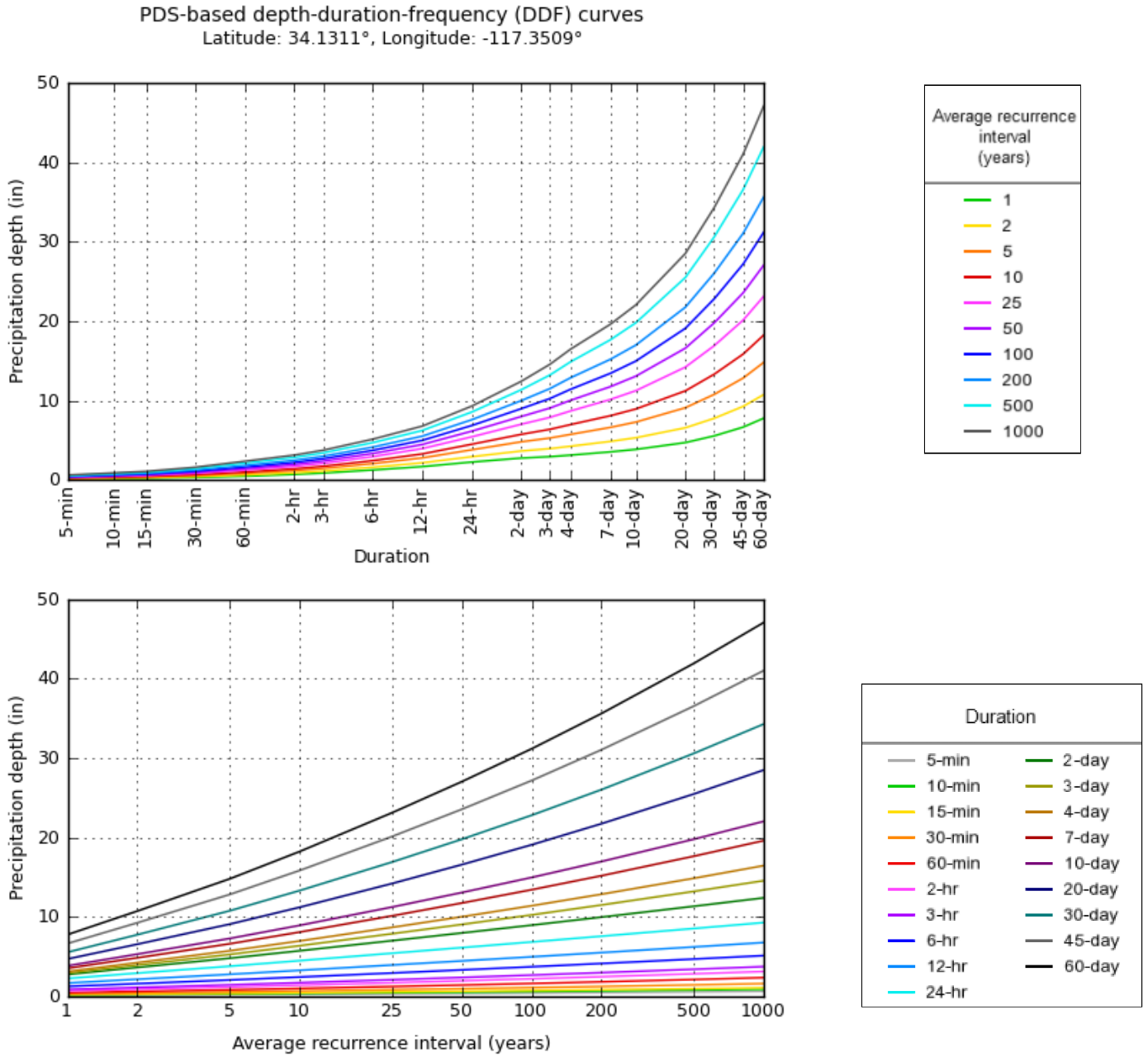
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



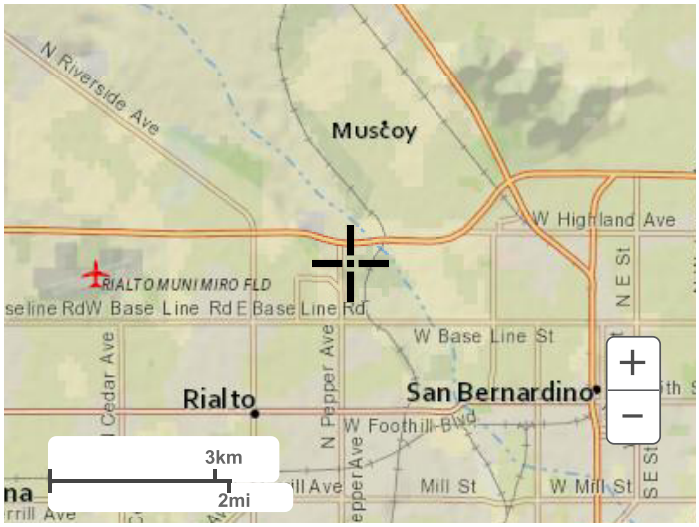
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Mon May 31 18:18:56 2021

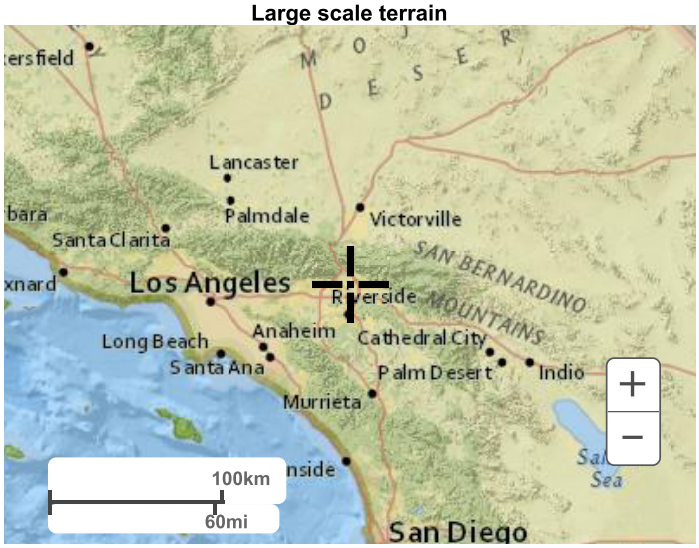
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Maps & aerials

Small scale terrain



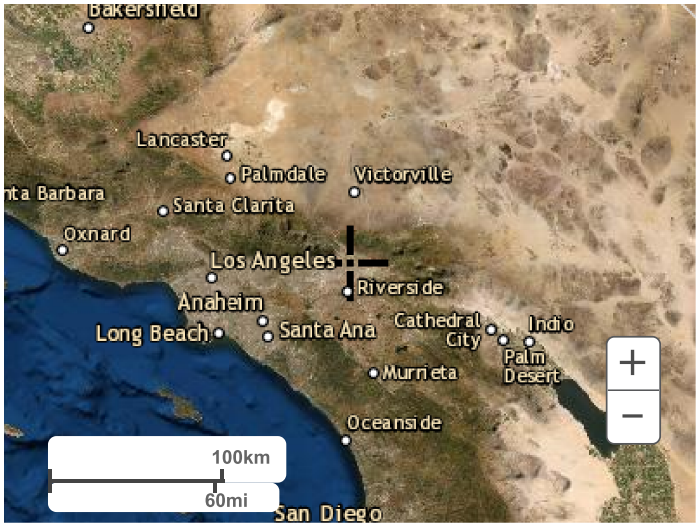
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Pepper Industrial Building **DMA 1**

Infiltration Test No.	Infiltration Rate (in/hr)	
I-3	0.8	
I-4	4.2	
Infiltration Rate (lowest) =	**2.5**	Used
Geotechnical Report recommendation =	3.9 (N/A)	

Worksheet H: Factor of Safety and Design Infiltration Rate and Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	1	0.25
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \sum p$			1.25
B	Design	Tributary area size	0.25	2	0.5
		Level of pretreatment/ expected sediment loads	0.25	3	0.75
		Redundancy	0.25	3	0.75
		Compaction during construction	0.25	2	0.5
		Design Safety Factor, $S_B = \sum p$			2.5
Combined Safety Factor, $S_{total} = S_A x S_B$					3.13
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					2.50
Design Infiltration Rate, in/hr, Kdesign = $K_{0bserved} / S_{total}$					**0.80**

Infiltration values I-3 and I-4 obtained from Southern California Geotechnical's Report #20G234-3 dated August 31, 2021. Other infiltration values were omitted as those infiltration tests do not fall within the proposed chamber footprint.

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

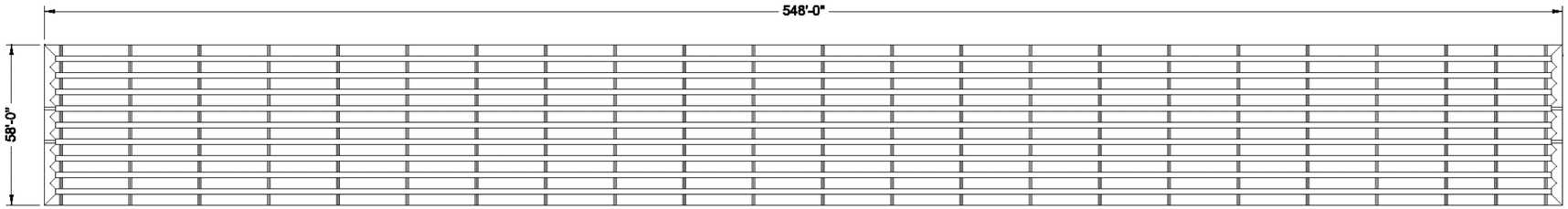
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 5,516 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 69,316 cf.
- BACKFILL STORAGE VOLUME = 58,073 cf.
- TOTAL STORAGE PROVIDED = 127,390 cf.

PIPE DETAILS
- DIAMETER = 48 IN.
- CORRUGATION = 2 2/3x1/2
- GAGE = 12
- COATING = ALT2
- WALL TYPE = Perforated
- BARRELL SPACING = 24 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 18 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 12 IN.



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 50'

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DATE	REVISION DESCRIPTION	BY

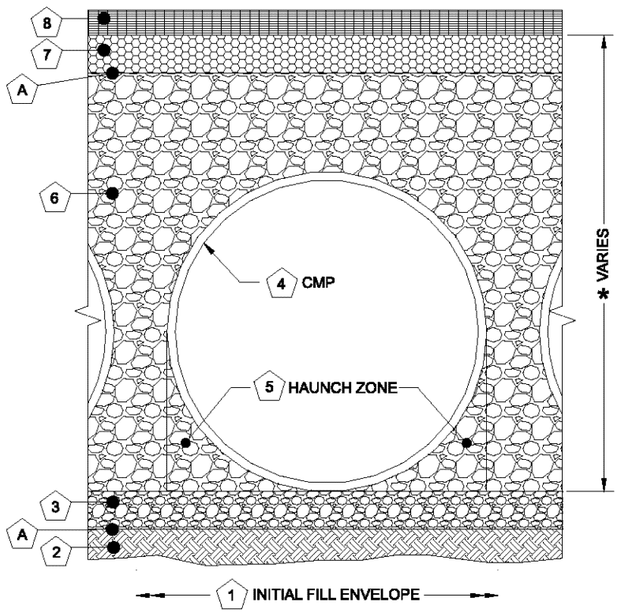
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

C:\EXPORT\SITEMPLATES\CMP_V5.DWG 10/18/2019 10:02 AM



Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
Material Location	Description	Material Designation	Designation
8 Rigid or Flexible Pavement (If applicable)			
7 Road Base (If applicable			
A Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6 Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ¼" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction*
3 Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
* Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

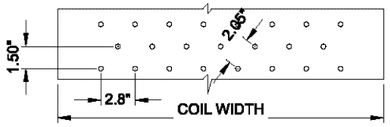
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

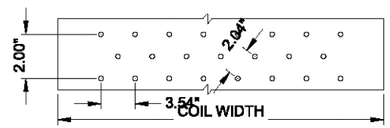
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



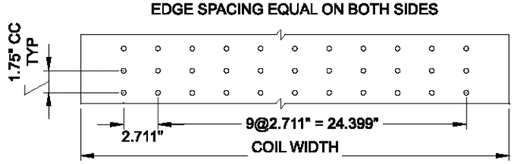
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



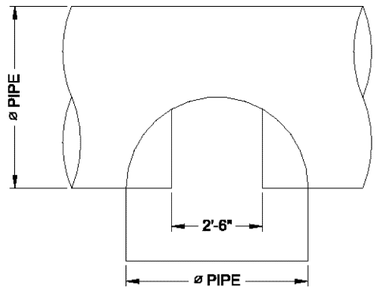
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

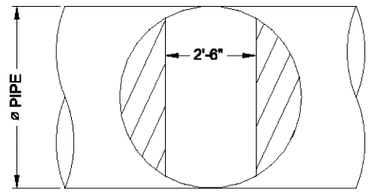
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

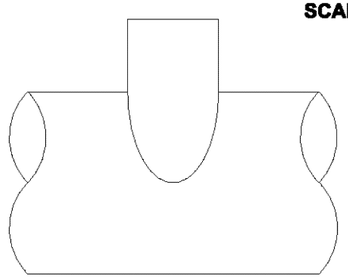


FRONT

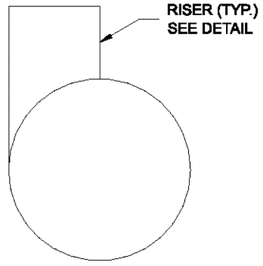
NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

TYPICAL MANWAY DETAIL

SCALE: N.T.S.



ELEVATION

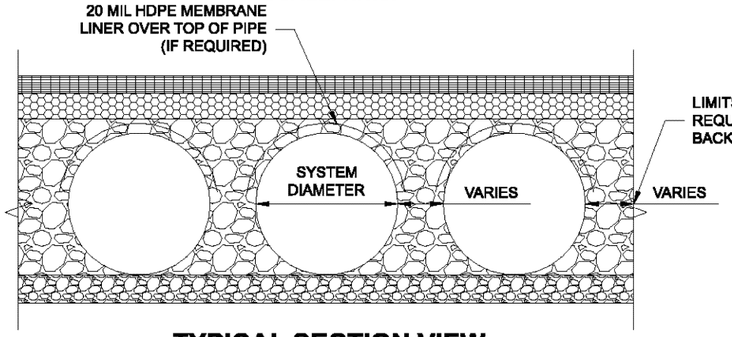


END

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

TYPICAL RISER DETAIL

SCALE: N.T.S.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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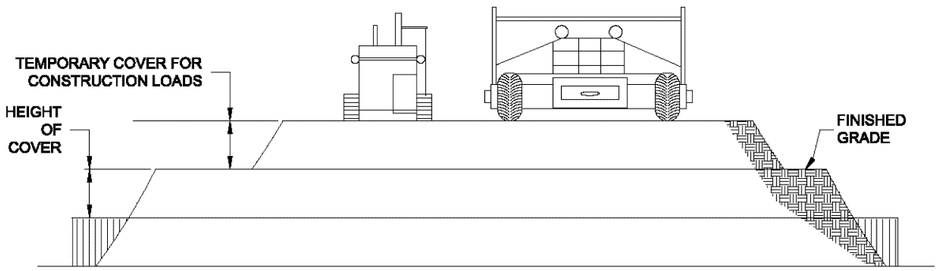
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800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D2		

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CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

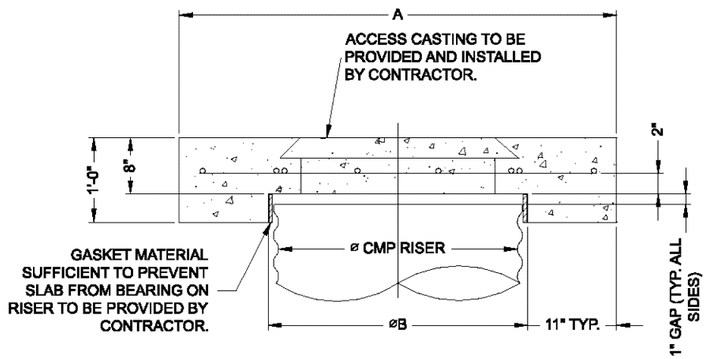
ALUMINUM: AASHTO M-196 OR ASTM B-745

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

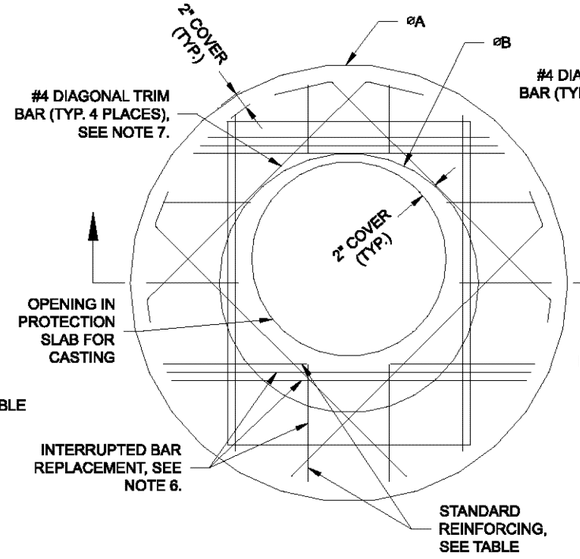
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



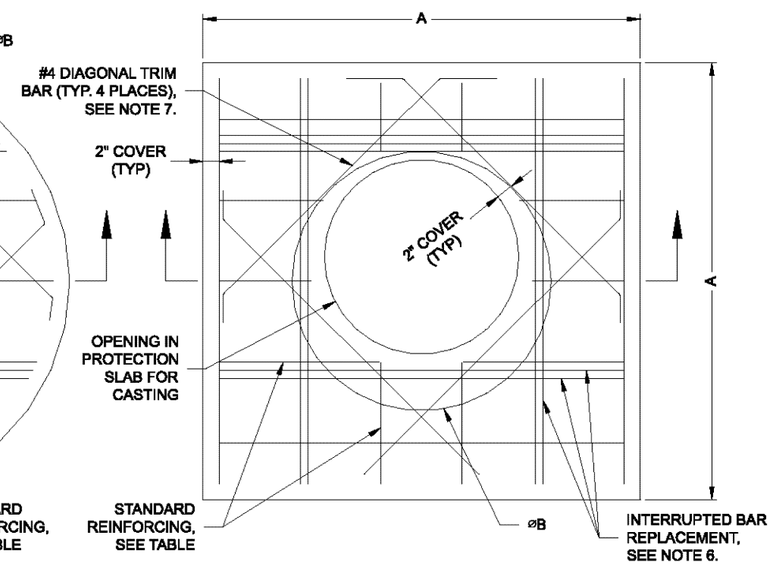
SECTION VIEW

REINFORCING TABLE				
ø CMP RISER	A	ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	ø 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	ø 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	ø 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	ø 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	ø 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D3		

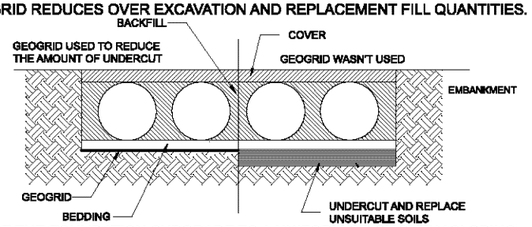
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

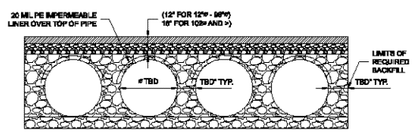


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

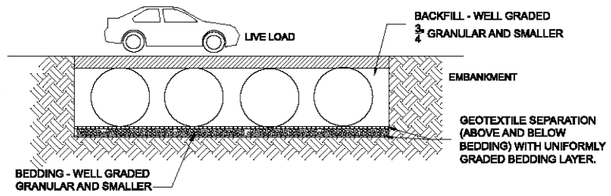
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

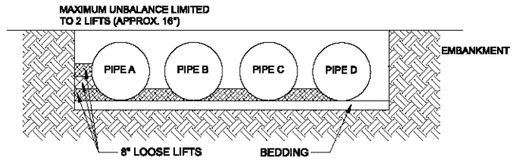
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



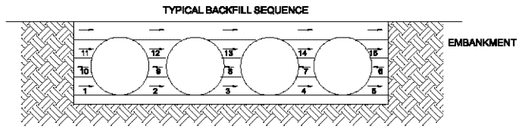
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

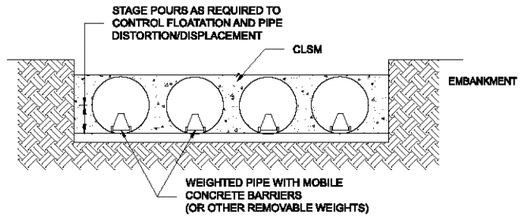


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

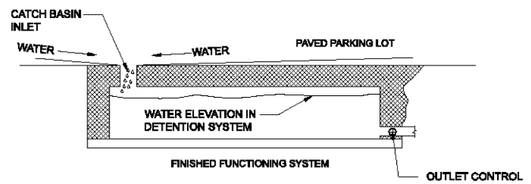


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

C:\EXPORTS\TEMPLATES\CMP_V5.DWG 10/18/2019 10:02 AM

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DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D4		

Santa Ana Watershed

BMP Design Volume, V_{BMP}

Company Name	FMCIVIL Engineers Inc.
Designed by	Francisco Martinez, PE
Project	Pepper Industrial Building (DA 1)
Date	12/14/2021

DA 1

Surface Type	**Area (SF)**
Roof	465,518.26
Concrete or Asphalt	444,750.92
Future Impervious Area	-
Restore to Natural	
Ornamental Landscaping, Basin, and Pervious Concrete	122,175.82
Total Area (SF)	1,032,445.00
Total Area (Acres)	23.7

Impervious Ratio =	**(i)**	88.2%
C_{BMP} = Runoff Coefficient	**$0.858i^3-0.78i^2+0.774i+0.04$**	0.7041
$P_{2yr,1hr}$	**NOAA - 2-yr 1-hr rainfall depth**	0.637
a_1 = San Bernardino Climate Region	**Valley = 1.4807 Mountain = 1.909 Desert = 1.2371**	1.4807
P_6 - Mean Storm Rainfall Depth	**$P_6 = a_1 * P_{2yr,1hr}$**	0.9432
a_2 = Drawdown rate of Basin	**1.582 for 24-hr 1.963 for 48-hr**	1.9630
Project Area (SF)	**(DA)**	1,032,445.00
Design Capture Volume (cu.ft.)	**$DCV = DA * C_{BMP} * a_2 * P_6/12$**	112,164.67
Volume Provided, cu. Ft.	**ConTech Chamber Capacity**	241,579.30

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the San Bernardino County ISD.GIS Department, United States Geological Survey, the Bureau of Land Management, the United States Department of Agriculture, and the National Geodetic Survey. The imagery was flown by U.S. Department of Agriculture Farm Sevice Agency in 2012 and was produced with a 1-meter ground sampling distance.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

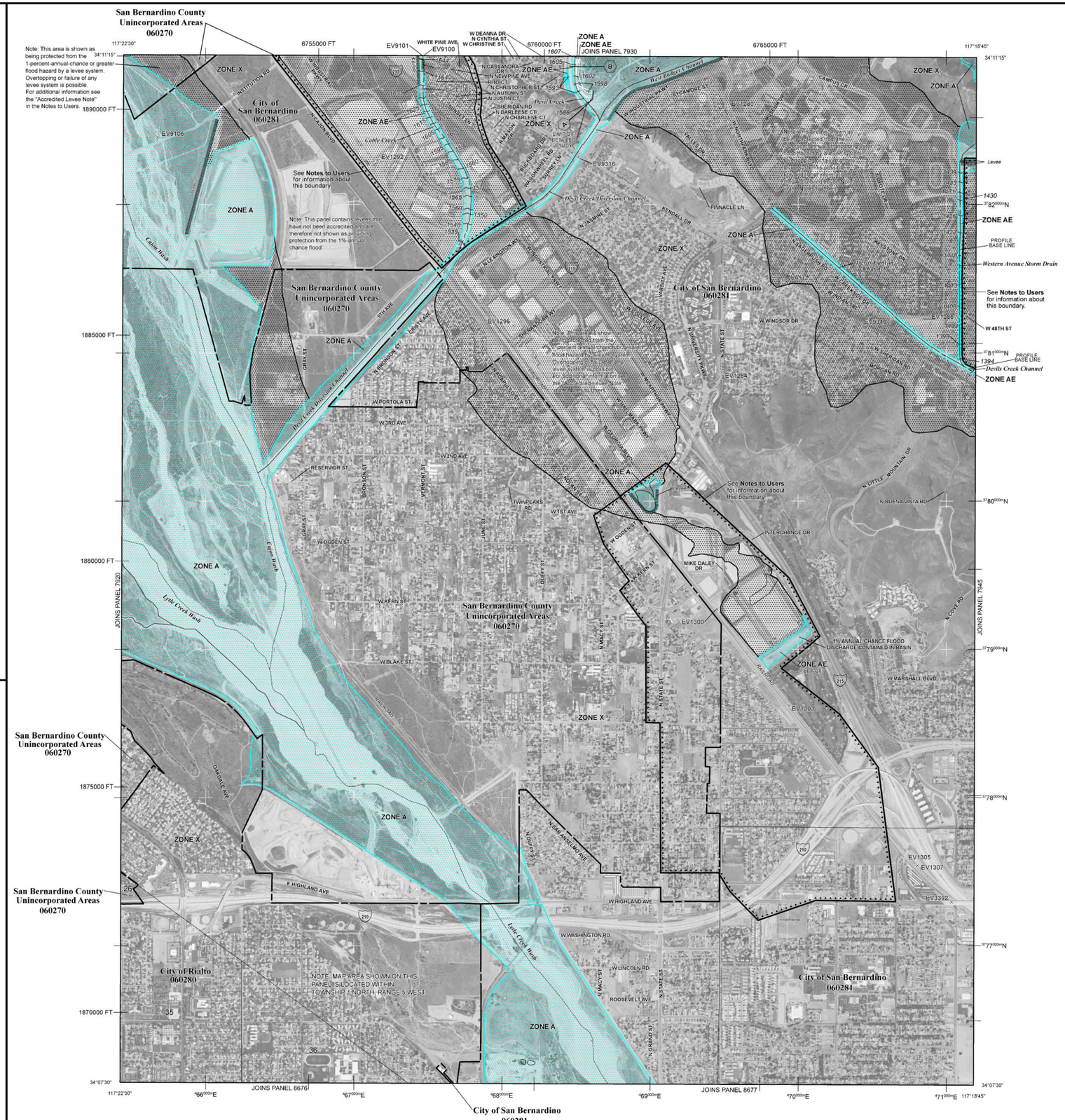
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

ATTENTION: The levee, dike, or other structure that impacts flood hazards inside this boundary has not been shown to comply with Section 65.10 of the NFIP Regulations. As such, this FIRM panel will be revised at a later date to update the flood hazard information associated with this structure.

The flood hazard data inside this boundary on the FIRM panel has been republished from the previous effective (historic) FIRM for this area, after being converted from NGVD29 to NAVD88.

ACCREDITED LEVEE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4675000mE — 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 2, 2016 – to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to add Special Flood Hazard Areas, to change zone designations, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 7940J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 7940 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RIALTO, CITY OF	060280	7940	J
SAN BERNARDINO COUNTY	060270	7940	J
SAN BERNARDINO, CITY OF	060281	7940	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C7940J

MAP REVISED
SEPTEMBER 2, 2016

Federal Emergency Management Agency

Preliminary Water Quality Management Plan

For:

Pepper Industrial Building

APN: 0264-201-05

Prepared for:

Howard Industrial Partners

1944 North Tustin Street, Suite 122

Orange, CA 92865

(714) 769-9155

Prepared by:

FMCivil Engineers, Inc

29995 Technology Drive, Suite 306

Murrieta, CA 92563

(951) 973-0201

Submittal Date: December 15, 2021

Approval Date:_____

Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for **Howard Industrial Partners, LLC** by **FMCivil Engineers Inc**. The WQMP is intended to comply with the requirements of the County of San Bernardino and the NPDES Areawide Stormwater Program requiring the preparation of a WQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Storm Water Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

.

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	TBD	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0264-201-05

Owner's Signature			
Owner Name: Tim Howard			
Title	Partner		
Company	Howard Industrial Partners		
Address	1944 North Tustin Street, Suite 122		
Email	thoward@hipre.net		
Telephone #	(714) 769-9155		
Signature		Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	TBD	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0264-201-05

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R8-2010-0036."

Engineer: Francisco Martinez		PE Stamp Below
Title	Principal	
Company	FMCivil Engineers, Inc	
Address	29995 Technology Drive, Suite 306 Murrieta, CA 92563	
Email	Francisco.martinez@fmcivil.com	
Telephone #	(951) 973-0201	
Signature		
Date		



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Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name	Pepper Industrial Building				
Project Owner Contact Name:	Tim Howard				
Mailing Address:	1944 North Tustin Street, Suite 122 Orange, CA 92865	E-mail Address:	thoward@hipre.net	Telephone:	(714) 769-9155
Permit/Application Number(s):	TBD	Tract/Parcel Map Number(s):	TBD		
Additional Information/ Comments:					
Description of Project:	The overall site, which totals ±23.7 acres, is currently a vacant parcel. The proposed site consists of an industrial building, truck yard, landscaping improvements, and underground infiltration chambers. The site is comprised of a single drainage area. Flows up to a mitigated 2-year 24-hour storm event from this area will be directed to hydrodynamic separators, and then to the underground infiltration BMP, to address water quality and HCOC. Flows greater than the mitigated 2-year 24-hour storm will bubble out of the underground infiltration BMP into an outlet structure and then to an existing natural flow path toward Lytle Creek. Lytle Creek runs until its confluence with Warm Creek, which itself confluences with the Santa Ana River approximately half a mile east of the I-10 and I-215 Junction in the City of Colton.				
Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.					

Section 2 Project Description

2.1 Project Information

This section of the WQMP should provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein.

The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

Form 2.1-1 Description of Proposed Project

1 Development Category (Select all that apply):

☐ Significant re-development involving the addition or replacement of 5,000 ft² or more of impervious surface on an already developed site	☒ New development involving the creation of 10,000 ft² or more of impervious surface collectively over entire site	☐ Automotive repair shops with standard industrial classification (SIC) codes 5013, 5014, 5541, 7532- 7534, 7536-7539	☐ Restaurants (with SIC code 5812) where the land area of development is 5,000 ft² or more
☐ Hillside developments of 5,000 ft² or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more	☐ Developments of 2,500 ft² of impervious surface or more adjacent to (within 200 ft) or discharging directly into environmentally sensitive areas or waterbodies listed on the CWA Section 303(d) list of impaired waters.	☒ Parking lots of 5,000 ft² or more exposed to storm water	☐ Retail gasoline outlets that are either 5,000 ft² or more, or have a projected average daily traffic of 100 or more vehicles per day

☐ Non-Priority / Non-Category Project *May require source control LID BMPs and other LIP requirements. Please consult with local jurisdiction on specific requirements*.

2 Project Area (ft2):	1,032,445	**3** Number of Dwelling Units:	N/A	**4** SIC Code:	4225 – General Warehousing and Storage

5 Is Project going to be phased? Yes ☐ No ☒ *If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.*

6 Does Project include roads? Yes ☐ No ☒ *If yes, ensure that applicable requirements for transportation projects are addressed (see Appendix A of TGD for WQMP)*

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:

Contact Info:

-Tim Howard
-Partner
-Howard Industrial Partners
-1944 North Tustin Street, Suite 122
-Orange, CA 92865
-thoward@hipre.net

The maintenance of the proposed development is the responsibility of the owner until the property is sold to a new owner and then they assume responsibility of the BMP maintenance and management. There is no homeowner's or property owner's association set up for this proposed development. All of the BMP's are the responsibility of the owner to maintain. BMPs include, but are not limited to, BMP maintenance; e.g. inspection, storm drain stenciling, efficient irrigation and landscape maintenance, BMP maintenance of sub-surface infiltration system, hydrodynamic separators and pervious pavement.

No infrastructure will be transferred to a public agency after project completion.

2.3 Potential Stormwater Pollutants

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-3 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern			
Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E ☒	N ☐	Wild Birds/Animal Waste/Garbage
Nutrients - Phosphorous	E ☒	N ☐	Fertilizer/Food Waste/Garbage
Nutrients - Nitrogen	E ☒	N ☐	Fertilizer/Food Waste/Garbage
Noxious Aquatic Plants	E ☒	N ☐	Landscape areas
Sediment	E ☒	N ☐	Driveways/Sidewalks
Metals	E ☒	N ☐	Cars/Trucks
Oil and Grease	E ☒	N ☐	Cars/Trucks
Trash/Debris	E ☒	N ☐	Parking Lot/Poorly managed trash containers
Pesticides / Herbicides	E ☒	N ☐	Landscape Use
Organic Compounds	E ☒	N ☐	Landscape Use
Other: Oxygen Demanding Compounds	E ☒	N ☐	Cars/Trucks
Other: Petroleum Hydrocarbons	E ☒	N ☐	Cars/Trucks
Other: Solvents	E ☒	N ☐	Cars/Trucks
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	

2.4 Water Quality Credits

A water quality credit program is applicable for certain types of development projects if it is not feasible to meet the requirements for on-site LID. Proponents for eligible projects, as described below, can apply for water quality credits that would reduce project obligations for selecting and sizing other treatment BMP or participating in other alternative compliance programs. Refer to Section 6.2 in the TGD for WQMP to determine if water quality credits are applicable for the project.

Form 2.4-1 Water Quality Credits

1 Project Types that Qualify for Water Quality Credits: *Select all that apply*

☐ Redevelopment projects that reduce the overall impervious footprint of the project site. [Credit = % impervious reduced]	Higher density development projects ☐ Vertical density [20%] ☐ 7 units/ acre [5%]	☐ Mixed use development, (combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that demonstrate environmental benefits not realized through single use projects) [20%]	☐ Brownfield redevelopment (redevelop real property complicated by presence or potential of hazardous contaminants) [25%]
☐ Redevelopment projects in established historic district, historic preservation area, or similar significant core city center areas [10%]	☐ Transit-oriented developments (mixed use residential or commercial area designed to maximize access to public transportation) [20%]	☐ In-fill projects (conversion of empty lots & other underused spaces < 5 acres, substantially surrounded by urban land uses, into more beneficially used spaces, such as residential or commercial areas) [10%]	☐ Live-Work developments (variety of developments designed to support residential and vocational needs) [20%]

2 Total Credit % 0 *(Total all credit percentages up to a maximum allowable credit of 50 percent)*

Description of Water Quality Credit Eligibility (if applicable)	This project is not eligible for any Water Quality Credits.

Section 3 Site and Watershed Description

Describe the project site conditions that will facilitate the selection of BMP through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed DMAs) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example. Then complete Forms 3.2 and 3.3 for each DA on the project site. ***If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet.***

Form 3-1 Site Location and Hydrologic Features

Site coordinates *take GPS measurement at approximate center of site*	Latitude 34°07'52.15"N	Longitude 117°21'03.22"W	Thomas Bros Map: Page 576

1 San Bernardino County climatic region: ☒ Valley ☐ Mountain

2 Does the site have more than one drainage area (DA): Yes☐ No☒ *If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or a drawing clearly showing DMA and flow routing may be attached*



Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DMA
DA1 (23.70ac) to Subsurface Basin 1	All drainage will surface flow via gutter and be conveyed to two hydrodynamic separators, and then to a system of underground infiltration chambers at equal depths connected via storm drain where the DCV will be treated, along with storing flows due to address HCOC requirements.

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1				
For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA A			
1 DMA drainage area (ft^2)	1,032,445			
2 Existing site impervious area (ft^2)	0			
3 Antecedent moisture condition *For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*	II			
4 Hydrologic soil group *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	A			
5 Longest flowpath length (ft)	1,762			
6 Longest flowpath slope (ft/ft)	0.012			
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*	Grass			
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Fair			

Form 3-3 Watershed Description for Drainage Area

Receiving waters *Refer to Watershed Mapping Tool - http://permitrack.sbcounty.gov/wap/ See 'Drainage Facilities" link at this website*	Lytle Creek Warm Creek Santa Ana River, Reach 4 Santa Ana River, Reach 3 Prado Flood Control Basin
Applicable TMDLs *Refer to Local Implementation Plan*	None
303(d) listed impairments *Refer to Local Implementation Plan and Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/ and State Water Resources Control Board website – http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml*	Santa Ana River, Reach 4 – Pathogens Santa Ana River, Reach 3 – Pathogens, Lead Prado Flood Control Basin - pH
Environmentally Sensitive Areas (ESA) *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	San Bernardino Kangaroo Rat Riversidian Alluvial Sage Scrub
Unlined Downstream Water Bodies *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	Santa Ana River, Reach 4 Santa Ana River, Reach 3
Hydrologic Conditions of Concern	☒ Yes *Complete Hydrologic Conditions of Concern (HCOC) Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-10 in submittal* ☐ No
Watershed–based BMP included in a RWQCB approved WAP	☐ Yes *Attach verification of regional BMP evaluation criteria in WAP* • *More Effective than On-site LID* • *Remaining Capacity for Project DCV* • *Upstream of any Water of the US* • *Operational at Project Completion* • *Long-Term Maintenance Plan* ☒ No

Section 4 Best Management Practices (BMP)

4.1 Source Control BMP

4.1.1 Pollution Prevention

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	The owner shall familiarize himself with the contents of the WQMP and County Ordinances and brochures and furnish copies of the County BMP factsheets to all future tenants through lease agreements.
N2	Activity Restrictions	☒	☐	Tenants shall not be allowed to discharge chemicals, chemical residues, wastewater or other prohibited discharges listed in the County Ordinances, to the outside, paved areas of the site; or store chemicals or other pollutant sources in non-spill contained or covered facilities.
N3	Landscape Management BMPs	☒	☐	Landscape crews contracted by the owner shall inspect the irrigation system and the health of the landscaping plant cover after each landscape procedure and shall report all repairs and problems to the owner. All routine landscaping maintenance shall be done in conformance with BMP fact sheet SD-10 in Section 6.4.5.
N4	BMP Maintenance	☒	☐	BMP maintenance will be provided by the property owner and will take place at a minimum of twice a year and after any major rainfall event. Manufacturer of underground infiltration system recommends yearly inspection at a minimum, with maintenance occurring should the inspection reveal sediment or trash clogging the system. Maintaining the BMP at more frequent intervals will help it retain its effectiveness and longevity.
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	The owner/tenant will file appropriate hazardous material disclosures, if any storage is conducted, and must comply with all the Title 22 CCR, Chapter 29 regulations.
N6	Local Water Quality Ordinances	☒	☐	The owner shall ensure that all business activities at the site comply with the County of San Bernardino's Stormwater Ordinance through the implementation of BMP's.
N7	Spill Contingency Plan	☒	☐	Absorbent materials will be kept on site at all times, along with equipment necessary to address small and large non-hazardous spills/leaks, with private cleanup company being contacted to handle hazardous spills/leaks from trucks on site per CASQA SC-11.
N8	Underground Storage Tank Compliance	☐	☒	The project site does not incorporate underground storage tanks.
N9	Hazardous Materials Disclosure Compliance	☒	☐	The current owner and future owners shall prohibit the storage of hazardous materials.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	☒	☐	All fire code requirements shall be implemented at this site per Uniform Fire Code Article 80 as applicable.
N11	Litter/Debris Control Program	☒	☐	The project will implement the maintenance and removal of litter from common areas by private contractor.
N12	Employee Training	☒	☐	Training will be required within 6 months of hire dates for new employees, and then annually thereafter. Training will cover the impact of dumping oil, paint, solvents, or other potentially harmful chemical into the storm drain system; the use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of litter and improper waste disposal.
N13	Housekeeping of Loading Docks	☒	☐	General good housekeeping procedures will include maintenance of loading docks.
N14	Catch Basin Inspection Program	☒	☐	The on-site catch basins shall be inspected monthly during the rainy season (October-May) and before and after each storm to ensure proper operation. The owner shall contract with a qualified landscape contractor to inspect and clean out accumulation of trash, litter and sediment and check for evidence of illegal dumping of waste materials into on-site drains.
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	Parking lots shall be vacuum swept weekly to prevent sediment, garden waste, and trash, or other pollutants from entering on-site drains and public storm channels. Vacuum sweeping will be done by a landscape contractor or other contractor provided by the owner.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	This is a private project.
N17	Comply with all other applicable NPDES permits	☒	☐	The developer of this site shall comply with the state's General Construction Stormwater Permit by filing a NOI, SWPPP, and obtain a WDID #, prior to start of grading/construction. All future occupants requiring coverage under the NPDES General Industrial Activities Permit shall comply with the permit requirements by filing a notice of intent and SWPPP with the state and obtaining a WDID Discharge Permit Number, prior to commencement of industrial activities, covered under the permit.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	A painted message "No Dumping- Drains to River" shall be placed on each catch basin. The message shall be inspected annually & repainted as necessary.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	No outdoor material storage shall be allowed at this facility.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	All dumpsters shall have working lids which shall be kept closed, at all times. Trash enclosure shall comply with CASQA SD-32 and shall have doors.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	The irrigation system will include devices to prevent low head drainage, overspray and run off through the use of pressure regulating devices, check valves, rain shutoff valves, flow sensors, pressure drop sensors, proper spacing, low precipitation emission devises and ET or weather based controllers. Landscape and irrigation shall be consistent with the State Model Water Efficient landscape Ordinance and the County of San Bernardino landscape Development Standards. Plants installed will be arranged according to similar hydrozones and meet the required water budget for the site. Landscape areas used for water quality swales or infiltration areas shall have proper plants for saturated soils, drought tolerance and erosion control qualities. Shade trees shall be used to intercept rainwater and reduce heat gain on paving.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	Proposed landscape will comply with depressed area requirements by finishing landscaped areas 1-2 inches below the top of curb, sidewalks, or pavement.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☒	☐	Proposed slopes will be vegetated to prevent erosion.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☒	☐	Proposed docks are equipped with dock high doors so that truck trailers back up flush with building and loading/unloading activities are contained inside building.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	The project site does not incorporate maintenance bays, covered or otherwise
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No car wash area proposed on project site
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	No outdoor processing areas proposed on project site
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No proposed wash areas proposed on project site
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	No fueling areas proposed on project site
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	No hillside conditions present on project site.
S14	Wash water control for food preparation areas	☐	☒	N/A
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	N/A

4.1.2 Preventative LID Site Design Practices

Site design practices associated with new LID requirements in the MS4 Permit should be considered in the earliest phases of a project. Preventative site design practices can result in smaller DCV for LID BMP and hydromodification control BMP by reducing runoff generation. Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Preventative LID Site Design Practices Checklist

Site Design Practices *If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets*
Minimize impervious areas: Yes ☒ No ☐ Explanation: The project site will minimize the impervious areas by incorporating porous concrete at auto parking stalls and drive aisles to the north-west and west of the building, and by providing landscaping in all feasible areas to the maximum extent practicable.
Maximize natural infiltration capacity: Yes ☒ No ☐ Explanation: The project site will utilize underground infiltration chambers as well as porous concrete, which will maximize the natural infiltration capacity.
Preserve existing drainage patterns and time of concentration: Yes ☐ No ☒ Explanation: Existing drainage patterns will be preserved. Time of concentration will differ but will be mitigated through the use of the infiltration chambers.
Disconnect impervious areas: Yes ☒ No ☐ Explanation: Proposed development runoff water is disconnected from the MS4 by directing 2-year, 1-hour storm event into the underground infiltration basin, which retain the entire DCV for this project.
Protect existing vegetation and sensitive areas: Yes ☐ No ☒ Explanation: Onsite vegetation will not be preserved; however, non-paved areas will be landscaped to the maximum extent practicable.
Re-vegetate disturbed areas: Yes ☒ No ☐ Explanation: All areas not paved will be landscaped.
Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes ☒ No ☐ Explanation: The project will minimize unnecessary compaction in the infiltration BMP areas. Contractor will be informed to minimize compaction per manufacturer's and Geotechnical Engineer's recommendations at the underground infiltration area during grading and installation.
Utilize vegetated drainage swales in place of underground piping or imperviously lined swales: Yes ☐ No ☒ Explanation: Vegetated swales were not practical or feasible given the proposed use for the project site. Surface drainage paths would be damaged by regular truck traffic.
Stake off areas that will be used for landscaping to minimize compaction during construction : Yes ☒ No ☐ Explanation: The project will stake off areas that will be used for landscaping to minimize compaction during construction.

4.2 Project Performance Criteria

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in the MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection of any downstream waterbody segments with a HCOC. ***If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.***

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), the San Bernardino County Stormwater Program requires use of the P_6 method (MS4 Permit Section XI.D.6a.ii) – Form 4.2-1
- For HCOC pre- and post-development hydrologic calculation, the San Bernardino County Stormwater Program requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi²), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for HCOC performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 1)

1 Project area DA 1 (ft^2): 1,032,445	**2** Imperviousness after applying preventative site design practices (Imp%): 88.2	**3** Runoff Coefficient (Rc): 0.7014 *$R_c = 0.858(Imp\%)^{\wedge 3} - 0.78(Imp\%)^{\wedge 2} + 0.774(Imp\%) + 0.04$*
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.637 *http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html*		
5 Compute P_6, Mean 6-hr Precipitation (inches): 0.9432 *P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*		
6 Drawdown Rate *Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.*		24-hrs ☐ 48-hrs ☒
7 Compute design capture volume, DCV (ft^3): 112,165 *DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)* *Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2*		

Form 4.2-2 Summary of HCOC Assessment (DA 1)

Does project have the potential to cause or contribute to an HCOC in a downstream channel: Yes ☒ No ☐

Go to: *http://permitrack.sbcounty.gov/wap/*

If "Yes", then complete HCOC assessment of site hydrology for 2yr storm event using Forms 4.2-3 through 4.2-5 and insert results below *(Forms 4.2-3 through 4.2-5 may be replaced by computer software analysis based on the San Bernardino County Hydrology Manual)*

If "No," then proceed to Section 4.3 Project Conformance Analysis

Condition	Runoff Volume (ft^3)	Time of Concentration (min)	Peak Runoff (cfs)
Pre-developed	**1** 21,453 *Form 4.2-3 Item 12*	**2** 66.30 *Form 4.2-4 Item 13*	**3** 4.61 *Form 4.2-5 Item 10*
Post-developed	**4** 212,982 *Form 4.2-3 Item 13*	**5** 18.72 *Form 4.2-4 Item 14*	**6** 27.35 *Form 4.2-5 Item 14*
Difference	**7** *191,529* *Item 4 – Item 1*	**8** *47.58* *Item 2 – Item 5*	**9** *22.74* *Item 6 – Item 3*
Difference (as % of pre-developed)	**10** *892.8%* *Item 7 / Item 1*	**11** *71.8%* *Item 8 / Item 2*	**12** *493.3%* *Item 9 / Item 3*

Values 12 & 13 calculated using CivilDesign Hydrology Software run attached in Appendix 6.4.7

Form 4.2-3 HCOC Assessment for Runoff Volume (DA 1)

Weighted Curve Number Determination for: Pre-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1a Land Cover type								
2a Hydrologic Soil Group (HSG)								
3a DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4a Curve Number (CN) *use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								
Weighted Curve Number Determination for: Post-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type								
2b Hydrologic Soil Group (HSG)								
3b DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4b Curve Number (CN) *use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								

5 Pre-Developed area-weighted CN:	**7** Pre-developed soil storage capacity, S (in): *S = (1000 / Item 5) - 10*	**9** Initial abstraction, I_a (in): *I_a = 0.2 * Item 7*
6 Post-Developed area-weighted CN:	**8** Post-developed soil storage capacity, S (in): *S = (1000 / Item 6) - 10*	**10** Initial abstraction, I_a (in): *I_a = 0.2 * Item 8*

11 Precipitation for 2 yr, 24 hr storm (in): 2.94
Go to: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

12 Pre-developed Volume (ft^3): **21,453**
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 9)^2 / ((Item 11 – Item 9 + Item 7)*

13 Post-developed Volume (ft^3): **212,982**
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 10)^2 / ((Item 11 – Item 10 + Item 8)*

14 Volume Reduction needed to meet HCOC Requirement, (ft^3): **180,880**
*V_{HCOC} = (Item 13 * 0.95) – Item 12*

Values 13 & 14 calculated using CivilDesign Hydrology Software run attached in Appendix 6.4.7

Form 4.2-4 HCOC Assessment for Time of Concentration (DA 1)

Compute time of concentration for pre and post developed conditions for each DA *(For projects using the Hydrology Manual complete the form below)*

Variables	Pre-developed DA1 *Use additional forms if there are more than 4 DMA*				Post-developed DA1 *Use additional forms if there are more than 4 DMA*			
	DMA A	DMA B	DMA C	DMA D	DMA A	DMA B	DMA C	DMA D
1 Length of flowpath (ft) *Use Form 3-2 Item 5 for pre-developed condition*								
2 Change in elevation (ft)								
3 Slope (ft/ft), S_o = *Item 2 / Item 1*								
4 Land cover								
5 Initial DMA Time of Concentration (min) *Appendix C-1 of the TGD for WQMP*								
6 Length of conveyance from DMA outlet to project site outlet (ft) *May be zero if DMA outlet is at project site outlet*								
7 Cross-sectional area of channel (ft^2)								
8 Wetted perimeter of channel (ft)								
9 Manning's roughness of channel (n)								
10 Channel flow velocity (ft/sec) V_{fps} = *(1.49 / Item 9) * (Item 7/Item 8)^0.67 * (Item 3)^0.5*								
11 Travel time to outlet (min) T_t = *Item 6 / (Item 10 * 60)*								
12 Total time of concentration (min) T_c = *Item 5 + Item 11*								

13 Pre-developed time of concentration (min): **66.30** *Minimum of Item 12 pre-developed DMA*

14 Post-developed time of concentration (min): **18.72** *Minimum of Item 12 post-developed DMA*

15 Additional time of concentration needed to meet HCOC requirement (min): $T_{C\text{-}HCOC}$ = *(Item 13 * 0.95) – Item 14 =* ***44.27***

Values 10 & 14 calculated using CivilDesign Hydrology Software run attached in Appendix 6.4.7

Form 4.2-5 HCOC Assessment for Peak Runoff (DA 1)

Compute peak runoff for pre- and post-developed conditions

Variables		Pre-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*			Post-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*		
		DMA A	DMA B	DMA C	DMA A	DMA B	DMA C
1 Rainfall Intensity for storm duration equal to time of concentration *I_{peak} = 10^(LOG Form 4.2-1 Item 4 - 0.6 LOG Form 4.2-4 Item 5 /60)*							
2 Drainage Area of each DMA (Acres) *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
3 Ratio of pervious area to total area *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
4 Pervious area infiltration rate (in/hr) *Use pervious area CN and antecedent moisture condition with Appendix C-3 of the TGD for WQMP*							
5 Maximum loss rate (in/hr) *F_m = Item 3 * Item 4* *Use area-weighted F_m from DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
6 Peak Flow from DMA (cfs) *Q_p =Item 2 * 0.9 * (Item 1 - Item 5)*							
7 Time of concentration adjustment factor for other DMA to site discharge point *Form 4.2-4 Item 12 DMA / Other DMA upstream of site discharge point (If ratio is greater than 1.0, then use maximum value of 1.0)*	DMA A	*n/a*			*n/a*		
	DMA B		*n/a*			*n/a*	
	DMA C			*n/a*			*n/a*

8 Pre-developed Q_p at T_c for DMA A: *Q_p = Item 6_{DMAA} + [Item 6_{DMAB} * (Item 1_{DMAA} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAA/2}$] + [Item 6_{DMAC} * (Item 1_{DMAA} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAA/3}$]*	**9** Pre-developed Q_p at T_c for DMA B: *Q_p = Item 6_{DMAB} + [Item 6_{DMAA} * (Item 1_{DMAB} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAB/1}$] + [Item 6_{DMAC} * (Item 1_{DMAB} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAB/3}$]*	**10** Pre-developed Q_p at T_c for DMA C: *Q_p = Item 6_{DMAC} + [Item 6_{DMAA} * (Item 1_{DMAC} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAC/1}$] + [Item 6_{DMAB} * (Item 1_{DMAC} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAC/2}$]*

10 Peak runoff from pre-developed condition confluence analysis (cfs): **4.61** *Maximum of Item 8, 9, and 10 (including additional forms as needed)*

11 Post-developed Q_p at T_c for DMA A: *Same as Item 8 for post-developed values*	**12** Post-developed Q_p at T_c for DMA B: *Same as Item 9 for post-developed values*	**13** Post-developed Q_p at T_c for DMA C: *Same as Item 10 for post-developed values*

14 Peak runoff from post-developed condition confluence analysis (cfs): **27.35** *Maximum of Item 11, 12, and 13 (including additional forms as needed)*

15 Peak runoff reduction needed to meet HCOC Requirement (cfs): *$Q_{p\text{-}HCOC}$ = (Item 14 * 0.95) – Item 10 =* **21.37**

4.3 Project Conformance Analysis

Complete the following forms for each project site DA to document that the proposed LID BMPs conform to the project DCV developed to meet performance criteria specified in the MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the MS4 Permit (see Section 5.3.1 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design and Hydrologic Source Controls (Form 4.3-2)
- Retention and Infiltration (Form 4.3-3)
- Harvested and Use (Form 4.3-4) or
- Biotreatment (Form 4.3-5).

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2.1 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3) to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is "Yes," provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Forms 4.3-2 and 4.3-4 to determine the feasibility of applicable HSC and harvest and use BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable HSC BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of LID HSC, retention and infiltration, and harvest and use BMPs are unable to mitigate the entire DCV, then biotreatment BMPs may be implemented by the project proponent. If biotreatment BMPs are used, then they must be sized to provide sufficient capacity for effective treatment of the remainder of the volume-based performance criteria that cannot be achieved with LID BMPs (TGD for WQMP Section 5.4.4.2). **Under no circumstances shall any portion of the DCV be released from the site without effective mitigation and/or treatment**.

Form 4.3-1 Infiltration BMP Feasibility (DA 1)

Feasibility Criterion – Complete evaluation for each DA on the Project Site

[1] Would infiltration BMP pose significant risk for groundwater related concerns? Yes ☐ No ☒
Refer to Section 5.3.2.1 of the TGD for WQMP

If Yes, Provide basis: (attach)

[2] Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? Yes ☐ No ☒
(Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert):

- The location is less than 50 feet away from slopes steeper than 15 percent
- The location is less than eight feet from building foundations or an alternative setback.
- A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.

If Yes, Provide basis: (attach)

[3] Would infiltration of runoff on a Project site violate downstream water rights? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[4] Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[5] Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[6] Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? Yes ☐ No ☒
See Section 3.5 of the TGD for WQMP and WAP

If Yes, Provide basis: (attach)

[7] Any answer from Item 1 through Item 3 is "Yes": Yes ☐ No ☒
If yes, infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Harvest and Use BMP. If no, then proceed to Item 8 below.

[8] Any answer from Item 4 through Item 6 is "Yes": Yes ☐ No ☒
If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Hydrologic Source Control BMP.
If no, then proceed to Item 9, below.

[9] All answers to Item 1 through Item 6 are "No": Yes ☒ No ☐
Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP.
Proceed to Form 4.3-2, Hydrologic Source Control BMP.

4.3.1 Site Design Hydrologic Source Control BMP

Section XI.E. of the Permit emphasizes the use of LID preventative measures; and the use of LID HSC BMPs reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable HSC shall be provided except where they are mutually exclusive with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of HSC, if a project cannot feasibly meet BMP sizing requirements or cannot fully address HCOCs, feasibility of all applicable HSC must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design HSC BMP. Refer to Section 5.4.1 in the TGD for more detailed guidance.

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)

1 Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes ☐ No ☒ *If yes, complete Items 2-5; If no, proceed to Item 6*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Total impervious area draining to pervious area (ft^2)			
3 Ratio of pervious area receiving runoff to impervious area			
4 Retention volume achieved from impervious area dispersion (ft^3) *V = Item2 * Item 3 * (0.5/12), assuming retention of 0.5 inches of runoff*			
5 Sum of retention volume achieved from impervious area dispersion (ft^3): *$V_{retention}$ =Sum of Item 4 for all BMPs*			
6 Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes ☐ No ☒ *If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; If no, proceed to Item 14*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
7 Ponding surface area (ft^2)			
8 Ponding depth (ft)			
9 Surface area of amended soil/gravel (ft^2)			
10 Average depth of amended soil/gravel (ft)			
11 Average porosity of amended soil/gravel			
12 Retention volume achieved from on-lot infiltration (ft^3) *$V_{retention}$ = (Item 7 *Item 8) + (Item 9 * Item 10 * Item 11)*			
13 Runoff volume retention from on-lot infiltration (ft^3): *$V_{retention}$ =Sum of Item 12 for all BMPs*			

Form 4.3-2 cont. Site Design Hydrologic Source Control BMPs (DA 1)

14 Implementation of evapotranspiration BMP (green, brown, or blue roofs): Yes ☐ No ☒ *If yes, complete Items 15-20. If no, proceed to Item 21*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
15 Rooftop area planned for ET BMP (ft^2)			
16 Average wet season ET demand (in/day) *Use local values, typical ~ 0.1*			
17 Daily ET demand (ft^3/day) *Item 15 * (Item 16 / 12)*			
18 Drawdown time (hrs) *Copy Item 6 in Form 4.2-1*			
19 Retention Volume (ft^3) $V_{retention}$ *= Item 17 * (Item 18 / 24)*			
20 Runoff volume retention from evapotranspiration BMPs (ft^3): $V_{retention}$ *=Sum of Item 19 for all BMPs*			
21 Implementation of Street Trees: Yes ☐ No ☒ *If yes, complete Items 22-25. If no, proceed to Item 26*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
22 Number of Street Trees			
23 Average canopy cover over impervious area (ft^2)			
24 Runoff volume retention from street trees (ft^3) $V_{retention}$ *= Item 22 * Item 23 * (0.05/12) assume runoff retention of 0.05 inches*			
25 Runoff volume retention from street tree BMPs (ft^3): $V_{retention}$ *= Sum of Item 24 for all BMPs*			
26 Implementation of residential rain barrel/cisterns: Yes ☐ No ☒ *If yes, complete Items 27-29; If no, proceed to Item 30*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
27 Number of rain barrels/cisterns			
28 Runoff volume retention from rain barrels/cisterns (ft^3) $V_{retention}$ *= Item 27 * 3*			
29 Runoff volume retention from residential rain barrels/Cisterns (ft3): $V_{retention}$ *=Sum of Item 28 for all BMPs*			
30 Total Retention Volume from Site Design Hydrologic Source Control BMPs: 0 *Sum of Items 5, 13, 20, 25 and 29*			

4.3.2 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix D of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5.1 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

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Form 4.3-3 Infiltration LID BMP - including underground BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC BMP (ft^3): 112,165 *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30*

BMP Type *Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Infiltration rate of underlying soils (in/hr) *See Section 5.4.2 and Appendix D of the TGD for WQMP for minimum requirements for assessment methods*	2.50		
3 Infiltration safety factor *See TGD Section 5.4.2 and Appendix D*	3.13		
4 Design percolation rate (in/hr) *P_{design} = Item 2 / Item 3*	0.80		
5 Ponded water drawdown time (hr) *Copy Item 6 in Form 4.2-1*	48		
6 Maximum ponding depth (ft) *BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details*	4		
7 Ponding Depth (ft) *d_{BMP} = Minimum of (1/12*Item 4*Item 5) or Item 6*	3.2		
8 Infiltrating surface area, SA_{BMP} (ft^2) *the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP*	66,000		
9 Amended soil depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details*	n/a		
10 Amended soil porosity	n/a		
11 Gravel depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details*	2', 1' above and 1' below 4' CMP		
12 Gravel porosity	40%		
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*	3		
14 Above Ground Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*	0		
15 Underground Retention Volume (ft^3) *Volume determined using manufacturer's specifications and calculations*	254,779		

16 Total Retention Volume from LID Infiltration BMPs: 254,779 CF *(Sum of Items 14 and 15 for all infiltration BMP included in plan)*

17 Fraction of DCV achieved with infiltration BMP: 227.1% *Retention% = Item 16 / Form 4.2-1 Item 7*

18 Is full LID DCV retained onsite with combination of hydrologic source control and LID retention/infiltration BMPs? Yes ☒ No ☐

If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.

4.3.3 Harvest and Use BMP

Harvest and use BMP may be considered if the full LID DCV cannot be met by maximizing infiltration BMPs. Use Form 4.3-4 to compute on-site retention of runoff from proposed harvest and use BMPs.

Volume retention estimates for harvest and use BMPs are sensitive to the on-site demand for captured stormwater. Since irrigation water demand is low in the wet season, when most rainfall events occur in San Bernardino County, the volume of water that can be used within a specified drawdown period is relatively low. The bottom portion of Form 4.3-4 facilitates the necessary computations to show infeasibility if a minimum incremental benefit of 40 percent of the LID DCV would not be achievable with MEP implementation of on-site harvest and use of stormwater (Section 5.5.4 of the TGD for WQMP).

Form 4.3-4 Harvest and Use BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC or infiltration BMP (ft^3): 0 *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16*			
BMP Type(s) *Compute runoff volume retention from proposed harvest and use BMP (Select BMPs from Table 5-4 of the TGD for WQMP) - Use additional forms for more BMPs*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Describe cistern or runoff detention facility			
3 Storage volume for proposed detention type (ft^3) *Volume of cistern*			
4 Landscaped area planned for use of harvested stormwater (ft^2)			
5 Average wet season daily irrigation demand (in/day) Use local values, typical ~ 0.1 in/day			
6 Daily water demand (ft^3/day) *Item 4 * (Item 5 / 12)*			
7 Drawdown time (hrs) *Copy Item 6 from Form 4.2-1*			
8 Retention Volume (ft^3) *$V_{retention}$ = Minimum of (Item 3) or (Item 6 * (Item 7 / 24))*			
9 Total Retention Volume (ft^3) from Harvest and Use BMP *Sum of Item 8 for all harvest and use BMP included in plan*			
10 Is the full DCV retained with a combination of LID HSC, retention and infiltration, and harvest & use BMPs? Yes ☐ No ☐ *If yes, demonstrate conformance using Form 4.3-10. If no, then re-evaluate combinations of all LID BMP and optimize their implementation such that the maximum portion of the DCV is retained on-site (using a single BMP type or combination of BMP types). If the full DCV cannot be mitigated after this optimization process, proceed to Section 4.3.4.*			

4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration, and harvest and use BMPs. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-5 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV w. Biotreatment computations are included as follows:

- Use Form 4.3-6 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-7 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-8 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-5 Selection and Evaluation of Biotreatment BMP (DA 1)

1 Remaining LID DCV not met by site design HSC, infiltration, or harvest and use BMP for potential biotreatment (ft^3): 0 *Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16- Form 4.3-4 Item 9*	List pollutants of concern *Copy from Form 2.3-1.*	
2 Biotreatment BMP Selected *(Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)*	Volume-based biotreatment *Use Forms 4.3-6 and 4.3-7 to compute treated volume*	Flow-based biotreatment *Use Form 4.3-8 to compute treated volume*
	☐ Bioretention with underdrain ☐ Planter box with underdrain ☐ Constructed wetlands ☐ Wet extended detention ☐ Dry extended detention	☐ Vegetated swale ☐ Vegetated filter strip ☐ Proprietary biotreatment
3 Volume biotreated in volume based biotreatment BMP (ft^3): *Form 4.3-6 Item 15 + Form 4.3-7 Item 13*	**4** Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft^3): *Item 1 – Item 3*	**5** Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % *Item 4 / Item 1*
6 Flow-based biotreatment BMP capacity provided (cfs): *Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)*		
7 Metrics for MEP determination: • Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: ☐ *If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.*		

Form 4.3-6 Volume Based Biotreatment (DA 1) – Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type *(Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*			
2 Amended soil infiltration rate *Typical ~ 5.0*			
3 Amended soil infiltration safety factor *Typical ~ 2.0*			
4 Amended soil design percolation rate (in/hr) P_{design} *= Item 2 / Item 3*			
5 Ponded water drawdown time (hr) *Copy Item 6 from Form 4.2-1*			
6 Maximum ponding depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 4 * Item 5) or Item 6*			
8 Amended soil surface area (ft^2)			
9 Amended soil depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Amended soil porosity, *n*			
11 Gravel depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
12 Gravel porosity, *n*			
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*			
14 Biotreated Volume (ft^3) $V_{biotreated}$ *= Item 8 * [(Item 7/2) + (Item 9 * Item 10) +(Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*			
15 Total biotreated volume from bioretention and/or planter box with underdrains BMP: *Sum of Item 14 for all volume-based BMPs included in this form*			

Form 4.3-7 Volume Based Biotreatment (DA 1) – Constructed Wetlands and Extended Detention

Biotreatment BMP Type *Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (e.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.*	DA DMA BMP Type		DA DMA BMP Type *(Use additional forms for more BMPs)*	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft^2) A_{bottom} = *Item 2 * Item 3*				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft^2) $A_{surface}$ =*(Item 2 + (2 * Item 5 * Item 6)) * (Item 3 + (2 * Item 5 * Item 6))*				
8 Storage volume (ft^3) *For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details* V =*Item 6 / 3 * [Item 4 + Item 7 + (Item 4 * Item 7)^0.5]*				
9 Drawdown Time (hrs) *Copy Item 6 from Form 2.1*				
10 Outflow rate (cfs) Q_{BMP} = *(Item* $8_{forebay}$ + *Item* 8_{basin}*) / (Item 9 * 3600)*				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft^3) $V_{biotreated}$ = *(Item* $8_{forebay}$ + *Item* 8_{basin}*) +(Item 10 * Item 11 * 3600)*				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : *(Sum of Item 12 for all BMP included in plan)*				

Form 4.3-8 Flow Based Biotreatment (DA 1)

Biotreatment BMP Type *Vegetated swale, vegetated filter strip, or other comparable proprietary BMP*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5*			
2 Flow depth for water quality treatment (ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
3 Bed slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
4 Manning's roughness coefficient			
5 Bottom width (ft) b_w *= (Form 4.3-5 Item 6 * Item 4) / (1.49 * Item 2^1.67 * Item 3^0.5)*			
6 Side Slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Cross sectional area (ft^2) *A = (Item 5 * Item 2) + (Item 6 * Item 2^2)*			
8 Water quality flow velocity (ft/sec) *V = Form 4.3-5 Item 6 / Item 7*			
9 Hydraulic residence time (min) *Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Length of flow based BMP (ft) *L = Item 8 * Item 9 * 60*			
11 Water surface area at water quality flow depth (ft^2) SA_{top} *= (Item 5 + (2 * Item 2 * Item 6)) * Item 10*			

4.3.5 Conformance Summary

Complete Form 4.3-9 to demonstrate how on-site LID DCV is met with proposed site design hydrologic source control, infiltration, harvest and use, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)

1 Total LID DCV for the Project DA-1 (ft^3): 112,165 *Copy Item 7 in Form 4.2-1*

2 On-site retention with site design hydrologic source control LID BMP (ft^3): 0 *Copy Item 30 in Form 4.3-2*

3 On-site retention with LID infiltration BMP (ft^3): 254,779 *Copy Item 16 in Form 4.3-3*

4 On-site retention with LID harvest and use BMP (ft^3): 0 *Copy Item 9 in Form 4.3-4*

5 On-site biotreatment with volume based biotreatment BMP (ft^3): 0 *Copy Item 3 in Form 4.3-5*

6 Flow capacity provided by flow based biotreatment BMP (cfs): 0 *Copy Item 6 in Form 4.3-5*

7 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☒
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☒
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

8 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: : Yes ☐ No ☒
  Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} *= (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%*
- An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: Yes ☐ No ☒
  Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed

4.3.6 Hydromodification Control BMP

N/A – Project site is entirely within HCOC Exemption Area

Use Form 4.3-10 to compute the remaining runoff volume retention, after LID BMP are implemented, needed to address HCOC, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential HCOC. Describe hydromodification control BMP that address HCOC, which may include off-site BMP and/or in-stream controls. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-10 Hydromodification Control BMPs (DA 1)

1 Volume reduction needed for HCOC performance criteria (ft^3): **180,880** *(Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1*	**2** On-site retention with site design hydrologic source control, infiltration, and harvest and use LID BMP (ft^3): **254,779** *Sum of Form 4.3-9 Items 2, 3, and 4 Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving HCOC volume reduction*
3 Remaining volume for HCOC volume capture (ft^3): 0 *Item 1 – Item 2*	**4** Volume capture provided by incorporating additional on-site or off-site retention BMPs (ft^3): **0** *Existing downstream BMP may be used to demonstrate additional volume capture (if so, attach to this WQMP a hydrologic analysis showing how the additional volume would be retained during a 2-yr storm event for the regional watershed)*

5 If Item 4 is less than Item 3, incorporate in-stream controls on downstream waterbody segment to prevent impacts due to hydromodification ☐ *Attach in-stream control BMP selection and evaluation to this WQMP*

6 Is Form 4.2-2 Item 11 less than or equal to 5%: Yes ☐ No ☒

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site or off-site retention BMP ☒ **See Appendix 6.4.7 for Hydrograph Analysis. The Infiltration BMPs will contain the entire 2-year storm.**
- Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities ☐
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

7 Form 4.2-2 Item 12 less than or equal to 5%: Yes ☐ No ☒

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site or off-site retention BMPs ☒ **See Appendix 6.4.7 for Hydrograph Analysis. The Infiltration BMPs will contain the entire 2-year storm.**
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, harvest and use, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance. Alternative compliance plans may include one or more of the following elements:

- On-site structural treatment control BMP - All treatment control BMP should be located as close to possible to the pollutant sources and should not be located within receiving waters;
- Off-site structural treatment control BMP - Pollutant removal should occur prior to discharge of runoff to receiving waters;
- Urban runoff fund or In-lieu program, if available

Depending upon the proposed alternative compliance plan, approval by the executive officer may or may not be required (see Section 6 of the TGD for WQMP).

Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMP included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and may require a Maintenance Agreement (consult the jurisdiction's LIP). If a Maintenance Agreement is required, it must also be attached to the WQMP.

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Education on Storm Water BMP's	Project Owner	Building owners shall furnish copies of City and County BMP factsheets to all future tenants through lease agreements.	Beginning of new tenancy
Activity Restrictions	Project Owner	Tenants shall not be allowed to discharge chemicals, chemical residues, wastewater or other prohibited discharges listed in the City and County Ordinances, to the outside, paved areas of the site; or store chemicals or other pollutant sources in non-spill contained or covered facilities. Pesticide application shall be done by a licensed applicator and car washing is prohibited on site.	On-going
Landscape Management	Project Owner	Landscape crews contracted by the owner shall inspect the irrigation system and the health of the landscaping plant cover after each landscape procedure and shall report all repairs and problems to the owner.	Weekly
BMP Maintenance	Project Owner	BMP maintenance will be provided by the property owner and will take place at a minimum of twice a year and after any major rainfall event.	Semi-Annual/ Oct. 1st & Feb. 1st (each year)
Title 22 CCR Compliance	Project Owner	The owner/tenant will file appropriate hazardous material disclosures, if any storage is conducted, and must comply with all the Title 22 CCR, Chapter 29 regulations.	As needed
Local Water Quality Ordinances	Project Owner	The property owner shall ensure that all business activities at the site comply with the County of San Bernardino Stormwater Ordinance through the implementation of BMP's.	On-going

Spill Contingency Plan	Project Owner	Any hazardous material storage, if any, will require a business/ emergency response plan as required by the San Bernardino County Fire Hazmat.	As needed
Hazardous Materials Disclosure Compliance	Project Owner	The current owner and future owners shall prohibit the storage of hazardous materials.	Beginning of new tenancy
Uniform Fire Code Implementation	Project Owner	All fire code requirements shall be implemented at this site.	On-going
Litter/Debris Control Program	Project Owner	A program shall be implemented to pick up litter and sweep and clean the existing trash enclosures daily. Trash enclosures are designed to divert all flows away from the enclosure. All dumpsters will have lids installed and will be inspected to ensure that the dumpsters remain covered and leak-proof. The owner shall ensure tenants contract with a refuse company to have the dumpsters emptied on a weekly basis, at a minimum.	Weekly
Employee Training	Project Owner	Property owner shall establish an educational program for site employees and contractors to inform and train personnel engaged in maintenance activities regarding the impact of dumping oil, paint, solvents, or other potentially harmful chemicals into the storm drain system; the use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of litter and improper waste disposal.	Beginning of new tenancy
Housekeeping of Loading Docks	Project Owner	The loading/unloading of materials will take place at the docks; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or n other surfaces and have the potential to be carried away by stormwater runoff or when the area is cleaned. Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. A program shall be implemented to train employees on applicable BMPs and general pollution prevention strategies and objectives. The dock area shall be swept daily and the maintenance policy for the site will address daily maintenance of the area.	Daily
Catch Basin Inspection Program	Project Owner	The on-site catch basins shall be inspected monthly during the rainy season (October- May) and before and after each storm to ensure proper operation. The owner shall contract with a qualified landscape contractor to inspect and clean out accumulation of trash, litter and sediment and check for evidence of illegal dumping of waste materials into on-site drains.	Monthly/ Seasonal

Vacuum Sweeping of Private Streets and Parking Lots	Project Owner	Parking lots shall be swept weekly to prevent sediment, garden waste, and trash, or other pollutants from entering on-site drains and public storm channels. Sweeping will be done by a landscape contractor or other contractor provided by the owner.	Weekly
Comply with all other applicable NPDES permits	Project Owner	The developer of this site shall comply with the state's General Construction Stormwater Permit by filing a NOI, SWPPP, and obtain a WDID #, prior to start of grading/construction. All future occupants requiring coverage under the NPDES General Industrial Activities Permit shall comply with the permit requirements by filing a notice of intent and SWPPP with the state and obtaining a WDID Discharge Permit Number, prior to commencement of industrial activities, covered under the permit.	Prior to construction /beginning of new tenancy
Provide storm drain system stenciling and signage	Project Owner	A painted message "No Dumping- Drains to River" shall be placed on each catch basin. The message shall be inspected annually & repainted as necessary.	On-going
Design and construct trash and waste storage areas to reduce pollution introduction	Project Owner	All dumpsters shall have working lids which shall be kept closed, at all times. Trash enclosure shall comply with CASQA SD-32 and shall have doors and permanent roofing.	During construction
Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Project Owner	The irrigation system will include devices to prevent low head drainage, overspray and run off through the use of pressure regulating devices, check valves, rain shutoff valves, flow sensors, pressure drop sensors, proper spacing, low precipitation emission devises and ET or weather based controllers. Landscape and irrigation shall be consistent with the State Model Water Efficient landscape Ordinance and the San Bernardino County Landscape Development Standards. Plants installed will be arranged according to similar hydrozones and meet the required water budget for the site. Landscape areas used for water quality swales or infiltration areas shall have proper plants for saturated soils, drought tolerance and erosion control qualities. Shade trees shall be used to intercept rainwater and reduce heat gain on paving.	During construction
Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb,	Project Owner	Landscape complies with depressed area requirements.	During construction

sidewalk, or pavement			
Protect slopes and channels and provide energy dissipation	Project Owner	Proposed slopes will be protected to prevent erosion.	As Needed
Covered Dock Areas	Project Owner	Proposed docks are equipped with dock high doors so that truck trailers back up flush with building and loading/unloading activities are contained inside building.	On-going

Section 6 WQMP Attachments

6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

6.2 Electronic Data Submittal

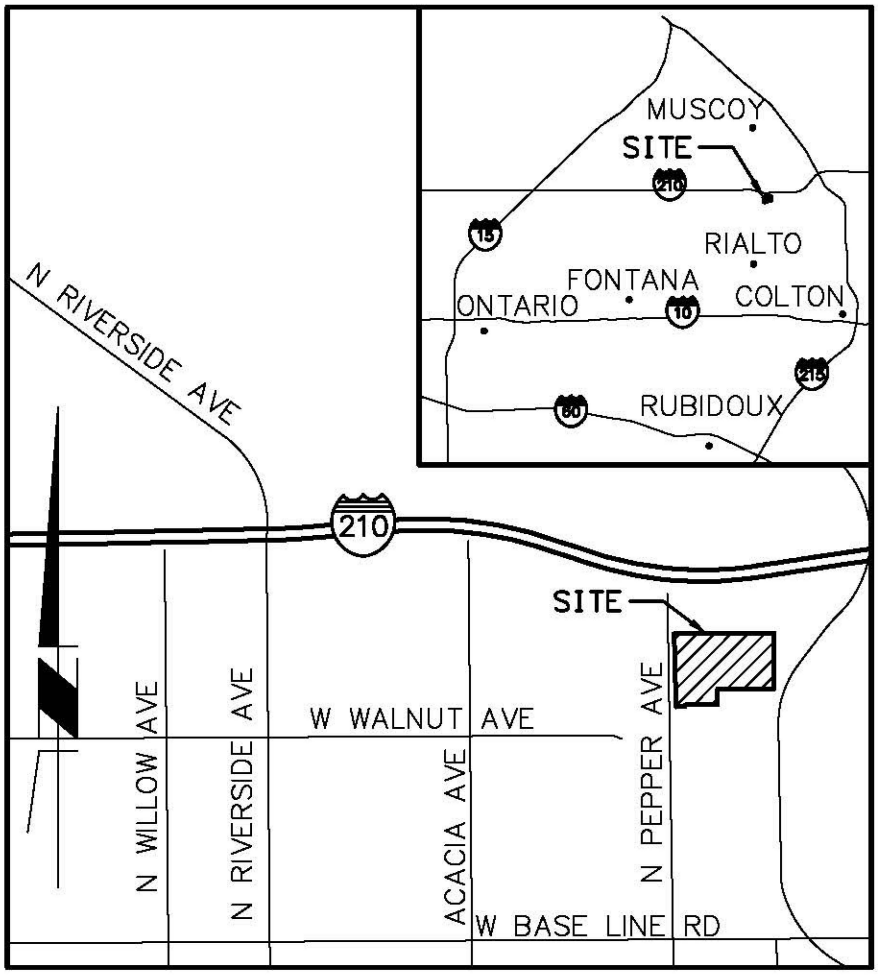
Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their local Local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

6.3 Post Construction

Attach all O&M Plans and Maintenance Agreements for BMP to the WQMP.

6.4 Other Supporting Documentation

6.4.1 - BMP Design Details
6.4.2 – Conceptual Grading Plans and Outlet Control Detail
6.4.3 - DCV and Factor of Safety Calculations
6.4.4 – USDA Soil Report
6.4.5 - BMP Educational Materials/Fact Sheets
6.4.6 - NOAA Precipitation Estimates
6.4.7 – CivilDesign 2-Year Rational Method and Unit Hydrograph Calculations

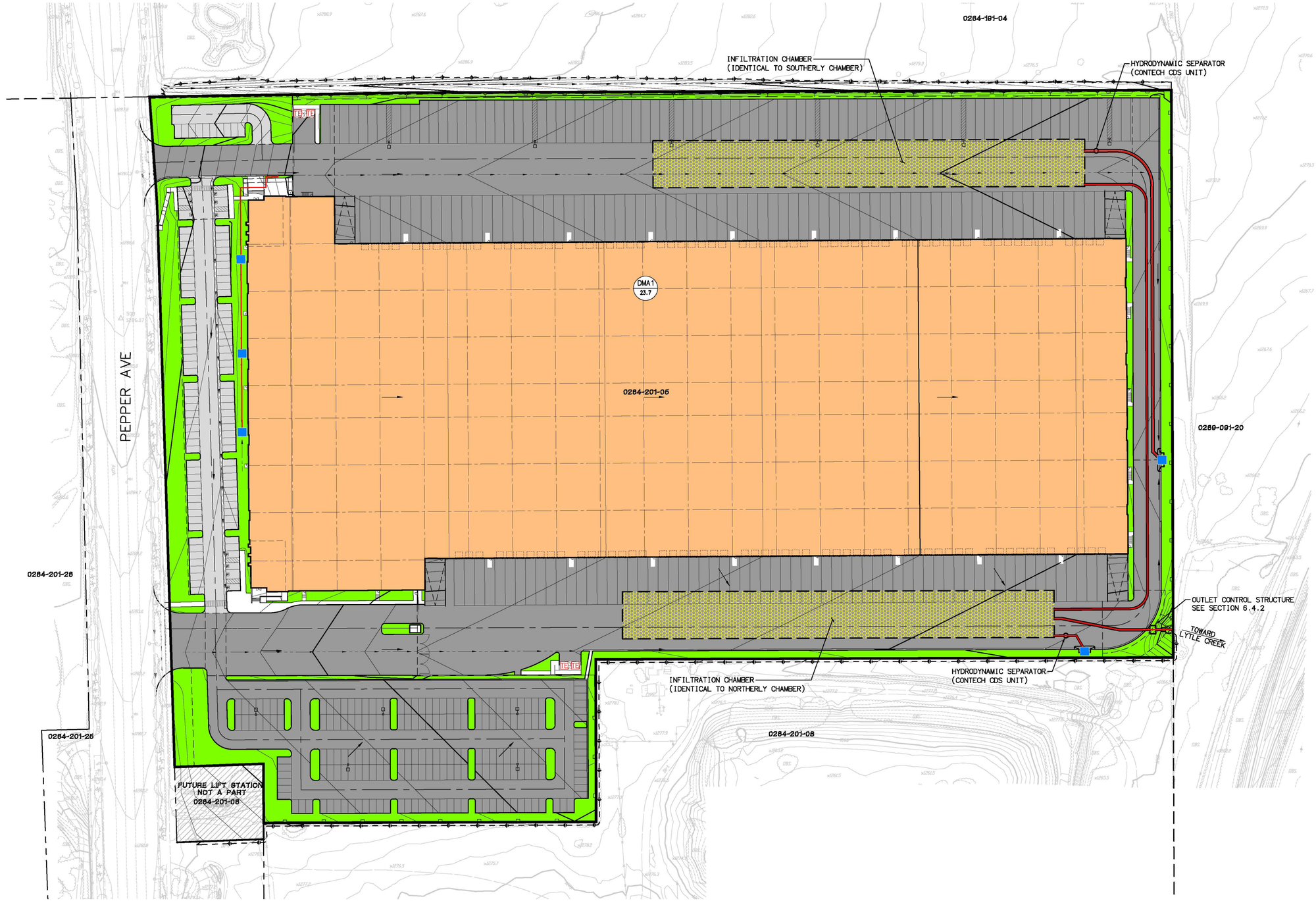


FMCIVIL ENGINEERS INC.
29995 TECHNOLOGY DRIVE, SUITE 306 | MURRIETA | CA 92563
951.331.9873 - FMCIVIL.COM

PEPPER AVENUE

FIGURE 1
VICINITY MAP

H:\PDATA\19-006 HIP RIALTO PEPPER AVE\DOCS\HYDRO\1. PRELIMINARY\CAD\19-006-VIC-MAP-001.DWG DANIEL 5/27/2021 11:58 AM



LEGEND

- DMA 1 / 3.38 — DA AREA NUMBER / AREA IN ACRES
- LANDSCAPE AREA
- PROPOSED P.C.C. DRIVE AISLE & PARKING AREAS
- PROPOSED POROUS CONCRETE DRIVE AISLE & PARKING AREAS
- PROPOSED ROOFTOP
- PROPOSED HARDSCAPE AREA
- UNDERGROUND INFILTRATION (SEE PLANS ATTACHED IN APPENDIX 6.4.1)
- DRAIN INLET STENCIL
- DMA BOUNDARY
- PROPOSED STORM DRAIN
- EXIST. PROPERTY LINE
- DIRECTION OF FLOW
- TE — TRASH ENCLOSURE

DMA	TOTAL	PERVIOUS	IMPERVIOUS	% PERVIOUS	% IMPERVIOUS	C_{AMP}	P_6	DCV	DRAWDOWN	STORAGE VOLUME REQUIRED	STORAGE VOLUME PROVIDED
DA 1	1,032,445 SF	122,176 SF	910,269 SF	11.8%	88.2%	0.7014	0.9432	112,165 SF	48 HR	112,165 SF	254,779 SF

60 30 0 60 120 180
SCALE: 1"=60'

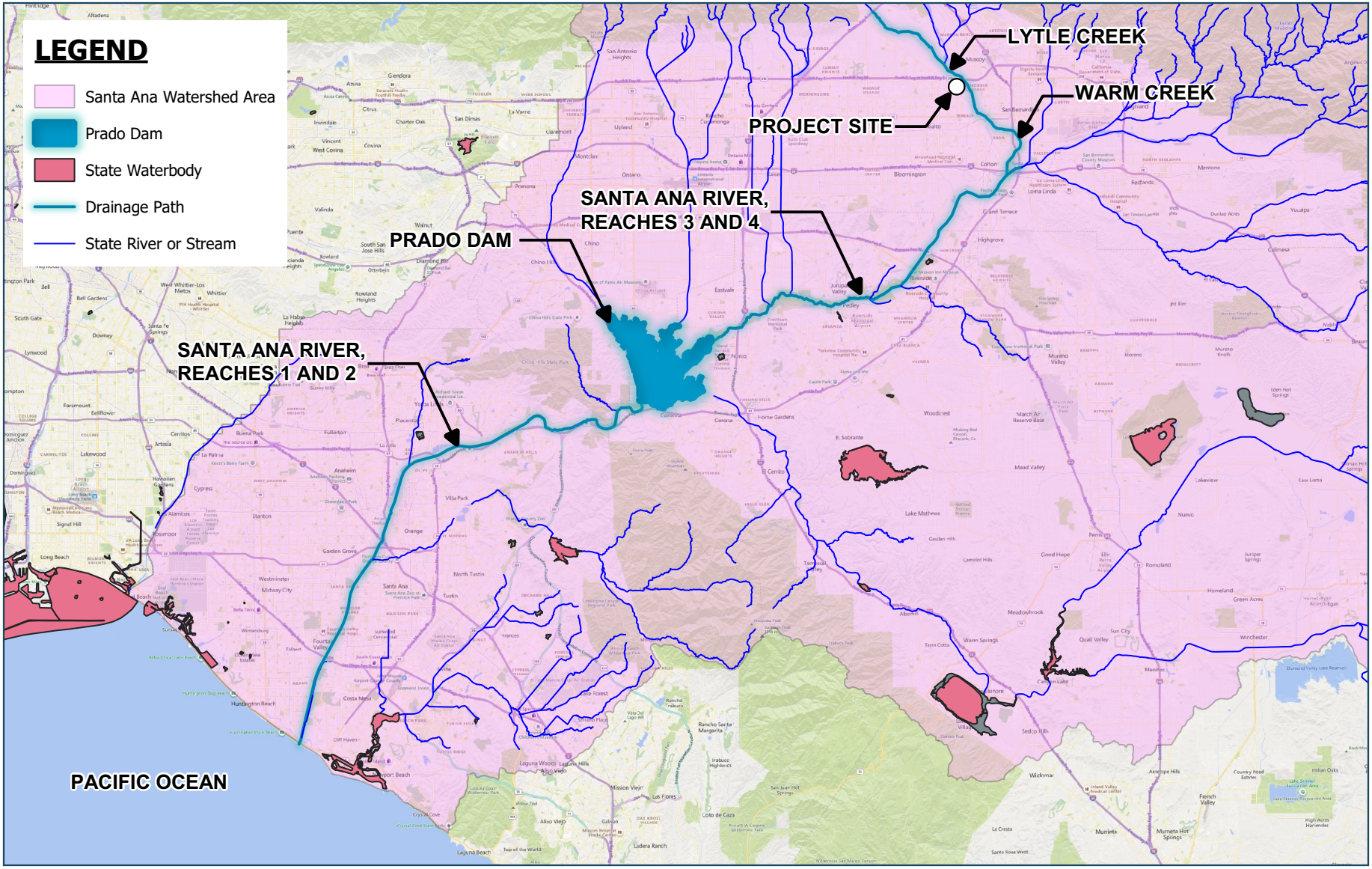
SCALE 1"=60'

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951.973.0201 - FMCIVIL.COM

PEPPER INDUSTRIAL BUILDING

WQMP SITE PLAN

1 OF 1 SHEETS



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MURRIETA | CA 92563
951.973.0201 - FMCIVIL.COM

5 0 5 10 mi

Pepper Industrial Building

In Rialto, County of San Bernardino
Receiving Waters Exhibit

SECTION 6.4.1
BMP DESIGN DETAILS

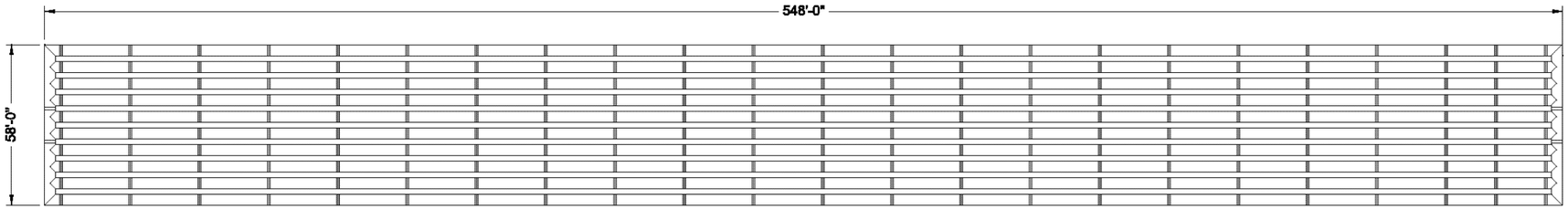
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 5,516 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 69,316 cf.
- BACKFILL STORAGE VOLUME = 58,073 cf.
- TOTAL STORAGE PROVIDED = 127,390 cf.

PIPE DETAILS
- DIAMETER = 48 IN.
- CORRUGATION = 2 2/3x1/2
- GAGE = 12
- COATING = ALT2
- WALL TYPE = Perforated
- BARRELL SPACING = 24 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 18 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 12 IN.



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 50'

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DATE	REVISION DESCRIPTION	BY

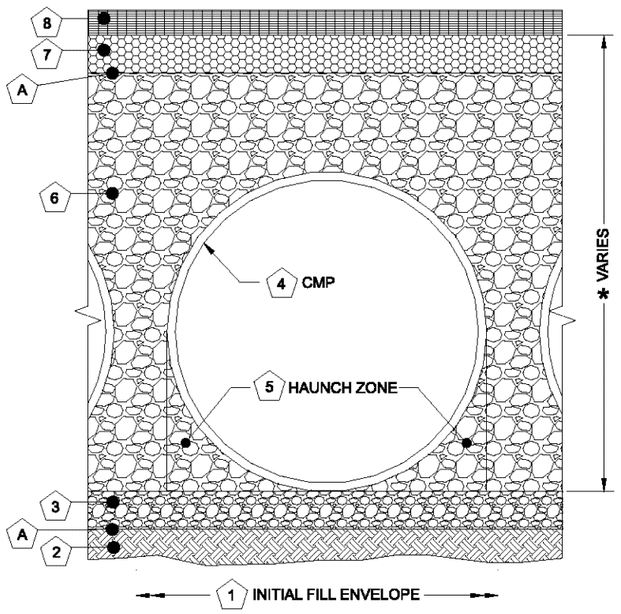
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

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Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
Material Location	Description	Material Designation	Designation
8 Rigid or Flexible Pavement (If applicable)			
7 Road Base (If applicable			
A Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6 Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ¼" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction*
3 Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
* Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

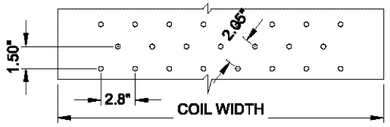
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

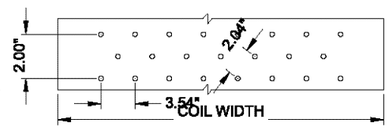
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



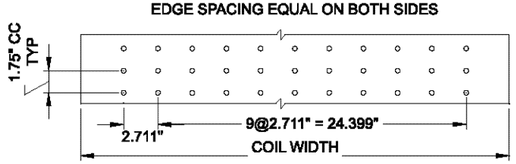
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



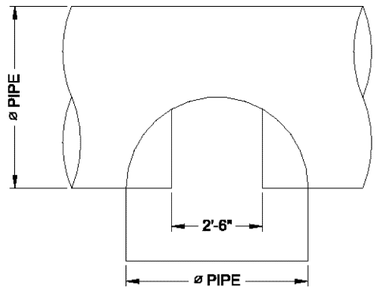
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

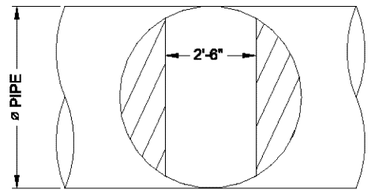
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

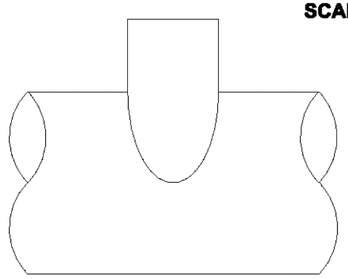


FRONT

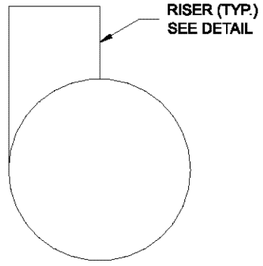
NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

TYPICAL MANWAY DETAIL

SCALE: N.T.S.



ELEVATION

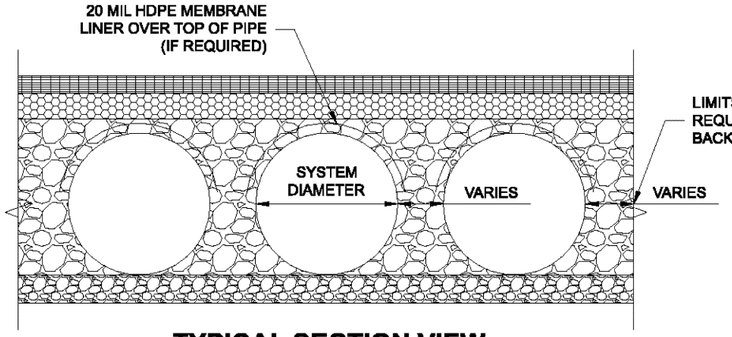


END

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

TYPICAL RISER DETAIL

SCALE: N.T.S.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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DATE	REVISION DESCRIPTION	BY

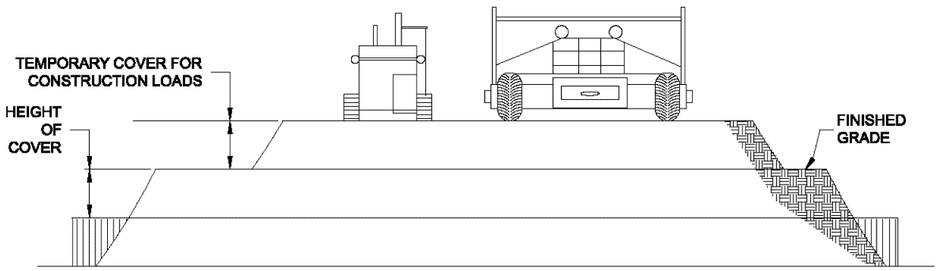
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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D2		

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CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

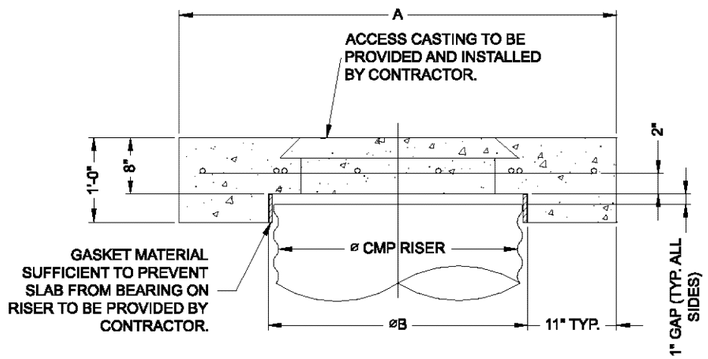
ALUMINUM: AASHTO M-196 OR ASTM B-745

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

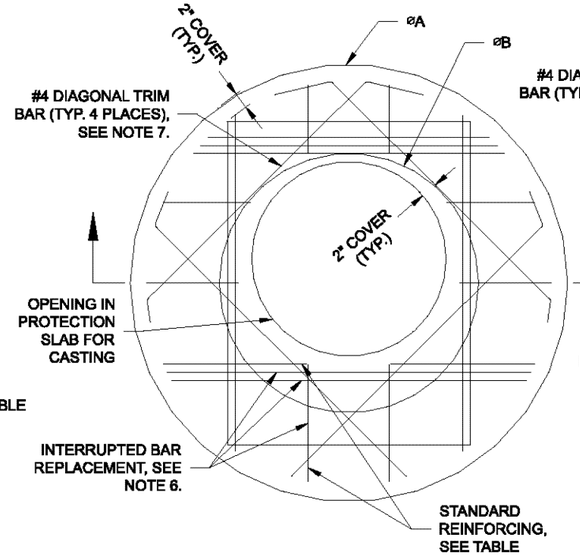
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



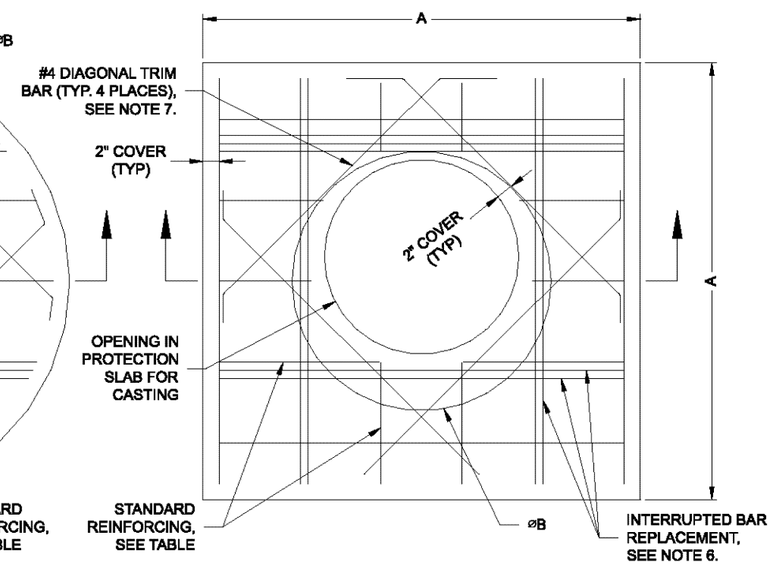
SECTION VIEW

REINFORCING TABLE				
ø CMP RISER	A	ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	ø 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	ø 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	ø 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	ø 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	ø 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D3		

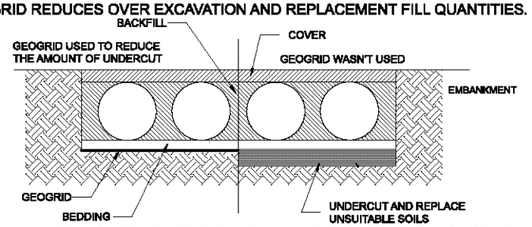
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

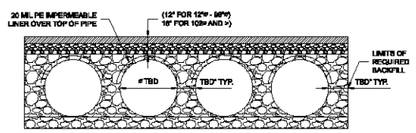


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

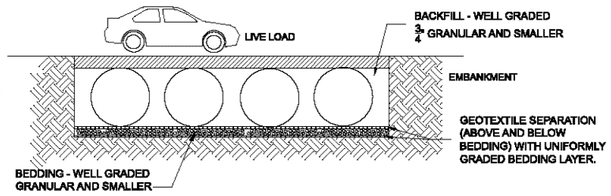
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

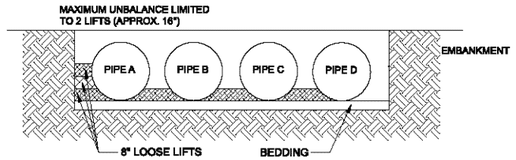
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



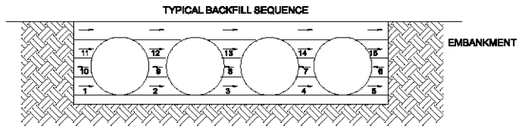
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

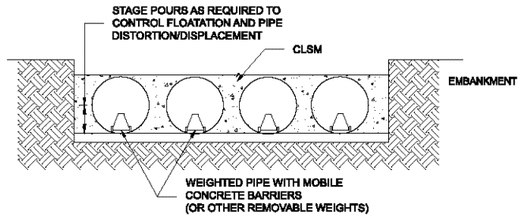


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

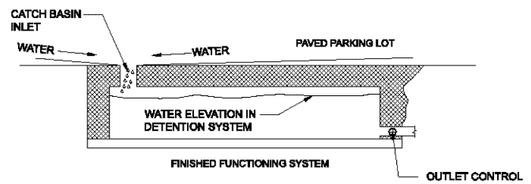


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12190 Pepper Avenue - Rialto
Chamber 1 - Revised
Rialto, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
5126	12190	12/15/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D4		

Date: 12/14/2021
Project Name: Chamber 1 - Revised - 12190 (12-14-2021 22-56-39)

City / County: Rialto
State: CA

Designed By: FMC
Company:
Telephone:

CMP: Underground Detention System Storage Volume Estimation

=Adjustable Input Cells

Contech Engineered Solutions, LLC is pleased to offer the following estimate of storage volume for the above named project. The results are submitted as an estimate only, without liability on the part of Contech Engineered Solutions, LLC for accuracy or suitability to any particular applicaton and are subject to verification of the Engineer of Record. **This tool is only applicable for rectangular shaped systems.**

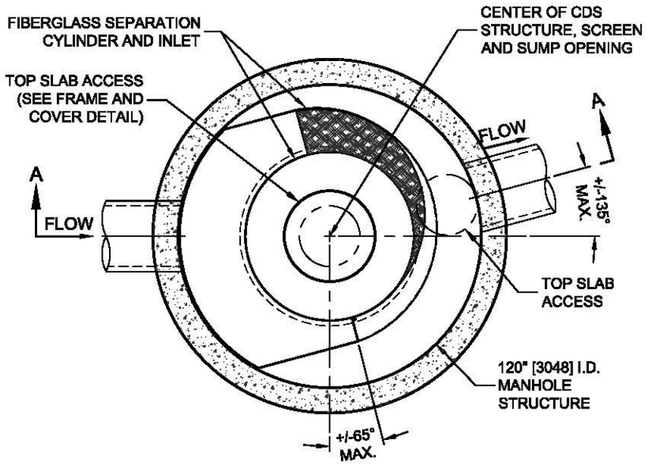
Summary of Inputs (Project contains two identical chambers as shown below)

System Information		Backfill Information		Pipe & Analysis Information	
Out-to-out length (ft):	548.0	Backfill Porosity (%):	40%	System Diameter (in):	48
Out-to-out width (ft):	58.0	Depth Above Pipe (in):	18.0	Pipe Spacing (in):	24
Number of Manifolds (ea):	2.0	Depth Below Pipe (in):	12.0	Incremental Analysis (in):	2
Number of Barrels (ea):	10.0	Width At Ends (ft):	1.0	System Invert (Elevation):	1263.8
		Width At Sides (ft):	1.0		

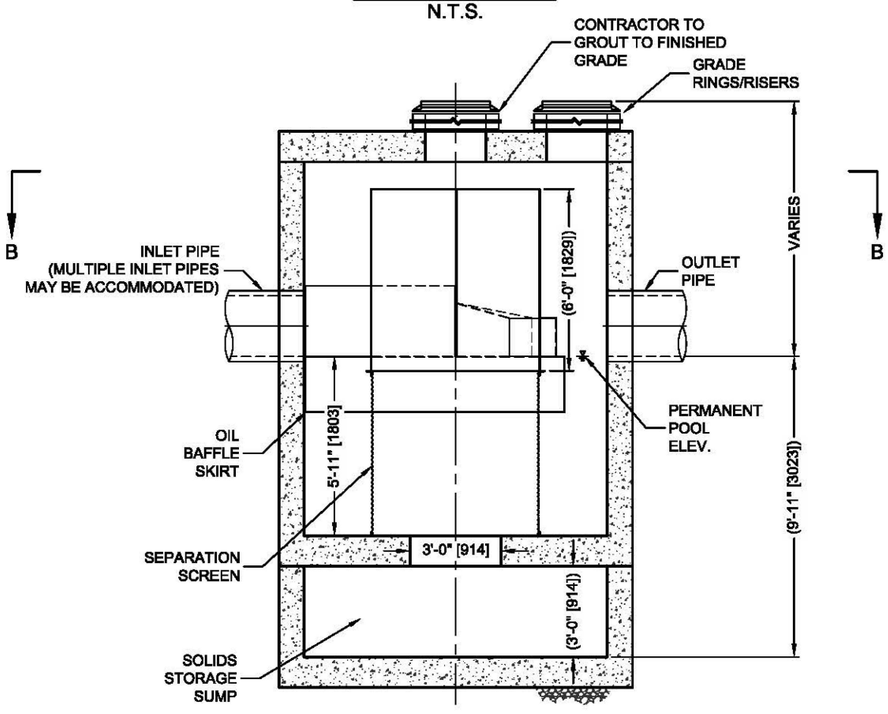
Storage Volume Estimation

System		Pipe		Stone		Single Chamber		Miscellaneous		Dual Chamber
Depth (ft)	Elevation (ft)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Percent Open Storage (%)	Ave. Surface Area (sf)	Total Cumulative Site Storage (cf)
0.00	1263.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	13,200.0	0
0.17	1263.96	0.0	0.0	2,200.0	2,200.0	2,200.0	2,200.0	0.0%	13,200.0	4400.0
0.33	1264.13	0.0	0.0	2,200.0	4,400.0	2,200.0	4,400.0	0.0%	13,200.0	8800.0
0.50	1264.30	0.0	0.0	2,200.0	6,600.0	2,200.0	6,600.0	0.0%	13,200.0	13200.0
0.67	1264.46	0.0	0.0	2,200.0	8,800.0	2,200.0	8,800.0	0.0%	13,200.0	17600.0
0.83	1264.63	0.0	0.0	2,200.0	11,000.0	2,200.0	11,000.0	0.0%	13,200.0	22000.0
1.00	1264.80	0.0	0.0	2,200.0	13,200.0	2,200.0	13,200.0	0.0%	13,200.0	26400.0
1.17	1264.96	988.2	988.2	1,804.7	15,004.7	2,792.9	15,992.9	6.2%	18,490.8	31985.9
1.33	1265.13	1,770.7	2,759.0	1,491.7	16,496.4	3,262.4	19,255.4	14.3%	20,517.8	38510.7
1.50	1265.30	2,242.0	5,000.9	1,303.2	17,799.6	3,545.2	22,800.6	21.9%	21,956.4	45601.1
1.67	1265.46	2,592.7	7,593.6	1,162.9	18,962.5	3,755.6	26,556.2	28.6%	23,067.3	53112.4
1.83	1265.63	2,868.4	10,462.0	1,052.6	20,015.2	3,921.0	30,477.2	34.3%	23,952.7	60954.4
2.00	1265.80	3,089.3	13,551.4	964.3	20,979.5	4,053.6	34,530.8	39.2%	24,664.8	69061.6
2.17	1265.96	3,266.8	16,818.2	893.3	21,872.7	4,160.1	38,690.9	43.5%	25,234.5	77381.8
2.33	1266.13	3,407.6	20,225.8	836.9	22,709.7	4,244.6	42,935.5	47.1%	25,681.3	85871.0
2.50	1266.30	3,516.2	23,742.1	793.5	23,503.2	4,309.7	47,245.2	50.3%	26,018.0	94490.5
2.67	1266.46	3,595.5	27,337.6	761.8	24,265.0	4,357.3	51,602.5	53.0%	26,253.2	103205.1
2.83	1266.63	3,647.4	30,985.0	741.0	25,006.0	4,388.4	55,991.0	55.3%	26,392.4	111982.0
3.00	1266.80	3,673.1	34,658.1	730.8	25,736.8	4,403.8	60,394.8	57.4%	26,438.4	120789.7
3.17	1266.96	3,673.1	38,331.1	730.8	26,467.6	4,403.8	64,798.7	59.2%	26,392.4	129597.3
3.33	1267.13	3,647.4	41,978.5	741.0	27,208.6	4,388.4	69,187.1	60.7%	26,253.2	138374.2
3.50	1267.30	3,595.5	45,574.0	761.8	27,970.4	4,357.3	73,544.4	62.0%	26,018.0	147088.8
3.67	1267.46	3,516.2	49,090.3	793.5	28,763.9	4,309.7	77,854.2	63.1%	25,681.3	155708.3
3.83	1267.63	3,407.6	52,497.9	836.9	29,600.8	4,244.6	82,098.7	63.9%	25,234.5	164197.5
4.00	1267.80	3,266.8	55,764.7	893.3	30,494.1	4,160.1	86,258.8	64.6%	24,664.8	172517.7
4.17	1267.96	3,089.3	58,854.1	964.3	31,458.4	4,053.6	90,312.4	65.2%	23,952.7	180624.9
4.33	1268.13	2,868.4	61,722.5	1,052.6	32,511.0	3,921.0	94,233.5	65.5%	23,067.3	188466.9
4.50	1268.30	2,592.7	64,315.2	1,162.9	33,673.9	3,755.6	97,989.1	65.6%	21,956.4	195978.2
4.67	1268.46	2,242.0	66,557.1	1,303.2	34,977.1	3,545.2	101,534.3	65.6%	20,517.8	203068.6
4.83	1268.63	1,770.7	68,327.9	1,491.7	36,468.9	3,262.4	104,796.7	65.2%	18,490.8	209593.4
5.00	1268.80	988.2	69,316.1	1,804.7	38,273.6	2,792.9	107,589.7	64.4%	13,200.0	215179.3
5.17	1268.96	0.0	69,316.1	2,200.0	40,473.6	2,200.0	109,789.7	63.1%	13,200.0	219579.3
5.33	1269.13	0.0	69,316.1	2,200.0	42,673.6	2,200.0	111,989.7	61.9%	13,200.0	223979.3
5.50	1269.30	0.0	69,316.1	2,200.0	44,873.6	2,200.0	114,189.7	60.7%	13,200.0	228379.3
5.67	1269.46	0.0	69,316.1	2,200.0	47,073.6	2,200.0	116,389.7	59.6%	13,200.0	232779.3
5.83	1269.63	0.0	69,316.1	2,200.0	49,273.6	2,200.0	118,589.7	58.5%	13,200.0	237179.3
6.00	1269.80	0.0	69,316.1	2,200.0	51,473.6	2,200.0	120,789.7	57.4%	13,200.0	241579.3
6.17	1269.96	0.0	69,316.1	2,200.0	53,673.6	2,200.0	122,989.7	56.4%	13,200.0	245979.3
6.33	1270.13	0.0	69,316.1	2,200.0	55,873.6	2,200.0	125,189.7	55.4%	13,200.0	250379.3
6.50	1270.30	0.0	69,316.1	2,200.0	58,073.6	2,200.0	127,389.7	54.4%	13,200.0	254779.3

These results are submitted to you as a guideline only, without liability on the part of CONTECH Engineered Solutions, LLC for accuracy or suitability to any particular application, and are subject to your verification.



PLAN VIEW B-B
N.T.S.

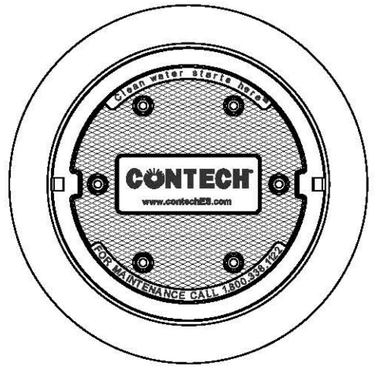


ELEVATION A-A
N.T.S.

CDS5653-10-C DESIGN NOTES

THE STANDARD CDS5653-10-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechEScom
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET HS20 (AASHTO M 306) AND BE CAST WITH THE CONTECH LOGO.
6. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,755,516; 6,641,720; 6,811,696; 6,991,709. RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

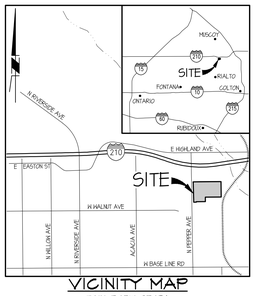
CDS5653-10-C
INLINE CDS
STANDARD DETAIL

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SECTION 6.4.2
CONCEPTUAL GRADING PLANS AND OUTLET CONTROL DETAIL

CITY OF RIALTO
COUNTY OF SAN BERNARDINO, CALIFORNIA

PEPPER AVENUE INDUSTRIAL BUILDING
CONCEPTUAL GRADING



VICINITY MAP
TOWN, ROSHA, SEC.36
NOT TO SCALE

APPLICANT/OWNER
HOWARD INDUSTRIAL PARTNERS
1144 NORTH TUSTIN STREET, SUITE 122
ORANGE, CA 92865
CONTACT: TIM HOWARD
(TEL)714-769-9155

ARCHITECT
AO ARCHITECTURE
1144 NORTH STREET
ORANGE, CA 92866
CONTACT: STEPHEN PRZYBYLOWSKI
(TEL)714-639-4860

ENGINEER
FMCIVIL ENGINEERS INC.
29985 TECHNOLOGY DRIVE, SUITE 306
MURRIETA, CA 92563
CONTACT: FRANCISCO MARTINEZ
(TEL)951-331-4873

PROJECT DESCRIPTION
AN INDUSTRIAL WAREHOUSE FACILITY CONSISTING OF A WAREHOUSE TOTALING 432,000 SQUARE FEET ON 23.82 ACRES.

SITE PLAN KEYNOTES

1. PAINTED CONCRETE TILT-UP WAREHOUSE / OFFICE / MANUFACTURING FACILITY. BUILDING TO BE DESIGNED PER ARCHITECT'S PLANS
2. ON SITE ACCESSIBLE SIDEWALK AND CURB RAMPS.
3. CONCRETE CURB
4. CONCRETE CURB & GUTTER
5. STANDARD PARKING STALL MIN. 9' X 18' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
6. HANDICAP PARKING STALL MIN. 9' X 18' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
7. TRAILER PARKING STALL MIN. 12' X 50' - STRIPE PER STANDARDS SHOWN ON ARCHITECT'S PLANS
8. ACCESSIBLE BUILDING ENTRY WITH ADJACENT BICYCLE RACKS PER ARCHITECT'S PLANS
9. PORTLAND CONC. CEMENT (PCC) PAVED TRUCK YARD ARCHITECT'S PLANS
10. POROUS ASPHALT PAVED PARKING PER ARCHITECT'S PLANS
11. DOCK HIGH TRUCK DOOR PER ARCHITECT'S PLANS
12. GRADE LEVEL RAMP DOOR PER ARCHITECT'S PLANS
13. EXTERIOR MAN DOOR AND STAIRS W/GUARD POST PER ARCHITECT'S PLANS
14. COMMERCIAL DRIVEWAY APPROACH PER SAN BERNARDINO COUNTY STD. 129B, LOCATED PER STD. 130, WITH DECORATIVE CONCRETE PAVING PER ARCHITECT'S PLANS
15. DETENTION BASIN
16. UNDERGROUND STORM WATER CHAMBER SYSTEM
17. LANDSCAPE AREA PER LANDSCAPE ARCHITECT'S PLANS
18. APPROXIMATE LOCATION OF TRASH ENCLOSURE PER ARCHITECT'S PLANS
19. METAL, MANUAL OPERATED SECURITY GATE WITH KNOX-PAD LOCK FOR FIRE DEPARTMENT ACCESS PER ARCHITECT'S PLANS
20. CONCRETE SCREEN WALL PER ARCHITECT'S PLANS
21. COMBINATION SCREEN & RETAINING WALL PER ARCHITECT'S PLANS
22. COMBINATION RETAINING WALL & TUBE STEEL FENCE PER ARCHITECT'S PLANS
23. TUBE STEEL FENCE PER ARCHITECT'S PLANS
24. RETAINING WALL
25. PROPOSED LOCATION OF FUTURE SEWER LIFT STATION (BY OTHERS)

LEGEND

- 1025 — INDEX CONTOUR
- RETAINING WALL
- FENCE
- EDGE OF PAVEMENT
- SIGN
- MH — MANHOLE
- RIGHT OF WAY
- EASEMENT
- PARCEL LINE
- PARCEL MAP BOUNDARY
- STREET CENTER LINE
- SCREEN WALL
- COMBINATION SCREEN/RETAINING WALL
- EXISTING LOT LINE
- RIDGE LINE
- RIBBON GUTTER
- FLOW ARROW
- PROPOSED EDGE OF PAVEMENT
- EX W — EXISTING WATER LINE
- EX SS — EXISTING SNR LINE
- SD — EXISTING STORM DRAIN PIPE
- SD — PROPOSED STORM DRAIN PIPE
- CUT/FILL LINE
- SLOPE SYMBOL
- PROPOSED STREET AC PAVEMENT
- GRIND AND OVERLAY
- POROUS PAVEMENT

SEWER

EXISTING SEWER:
PUBLIC SEWER

PROPOSED SEWER:
PRIVATE & PUBLIC SEWER

UTILITY COMPANIES:

WATER:	WEST VALLEY WATER DISTRICT PHONE: (909) 875-1322 RIALTO WATER SERVICES PHONE: (909) 820-2546
ELECTRIC:	SOUTHERN CALIFORNIA EDISON PHONE: (800) 655-4555
TELEPHONE:	AT&T PHONE: (800) 288-2020
CABLE:	SPECTRUM PHONE: (855) 243-8892
GAS:	SOUTHERN CALIFORNIA GAS COMPANY PHONE: (800) 427-2200
SCHOOL:	RIALTO UNIFIED SCHOOL DISTRICT PHONE: (909) 820-7700
SEWER:	RIALTO WATER SERVICES PHONE: (909) 820-2546

EARTHWORK ESTIMATE:

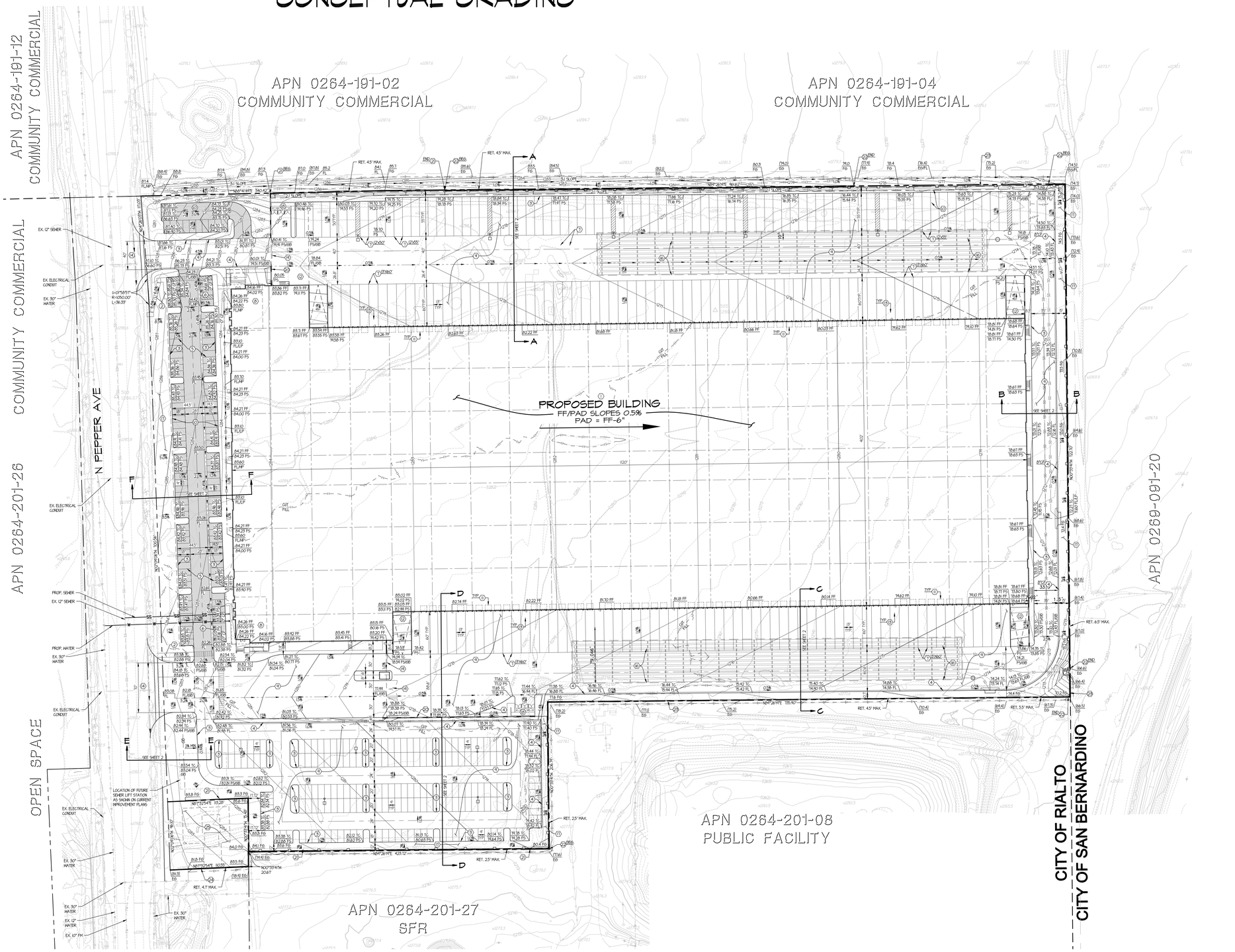
RAW CUT:	62,230 CY
RAW FILL:	49,740 CY
NET:	12,490 CY EXPORT

HAUL TRIPS:
ASSUMED (13 CY PER TRIP) = 961

ZONING ORDINANCE

EXISTING ZONING:
PEPPER AVENUE SPECIFIC PLAN COMMUNITY COMMERCIAL

PROPOSED ZONING:
PEPPER AVENUE SPECIFIC PLAN COMMUNITY COMMERCIAL (ALLOWING WAREHOUSE & LOGISTICS USES)



SCALE: 1"=50'

50 25 0 50 100 150
SCALE: 1"=50'

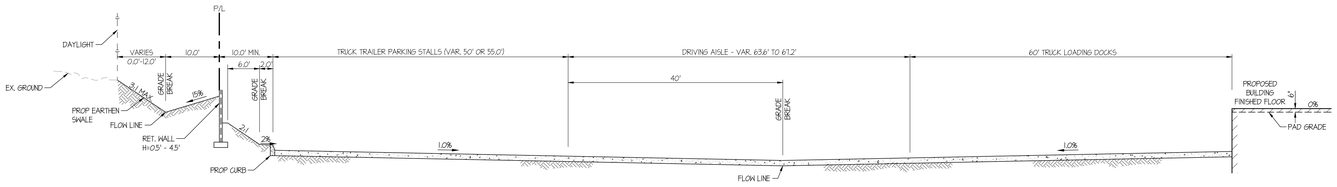
SAN BERNARDINO COUNTY	
PEPPER AVENUE INDUSTRIAL BUILDING CONCEPTUAL GRADING	
SCALE: AS SHOWN	SHEET 1
DATE: DEC. 2021	
DESIGNED: AJ	
CHECKED: FM	
PLN CK REF:	OF 2 SHEETS

FMCIVIL ENGINEERS INC.
29985 TECHNOLOGY DRIVE, SUITE 306
MURRIETA | CA 92563
951.973.0201 - FMCIVIL.COM

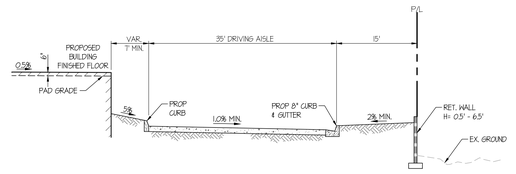
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CITY OF RIALTO
COUNTY OF SAN BERNARDINO, CALIFORNIA

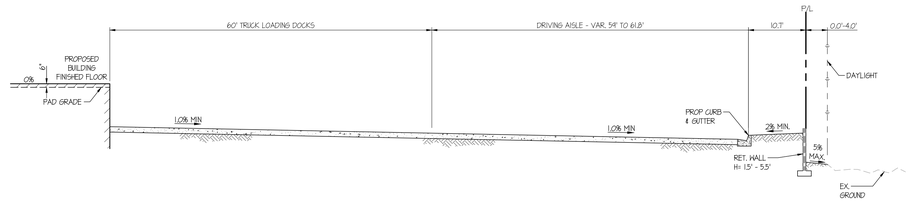
PEPPER AVENUE INDUSTRIAL BUILDING
CONCEPTUAL GRADING



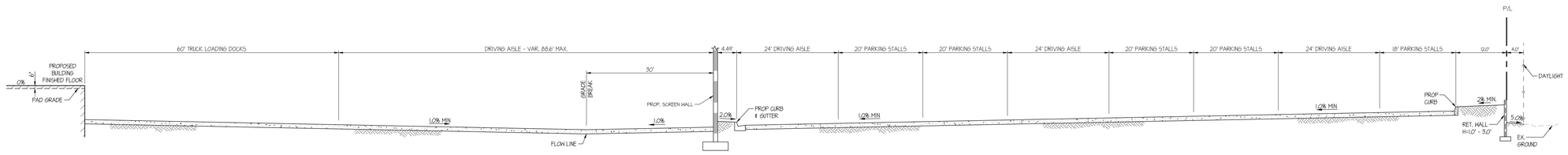
SECTION A-A
HOR. SCALE: 1"=10'



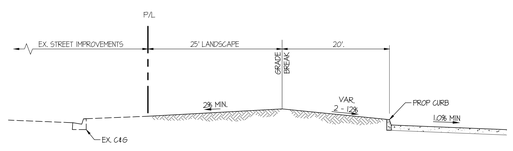
SECTION B-B
HOR. SCALE: 1"=10'



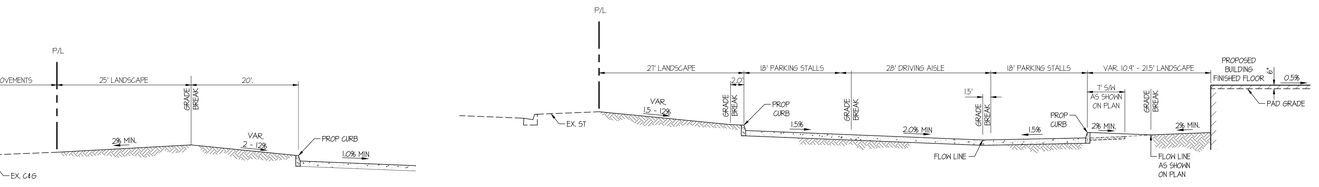
SECTION C-C
HOR. SCALE: 1"=10'



SECTION D-D
HOR. SCALE: 1"=10'



SECTION E-E
HOR. SCALE: 1"=10'



SECTION F-F
HOR. SCALE: 1"=10'

SAN BERNARDINO COUNTY

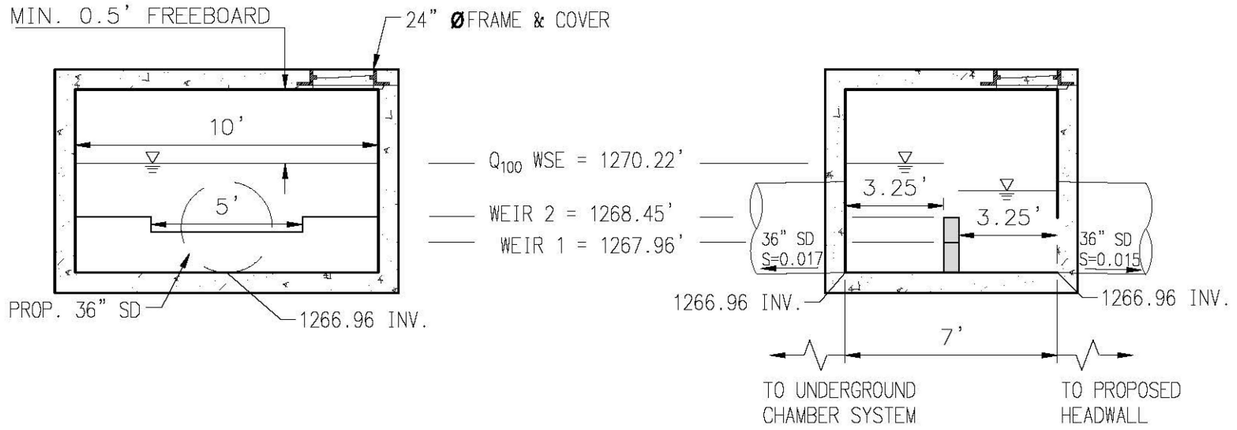
PEPPER AVENUE
INDUSTRIAL BUILDING
TYPICAL SECTIONS

SCALE: AS SHOWN	
DATE: DEC. 2021	
DESIGNED: AJ	
CHECKED: PM	
PLN CK REF.	

FMCIVIL ENGINEERS INC.
29995 TECHNOLOGY DRIVE, SUITE 306
MURRIETA | CA 92563
951.973.0201 - FMCIVIL.COM

SHEET 2 OF 2 SHEETS

N:\PROJ\A19-006 MTP RIALTO PEPPER AVE\DWGS\PLN\SHT\TITLE\DWG\DEPT\19-006-CP-002.DWG ALLAN 12/10/2021 10:40 AM



OUTLET CONTROL STRUCTURE

UNDERGROUND CHAMBER SYSTEM BOTTOM = 1264.77

FMCIVIL ENGINEERS INC.
29995 TECHNOLOGY DRIVE, SUITE 306 | MURRIETA | CA 92563
951.331.9873 - FMCIVIL.COM

PEPPER AVE

OUTLET CONTROL STRUCTURE DETAIL

1

OF 1 SHEETS

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SECTION 6.4.3
DCV AND FACTOR OF SAFETY CALCULATIONS

Santa Ana Watershed

BMP Design Volume, V_{BMP}

Company Name	FMCIVIL Engineers Inc.
Designed by	Francisco Martinez, PE
Project	Pepper Industrial Building (DA 1)
Date	12/15/2021

DA 1	**Surface Type**	**Area (SF)**
	Roof	465,518.26
	Concrete or Asphalt	444,750.92
	Future Impervious Area	-
	Restore to Natural	
	Ornamental Landscaping, Basin, and Pervious Concrete	122,175.82
	Total Area (SF)	1,032,445.00
	Total Area (Acres)	23.7

Impervious Ratio =	**(i)**	88.2%
C_{BMP} = Runoff Coefficient	**$0.858i^3-0.78i^2+0.774i+0.04$**	0.7041
$P_{2yr,1hr}$	**NOAA - 2-yr 1-hr rainfall depth**	0.637
a_1 = San Bernardino Climate Region	**Valley = 1.4807 Mountain = 1.909 Desert = 1.2371**	1.4807
P_6 - Mean Storm Rainfall Depth	**$P_6 = a_1 * P_{2yr,1hr}$**	0.9432
a_2 = Drawdown rate of Basin	**1.582 for 24-hr 1.963 for 48-hr**	1.9630
Project Area (SF)	**(DA)**	1,032,445.00
Design Capture Volume (cu.ft.)	**DCV = DA * C_{BMP} * a_2 * P_6/12**	112,164.67
Volume Provided, cu. Ft.	**ConTech Chamber Capacity**	254,779.30

Pepper Industrial Building **DMA 1**

Infiltration Test No.	Infiltration Rate (in/hr)	
I-3	0.8	
I-4	4.2	
Infiltration Rate (lowest) =	**2.5**	Used
Geotechnical Report recommendation =	3.9 (N/A)	

Worksheet H: Factor of Safety and Design Infiltration Rate and Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	1	0.25
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \sum p$			1.25
B	Design	Tributary area size	0.25	2	0.5
		Level of pretreatment/ expected sediment loads	0.25	3	0.75
		Redundancy	0.25	3	0.75
		Compaction during construction	0.25	2	0.5
		Design Safety Factor, $S_B = \sum p$			2.5
Combined Safety Factor, $S_{total} = S_A x S_B$					3.13
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					2.50
Design Infiltration Rate, in/hr, Kdesign = $K_{0bserved} / S_{total}$					**0.80**

Infiltration values I-3 and I-4 obtained from Southern California Geotechnical's Report #20G234-3 dated August 31, 2021. Other infiltration values were omitted as those infiltration tests do not fall within the proposed chamber footprint.

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

SECTION 6.4.4
INFILTRATION AND USDA SOIL REPORTS

August 31, 2021

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Howard Industrial Partners
1944 North Tustin Street, Suite 122
Orange, California 92865

Attention: Mr. Mike Tunney

Project No.: **20G234-3**

Subject: **Results of Infiltration Testing**
Proposed Commercial/Industrial Building
Pepper Avenue, South of Foothill Freeway
Rialto, California

Mr. Tunney:

In accordance with your request, we have conducted infiltration testing at the subject site. We are pleased to present this report summarizing the results of the infiltration testing and our design recommendations.

Scope of Services

The scope of services performed for this project was in general accordance with our Proposal No. 20P409-2 dated August 6, 2021. The scope of services included a visual site reconnaissance and the review of the previously prepared infiltration report to determine the infiltration rates of the on-site soils. The infiltration testing was performed in general accordance with the guidelines published in the Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A, prepared for the Riverside County Department of Environmental Health (RCDEH), dated December, 2013. The San Bernardino County standards defer to the guidelines published by the RCDEH.

Site and Project Description

The subject site is located on the east side of Pepper Avenue, approximately 500 feet south of the intersection of Pepper Avenue and the Foothill Freeway (CA-210) in Rialto, California. The site is bounded to the north and east by vacant lots, to the west by Pepper Avenue, and to the south by a vacant lot and a detention basin with an above-ground storage tank (AST). The general location of the site is illustrated on the Site Location Map, included as Plate 1 of this report.

The site consists of an L-shaped parcel, 24.23± acres in size. Based on aerial photographs obtained from Google Earth, the site is vacant and undeveloped. The ground surface cover consists of exposed soil with sparse to moderate native grass and weed growth.

Topographic information by Inland Aerial Surveys, Inc. was provided by the client. The site topography ranges from 1267± feet mean sea level (msl) located in the southeast corner of the site to 1290± msl in the northwest corner of the site. The site generally slopes downward to the southeast at a gradient of 1½± percent.

Proposed Development

SCG was provided with a conceptual site plan provided to our office, the subject site will be developed with one commercial/industrial building, 436,000± ft² in size, located in the north-central area of the site. Dock-high doors will be constructed along portions of the north and south building walls. The building will be surrounded by asphaltic concrete pavements in the parking and drive lanes, Portland cement concrete pavements in the loading dock areas, concrete flatwork, and limited areas of landscape planters throughout.

Based on an infiltration exhibit provided by FMCIVIL Engineers Inc. (FMC), the proposed development will include on-site stormwater infiltration. The infiltration systems will consist of one (1) detention basin and one (1) below-grade chamber system located in the southeastern area of the site. The bottom of the basin will range from approximately 1 to 3½ feet below the existing site grades and the bottom of the chamber system will range from approximately 8 to 12½ feet below the existing site grades.

Previous Study

SCG previously performed a geotechnical feasibility study at the subject site, which is referenced below.

> Geotechnical Feasibility Study, Proposed Commercial/Industrial Building, Pepper Avenue, South of Foothill Freeway, Rialto, California, prepared by Southern California Geotechnical, Inc. (SCG) for Howard Industrial Partners, SCG Project No. 20G234-1, dated December 15, 2020.

As part of this investigation, four (4) borings were advanced to a depth of 50± feet below the existing site grades. Native alluvium was encountered at the ground surface at all of the boring locations, extending to at least the maximum depth explored of 50± feet below the existing site grades. The near-surface alluvium generally consisted of very loose to medium dense silty sands, sandy silts, gravelly sands, and well-graded sands, with varying silt and gravel content, extending to depths of 7 to 10± feet. The underlying alluvium generally consisted of medium dense to dense silty sands, sandy silts, and well-graded sands with varying fine gravel and silt content, extending to depths of 15 to 20± feet. At greater depths the alluvial soils generally consisted of dense to very dense silty sands, gravely sands, sandy gravels, and well-graded sands, with varying silt, gravel and cobble content. Free water was not encountered during the drilling of any of the borings.

Groundwater

Free water was not encountered during the drilling of any of the borings. Based on the lack of any water within the borings, and the moisture contents of the recovered soil samples, the static groundwater is considered to have existed at a depth in excess of 50± feet at the time of the subsurface exploration. As part of our research, we reviewed readily available groundwater data in order to determine regional groundwater depths. The primary reference used to determine the groundwater depths in the subject site area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. The nearest monitoring well is located

approximately 800 feet southeast from the site. Water level readings within this monitoring well indicates a high groundwater level of 418± feet below the ground surface in September 2020.

Subsurface Exploration

Scope of Exploration

The subsurface exploration conducted for the infiltration testing consisted of seven (7) infiltration test borings (identified as I-1 through I-7), advanced to a depth of 2 to 12½± feet below the existing site grades.

The infiltration borings were advanced using a truck-mounted drilling rig, equipped with 8-inch diameter hollow stem augers and were logged during drilling by a member of our staff. Upon the completion of the infiltration borings, the bottom of each test boring was covered with 2± inches of clean ¾-inch gravel. A sufficient length of 3-inch-diameter perforated PVC casing was then placed into each test hole so that the PVC casing extended from the bottom of the test hole to the ground surface. Clean ¾-inch gravel was then installed in the annulus surrounding the PVC casing.

The approximate locations of the infiltration borings are indicated on the Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Geotechnical Conditions

Native alluvial soils were encountered at the ground surface at all of the infiltration boring locations, extending to at least the maximum depth explored of 12½± feet below the existing site grades. The near-surface alluvium within the upper 5± feet generally consists of loose silty sands and fine sands with varying gravel content. At greater depths, the alluvium generally consists of medium dense silty sands and occasional sandy silts. Groundwater was not encountered during the drilling of these borings. The Boring Logs, which illustrate the conditions encountered at the boring locations, are included with this report.

Infiltration Testing

As previously mentioned, the infiltration testing was performed in general accordance with the guidelines published in Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A, which apply to San Bernardino County.

Pre-soaking

In accordance with the county infiltration standards for sandy soils, all infiltration test borings were pre-soaked 2 hours prior to the infiltration testing or until all of the water had percolated through the test holes. The pre-soaking process consisted of filling test borings by inverting a full 5-gallon bottle of clear water supported over each hole so that the water flow into the hole holds constant at a level at least 5 times the hole's radius above the gravel at the bottom of each hole. Pre-soaking was completed after all of the water had percolated through the test holes.

Infiltration Testing

Following the pre-soaking process of the infiltration test borings, SCG performed the infiltration testing. Each test hole was filled with water to a depth of at least 5 times the hole's radius above the gravel at the bottom of the test holes. In accordance with the San Bernardino County guidelines, since "sandy soils" were encountered at the bottom of both of the infiltration test borings (where 6 inches of water infiltrated into the surrounding soils for two consecutive 25-minute readings), readings were taken at 10-minute intervals for a total of 1 hour at each test location. After each reading, water was added to the borings so that the depth of the water was at least 5 times the radius of the hole. The water level readings are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on the spreadsheets.

The infiltration rates from the test are tabulated in inches per hour. In accordance with the typically accepted practice, it is recommended that the most conservative reading from the latter part of the infiltration tests be used as the design infiltration rate. The rates are summarized below:

Infiltration Test No.	Depth (feet)	Test Elevation (feet) MSL	Soil Description	Infiltration Rate (inches/hour)
I-1	9½	1261.5	Light Gray Silty fine to medium Sand	7.2
I-2	8	1262	Light Gray fine Sandy Silt, little medium Sand	5.7
I-3	12½	1261.5	Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel	0.8
I-4	11	1262	Gray Brown Silty fine to medium Sand	4.2
I-5	8½	1262	Gray Brown Silty fine to medium Sand, little coarse Gravel	1.7
I-6	3½	1266.5	Gray Brown Silty fine to medium Sand	9.0
I-7	2	1265.5	Gray Brown Silty fine to medium Sand	1.7

Laboratory Testing

Moisture Content

The moisture contents for the recovered soil samples within the borings were determined in accordance with ASTM D-2216 and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Grain Size Analysis

The grain size distribution of selected soils collected from the base of each infiltration test boring have been determined using a range of wire mesh screens. These tests were performed in general accordance with ASTM D-422 and/or ASTM D-1140. The weight of the portion of the sample

retained on each screen is recorded and the percentage finer or coarser of the total weight is calculated. The results of these tests are presented on Plates C-1 through C-7 of this report.

Design Recommendations

Seven (7) infiltration tests were performed at the subject site. As noted above, the infiltration rates at these locations vary from 0.8 to 9.0 inches per hour.

Based on the results of the infiltration testing, we recommend the following infiltration rates for the proposed infiltration systems:

Infiltration System	Infiltration Rate (Inches per Hour)
Chamber System	3.9
Detention Basin	5.3

The design of the storm water infiltration system should be performed by the project civil engineer, in accordance with the City of Rialto and/or County of San Bernardino guidelines. It is recommended that the system be constructed so as to facilitate removal of silt and clay, or other deleterious materials from any water that may enter the system. The presence of such materials would decrease the effective infiltration rate. **It is recommended that the project civil engineer apply an appropriate factor of safety. The infiltration rate recommended above is based on the assumption that only clean water will be introduced to the subsurface profile. Any fines, debris, or organic materials could significantly impact the infiltration rate.** It should be noted that the recommended infiltration rates are based on infiltration testing at seven (7) discrete locations and that the overall infiltration rate of the proposed infiltration system could vary considerably.

Infiltration Rate Considerations

The infiltration rates presented herein was determined in accordance with the San Bernardino County guidelines and are considered valid only for the time and place of the actual test. Varying subsurface conditions will exist in other areas of the site, which could alter the recommended infiltration rate presented above. The infiltration rate will decline over time between maintenance cycles as silt or clay particles accumulate on the BMP surface. The infiltration rate is highly dependent upon a number of factors, including density, silt and clay content, grainsize distribution throughout the range of particle sizes, and particle shape. Small changes in these factors can cause large changes in the infiltration rate.

Infiltration rates are based on unsaturated flow. As water is introduced into soils by infiltration, the soils become saturated and the wetting front advances from the unsaturated zone to the saturated zone. Once the soils become saturated, infiltration rates become zero, and water can only move through soils by hydraulic conductivity at a rate determined by pressure head and soil permeability. Changes in soil moisture content will affect the infiltration rate. Infiltration rates should be expected to decrease until the soils become saturated. Soil permeability values will then govern groundwater movement. Permeability values may be on the order of 10 to 20 times less than infiltration rates. The system designer should incorporate adequate factors of safety

and allow for overflow design into appropriate traditional storm drain systems, which would transport storm water off-site.

Construction Considerations

The infiltration rate presented in this report is specific to the tested location and tested depth. Infiltration rates can be significantly reduced if the soils are exposed to excessive disturbance or compaction during construction. Therefore, the subgrade soils within the proposed infiltration system area should not be overexcavated, undercut or compacted in any significant manner. **It is recommended that a note to this effect be added to the project plans and/or specifications.**

We recommend that a representative from the geotechnical engineer be on-site during the construction of the proposed infiltration system to identify the soil classification at the base of the system. It should be confirmed that the soils at the base of the proposed infiltration system correspond with those presented in this report to ensure that the performance of the system will be consistent with the rate reported herein.

We recommend that scrapers and other rubber-tired heavy equipment not be operated on the system bottom, or at levels lower than 2 feet above the bottom of the system, particularly within basins. As such, the bottom 24 inches of the infiltration system should be excavated with non-rubber-tired equipment, such as excavators.

Basin Maintenance

The proposed project may include infiltration basins. Water flowing into these basins will carry some level of sediment. Wind-blown sediments and erosion of the basin side walls will also contribute to sediment deposition at the bottom of the basin. This layer has the potential to significantly reduce the infiltration rate of the basin subgrade soils. Therefore, a formal basin maintenance program should be established to ensure that these silt and clay deposits are removed from the basin on a regular basis. Appropriate vegetation on the basin sidewalls and bottom may reduce erosion and sediment deposition.

Basin maintenance should also include measures to prevent animal burrows, and to repair any burrows or damage caused by such. Animal burrows in the basin sidewalls can significantly increase the risk of erosion and piping failures.

Location of Infiltration Systems

The use of on-site storm water infiltration systems carries a risk of creating adverse geotechnical conditions. Increasing the moisture content of the soil can cause the soil to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Overlying structures and pavements in the infiltration area could potentially be damaged due to saturation of the subgrade soils. **The proposed infiltration systems for this site should be located at least 25 feet away from any structures, including retaining walls.** Even with this provision of locating the infiltration system at least 25 feet from the building(s), it is possible that infiltrating water into the subsurface soils could have an adverse effect on the proposed or existing structures. It should also be noted that utility trenches which

happen to collect storm water can also serve as conduits to transmit storm water toward the structure, depending on the slope of the utility trench. Therefore, consideration should also be given to the proposed locations of underground utilities which may pass near the proposed infiltration system.

The infiltration system designer should also give special consideration to the effect that the proposed infiltration systems may have on nearby subterranean structures, open excavations, or descending slopes. In particular, infiltration systems should not be located near the crest of descending slopes, particularly where the slopes are comprised of granular soils. Such systems will require specialized design and analysis to evaluate the potential for slope instability, piping failures and other phenomena that typically apply to earthen dam design. This type of analysis is beyond the scope of this infiltration test report, but these factors should be considered by the infiltration system designer when locating the infiltration systems.

General Comments

This report has been prepared as an instrument of service for use by the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, structural engineer, and/or civil engineer. The design of the proposed storm water infiltration system is the responsibility of the civil engineer. The role of the geotechnical engineer is limited to determination of infiltration rate only. By using the design infiltration rate contained herein, the civil engineer agrees to indemnify, defend, and hold harmless the geotechnical engineer for all aspects of the design and performance of the proposed storm water infiltration system. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and testing depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted. The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with

generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

Closure

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

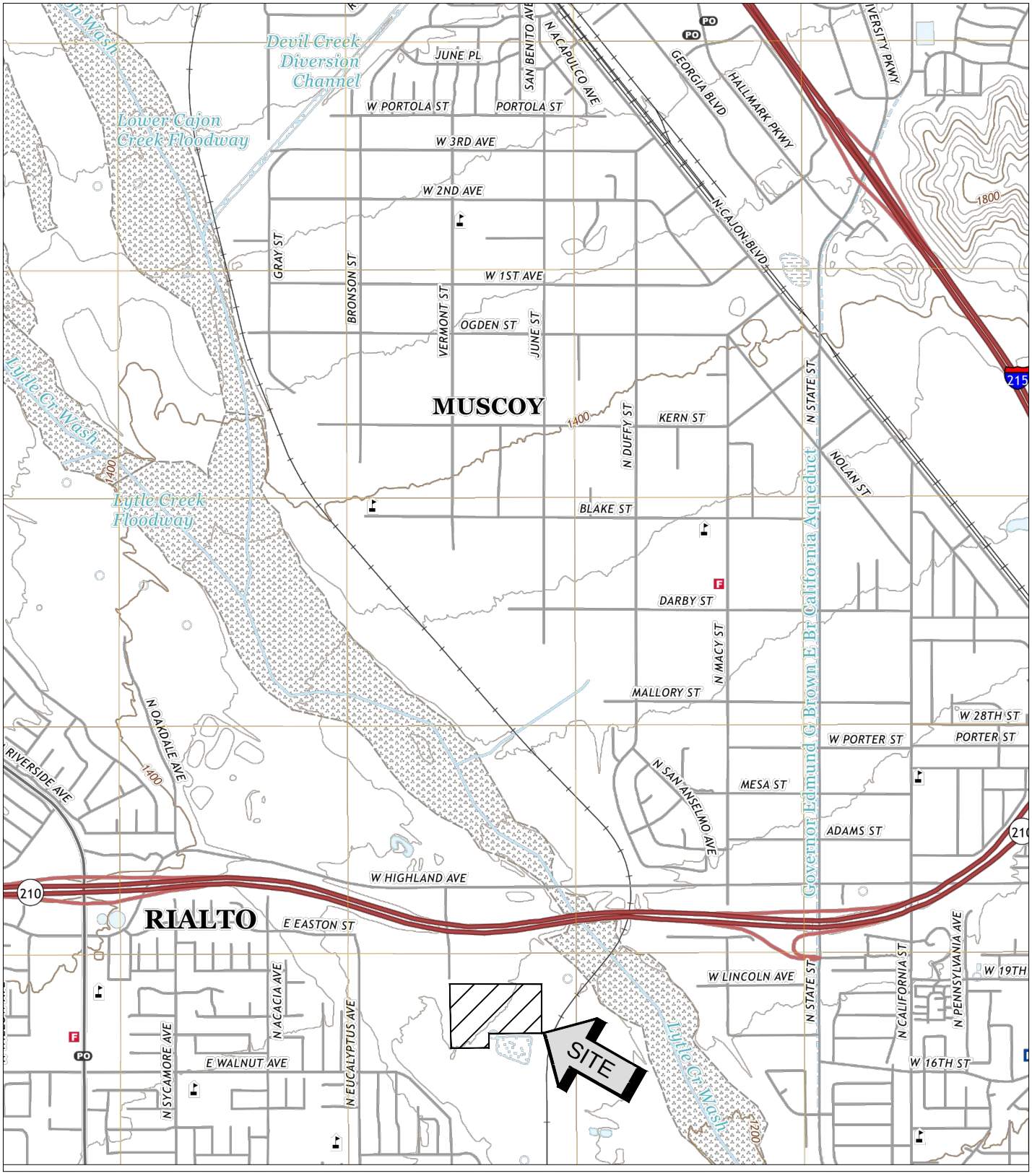
Jose Zuniga
Staff Engineer



Robert G. Trazo, GE 2655
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 - Infiltration Test Location Plan
Boring Log Legend and Logs (9 pages)
Infiltration Test Results Spreadsheets (7 pages)
Grain Size Distribution Graphs (7 pages)



SOURCE: USGS TOPOGRAPHIC MAPS OF THE SAN BERNARDINO NORTH QUADRANGLES, SAN BERNARDINO COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

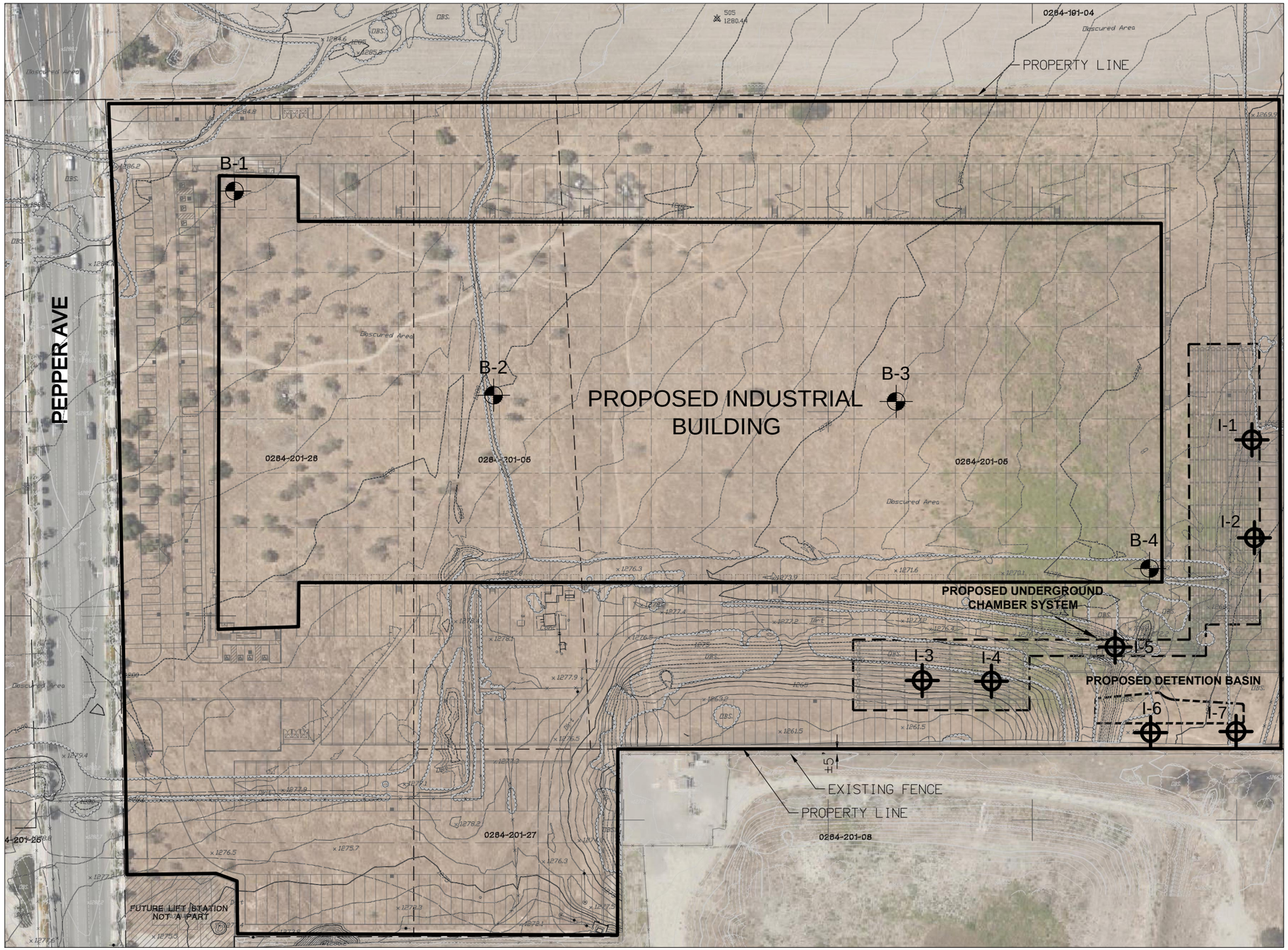
PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JAH CHKD: RGT	
SCG PROJECT 20G234-3	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

- APPROXIMATE INFILTRATION BORING LOCATION
- PREVIOUS BORING LOCATION (SCG PROJECT NO. 20G234-1)

NOTE: AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH. CONCEPTUAL SITE PLAN PROVIDED BY THE CLIENT.

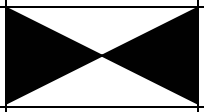
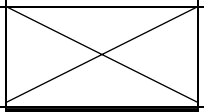
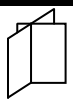
INFILTRATION TEST LOCATION PLAN

PROPOSED COMMERCIAL/INDUSTRIAL BUILDING

RIALTO, CALIFORNIA

SCALE: 1" = 120'	SOUTHERN CALIFORNIA GEOTECHNICAL
DRAWN: JAH CHKD: RGT	
SCG PROJECT 20G234-3	
PLATE 2	

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

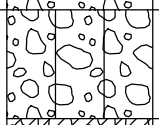
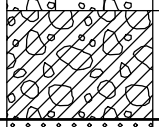
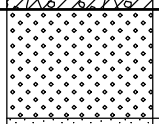
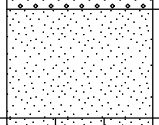
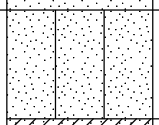
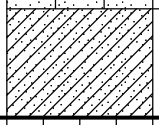
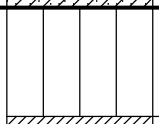
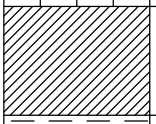
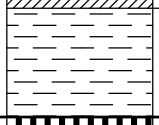
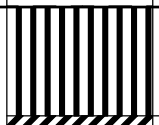
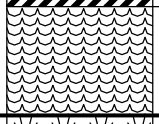
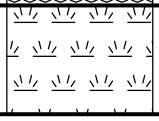
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-1

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1271 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		4			ALLUVIUM: Light Gray Brown fine Sand, trace Silt, very loose to loose-damp		4					
5		8			Light Gray Silty fine Sand, loose to medium dense-damp		5					
		12			@ 6 to 7½ feet, little Iron oxide staining		7					
		18			Light Gray Silty fine to medium Sand, medium dense-damp		4			31		
					Boring Terminated at 9½ feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG

PLATE B-1

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-2

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1270 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		3			ALLUVIUM: Light Gray to Light Gray Brown fine Sand, trace to little Silt, very loose to loose-dry to damp		2					
		6					4					
5					Light Gray fine Sandy Silt, little medium Sand, medium dense-damp							
		10					6			63		
					Boring Terminated at 8 feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG

PLATE B-2

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-3

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1274 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
5		10			ALLUVIUM: Gray Brown fine Sand, trace medium to coarse Sand, trace Silt, trace Iron oxide staining, medium dense-dry to damp		3					
		18			Dark Gray Brown Silty fine Sand, little medium Sand, trace coarse Gravel, medium dense-moist		11					
10		25			Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel, medium dense-damp		6			23		
					Boring Terminated at 12½ feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG **PLATE B-3**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-4

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1273 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		7			ALLUVIUM: Gray Brown Silty fine Sand, little medium to coarse Sand, trace fine Gravel, loose-damp		6					
		10			Light Gray fine Sand, little Iron oxide staining, medium dense-damp		5					
5		12			Gray Brown Silty fine Sand, trace fine Gravel, trace fine to medium Sand, medium dense-damp		7					
					Gray Brown Silty fine to medium Sand, medium dense-moist							
10		15					10			44		
					Boring Terminated at 11 feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG **PLATE B-4**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-5

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1270.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		6			ALLUVIUM: Light Gray fine Sand, little Silt, little medium to coarse Sand, loose-dry		2					
		6			@ 3½ to 5 feet, 2-inch Dark Gray Silty fine Sand lense, moist		10					
5					Gray Brown Silty fine to medium Sand, little coarse Gravel, medium dense-moist							
		24					9			37		
					Boring Terminated at 8½ feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG **PLATE B-5**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-6

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1270 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
	X	5			ALLUVIUM: Gray Brown Silty fine to medium Sand, trace fine root fibers, loose-damp		4			42		
					Boring Terminated at 3½ feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG

PLATE B-6

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-7

JOB NO.: 20G234-3
PROJECT: Proposed C/I Building
LOCATION: Rialto, California

DRILLING DATE: 8/10/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 1267.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
	X	4			ALLUVIUM: Gray Brown Silty fine to medium Sand, little fine root fibers, very loose to loose-dry to damp		3			46		
					Boring Terminated at 2 feet							

TBL 20G234-3.GPJ SOCALGEO.GDT 8/31/21

TEST BORING LOG

PLATE B-7

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	9.50	(ft)

Infiltration Test Hole: I-1

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	8:10 AM	25.00	7.10	36.00	YES	SANDY SOILS
	Final	8:35 AM		10.10			
2	Initial	8:37 AM	25.00	7.10	36.00	YES	SANDY SOILS
	Final	9:02 AM		10.10			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	9:10 AM	10.00	7.10	1.93	1.44	14.46
	Final	9:20 AM		9.03			
2	Initial	9:22 AM	10.00	7.10	1.32	1.74	8.31
	Final	9:32 AM		8.42			
3	Initial	9:34 AM	10.00	7.10	1.20	1.80	7.32
	Final	9:44 AM		8.30			
4	Initial	9:46 AM	10.00	7.10	1.19	1.81	7.24
	Final	9:56 AM		8.29			
5	Initial	9:58 AM	10.00	7.10	1.18	1.81	7.16
	Final	10:08 AM		8.28			
6	Initial	10:10 AM	10.00	7.10	1.18	1.81	7.16
	Final	10:20 AM		8.28			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	8.00	(ft)

Infiltration Test Hole	I-2

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	10:50 AM	25.00	4.70	36.00	YES	SANDY SOILS
	Final	11:15 AM		7.70			
2	Initial	11:17 AM	25.00	4.70	36.00	YES	SANDY SOILS
	Final	11:42 AM		7.70			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	11:45 AM	10.00	4.70	1.80	2.40	8.42
	Final	11:55 AM		6.50			
2	Initial	11:57 AM	10.00	4.70	1.48	2.56	6.51
	Final	12:07 PM		6.18			
3	Initial	12:09 PM	10.00	4.70	1.45	2.58	6.35
	Final	12:19 PM		6.15			
4	Initial	12:21 PM	10.00	4.70	1.40	2.60	6.07
	Final	12:31 PM		6.10			
5	Initial	12:33 PM	10.00	4.70	1.34	2.63	5.75
	Final	12:43 PM		6.04			
6	Initial	12:45 PM	10.00	4.70	1.34	2.63	5.75
	Final	12:55 PM		6.04			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)

ΔH = Change in Height (Water Level) over the time interval

r = Test Hole (Borehole) Radius

Δt = Time Interval

H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	12.50	(ft)

Infiltration Test Hole: I-3

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	1:15 PM	25.00	9.30	15.60	YES	SANDY SOILS
	Final	1:40 PM		10.60			
2	Initial	1:42 PM	25.00	9.30	13.32	YES	SANDY SOILS
	Final	2:07 PM		10.41			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	2:09 PM	10.00	9.30	0.25	3.08	0.93
	Final	2:19 PM		9.55			
2	Initial	2:21 PM	10.00	9.30	0.23	3.09	0.85
	Final	2:31 PM		9.53			
3	Initial	2:33 PM	10.00	9.30	0.23	3.09	0.85
	Final	2:43 PM		9.53			
4	Initial	2:45 PM	10.00	9.30	0.22	3.09	0.81
	Final	2:55 PM		9.52			
5	Initial	2:57 PM	10.00	9.30	0.22	3.09	0.81
	Final	3:07 PM		9.52			
6	Initial	3:09 PM	10.00	9.30	0.22	3.09	0.81
	Final	3:19 PM		9.52			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	11.00	(ft)

Infiltration Test Hole	I-4

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	3:30 PM	25.00	8.00	31.92	YES	SANDY SOILS
	Final	3:55 PM		10.66			
2	Initial	3:57 PM	25.00	8.00	28.08	YES	SANDY SOILS
	Final	4:22 PM		10.34			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	4:25 PM	10.00	8.00	1.10	2.45	5.04
	Final	4:35 PM		9.10			
2	Initial	4:37 PM	10.00	8.00	1.05	2.48	4.77
	Final	4:47 PM		9.05			
3	Initial	4:49 PM	10.00	8.00	0.97	2.52	4.34
	Final	4:59 PM		8.97			
4	Initial	5:01 PM	10.00	8.00	0.96	2.52	4.29
	Final	5:11 PM		8.96			
5	Initial	5:13 PM	10.00	8.00	0.95	2.53	4.24
	Final	5:23 PM		8.95			
6	Initial	5:25 PM	10.00	8.00	0.95	2.53	4.24
	Final	5:35 PM		8.95			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)

ΔH = Change in Height (Water Level) over the time interval

r = Test Hole (Borehole) Radius

Δt = Time Interval

H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	8.50	(ft)

Infiltration Test Hole: I-5

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	8:00 AM	25.00	5.20	17.40	YES	SANDY SOILS
	Final	8:25 AM		6.65			
2	Initial	8:28 AM	25.00	5.30	15.60	YES	SANDY SOILS
	Final	8:53 AM		6.60			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	8:55 AM	10.00	5.20	0.95	2.83	3.81
	Final	9:05 AM		6.15			
2	Initial	9:07 AM	10.00	5.20	0.95	2.83	3.81
	Final	9:17 AM		6.15			
3	Initial	9:19 AM	10.00	5.20	0.50	3.05	1.87
	Final	9:29 AM		5.70			
4	Initial	9:31 AM	10.00	5.20	0.49	3.06	1.83
	Final	9:41 AM		5.69			
5	Initial	9:43 AM	10.00	5.20	0.48	3.06	1.79
	Final	9:53 AM		5.68			
6	Initial	9:55 AM	10.00	5.20	0.47	3.07	1.75
	Final	10:05 AM		5.67			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	3.50	(ft)

Infiltration Test Hole	I-6

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	10:30 AM	25.00	0.50	34.80	YES	SANDY SOILS
	Final	10:55 AM		3.40			
2	Initial	10:57 AM	25.00	0.50	34.80	YES	SANDY SOILS
	Final	11:22 AM		3.40			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	11:24 AM	10.00	0.50	2.11	1.95	11.99
	Final	11:34 AM		2.61			
2	Initial	11:36 AM	10.00	0.50	1.94	2.03	10.60
	Final	11:46 AM		2.44			
3	Initial	11:48 AM	10.00	0.50	1.80	2.10	9.53
	Final	11:58 AM		2.30			
4	Initial	12:00 PM	10.00	0.50	1.75	2.13	9.16
	Final	12:10 PM		2.25			
5	Initial	12:12 PM	10.00	0.50	1.73	2.14	9.02
	Final	12:22 PM		2.23			
6	Initial	12:24 PM	10.00	0.50	1.73	2.14	9.02
	Final	12:34 PM		2.23			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)

ΔH = Change in Height (Water Level) over the time interval

r = Test Hole (Borehole) Radius

Δt = Time Interval

H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Commercial/Industrial Building
Project Location	Rialto. CA
Project Number	20G234-3
Engineer	Caleb Brackett

Test Hole Radius	4	(in)
Test Depth	2.00	(ft)

Infiltration Test Hole: I-7

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	1:00 PM	25.00	0.25	9.00	YES	SANDY SOILS
	Final	1:25 PM		1.00			
2	Initial	1:27 PM	25.00	0.25	6.60	YES	SANDY SOILS
	Final	1:52 PM		0.80			

Test Data

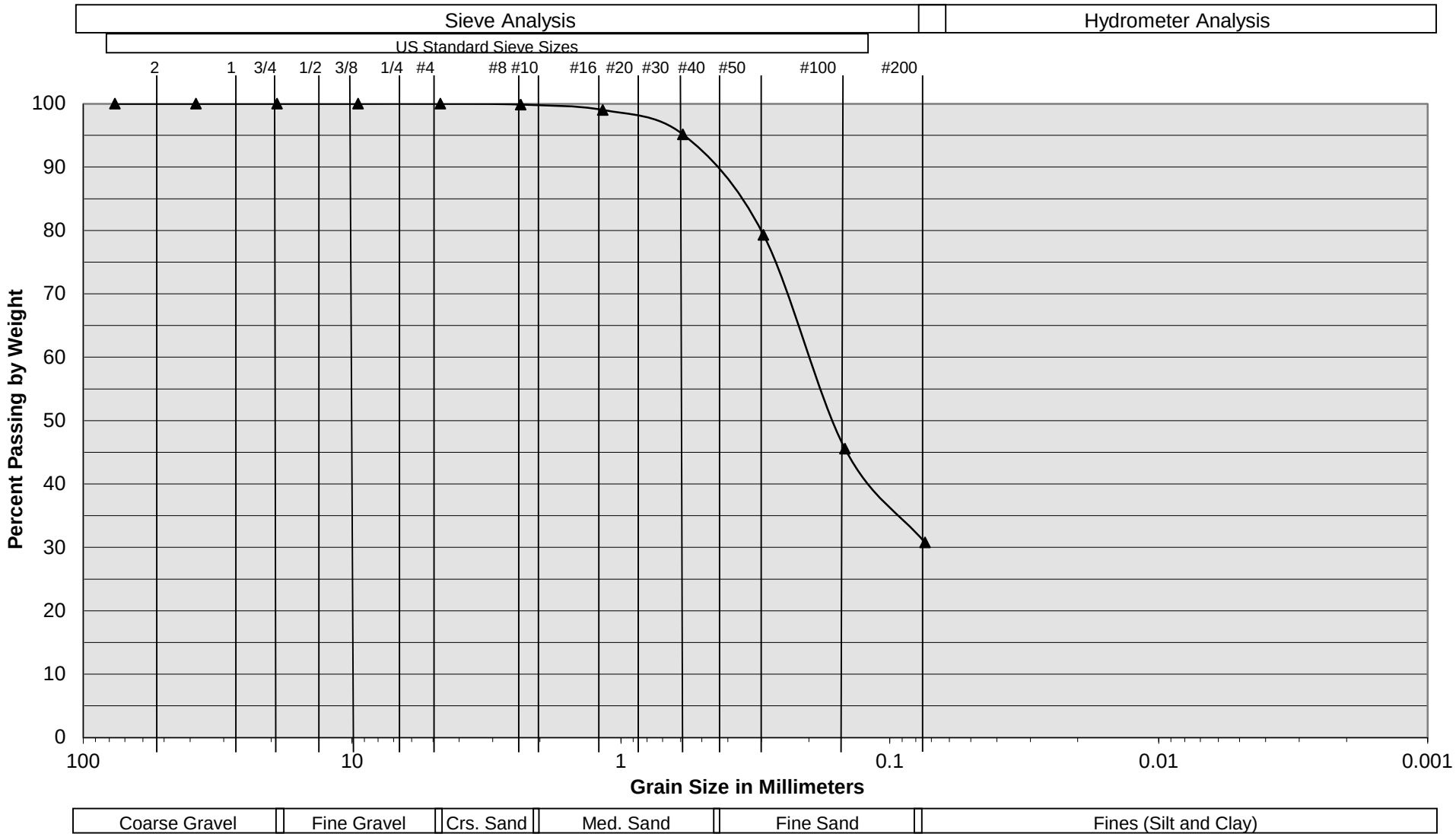
Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	1:54 PM	10.00	0.25	0.32	1.59	2.19
	Final	2:04 PM		0.57			
2	Initial	2:06 PM	10.00	0.25	0.31	1.60	2.11
	Final	2:16 PM		0.56			
3	Initial	2:18 PM	10.00	0.25	0.30	1.60	2.04
	Final	2:28 PM		0.55			
4	Initial	2:30 PM	10.00	0.25	0.28	1.61	1.89
	Final	2:40 PM		0.53			
5	Initial	2:42 PM	10.00	0.25	0.25	1.63	1.67
	Final	2:52 PM		0.50			
6	Initial	2:55 PM	10.00	0.25	0.25	1.63	1.67
	Final	3:05 PM		0.50			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where:
- Q = Infiltration Rate (in inches per hour)
- ΔH = Change in Height (Water Level) over the time interval
- r = Test Hole (Borehole) Radius
- Δt = Time Interval
- H_{avg} = Average Head Height over the time interval

Grain Size Distribution

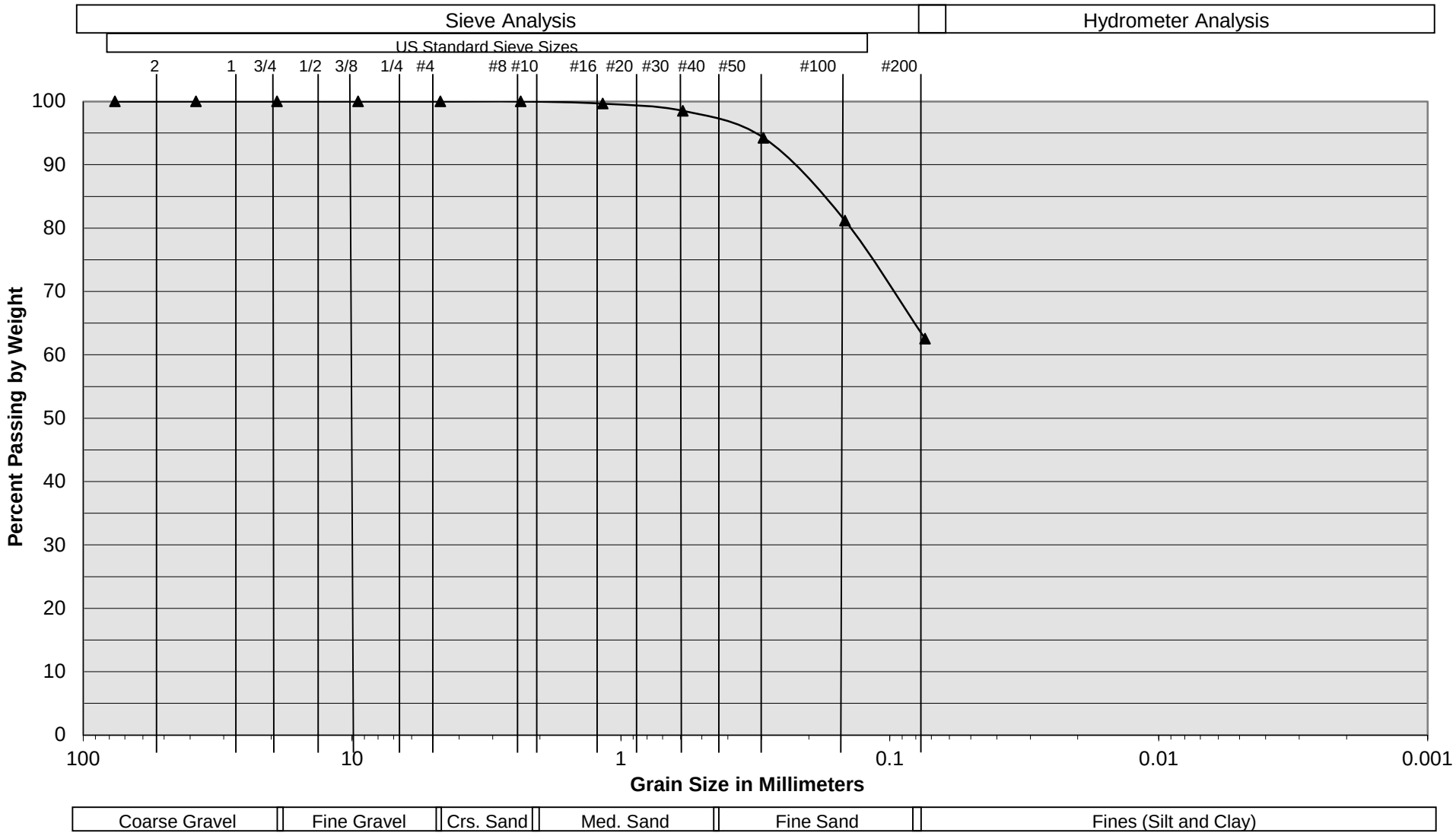


Sample Description	I-1 @ 8 feet
Soil Classification	Light Gray Silty fine to medium Sand

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 1

SoCalGeo
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Grain Size Distribution



Sample Description	I-2 @ 6½ feet
Soil Classification	Light Gray fine Sandy Silt, little medium Sand

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 2

SoCalGeo
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A California Corporation

Grain Size Distribution

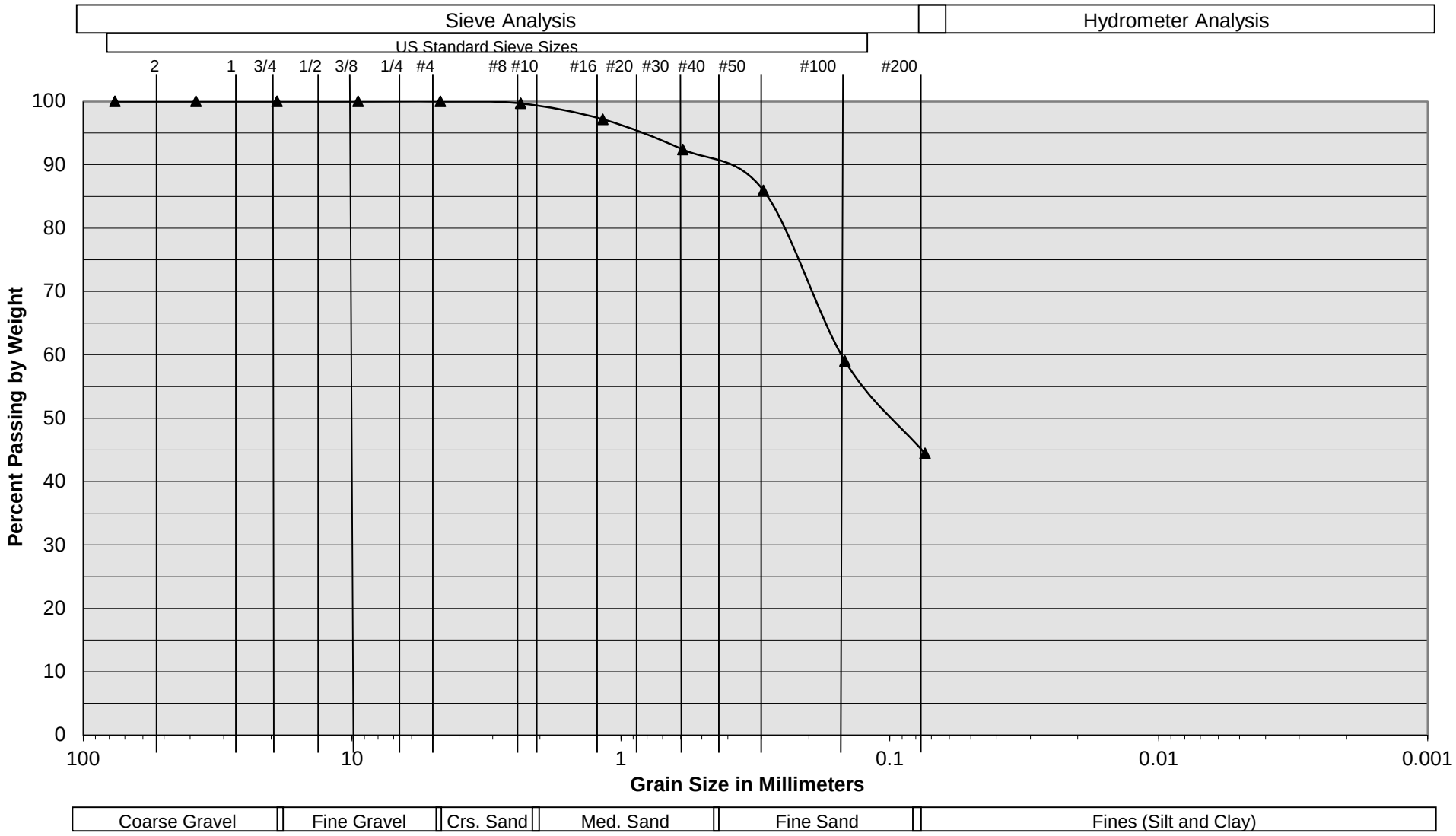


Sample Description	I-3 @ 11 feet
Soil Classification	Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 3

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Grain Size Distribution



Sample Description	I-4 @ 9½ feet
Soil Classification	Gray Brown Silty fine to medium Sand

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 4

SoCalGeo
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Grain Size Distribution

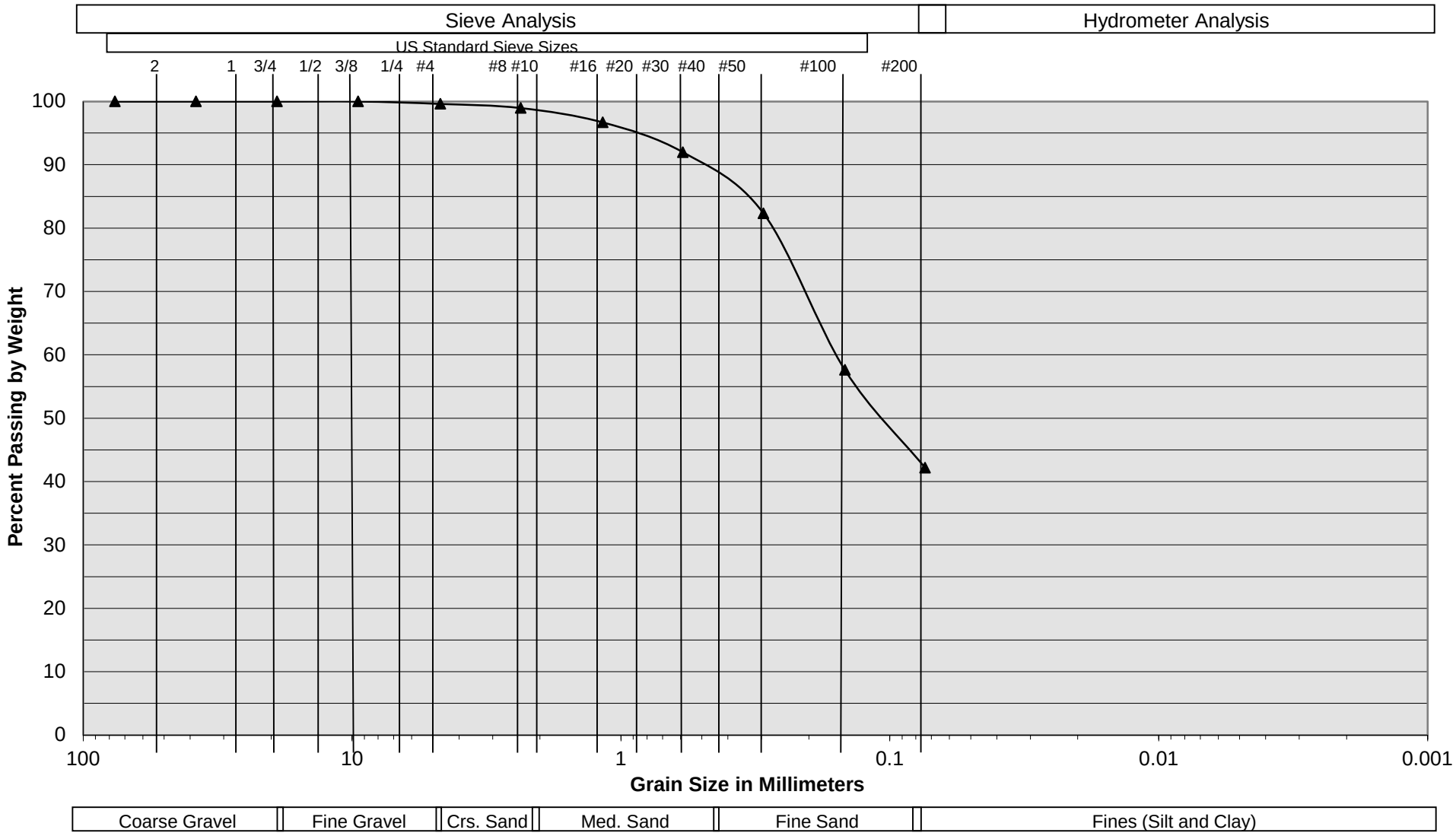


Sample Description	I-5 @ 7 feet
Soil Classification	Gray Brown Silty fine to medium Sand, little coarse Gravel

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 5

SoCalGeo
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Grain Size Distribution

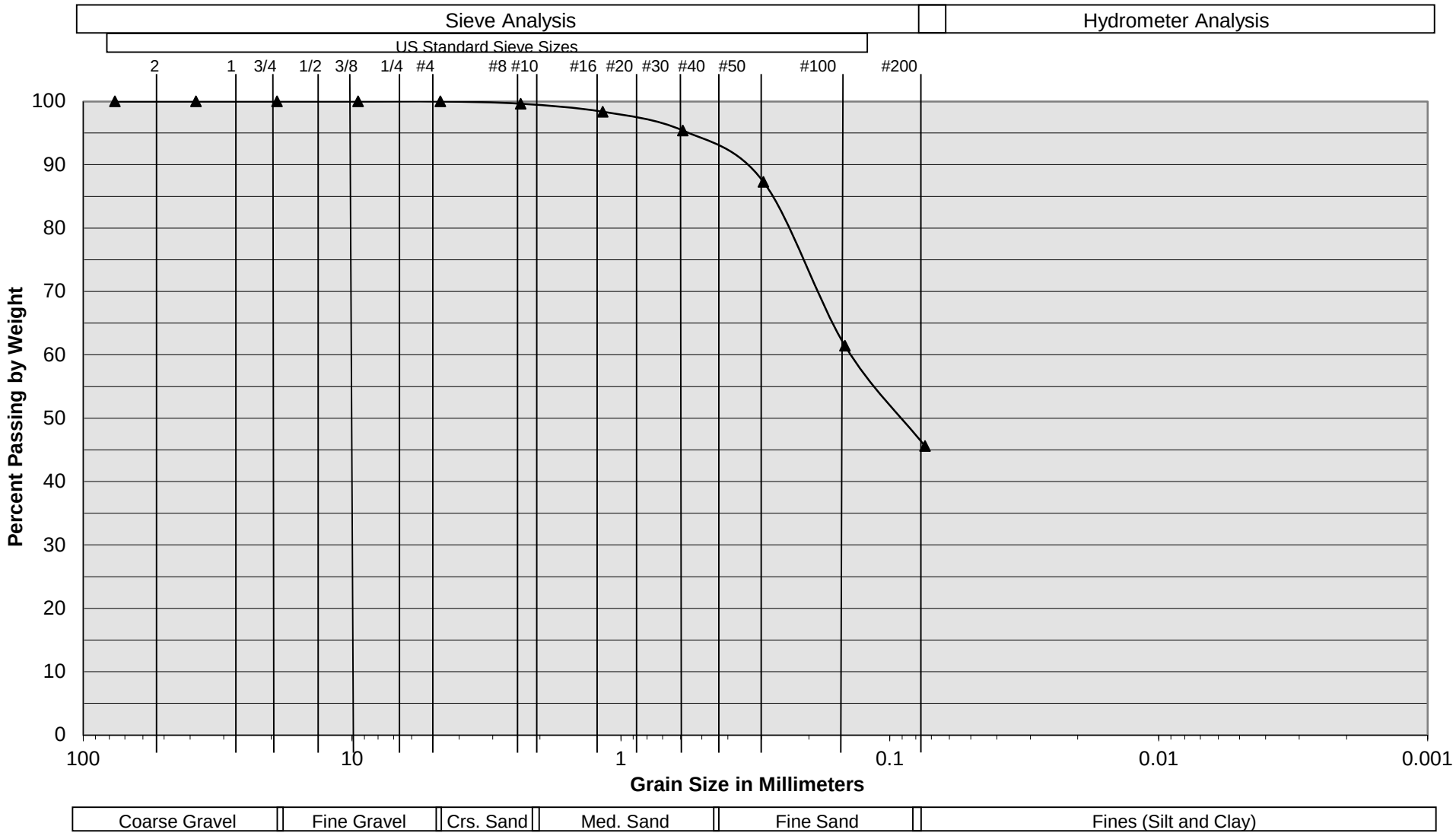


Sample Description	I-6 @ 2 feet
Soil Classification	Gray Brown Silty fine to medium Sand

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 6

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Grain Size Distribution



Sample Description	I-7 @ ½ feet
Soil Classification	Gray Brown Silty fine to medium Sand

Proposed Commercial/Industrial Building
Rialto, CA
Project No. 20G234-3
PLATE C- 7

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Bernardino County Southwestern Part, California

Pepper Avenue Industrial Building



May 31, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	15.8	65.7%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	8.3	34.3%
Totals for Area of Interest		**24.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino County Southwestern Part, California

Gr—Grangeville fine sandy loam, warm MAAT, MLRA 19

Map Unit Setting

National map unit symbol: 2vncy
Elevation: 490 to 1,430 feet
Mean annual precipitation: 11 to 17 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 271 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Grangeville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grangeville

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 12 inches: fine sandy loam
C - 12 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water capacity: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

San emigdio, fine sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains

Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 5 percent
Landform: Alluvial fans, depressions, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Chino

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

TuB—Tujunga loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2sx6y
Elevation: 650 to 3,110 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 325 to 365 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tujunga, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga, Loamy Sand

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 6 inches: loamy sand
C1 - 6 to 18 inches: loamy sand
C2 - 18 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Tujunga, gravelly loamy sand

Percent of map unit: 10 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hanford, sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

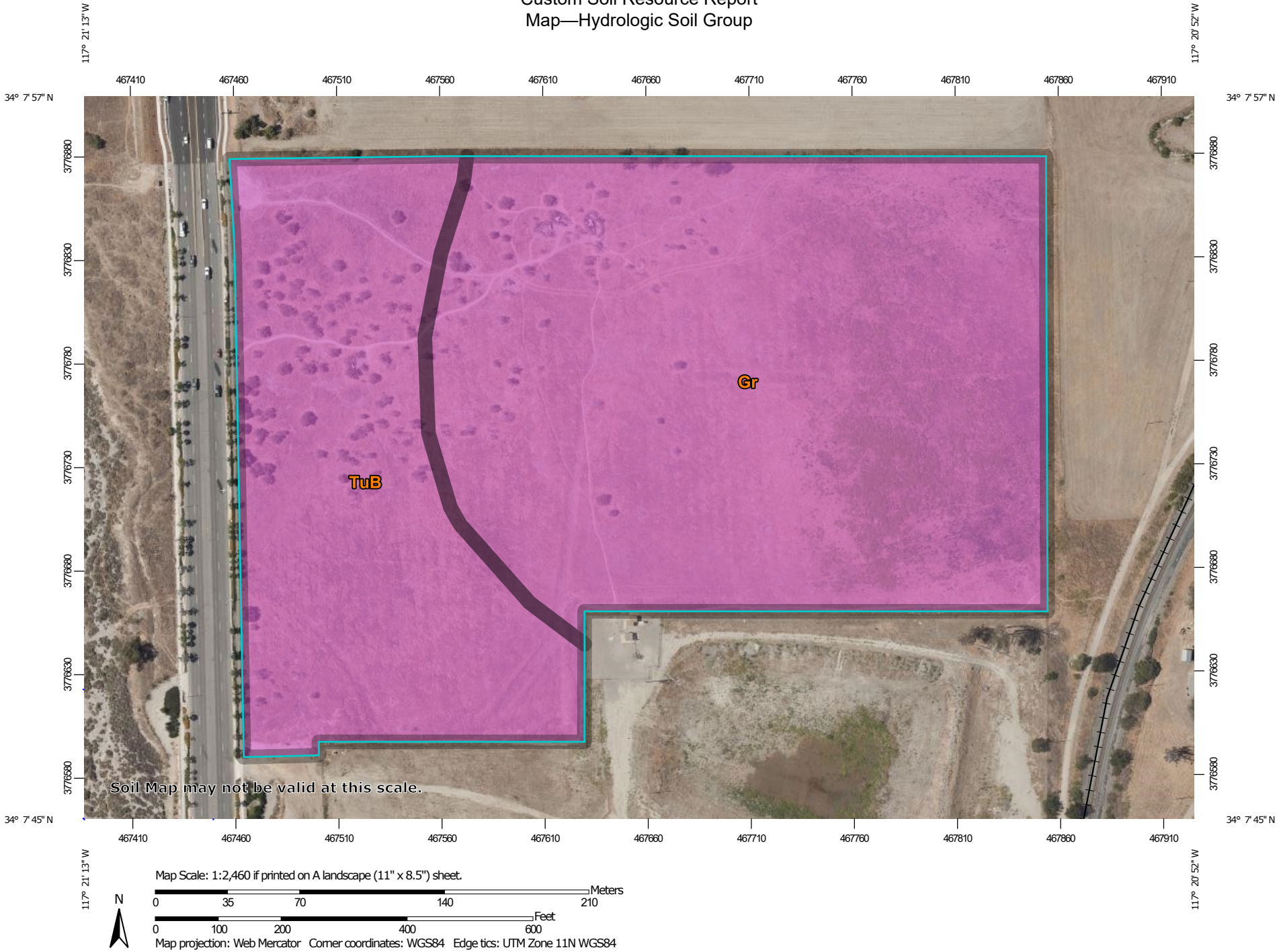
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:2,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	A	15.8	65.7%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	A	8.3	34.3%
Totals for Area of Interest			**24.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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SECTION 6.4.5
BMP EDUCATIONAL MATERIALS/FACT SHEETS

Spill Prevention, Control & Cleanup SC-11



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Spills and leaks, if not properly controlled, can adversely impact the storm drain system and receiving waters. Due to the type of work or the materials involved, many activities that occur either at a municipal facility or as a part of municipal field programs have the potential for accidental spills and leaks. Proper spill response planning and preparation can enable municipal employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment.

Targeted Constituents

Sediment	
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

- An effective spill response and control plan should include:
  - Spill/leak prevention measures;
  - Spill response procedures;
  - Spill cleanup procedures;
  - Reporting; and
  - Training
- A well thought out and implemented plan can prevent pollutants from entering the storm drainage system and can be used as a tool for training personnel to prevent and control future spills as well.

Pollution Prevention

- Develop and implement a Spill Prevention Control and Response Plan. The plan should include:

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- A description of the facility, the address, activities and materials involved
- Identification of key spill response personnel
- Identification of the potential spill areas or operations prone to spills/leaks
- Identification of which areas should be or are bermed to contain spills/leaks
- Facility map identifying the key locations of areas, activities, materials, structural BMPs, etc.
- Material handling procedures
- Spill response procedures including:
    - Assessment of the site and potential impacts
    - Containment of the material
    - Notification of the proper personnel and evacuation procedures
    - Clean up of the site
    - Disposal of the waste material and
    - Proper record keeping

- Product substitution – use less toxic materials (i.e. use water based paints instead of oil based paints)
- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of materials that are brought into the facility or into the field.

Suggested Protocols

Spill/Leak Prevention Measures

- If possible, move material handling indoors, under cover, or away from storm drains or sensitive water bodies.
- Properly label all containers so that the contents are easily identifiable.
- Berm storage areas so that if a spill or leak occurs, the material is contained.
- Cover outside storage areas either with a permanent structure or with a seasonal one such as a tarp so that rain can not come into contact with the materials.
- Check containers (and any containment sumps) often for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating with containers in good condition. Collect all spilled liquids and properly dispose of them.

- Store, contain and transfer liquid materials in such a manner that if the container is ruptured or the contents spilled, they will not discharge, flow or be washed into the storm drainage system, surface waters, or groundwater.

- Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during the filling and unloading of containers. Any collected liquids or soiled absorbent materials should be reused/recycled or properly disposed of.

- For field programs, only transport the minimum amount of material needed for the daily activities and transfer materials between containers at a municipal yard where leaks and spill are easier to control.

- If paved, sweep and clean storage areas monthly, do not use water to hose down the area unless all of the water will be collected and disposed of properly.

- Install a spill control device (such as a tee section) in any catch basins that collect runoff from any storage areas if the materials stored are oil, gas, or other materials that separate from and float on water. This will allow for easier cleanup if a spill occurs.

- If necessary, protect catch basins while conducting field activities so that if a spill occurs, the material will be contained.

Training

- Educate employees about spill prevention, spill response and cleanup on a routine basis.

- Well-trained employees can reduce human errors that lead to accidental releases or spills:

  - The employees should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

  - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan if one is available.

- Training of staff from all municipal departments should focus on recognizing and reporting potential or current spills/leaks and who they should contact.

- Employees responsible for aboveground storage tanks and liquid transfers for large bulk containers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.

Spill Response and Prevention

- Identify key spill response personnel and train employees on who they are.

- Store and maintain appropriate spill cleanup materials in a clearly marked location near storage areas; and train employees to ensure familiarity with the site's spill control plan and/or proper spill cleanup procedures.

- Locate spill cleanup materials, such as absorbents, where they will be readily accessible (e.g. near storage and maintenance areas, on field trucks).

SC-11 Spill Prevention, Control & Cleanup

- Follow the Spill Prevention Control and Countermeasure Plan if one is available.
- If a spill occurs, notify the key spill response personnel immediately. If the material is unknown or hazardous, the local fire department may also need to be contacted.
- If safe to do so, attempt to contain the material and block the nearby storm drains so that the area impacted is minimized. If the material is unknown or hazardous wait for properly trained personnel to contain the materials.
- Perform an assessment of the area where the spill occurred and the downstream area that it could impact. Relay this information to the key spill response and clean up personnel.

Spill Cleanup Procedures

- Small non-hazardous spills
  - Use a rag, damp cloth or absorbent materials for general clean up of liquids
  - Use brooms or shovels for the general clean up of dry materials
  - If water is used, it must be collected and properly disposed of. The wash water can not be allowed to enter the storm drain.
  - Dispose of any waste materials properly
  - Clean or dispose of any equipment used to clean up the spill properly
- Large non-hazardous spills
  - Use absorbent materials for general clean up of liquids
  - Use brooms, shovels or street sweepers for the general clean up of dry materials
  - If water is used, it must be collected and properly disposed of. The wash water can not be allowed to enter the storm drain.
  - Dispose of any waste materials properly
  - Clean or dispose of any equipment used to clean up the spill properly
- For hazardous or very large spills, a private cleanup company or Hazmat team may need to be contacted to assess the situation and conduct the cleanup and disposal of the materials.
- Chemical cleanups of material can be achieved with the use of absorbents, gels, and foams. Remove the adsorbent materials promptly and dispose of according to regulations.
- If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.

Reporting

- Report any spills immediately to the identified key municipal spill response personnel.

- Report spills in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to the Office of Emergency Service (OES)

- Spills that pose an immediate threat to human health or the environment may also need to be reported within 24 hours to the Regional Water Quality Control Board.

- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour)

- After the spill has been contained and cleaned up, a detailed report about the incident should be generated and kept on file (see the section on Reporting below). The incident may also be used in briefing staff about proper procedures

Other Considerations

- State regulations exist for facilities with a storage capacity of 10,000 gallons or more of petroleum to prepare a Spill Prevention Control and Countermeasure Plan (SPCC) Plan (Health & Safety Code Chapter 6.67).

- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.

- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, if permitted to do so, prohibiting any hard connections to the storm drain.

Requirements

Costs

- Will vary depending on the size of the facility and the necessary controls.

- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of wastes, contaminated soil and water is very expensive

Maintenance

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs

Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the response and containment of a spill. A good record keeping system helps the municipality minimize incident recurrence, correctly respond with appropriate containment and cleanup activities, and comply with legal requirements.

A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm drain.

These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Examples

The City of Palo Alto includes spill prevention and control as a major element of its highly effective program for municipal vehicle maintenance shops.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Parking/Storage Area Maintenance SC-43



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

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- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Housekeeping Practices SC-60

Description

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. Related information is provided in BMP fact sheets SC-11 Spill Prevention, Control & Cleanup and SC-34 Waste Handling & Disposal.

Approach

Pollution Prevention

- Purchase only the amount of material that will be needed for foreseeable use. In most cases this will result in cost savings in both purchasing and disposal. See SC-61 Safer Alternative Products for additional information.
- Be aware of new products that may do the same job with less environmental risk and for less or the equivalent cost. Total cost must be used here; this includes purchase price, transportation costs, storage costs, use related costs, clean up costs and disposal costs.

Suggested Protocols

General

- Keep work sites clean and orderly. Remove debris in a timely fashion. Sweep the area.
- Dispose of wash water, sweepings, and sediments, properly.
- Recycle or dispose of fluids properly.
- Establish a daily checklist of office, yard and plant areas to confirm cleanliness and adherence to proper storage and security. Specific employees should be assigned specific inspection responsibilities and given the authority to remedy any problems found.
- Post waste disposal charts in appropriate locations detailing for each waste its hazardous nature (poison, corrosive, flammable), prohibitions on its disposal (dumpster, drain, sewer) and the recommended disposal method (recycle, sewer, burn, storage, landfill).
- Summarize the chosen BMPs applicable to your operation and post them in appropriate conspicuous places.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

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- Require a signed checklist from every user of any hazardous material detailing amount taken, amount used, amount returned and disposal of spent material.
- Do a before audit of your site to establish baseline conditions and regular subsequent audits to note any changes and whether conditions are improving or deteriorating.
- Keep records of water, air and solid waste quantities and quality tests and their disposition.
- Maintain a mass balance of incoming, outgoing and on hand materials so you know when there are unknown losses that need to be tracked down and accounted for.
- Use and reward employee suggestions related to BMPs, hazards, pollution reduction, work place safety, cost reduction, alternative materials and procedures, recycling and disposal.
- Have, and review regularly, a contingency plan for spills, leaks, weather extremes etc. Make sure all employees know about it and what their role is so that it comes into force automatically.

Training

- Train all employees, management, office, yard, manufacturing, field and clerical in BMPs and pollution prevention and make them accountable.
- Train municipal employees who handle potentially harmful materials in good housekeeping practices.
- Train personnel who use pesticides in the proper use of the pesticides. The California Department of Pesticide Regulation license pesticide dealers, certify pesticide applicators and conduct onsite inspections.
- Train employees and contractors in proper techniques for spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and Countermeasure (SPCC) plant up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- There are no major limitations to this best management practice.
- There are no regulatory requirements to this BMP. Existing regulations already require municipalities to properly store, use, and dispose of hazardous materials

Requirements

Costs

- Minimal cost associated with this BMP. Implementation of good housekeeping practices may result in cost savings as these procedures may reduce the need for more costly BMPs.

Maintenance

- Ongoing maintenance required to keep a clean site. Level of effort is a function of site size and type of activities.

Supplemental Information

Further Detail of the BMP

- The California Integrated Waste Management Board's Recycling Hotline, 1-800-553-2962, provides information on household hazardous waste collection programs and facilities.

Examples

There are a number of communities with effective programs. The most pro-active include Santa Clara County and the City of Palo Alto, the City and County of San Francisco, and the Municipality of Metropolitan Seattle (Metro).

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000.
http://www.nalms.org/bclss/bmphome.html#bmp

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities, Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, Revised by California Coastal Commission, February 2002.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Mateo STOPPP - (http://stoppp.tripod.com/bmp.html)

Landscape Maintenance SC-73



Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Drainage System Maintenance SC-74



Photo Credit: Geoff Brosseau

Objectives

- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC-75 Waste Handling and Disposal).
- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.

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- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.
- Except for small communities with relatively few catch basins that may be cleaned manually, most municipalities will require mechanical cleaners such as eductors, vacuums, or bucket loaders.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect flushed effluent and pump to the sanitary sewer for treatment.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge from cleaning a storm drain pump station or other facility to reach the storm drain system.
- Conduct quarterly routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.
- Sample collected sediments to determine if landfill disposal is possible, or illegal discharges in the watershed are occurring.

Open Channel

- Consider modification of storm channel characteristics to improve channel hydraulics, to increase pollutant removals, and to enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies

(SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections
  - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
  - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

- The State Department of Fish and Game has a hotline for reporting violations called Cal TIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).
- The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Only properly trained individuals are allowed to handle hazardous materials/wastes.
- Train municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.
- Train municipal employees and educate businesses, contractors, and the general public in proper and consistent methods for disposal.
- Train municipal staff regarding non-stormwater discharges (See SC-10 Non-Stormwater Discharges).

Spill Response and Prevention

- Refer to SC-11, Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Private property access rights may be needed to track illegal discharges up gradient.

- Requirements of municipal ordinance authority for suspected source verification testing for illicit connections necessary for guaranteed rights of entry.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget. A careful study of cleaning effectiveness should be undertaken before increased cleaning is implemented. Catch basin cleaning costs are less expensive if vacuum street sweepers are available; cleaning catch basins manually can cost approximately twice as much as cleaning the basins with a vacuum attached to a sweeper.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary. Encouraging reporting of illicit discharges by employees can offset costs by saving expense on inspectors and directing resources more efficiently. Some programs have used funds available from "environmental fees" or special assessment districts to fund their illicit connection elimination programs.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.

- Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.

- Arrangements must be made for proper disposal of collected wastes.

- Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to

cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce the impacts of stormwater pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.

Flow Management

Flow management has been one of the principal motivations for designing urban stream corridors in the past. Such needs may or may not be compatible with the stormwater quality goals in the stream corridor.

Downstream flood peaks can be suppressed by reducing through flow velocity. This can be accomplished by reducing gradient with grade control structures or increasing roughness with boulders, dense vegetation, or complex banks forms. Reducing velocity correspondingly increases flood height, so all such measures have a natural association with floodplain open space. Flood elevations laterally adjacent to the stream can be lowered by increasing through flow velocity.

However, increasing velocity increases flooding downstream and inherently conflicts with channel stability and human safety. Where topography permits, another way to lower flood elevation is to lower the level of the floodway with drop structures into a large but subtly excavated bowl where flood flows we allowed to spread out.

Stream Corridor Planning

Urban streams receive and convey stormwater flows from developed or developing watersheds. Planning of stream corridors thus interacts with urban stormwater management programs. If local programs are intended to control or protect downstream environments by managing flows delivered to the channels, then it is logical that such programs should be supplemented by management of the materials, forms, and uses of the downstream riparian corridor. Any proposal for steam alteration or management should be investigated for its potential flow and stability effects on upstream, downstream, and laterally adjacent areas. The timing and rate of flow from various tributaries can combine in complex ways to alter flood hazards. Each section of channel is unique, influenced by its own distribution of roughness elements, management activities, and stream responses.

Flexibility to adapt to stream features and behaviors as they evolve must be included in stream reclamation planning. The amenity and ecology of streams may be enhanced through the landscape design options of 1) corridor reservation, 2) bank treatment, 3) geomorphic restoration, and 4) grade control.

Corridor reservation - Reserving stream corridors and valleys to accommodate natural stream meandering, aggradation, degradation, and over bank flows allows streams to find their own form and generate less ongoing erosion. In California, open stream corridors in recent urban developments have produced recreational open space, irrigation of streamside plantings, and the aesthetic amenity of flowing water.

Bank treatment - The use of armoring, vegetative cover, and flow deflection may be used to influence a channel's form, stability, and biotic habitat. To prevent bank erosion, armoring can be done with rigid construction materials, such as concrete, masonry, wood planks and logs, riprap, and gabions. Concrete linings have been criticized because of their lack of provision of biotic habitat. In contrast, riprap and gabions make relatively porous and flexible linings. Boulders, placed in the bed reduce velocity and erosive power.

Riparian vegetation can stabilize the banks of streams that are at or near a condition of equilibrium. Binding networks of roots increase bank shear strength. During flood flows, resilient vegetation is forced into erosion-inhibiting mats. The roughness of vegetation leads to lower velocity, further reducing erosive effects. Structural flow deflection can protect banks from erosion or alter fish habitat. By concentrating flow, a deflector causes a pool to be scoured in the bed.

Geomorphic restoration – Restoration refers to alteration of disturbed streams so their form and behavior emulate those of undisturbed streams. Natural meanders are retained, with grading to gentle slopes on the inside of curves to allow point bars and riffle-pool sequences to develop. Trees are retained to provide scenic quality, biotic productivity, and roots for bank stabilization, supplemented by plantings where necessary.

A restorative approach can be successful where the stream is already approaching equilibrium. However, if upstream urbanization continues new flow regimes will be generated that could disrupt the equilibrium of the treated system.

Grade Control - A grade control structure is a level shelf of a permanent material, such as stone, masonry, or concrete, over which stream water flows. A grade control structure is called a sill, weir, or drop structure, depending on the relation of its invert elevation to upstream and downstream channels.

A sill is installed at the preexisting channel bed elevation to prevent upstream migration of nick points. It establishes a firm base level below which the upstream channel can not erode.

A weir or check dam is installed with invert above the preexisting bed elevation. A weir raises the local base level of the stream and causes aggradation upstream. The gradient, velocity, and erosive potential of the stream channel are reduced. A drop structure lowers the downstream invert below its preexisting elevation, reducing downstream gradient and velocity. Weirs and drop structure control erosion by dissipating energy and reducing slope velocity.

When carefully applied, grade control structures can be highly versatile in establishing human and environmental benefits in stabilized channels. To be successful, application of grade control structures should be guided by analysis of the stream system both upstream and downstream from the area to he reclaimed.

Examples

The California Department of Water Resources began the Urban Stream Restoration Program in 1985. The program provides grant funds to municipalities and community groups to implement stream restoration projects. The projects reduce damages from streambank aid watershed instability arid floods while restoring streams' aesthetic, recreational, and fish and wildlife values.

In Buena Vista Park, upper floodway slopes are gentle and grassed to achieve continuity of usable park land across the channel of small boulders at the base of the slopes.

The San Diego River is a large, vegetative lined channel, which was planted in a variety of species to support riparian wildlife while stabilizing the steep banks of the floodway.

References and Resources

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San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) Municipal Activities Model Program Guidance. 2001. Project Clean Water. November.

United States Environmental Protection Agency (USEPA). 1999. Stormwater Management Fact Sheet Non-stormwater Discharges to Storm Sewers. EPA 832-F-99-022. Office of Water, Washington, D.C. September.

United States Environmental Protection Agency (USEPA). 1999. Stormwater O&M Fact Sheet Catch Basin Cleaning. EPA 832-F-99-011. Office of Water, Washington, D.C. September.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Illegal Dumping Control. On line: http://www.epa.gov/npdes/menuofbmps/poll_7.htm

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line: http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “ redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Maintenance Bays & Docks SD-31



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Several measures can be taken to prevent operations at maintenance bays and loading docks from contributing a variety of toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to the stormwater conveyance system.

Approach

In designs for maintenance bays and loading docks, containment is encouraged. Preventative measures include overflow containment structures and dead-end sumps. However, in the case of loading docks from grocery stores and warehouse/distribution centers, engineered infiltration systems may be considered.

Suitable Applications

Appropriate applications include commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for vehicle maintenance and repair are governed by Building and Fire Codes, and by current local agency ordinances, and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code requirements.

Designing New Installations

Designs of maintenance bays should consider the following:

- Repair/maintenance bays and vehicle parts with fluids should be indoors; or designed to preclude urban run-on and runoff.
- Repair/maintenance floor areas should be paved with Portland cement concrete (or equivalent smooth impervious surface).

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- Repair/maintenance bays should be designed to capture all wash water leaks and spills. Provide impermeable berms, drop inlets, trench catch basins, or overflow containment structures around repair bays to prevent spilled materials and wash-down waters form entering the storm drain system. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.
- Other features may be comparable and equally effective.

The following designs of loading/unloading dock areas should be considered:

- Loading dock areas should be covered, or drainage should be designed to preclude urban run-on and runoff.
- Direct connections into storm drains from depressed loading docks (truck wells) are prohibited.
- Below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items should drain through water quality inlets, or to an engineered infiltration system, or an equally effective alternative. Pre-treatment may also be required.
- Other features may be comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Infiltration Basin TC-11



Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

☑	Sediment	■
☑	Nutrients	■
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

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significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft^3 for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

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Schroeder, R.A., 1995, *Potential For Chemical Transport Beneath a Storm-Runoff Recharge (Retention) Basin for an Industrial Catchment in Fresno, CA*, USGS Water-Resource Investigations Report 93-4140.

Southeastern Wisconsin Regional Planning Commission (SWRPC). 1991. *Costs of Urban Nonpoint Source Water Pollution Control Measures*. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI.

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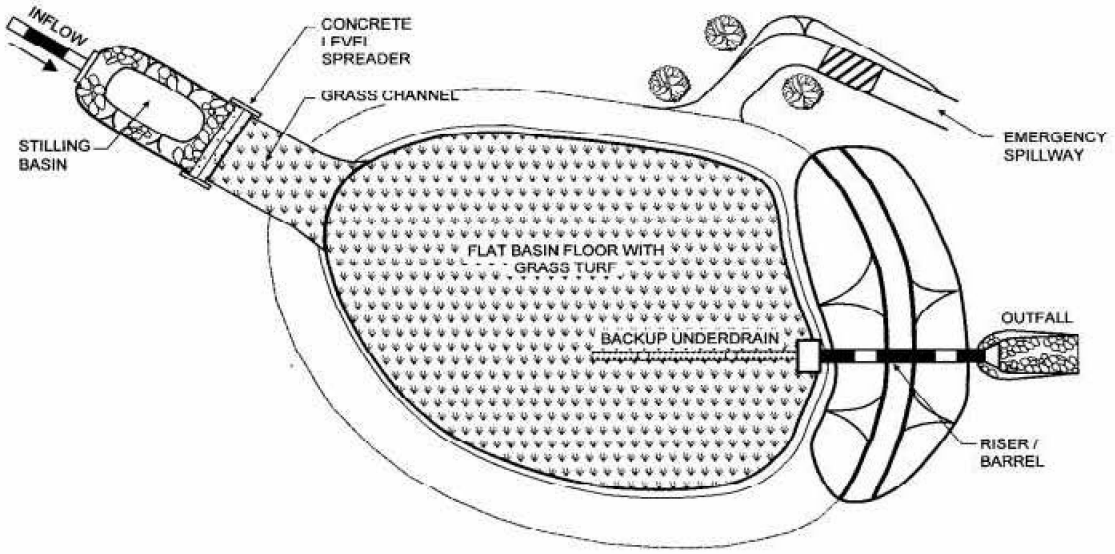
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Information Resources

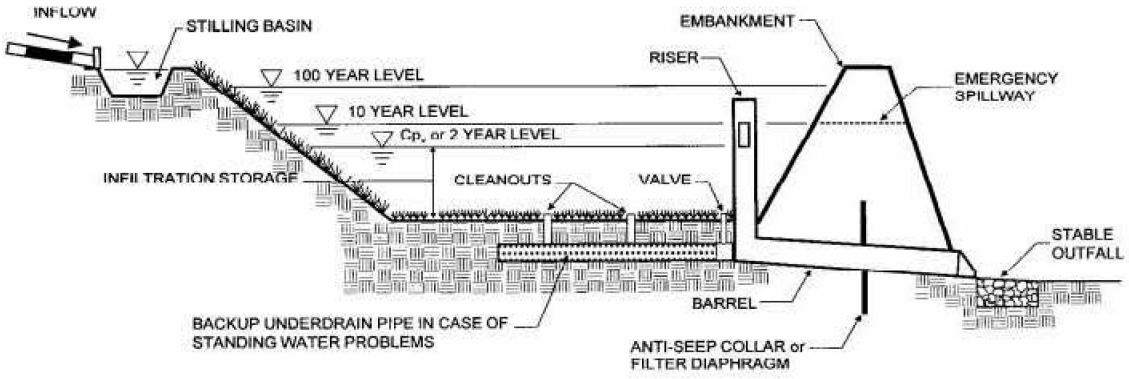
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PLAN VIEW



PROFILE

Drain Inserts MP-52

Description

Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are one box; that is, the setting area and filtration through media occur in the same box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

California Experience

The number of installations is unknown but likely exceeds a thousand. Some users have reported that these systems require considerable maintenance to prevent plugging and bypass.

Advantages

- Does not require additional space as inserts as the drain inlets are already a component of the standard drainage systems.
- Easy access for inspection and maintenance.
- As there is no standing water, there is little concern for mosquito breeding.
- A relatively inexpensive retrofit option.

Limitations

Performance is likely significantly less than treatment systems that are located at the end of the drainage system such as ponds and vaults. Usually not suitable for large areas or areas with trash or leaves than can plug the insert.

Design and Sizing Guidelines

Refer to manufacturer's guidelines. Drain inserts come any many configurations but can be placed into three general groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are

Design Considerations

- Use with other BMPs
- Fit and Seal Capacity within Inlet

Targeted Constituents

- ☑ Sediment
- ☑ Nutrients
- ☑ Trash
- ☑ Metals
- Bacteria
- ☑ Oil and Grease
- ☑ Organics

Removal Effectiveness

See New Development and Redevelopment Handbook-Section 5.

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one box; that is, the setting area and filtration through media occurs in the same box. One manufacturer has a double-box. Stormwater enters the first box where setting occurs. The stormwater flows into the second box where the filter media is located. Some products consist of one or more trays or mesh grates. The trays can hold different types of media. Filtration media vary with the manufacturer: types include polypropylene, porous polymer, treated cellulose, and activated carbon.

Construction/Inspection Considerations

Be certain that installation is done in a manner that makes certain that the stormwater enters the unit and does not leak around the perimeter. Leakage between the frame of the insert and the frame of the drain inlet can easily occur with vertical (drop) inlets.

Performance

Few products have performance data collected under field conditions.

Siting Criteria

It is recommended that inserts be used only for retrofit situations or as pretreatment where other treatment BMPs presented in this section area used.

Additional Design Guidelines

Follow guidelines provided by individual manufacturers.

Maintenance

Likely require frequent maintenance, on the order of several times per year.

Cost

- The initial cost of individual inserts ranges from less than $100 to about $2,000. The cost of using multiple units in curb inlet drains varies with the size of the inlet.
- The low cost of inserts may tend to favor the use of these systems over other, more effective treatment BMPs. However, the low cost of each unit may be offset by the number of units that are required, more frequent maintenance, and the shorter structural life (and therefore replacement).

References and Sources of Additional Information

Hrachovec, R., and G. Minton, 2001, Field testing of a sock-type catch basin insert, Planet CPR, Seattle, Washington

Interagency Catch Basin Insert Committee, Evaluation of Commercially-Available Catch Basin Inserts for the Treatment of Stormwater Runoff from Developed Sites, 1995

Larry Walker Associates, June 1998, NDMP Inlet/In-Line Control Measure Study Report

Manufacturers literature

Santa Monica (City), Santa Monica Bay Municipal Stormwater/Urban Runoff Project - Evaluation of Potential Catch basin Retrofits, Woodward Clyde, September 24, 1998

Woodward Clyde, June 11, 1996, Parking Lot Monitoring Report, Santa Clara Valley Nonpoint Source Pollution Control Program.

Round Curb Inlet Filter (R-GISB)

PROVEN STORMWATER TREATMENT TECHNOLOGY

Bio Clean
A Forterra Company

Overview

The Bio Clean Round Curb Inlet Filter (R-GISB) is a favorite amongst cities and municipalities nationwide. Many agencies have chosen this system as their standard due to its quick cleaning time and large storage capacity.

Its patented 'Shelf System' allows cleaning to be done in less than 15 minutes, and its larger storage capacity of 3.85 cubic feet allows for maximized cleaning intervals and minimized attention required by maintenance crews.

The modularized design of the 'Shelf System' for curb inlets makes it adaptable to any size or type catch basin.

Its multi-stage filtration screens allow this device to meet "full trash capture" requirements by removing 100% of trash & debris 5 mm and greater. Made of marine grade fiberglass and high grade stainless steel these filters come in standard and custom designs.

This filtration system addresses a wide array of pollutants including trash and debris, sediments, TSS, nutrients, metals, and hydrocarbons.

Includes the Patented 'Shelf System'

Higher Storage Capacity & 15 Minute Service Time



Advantages

- 8 Year Warranty
- Works in Any Size Catch Basin
- No Nets or Geofabrics
- 15+ Year User Life
- Meets **LEED** Requirements
- Patented Shelf System
- Fiberglass Construction

Performance

- 74%-86% Removal of TSS
- 54% Removal of Oils & Grease
- 57%-71% Removal of Phosphorus
- 56%-60% Removal of Nitrogen

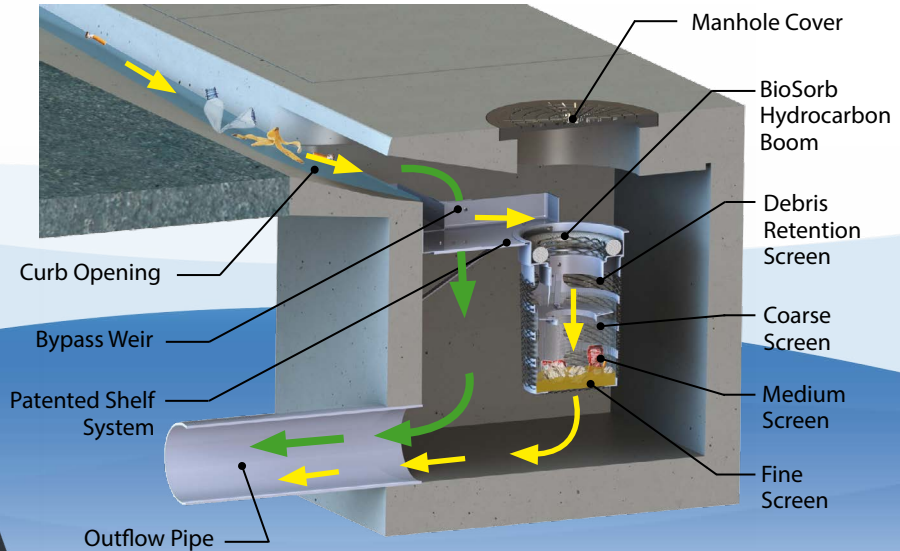
Specifications

Model #	Treatment Flow (CFS)	Bypass Flow (CFS)
BC-RGISB-22-24	2.4	Unlimited

Operation

Bypass Flow Path

Treatment Flow Path



www.BioCleanEnvironmental.com

Round Curb Inlet Filter (R-GISB)

PROVEN STORMWATER TREATMENT TECHNOLOGY

Media Filter

The Bio Clean Round Curb Inlet Media Filter (RGISB-MF) is an advanced level filtration device designed with a multi-layered media filter for increased removal efficiencies.

Performance

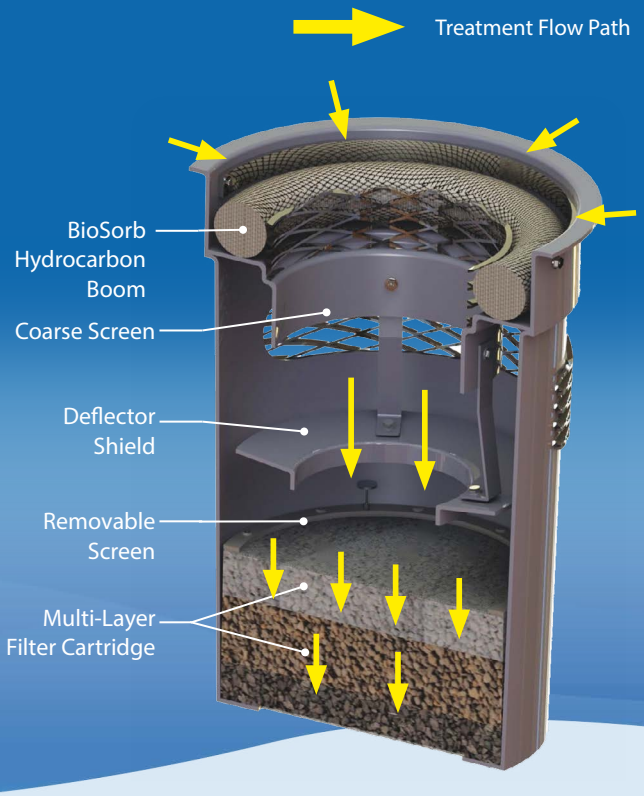
- 85% Removal of Fine TSS
- 69% Removal of Dissolved Phosphorus
- 95% Removal of Copper
- 87% Removal of Lead
- 95% Removal of Zinc
- 90% to 95% Removal of Oils & Grease
- 68% Removal of Fecal Coliform (bacteria)

Specifications

Model #	Media Treatment Flow (CFS)	Screen Treatment Flow (CFS)	Bypass Flow (CFS)
BC-RGISB-MF-22-24	0.12	2	Unlimited

Higher Flow Rate Models Available

Operation



Installation & Maintenance



- Cleaned Without Catch Basin Entry ✓
- Cleaned Easily With Vac Truck ✓
- 15 Minute Service Time ✓

Application

- Parking Lots
- Roadways



Easily Removed without Entry into Basin



Always Positioned Under Manhole Opening

Approvals

City and County of Honolulu

County of San Diego

County of Orange

Meets Full Capture Requirements

398 Via El Centro
Oceanside, CA 92058
p 760.433.7640 f 760.433.3176
www.BioCleanEnvironmental.com

Bio Clean
A Forterra Company

SECTION 6.4.6
NOAA PRECIPITATION ESTIMATES AND STORMWATER REPORT

NOAA Atlas 14, Volume 6, Version 2
Location name: Rialto, California, USA*
Latitude: 34.1311°, Longitude: -117.3509°
Elevation: 1275.95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.129 (0.107-0.156)	0.169 (0.141-0.206)	0.224 (0.186-0.273)	0.269 (0.221-0.331)	0.332 (0.264-0.423)	0.382 (0.297-0.497)	0.435 (0.329-0.579)	0.490 (0.361-0.672)	0.567 (0.400-0.812)	0.630 (0.429-0.934)
10-min	0.184 (0.153-0.224)	0.243 (0.202-0.295)	0.321 (0.266-0.391)	0.386 (0.317-0.474)	0.477 (0.378-0.606)	0.548 (0.426-0.713)	0.623 (0.472-0.830)	0.702 (0.517-0.963)	0.813 (0.574-1.16)	0.903 (0.615-1.34)
15-min	0.223 (0.186-0.271)	0.294 (0.244-0.357)	0.388 (0.322-0.473)	0.467 (0.384-0.574)	0.576 (0.458-0.733)	0.663 (0.515-0.862)	0.753 (0.571-1.00)	0.849 (0.625-1.17)	0.984 (0.694-1.41)	1.09 (0.744-1.62)
30-min	0.330 (0.275-0.401)	0.435 (0.361-0.529)	0.575 (0.476-0.701)	0.691 (0.568-0.850)	0.854 (0.678-1.09)	0.982 (0.763-1.28)	1.12 (0.846-1.49)	1.26 (0.926-1.73)	1.46 (1.03-2.09)	1.62 (1.10-2.40)
60-min	0.484 (0.403-0.588)	0.637 (0.530-0.775)	0.842 (0.698-1.03)	1.01 (0.832-1.25)	1.25 (0.993-1.59)	1.44 (1.12-1.87)	1.64 (1.24-2.18)	1.84 (1.36-2.53)	2.13 (1.51-3.06)	2.37 (1.61-3.51)
2-hr	0.710 (0.590-0.862)	0.917 (0.762-1.11)	1.19 (0.987-1.45)	1.42 (1.17-1.74)	1.73 (1.37-2.20)	1.97 (1.53-2.57)	2.23 (1.69-2.97)	2.49 (1.83-3.41)	2.85 (2.01-4.08)	3.14 (2.14-4.66)
3-hr	0.884 (0.735-1.07)	1.13 (0.942-1.38)	1.46 (1.21-1.78)	1.73 (1.42-2.13)	2.11 (1.67-2.68)	2.39 (1.86-3.11)	2.69 (2.04-3.59)	3.00 (2.21-4.11)	3.42 (2.42-4.90)	3.76 (2.56-5.57)
6-hr	1.26 (1.05-1.54)	1.61 (1.34-1.96)	2.07 (1.72-2.52)	2.44 (2.01-3.00)	2.95 (2.34-3.75)	3.34 (2.60-4.34)	3.74 (2.83-4.98)	4.15 (3.06-5.69)	4.71 (3.32-6.74)	5.14 (3.50-7.63)
12-hr	1.69 (1.41-2.05)	2.17 (1.80-2.63)	2.79 (2.31-3.40)	3.29 (2.70-4.04)	3.96 (3.14-5.04)	4.47 (3.48-5.81)	4.99 (3.78-6.65)	5.52 (4.07-7.57)	6.23 (4.40-8.92)	6.79 (4.62-10.1)
24-hr	2.26 (2.01-2.61)	2.94 (2.60-3.39)	3.81 (3.36-4.40)	4.50 (3.94-5.25)	5.44 (4.61-6.55)	6.15 (5.10-7.56)	6.86 (5.56-8.64)	7.58 (5.98-9.82)	8.55 (6.47-11.5)	9.30 (6.80-13.0)
2-day	2.77 (2.45-3.19)	3.65 (3.23-4.22)	4.81 (4.24-5.56)	5.75 (5.03-6.70)	7.02 (5.94-8.46)	7.99 (6.63-9.83)	8.97 (7.27-11.3)	9.99 (7.87-12.9)	11.4 (8.59-15.3)	12.4 (9.08-17.3)
3-day	2.94 (2.61-3.39)	3.95 (3.50-4.56)	5.29 (4.66-6.12)	6.39 (5.59-7.45)	7.89 (6.68-9.51)	9.06 (7.52-11.1)	10.3 (8.31-12.9)	11.5 (9.07-14.9)	13.2 (10.0-17.8)	14.6 (10.7-20.3)
4-day	3.14 (2.78-3.61)	4.26 (3.76-4.91)	5.75 (5.07-6.65)	6.98 (6.11-8.14)	8.69 (7.36-10.5)	10.0 (8.32-12.3)	11.4 (9.25-14.4)	12.9 (10.1-16.7)	14.9 (11.3-20.1)	16.5 (12.0-23.0)
7-day	3.55 (3.14-4.09)	4.87 (4.30-5.61)	6.63 (5.85-7.67)	8.10 (7.09-9.44)	10.1 (8.59-12.2)	11.8 (9.76-14.5)	13.4 (10.9-16.9)	15.2 (12.0-19.7)	17.7 (13.4-23.8)	19.6 (14.3-27.4)
10-day	3.86 (3.42-4.45)	5.33 (4.71-6.14)	7.30 (6.44-8.44)	8.95 (7.83-10.4)	11.2 (9.53-13.6)	13.1 (10.8-16.1)	15.0 (12.1-18.9)	17.0 (13.4-22.0)	19.8 (15.0-26.7)	22.0 (16.1-30.8)
20-day	4.71 (4.18-5.43)	6.58 (5.82-7.59)	9.10 (8.03-10.5)	11.2 (9.82-13.1)	14.2 (12.0-17.1)	16.6 (13.8-20.4)	19.1 (15.5-24.0)	21.7 (17.1-28.2)	25.5 (19.3-34.4)	28.5 (20.8-39.8)
30-day	5.56 (4.92-6.41)	7.77 (6.87-8.97)	10.8 (9.51-12.5)	13.3 (11.7-15.5)	16.9 (14.3-20.4)	19.8 (16.4-24.3)	22.8 (18.5-28.7)	26.0 (20.5-33.7)	30.6 (23.1-41.3)	34.3 (25.1-47.8)
45-day	6.66 (5.90-7.67)	9.27 (8.20-10.7)	12.8 (11.3-14.8)	15.9 (13.9-18.5)	20.1 (17.0-24.2)	23.6 (19.5-29.0)	27.2 (22.0-34.2)	31.1 (24.5-40.2)	36.5 (27.7-49.3)	41.0 (30.0-57.2)
60-day	7.78 (6.89-8.96)	10.7 (9.51-12.4)	14.8 (13.1-17.1)	18.2 (16.0-21.3)	23.1 (19.6-27.8)	27.0 (22.4-33.2)	31.2 (25.2-39.3)	35.6 (28.1-46.1)	41.9 (31.7-56.5)	47.1 (34.4-65.7)

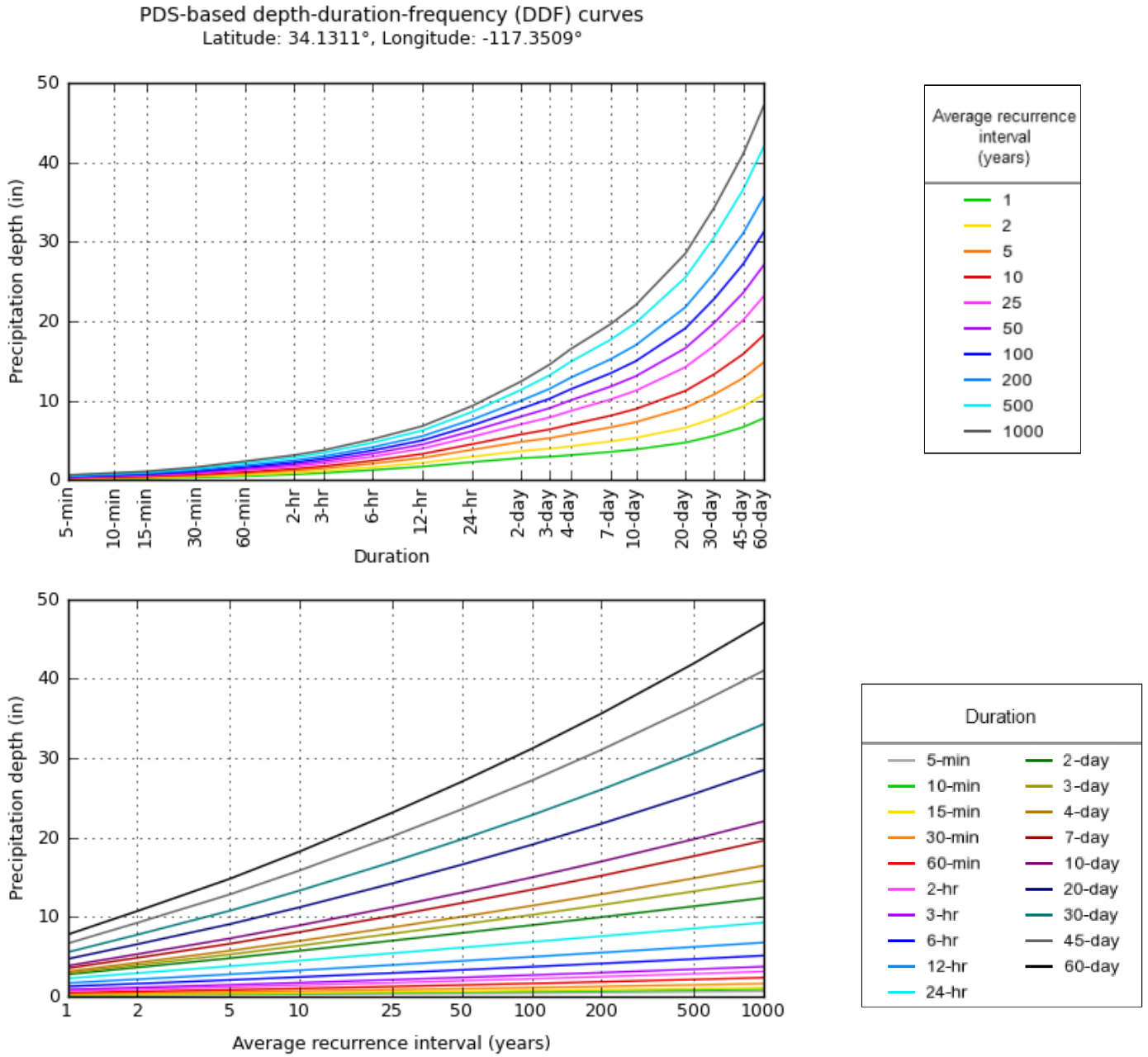
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



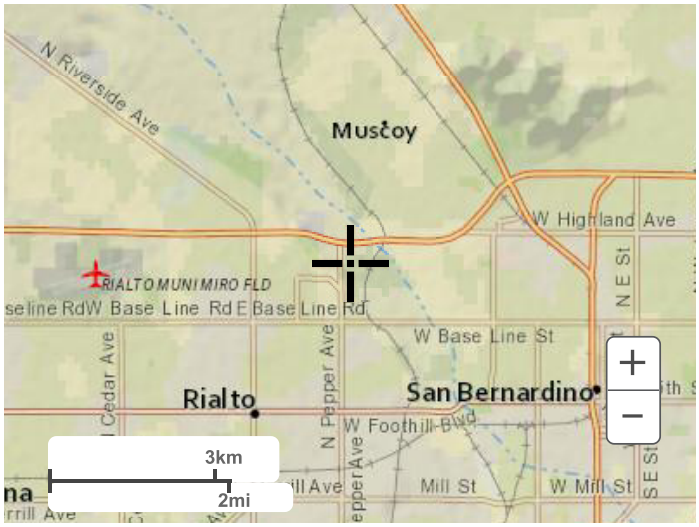
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Mon May 31 18:18:56 2021

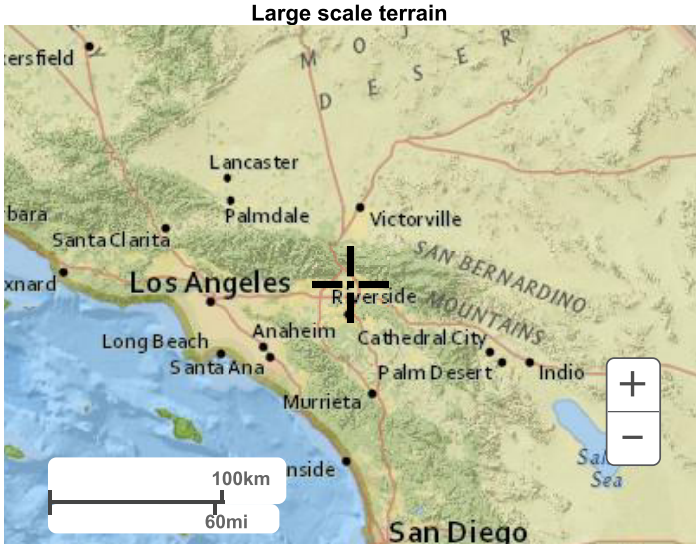
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Maps & aerials

Small scale terrain



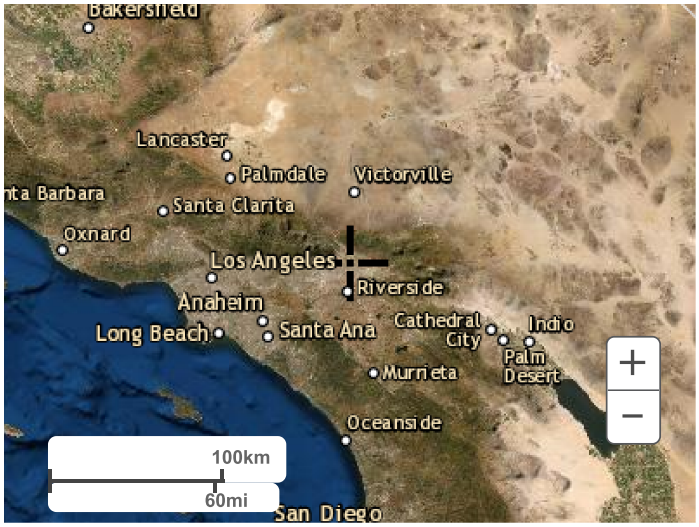
Large scale terrain



Large scale map



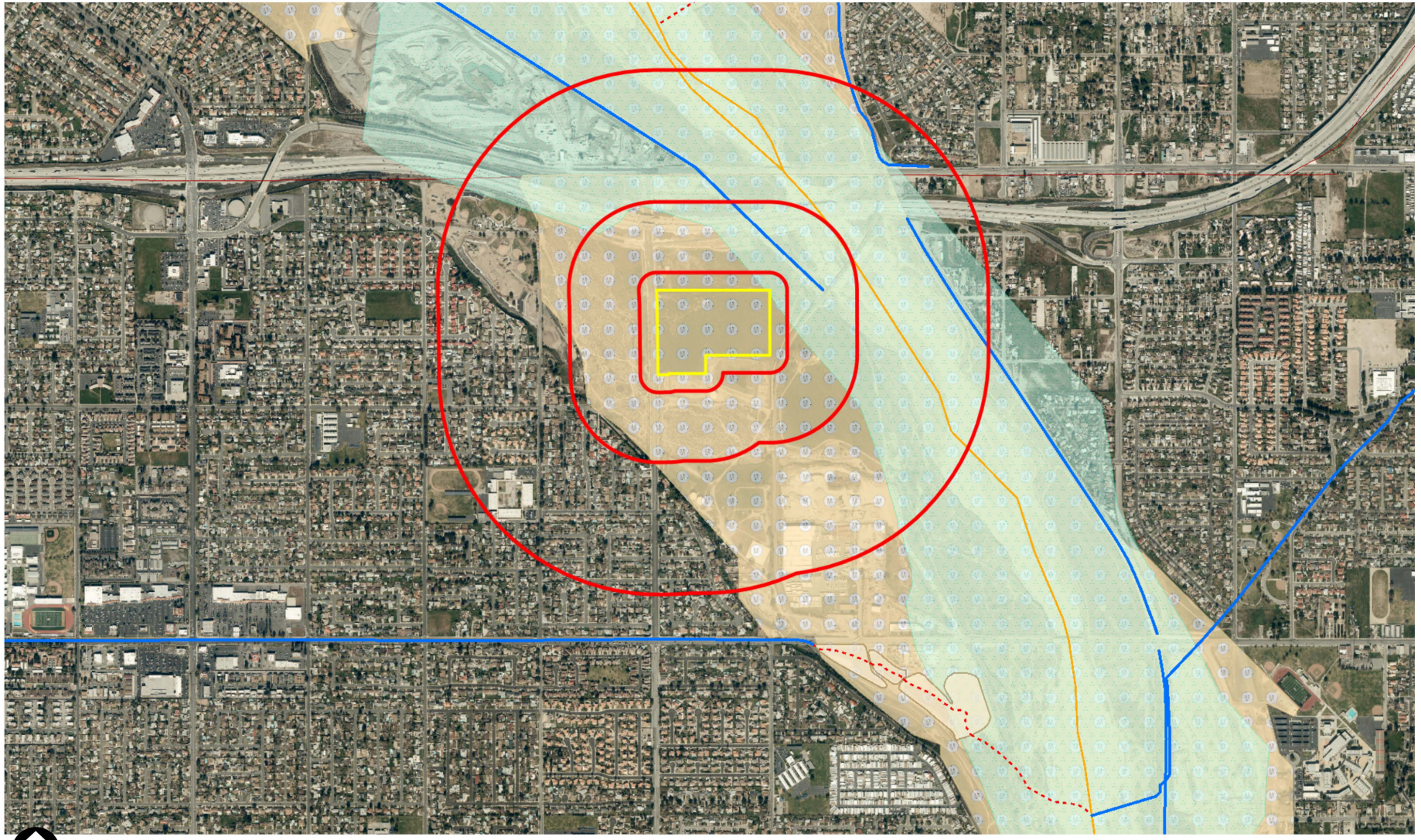
Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer



RBF CONSULTING GIS

Site Address: permitrack.sbcounty.gov/wap

County of San Bernardino
Stormwater Facility Mapping

Stormwater Map



WQMP Project Report

County of San Bernardino Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, May 31, 2021

Note: The information provided in this report and on the Stormwater Geodatabase for the County of San Bernardino Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	026420106, 026420126, 026420105
Project Site Acreage:	24.485
HCOC Exempt Area:	No
Closest Receiving Waters: (Applicant to verify based on local drainage facilities and topography.)	**System Number** - 207 **Facility Name** - Island Levee, COE **Owner** - SBCFCD
Closest channel segment's susceptibility to Hydromodification:	EHM
Highest downstream hydromodification susceptibility:	High
Is this drainage segment subject to TMDLs?	No
Are there downstream drainage segments subject to TMDLs?	No
Is this drainage segment a 303d listed stream?	Yes
Are there 303d listed streams downstream?	Yes
Are there unlined downstream waterbodies?	No
Project Site Onsite Soil Group(s):	A, B
Environmentally Sensitive Areas within 200':	SAN BERNARDINO KANGAROO RAT,Riversidian Alluvial Sage Scru
Groundwater Depth (FT):	-410
Parcels with potential septic tanks within 1000':	Yes
Known Groundwater Contamination Plumes within 1000':	No
Studies and Reports Related to Project Site:	Cactus Basin Preliminary Report on Proposed North SBFCP Rialto MPD Vol1 Rialto MPD Vol II RS-Rialto Map Book-FINAL Layout2 School Site Map Comprehensive Storm Drain Plan SBVMWD High Groundwater / Pressure Zone Area

SECTION 6.4.7

CIVILDESIGN 2-YEAR RATIONAL METHOD AND UNIT HYDROGRAPH CALCULATIONS

-EXISITING CONDITION 2-YEAR RATIONAL METHOD

-PROPOSED CONDITION 2-YEAR RATIONAL METHOD

- EXISITING CONDITION 2-YEAR UNIT HYDROGRAPH

-PROPOSED CONDITION 2-YEAR UNIT HYDROGRAPH

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
EXISTING CONDITION
2-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.637 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 13.000 to Point/Station 14.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Initial subarea data:
Initial area flow distance = 668.000(Ft.)
Top (of initial area) elevation = 1288.700(Ft.)
Bottom (of initial area) elevation = 1282.000(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.01003 s(%)= 1.00
TC = k(0.950)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 32.164 min.
Rainfall intensity = 0.926(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.113
Subarea runoff = 0.117(CFS)
Total initial stream area = 1.120(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.810(In/Hr)

++
Process from Point/Station 14.000 to Point/Station 15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

```
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.054(Ft.), Average velocity =   0.530(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2            100.00              0.00
      3            200.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.154(CFS)
  '     '    flow top width =     10.799(Ft.)
  '     '    velocity=    0.530(Ft/s)
  '     '    area =      0.292(Sq.Ft)
  '     '    Froude number =     0.568

Upstream point elevation =  1282.000(Ft.)
Downstream point elevation =  1266.700(Ft.)
Flow length =  1084.000(Ft.)
Travel time  =   34.12 min.
Time of concentration =   66.28 min.
Depth of flow =   0.054(Ft.)
Average velocity =   0.530(Ft/s)
Total irregular channel flow =     0.154(CFS)
Irregular channel normal depth above invert elev. =   0.054(Ft.)
Average velocity of channel(s) =   0.530(Ft/s)
 Adding area flow to channel
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 50.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.810(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q =      0.000(CFS)
therefore the upstream flow rate of Q =      0.117(CFS) is being used
Rainfall intensity =      0.600(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.000
Subarea runoff =      0.000(CFS) for   22.580(Ac.)
Total runoff =      0.117(CFS)
Effective area this stream =       23.70(Ac.)
Total Study Area (Main Stream No. 1) =       23.70(Ac.)
Area averaged Fm value =    0.810(In/Hr)
Depth of flow =   0.049(Ft.), Average velocity =   0.495(Ft/s)
End of computations, Total Study Area =           23.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  50.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 12/14/21

PEPPER INDUSTRIAL BUILDING
PROPOSED CONDITION
2-YEAR STORM EVENT ANALYSIS - WATERSHED A

Program License Serial Number 6405

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.637 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.098(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 1288.200(Ft.)
Bottom (of initial area) elevation = 1277.700(Ft.)
Difference in elevation = 10.500(Ft.)
Slope = 0.02100 s(%)= 2.10
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.907 min.
Rainfall intensity = 2.149(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.859
Subarea runoff = 8.399(CFS)
Total initial stream area = 4.550(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.098(In/Hr)

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       12.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1277.700(Ft.)
Downstream point elevation =  1273.400(Ft.)
Channel length thru subarea  =   818.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  23.330
Slope or 'Z' of right channel bank =  23.330
Estimated mean flow rate at midpoint of channel =      9.626(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    4.500(Ft.)
Flow(q) thru subarea =      9.626(CFS)
Depth of flow =   0.407(Ft.), Average velocity =   2.485(Ft/s)
Channel flow top width =   19.011(Ft.)
Flow Velocity =    2.49(Ft/s)
Travel time  =    5.49 min.
Time of concentration =   13.39 min.
Critical depth =      0.402(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.566(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.844
Subarea runoff =      2.373(CFS) for    3.600(Ac.)
Total runoff =     10.772(CFS)
Effective area this stream =        8.15(Ac.)
Total Study Area (Main Stream No. 1) =        8.15(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.425(Ft.), Average velocity =   2.556(Ft/s)
Critical depth =      0.422(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1273.400(Ft.)
Downstream point elevation =  1271.600(Ft.)
Channel length thru subarea  =   366.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =     12.085(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.300(Ft.)
Flow(q) thru subarea =     12.085(CFS)
Depth of flow =   0.260(Ft.), Average velocity =   1.784(Ft/s)
Channel flow top width =   52.054(Ft.)
```

```
Flow Velocity =    1.78(Ft/s)
Travel time  =    3.42 min.
Time of concentration =   16.81 min.
Critical depth =      0.246(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.367(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.836
Subarea runoff =      2.555(CFS) for    3.520(Ac.)
Total runoff =     13.327(CFS)
Effective area this stream =       11.67(Ac.)
Total Study Area (Main Stream No. 1) =       11.67(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.270(Ft.), Average velocity =   1.828(Ft/s)
Critical depth =      0.256(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     11.670(Ac.)
Runoff from this stream =     13.327(CFS)
Time of concentration =   16.81 min.
Rainfall intensity =     1.367(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   306.000(Ft.)
Top (of initial area) elevation =  1273.700(Ft.)
Bottom (of initial area) elevation =  1271.600(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00686  s(%)=       0.69
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.126 min.
Rainfall intensity =      2.114(In/Hr) for a     2.0 year storm
```

```
Effective runoff coefficient used for area (Q=KCIA) is C = 0.858
Subarea runoff =      5.498(CFS)
Total initial stream area =        3.030(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       13.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.030(Ac.)
Runoff from this stream =      5.498(CFS)
Time of concentration =    8.13 min.
Rainfall intensity =     2.114(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     13.33    11.670     16.81    0.098      1.367
2      5.50     3.030      8.13    0.098      2.114
Qmax(1) =
         1.000 *    1.000 *    13.327) +
         0.629 *    1.000 *     5.498) + =      16.787
Qmax(2) =
         1.589 *    0.483 *    13.327) +
         1.000 *    1.000 *     5.498) + =      15.734

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.327       5.498
Maximum flow rates at confluence using above data:
       16.787       15.734
Area of streams before confluence:
       11.670        3.030
Effective area values after confluence:
       14.700        8.670
Results of confluence:
Total flow rate =     16.787(CFS)
Time of concentration =    16.812 min.
Effective stream area after confluence =     14.700(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =      14.70(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1265.600(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
```

```
Pipe length  =   465.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.787(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    16.787(CFS)
Normal flow depth in pipe =   23.77(In.)
Flow top width inside pipe =   24.34(In.)
Critical Depth =   16.62(In.)
Pipe flow velocity =      4.02(Ft/s)
Travel time through pipe =    1.93 min.
Time of concentration (TC) =    18.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.700(Ac.)
Runoff from this stream =     16.787(CFS)
Time of concentration =   18.74 min.
Rainfall intensity =     1.281(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   431.000(Ft.)
Top (of initial area) elevation =  1284.800(Ft.)
Bottom (of initial area) elevation =  1282.500(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00534  s(%)=       0.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.800 min.
Rainfall intensity =      1.889(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff =      1.645(CFS)
Total initial stream area =        1.020(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       17.000
**** IMPROVED CHANNEL TRAVEL TIME ****
```

```
Upstream point elevation =  1282.500(Ft.)
Downstream point elevation =  1276.900(Ft.)
Channel length thru subarea  =   565.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  48.300
Slope or 'Z' of right channel bank =  48.300
Estimated mean flow rate at midpoint of channel =      4.062(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =      4.062(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   2.119(Ft/s)
Channel flow top width =   19.244(Ft.)
Flow Velocity =    2.12(Ft/s)
Travel time  =    4.44 min.
Time of concentration =   14.24 min.
Critical depth =      0.213(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.510(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.842
Subarea runoff =      4.772(CFS) for    4.030(Ac.)
Total runoff =      6.417(CFS)
Effective area this stream =        5.05(Ac.)
Total Study Area (Main Stream No. 2) =       19.75(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.236(Ft.), Average velocity =   2.376(Ft/s)
Critical depth =      0.256(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.050(Ac.)
Runoff from this stream =      6.417(CFS)
Time of concentration =   14.24 min.
Rainfall intensity =     1.510(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
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```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   538.000(Ft.)
Top (of initial area) elevation =  1284.100(Ft.)
Bottom (of initial area) elevation =  1276.900(Ft.)
Difference in elevation =     7.200(Ft.)
Slope =    0.01338  s(%)=       1.34
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.910 min.
Rainfall intensity =      2.000(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.856
Subarea runoff =      3.544(CFS)
Total initial stream area =        2.070(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.070(Ac.)
Runoff from this stream =      3.544(CFS)
Time of concentration =    8.91 min.
Rainfall intensity =     2.000(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      6.42     5.050     14.24    0.098      1.510
2      3.54     2.070      8.91    0.098      2.000
Qmax(1) =
         1.000 *    1.000 *     6.417) +
         0.742 *    1.000 *     3.544) + =       9.047
Qmax(2) =
         1.348 *    0.626 *     6.417) +
         1.000 *    1.000 *     3.544) + =       8.954

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.417       3.544
Maximum flow rates at confluence using above data:
        9.047        8.954
Area of streams before confluence:
        5.050        2.070
Effective area values after confluence:
        7.120        5.229
Results of confluence:
Total flow rate =      9.047(CFS)
```

```
Time of concentration =    14.244 min.
Effective stream area after confluence =      7.120(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =       7.12(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       17.000 to Point/Station       18.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1276.900(Ft.)
Downstream point elevation =  1273.700(Ft.)
Channel length thru subarea  =   628.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank =  12.500
Estimated mean flow rate at midpoint of channel =      9.216(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.240(Ft.)
Flow(q) thru subarea =      9.216(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   1.950(Ft/s)
Channel flow top width =   32.605(Ft.)
Flow Velocity =    1.95(Ft/s)
Travel time  =    5.37 min.
Time of concentration =   19.61 min.
Critical depth =      0.277(Ft.)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Rainfall intensity =      1.246(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =      0.265(CFS) for    1.890(Ac.)
Total runoff =      9.312(CFS)
Effective area this stream =        9.01(Ac.)
Total Study Area (Main Stream No. 2) =       23.71(Ac.)
Area averaged Fm value =    0.098(In/Hr)
Depth of flow =   0.291(Ft.), Average velocity =   1.956(Ft/s)
Critical depth =      0.279(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1268.200(Ft.)
Downstream point/station elevation =  1264.770(Ft.)
Pipe length  =    50.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.312(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.312(CFS)
```

```
Normal flow depth in pipe =    9.82(In.)
Flow top width inside pipe =    9.25(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.54(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    19.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.010(Ac.)
Runoff from this stream =      9.312(CFS)
Time of concentration =   19.67 min.
Rainfall intensity =     1.244(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1     16.79    14.700     18.74    0.098      1.281
2      9.31     9.010     19.67    0.098      1.244
Qmax(1) =
         1.000 *    1.000 *    16.787) +
         1.032 *    0.953 *     9.312) + =      25.942
Qmax(2) =
         0.969 *    1.000 *    16.787) +
         1.000 *    1.000 *     9.312) + =      25.577

Total of 2 main streams to confluence:
Flow rates before confluence point:
      17.787      10.312
Maximum flow rates at confluence using above data:
       25.942       25.577
Area of streams before confluence:
       14.700        9.010
Effective area values after confluence:
       23.283       23.710


Results of confluence:
Total flow rate =     25.942(CFS)
Time of concentration =    18.739 min.
Effective stream area after confluence  =     23.283(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total =      23.71(Ac.)
End of computations, Total Study Area =           23.71 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
```

effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 32.0

U n i t H y d r o g r a p h A n a l y s i s

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Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE EXISTING CONDITION
2-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
23.70	1	0.64
Rainfall data for year 2		
23.70	6	1.61
Rainfall data for year 2		
23.70	24	2.94

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	50.0	23.70	1.000	0.810	1.000	0.810

Area-averaged adjusted loss rate Fm (In/Hr) = 0.810

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
23.70	1.000	50.0	50.0	10.00	0.027

Area-averaged catchment yield fraction, Y = 0.027
Area-averaged low loss fraction, Yb = 0.973
User entry of time of concentration = 1.105 (hours)
++
Watershed area = 23.70(Ac.)
Catchment Lag time = 0.884 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 9.4294
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.810(In/Hr)
Average low loss rate fraction (Yb) = 0.973 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.485(In)
Specified peak 1-hour rainfall = 0.640(In)
Computed peak 3-hour rainfall = 1.127(In)
Specified peak 6-hour rainfall = 1.610(In)
Specified peak 24-hour rainfall = 2.940(In)

Rainfall depth area reduction factors:
Using a total area of 23.70(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.237(In)
30-minute factor = 0.999 Adjusted rainfall = 0.484(In)
1-hour factor = 0.999 Adjusted rainfall = 0.639(In)
3-hour factor = 1.000 Adjusted rainfall = 1.127(In)
6-hour factor = 1.000 Adjusted rainfall = 1.610(In)
24-hour factor = 1.000 Adjusted rainfall = 2.940(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 286.62 (CFS))		
1	0.523	1.499
2	1.693	3.353
3	3.183	4.270
4	5.639	7.041
5	9.431	10.866
6	14.420	14.302
7	19.986	15.953

8	26.068	17.431
9	32.724	19.077
10	40.175	21.357
11	48.728	24.515
12	56.898	23.417
13	65.685	25.186
14	72.345	19.087
15	76.562	12.088
16	80.671	11.778
17	85.064	12.592
18	88.357	9.438
19	90.095	4.982
20	92.065	5.645
21	93.765	4.873
22	95.112	3.861
23	96.154	2.986
24	96.954	2.295
25	97.603	1.860
26	98.104	1.437
27	98.298	0.555
28	98.468	0.487
29	98.637	0.487
30	98.807	0.487
31	98.977	0.487
32	99.147	0.486
33	99.316	0.486
34	99.486	0.486
35	99.656	0.487
36	99.825	0.486
37	99.948	0.351
38	100.000	0.150

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2366	0.2366
2	0.3122	0.0756
3	0.3672	0.0550
4	0.4120	0.0448
5	0.4504	0.0385
6	0.4845	0.0341
7	0.5153	0.0308
8	0.5436	0.0283
9	0.5698	0.0262
10	0.5943	0.0245
11	0.6174	0.0231
12	0.6393	0.0219
13	0.6662	0.0269
14	0.6922	0.0260
15	0.7173	0.0251
16	0.7415	0.0243
17	0.7651	0.0236
18	0.7880	0.0229
19	0.8103	0.0223
20	0.8320	0.0217
21	0.8532	0.0212
22	0.8739	0.0207
23	0.8942	0.0203

24	0.9140	0.0198
25	0.9335	0.0194
26	0.9525	0.0191
27	0.9713	0.0187
28	0.9897	0.0184
29	1.0077	0.0181
30	1.0255	0.0178
31	1.0430	0.0175
32	1.0602	0.0172
33	1.0772	0.0170
34	1.0939	0.0167
35	1.1104	0.0165
36	1.1266	0.0163
37	1.1426	0.0160
38	1.1584	0.0158
39	1.1740	0.0156
40	1.1894	0.0154
41	1.2046	0.0152
42	1.2197	0.0150
43	1.2346	0.0149
44	1.2493	0.0147
45	1.2638	0.0145
46	1.2782	0.0144
47	1.2924	0.0142
48	1.3065	0.0141
49	1.3205	0.0139
50	1.3343	0.0138
51	1.3479	0.0137
52	1.3615	0.0135
53	1.3749	0.0134
54	1.3882	0.0133
55	1.4014	0.0132
56	1.4145	0.0131
57	1.4274	0.0130
58	1.4402	0.0128
59	1.4530	0.0127
60	1.4656	0.0126
61	1.4781	0.0125
62	1.4906	0.0124
63	1.5029	0.0123
64	1.5151	0.0122
65	1.5273	0.0121
66	1.5393	0.0121
67	1.5513	0.0120
68	1.5632	0.0119
69	1.5750	0.0118
70	1.5867	0.0117
71	1.5983	0.0116
72	1.6099	0.0116
73	1.6196	0.0097
74	1.6292	0.0096
75	1.6387	0.0095
76	1.6481	0.0095
77	1.6575	0.0094
78	1.6668	0.0093
79	1.6761	0.0092
80	1.6853	0.0092

81	1.6944	0.0091
82	1.7035	0.0091
83	1.7124	0.0090
84	1.7214	0.0089
85	1.7302	0.0089
86	1.7391	0.0088
87	1.7478	0.0088
88	1.7565	0.0087
89	1.7652	0.0086
90	1.7737	0.0086
91	1.7823	0.0085
92	1.7908	0.0085
93	1.7992	0.0084
94	1.8076	0.0084
95	1.8159	0.0083
96	1.8242	0.0083
97	1.8324	0.0082
98	1.8406	0.0082
99	1.8487	0.0081
100	1.8568	0.0081
101	1.8649	0.0080
102	1.8729	0.0080
103	1.8808	0.0080
104	1.8887	0.0079
105	1.8966	0.0079
106	1.9044	0.0078
107	1.9122	0.0078
108	1.9199	0.0077
109	1.9277	0.0077
110	1.9353	0.0077
111	1.9429	0.0076
112	1.9505	0.0076
113	1.9581	0.0075
114	1.9656	0.0075
115	1.9730	0.0075
116	1.9805	0.0074
117	1.9879	0.0074
118	1.9952	0.0074
119	2.0026	0.0073
120	2.0099	0.0073
121	2.0171	0.0073
122	2.0243	0.0072
123	2.0315	0.0072
124	2.0387	0.0072
125	2.0458	0.0071
126	2.0529	0.0071
127	2.0600	0.0071
128	2.0670	0.0070
129	2.0740	0.0070
130	2.0810	0.0070
131	2.0879	0.0069
132	2.0948	0.0069
133	2.1017	0.0069
134	2.1086	0.0069
135	2.1154	0.0068
136	2.1222	0.0068
137	2.1289	0.0068

138	2.1357	0.0067
139	2.1424	0.0067
140	2.1491	0.0067
141	2.1557	0.0067
142	2.1623	0.0066
143	2.1689	0.0066
144	2.1755	0.0066
145	2.1821	0.0066
146	2.1886	0.0065
147	2.1951	0.0065
148	2.2016	0.0065
149	2.2080	0.0064
150	2.2144	0.0064
151	2.2208	0.0064
152	2.2272	0.0064
153	2.2336	0.0064
154	2.2399	0.0063
155	2.2462	0.0063
156	2.2525	0.0063
157	2.2588	0.0063
158	2.2650	0.0062
159	2.2712	0.0062
160	2.2774	0.0062
161	2.2836	0.0062
162	2.2897	0.0062
163	2.2959	0.0061
164	2.3020	0.0061
165	2.3081	0.0061
166	2.3141	0.0061
167	2.3202	0.0060
168	2.3262	0.0060
169	2.3322	0.0060
170	2.3382	0.0060
171	2.3442	0.0060
172	2.3501	0.0059
173	2.3560	0.0059
174	2.3619	0.0059
175	2.3678	0.0059
176	2.3737	0.0059
177	2.3795	0.0058
178	2.3854	0.0058
179	2.3912	0.0058
180	2.3970	0.0058
181	2.4027	0.0058
182	2.4085	0.0058
183	2.4142	0.0057
184	2.4200	0.0057
185	2.4257	0.0057
186	2.4314	0.0057
187	2.4370	0.0057
188	2.4427	0.0057
189	2.4483	0.0056
190	2.4539	0.0056
191	2.4595	0.0056
192	2.4651	0.0056
193	2.4707	0.0056
194	2.4762	0.0056

195	2.4818	0.0055
196	2.4873	0.0055
197	2.4928	0.0055
198	2.4983	0.0055
199	2.5038	0.0055
200	2.5092	0.0055
201	2.5147	0.0054
202	2.5201	0.0054
203	2.5255	0.0054
204	2.5309	0.0054
205	2.5363	0.0054
206	2.5417	0.0054
207	2.5470	0.0054
208	2.5523	0.0053
209	2.5577	0.0053
210	2.5630	0.0053
211	2.5683	0.0053
212	2.5736	0.0053
213	2.5788	0.0053
214	2.5841	0.0053
215	2.5893	0.0052
216	2.5945	0.0052
217	2.5997	0.0052
218	2.6049	0.0052
219	2.6101	0.0052
220	2.6153	0.0052
221	2.6205	0.0052
222	2.6256	0.0051
223	2.6307	0.0051
224	2.6359	0.0051
225	2.6410	0.0051
226	2.6460	0.0051
227	2.6511	0.0051
228	2.6562	0.0051
229	2.6613	0.0051
230	2.6663	0.0050
231	2.6713	0.0050
232	2.6763	0.0050
233	2.6813	0.0050
234	2.6863	0.0050
235	2.6913	0.0050
236	2.6963	0.0050
237	2.7012	0.0050
238	2.7062	0.0049
239	2.7111	0.0049
240	2.7160	0.0049
241	2.7210	0.0049
242	2.7259	0.0049
243	2.7307	0.0049
244	2.7356	0.0049
245	2.7405	0.0049
246	2.7453	0.0049
247	2.7502	0.0048
248	2.7550	0.0048
249	2.7598	0.0048
250	2.7646	0.0048
251	2.7694	0.0048

252	2.7742	0.0048
253	2.7790	0.0048
254	2.7838	0.0048
255	2.7885	0.0048
256	2.7933	0.0047
257	2.7980	0.0047
258	2.8027	0.0047
259	2.8074	0.0047
260	2.8121	0.0047
261	2.8168	0.0047
262	2.8215	0.0047
263	2.8262	0.0047
264	2.8309	0.0047
265	2.8355	0.0047
266	2.8402	0.0046
267	2.8448	0.0046
268	2.8494	0.0046
269	2.8540	0.0046
270	2.8586	0.0046
271	2.8632	0.0046
272	2.8678	0.0046
273	2.8724	0.0046
274	2.8770	0.0046
275	2.8815	0.0046
276	2.8861	0.0045
277	2.8906	0.0045
278	2.8951	0.0045
279	2.8996	0.0045
280	2.9042	0.0045
281	2.9087	0.0045
282	2.9131	0.0045
283	2.9176	0.0045
284	2.9221	0.0045
285	2.9266	0.0045
286	2.9310	0.0045
287	2.9355	0.0044
288	2.9399	0.0044

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0043	0.0001
2	0.0044	0.0043	0.0001
3	0.0045	0.0043	0.0001
4	0.0045	0.0044	0.0001
5	0.0045	0.0044	0.0001
6	0.0045	0.0044	0.0001
7	0.0045	0.0044	0.0001
8	0.0045	0.0044	0.0001
9	0.0045	0.0044	0.0001
10	0.0046	0.0044	0.0001
11	0.0046	0.0044	0.0001
12	0.0046	0.0045	0.0001
13	0.0046	0.0045	0.0001
14	0.0046	0.0045	0.0001
15	0.0046	0.0045	0.0001

16	0.0046	0.0045	0.0001
17	0.0047	0.0045	0.0001
18	0.0047	0.0045	0.0001
19	0.0047	0.0046	0.0001
20	0.0047	0.0046	0.0001
21	0.0047	0.0046	0.0001
22	0.0047	0.0046	0.0001
23	0.0048	0.0046	0.0001
24	0.0048	0.0046	0.0001
25	0.0048	0.0047	0.0001
26	0.0048	0.0047	0.0001
27	0.0048	0.0047	0.0001
28	0.0048	0.0047	0.0001
29	0.0049	0.0047	0.0001
30	0.0049	0.0047	0.0001
31	0.0049	0.0048	0.0001
32	0.0049	0.0048	0.0001
33	0.0049	0.0048	0.0001
34	0.0049	0.0048	0.0001
35	0.0050	0.0048	0.0001
36	0.0050	0.0048	0.0001
37	0.0050	0.0049	0.0001
38	0.0050	0.0049	0.0001
39	0.0050	0.0049	0.0001
40	0.0050	0.0049	0.0001
41	0.0051	0.0049	0.0001
42	0.0051	0.0049	0.0001
43	0.0051	0.0050	0.0001
44	0.0051	0.0050	0.0001
45	0.0051	0.0050	0.0001
46	0.0052	0.0050	0.0001
47	0.0052	0.0050	0.0001
48	0.0052	0.0051	0.0001
49	0.0052	0.0051	0.0001
50	0.0052	0.0051	0.0001
51	0.0053	0.0051	0.0001
52	0.0053	0.0051	0.0001
53	0.0053	0.0052	0.0001
54	0.0053	0.0052	0.0001
55	0.0054	0.0052	0.0001
56	0.0054	0.0052	0.0001
57	0.0054	0.0052	0.0001
58	0.0054	0.0053	0.0001
59	0.0054	0.0053	0.0001
60	0.0055	0.0053	0.0001
61	0.0055	0.0053	0.0002
62	0.0055	0.0054	0.0002
63	0.0055	0.0054	0.0002
64	0.0056	0.0054	0.0002
65	0.0056	0.0054	0.0002
66	0.0056	0.0054	0.0002
67	0.0056	0.0055	0.0002
68	0.0057	0.0055	0.0002
69	0.0057	0.0055	0.0002
70	0.0057	0.0055	0.0002
71	0.0057	0.0056	0.0002
72	0.0058	0.0056	0.0002

73	0.0058	0.0056	0.0002
74	0.0058	0.0057	0.0002
75	0.0058	0.0057	0.0002
76	0.0059	0.0057	0.0002
77	0.0059	0.0057	0.0002
78	0.0059	0.0058	0.0002
79	0.0060	0.0058	0.0002
80	0.0060	0.0058	0.0002
81	0.0060	0.0059	0.0002
82	0.0060	0.0059	0.0002
83	0.0061	0.0059	0.0002
84	0.0061	0.0059	0.0002
85	0.0062	0.0060	0.0002
86	0.0062	0.0060	0.0002
87	0.0062	0.0060	0.0002
88	0.0062	0.0061	0.0002
89	0.0063	0.0061	0.0002
90	0.0063	0.0061	0.0002
91	0.0064	0.0062	0.0002
92	0.0064	0.0062	0.0002
93	0.0064	0.0062	0.0002
94	0.0064	0.0063	0.0002
95	0.0065	0.0063	0.0002
96	0.0065	0.0063	0.0002
97	0.0066	0.0064	0.0002
98	0.0066	0.0064	0.0002
99	0.0067	0.0065	0.0002
100	0.0067	0.0065	0.0002
101	0.0067	0.0066	0.0002
102	0.0068	0.0066	0.0002
103	0.0068	0.0066	0.0002
104	0.0069	0.0067	0.0002
105	0.0069	0.0067	0.0002
106	0.0069	0.0067	0.0002
107	0.0070	0.0068	0.0002
108	0.0070	0.0068	0.0002
109	0.0071	0.0069	0.0002
110	0.0071	0.0069	0.0002
111	0.0072	0.0070	0.0002
112	0.0072	0.0070	0.0002
113	0.0073	0.0071	0.0002
114	0.0073	0.0071	0.0002
115	0.0074	0.0072	0.0002
116	0.0074	0.0072	0.0002
117	0.0075	0.0073	0.0002
118	0.0075	0.0073	0.0002
119	0.0076	0.0074	0.0002
120	0.0077	0.0075	0.0002
121	0.0077	0.0075	0.0002
122	0.0078	0.0076	0.0002
123	0.0079	0.0077	0.0002
124	0.0079	0.0077	0.0002
125	0.0080	0.0078	0.0002
126	0.0080	0.0078	0.0002
127	0.0081	0.0079	0.0002
128	0.0082	0.0080	0.0002

129	0.0083	0.0081	0.0002
130	0.0083	0.0081	0.0002
131	0.0084	0.0082	0.0002
132	0.0085	0.0082	0.0002
133	0.0086	0.0084	0.0002
134	0.0086	0.0084	0.0002
135	0.0088	0.0085	0.0002
136	0.0088	0.0086	0.0002
137	0.0089	0.0087	0.0002
138	0.0090	0.0087	0.0002
139	0.0091	0.0089	0.0003
140	0.0092	0.0089	0.0003
141	0.0093	0.0091	0.0003
142	0.0094	0.0091	0.0003
143	0.0095	0.0093	0.0003
144	0.0096	0.0093	0.0003
145	0.0116	0.0112	0.0003
146	0.0116	0.0113	0.0003
147	0.0118	0.0115	0.0003
148	0.0119	0.0116	0.0003
149	0.0121	0.0117	0.0003
150	0.0121	0.0118	0.0003
151	0.0123	0.0120	0.0003
152	0.0124	0.0121	0.0003
153	0.0126	0.0123	0.0003
154	0.0127	0.0124	0.0003
155	0.0130	0.0126	0.0004
156	0.0131	0.0127	0.0004
157	0.0133	0.0129	0.0004
158	0.0134	0.0131	0.0004
159	0.0137	0.0133	0.0004
160	0.0138	0.0134	0.0004
161	0.0141	0.0137	0.0004
162	0.0142	0.0138	0.0004
163	0.0145	0.0141	0.0004
164	0.0147	0.0143	0.0004
165	0.0150	0.0146	0.0004
166	0.0152	0.0148	0.0004
167	0.0156	0.0152	0.0004
168	0.0158	0.0154	0.0004
169	0.0163	0.0158	0.0004
170	0.0165	0.0160	0.0005
171	0.0170	0.0165	0.0005
172	0.0172	0.0167	0.0005
173	0.0178	0.0173	0.0005
174	0.0181	0.0176	0.0005
175	0.0187	0.0182	0.0005
176	0.0191	0.0186	0.0005
177	0.0198	0.0193	0.0005
178	0.0203	0.0197	0.0006
179	0.0212	0.0206	0.0006
180	0.0217	0.0211	0.0006
181	0.0229	0.0223	0.0006
182	0.0236	0.0229	0.0006
183	0.0251	0.0244	0.0007
184	0.0260	0.0252	0.0007
185	0.0219	0.0213	0.0006

186	0.0231	0.0225	0.0006
187	0.0262	0.0255	0.0007
188	0.0283	0.0275	0.0008
189	0.0341	0.0331	0.0009
190	0.0385	0.0374	0.0011
191	0.0550	0.0535	0.0015
192	0.0756	0.0675	0.0081
193	0.2366	0.0675	0.1691
194	0.0448	0.0435	0.0012
195	0.0308	0.0300	0.0008
196	0.0245	0.0239	0.0007
197	0.0269	0.0262	0.0007
198	0.0243	0.0236	0.0007
199	0.0223	0.0217	0.0006
200	0.0207	0.0201	0.0006
201	0.0194	0.0189	0.0005
202	0.0184	0.0179	0.0005
203	0.0175	0.0170	0.0005
204	0.0167	0.0163	0.0005
205	0.0160	0.0156	0.0004
206	0.0154	0.0150	0.0004
207	0.0149	0.0145	0.0004
208	0.0144	0.0140	0.0004
209	0.0139	0.0136	0.0004
210	0.0135	0.0132	0.0004
211	0.0132	0.0128	0.0004
212	0.0128	0.0125	0.0004
213	0.0125	0.0122	0.0003
214	0.0122	0.0119	0.0003
215	0.0120	0.0116	0.0003
216	0.0117	0.0114	0.0003
217	0.0097	0.0094	0.0003
218	0.0095	0.0092	0.0003
219	0.0092	0.0090	0.0003
220	0.0091	0.0088	0.0002
221	0.0089	0.0086	0.0002
222	0.0087	0.0085	0.0002
223	0.0085	0.0083	0.0002
224	0.0084	0.0081	0.0002
225	0.0082	0.0080	0.0002
226	0.0081	0.0079	0.0002
227	0.0080	0.0077	0.0002
228	0.0078	0.0076	0.0002
229	0.0077	0.0075	0.0002
230	0.0076	0.0074	0.0002
231	0.0075	0.0073	0.0002
232	0.0074	0.0072	0.0002
233	0.0073	0.0071	0.0002
234	0.0072	0.0070	0.0002
235	0.0071	0.0069	0.0002
236	0.0070	0.0068	0.0002
237	0.0069	0.0067	0.0002
238	0.0068	0.0066	0.0002
239	0.0067	0.0065	0.0002
240	0.0066	0.0064	0.0002
241	0.0066	0.0064	0.0002
242	0.0065	0.0063	0.0002

243	0.0064	0.0062	0.0002
244	0.0063	0.0062	0.0002
245	0.0063	0.0061	0.0002
246	0.0062	0.0060	0.0002
247	0.0061	0.0060	0.0002
248	0.0061	0.0059	0.0002
249	0.0060	0.0058	0.0002
250	0.0059	0.0058	0.0002
251	0.0059	0.0057	0.0002
252	0.0058	0.0057	0.0002
253	0.0058	0.0056	0.0002
254	0.0057	0.0056	0.0002
255	0.0057	0.0055	0.0002
256	0.0056	0.0055	0.0002
257	0.0056	0.0054	0.0002
258	0.0055	0.0054	0.0002
259	0.0055	0.0053	0.0002
260	0.0054	0.0053	0.0001
261	0.0054	0.0052	0.0001
262	0.0053	0.0052	0.0001
263	0.0053	0.0051	0.0001
264	0.0053	0.0051	0.0001
265	0.0052	0.0051	0.0001
266	0.0052	0.0050	0.0001
267	0.0051	0.0050	0.0001
268	0.0051	0.0050	0.0001
269	0.0051	0.0049	0.0001
270	0.0050	0.0049	0.0001
271	0.0050	0.0048	0.0001
272	0.0049	0.0048	0.0001
273	0.0049	0.0048	0.0001
274	0.0049	0.0047	0.0001
275	0.0048	0.0047	0.0001
276	0.0048	0.0047	0.0001
277	0.0048	0.0046	0.0001
278	0.0047	0.0046	0.0001
279	0.0047	0.0046	0.0001
280	0.0047	0.0046	0.0001
281	0.0047	0.0045	0.0001
282	0.0046	0.0045	0.0001
283	0.0046	0.0045	0.0001
284	0.0046	0.0044	0.0001
285	0.0045	0.0044	0.0001
286	0.0045	0.0044	0.0001
287	0.0045	0.0044	0.0001
288	0.0045	0.0043	0.0001

Total soil rain loss = 2.69(In)
Total effective rainfall = 0.25(In)
Peak flow rate in flood hydrograph = 4.61(CFS)

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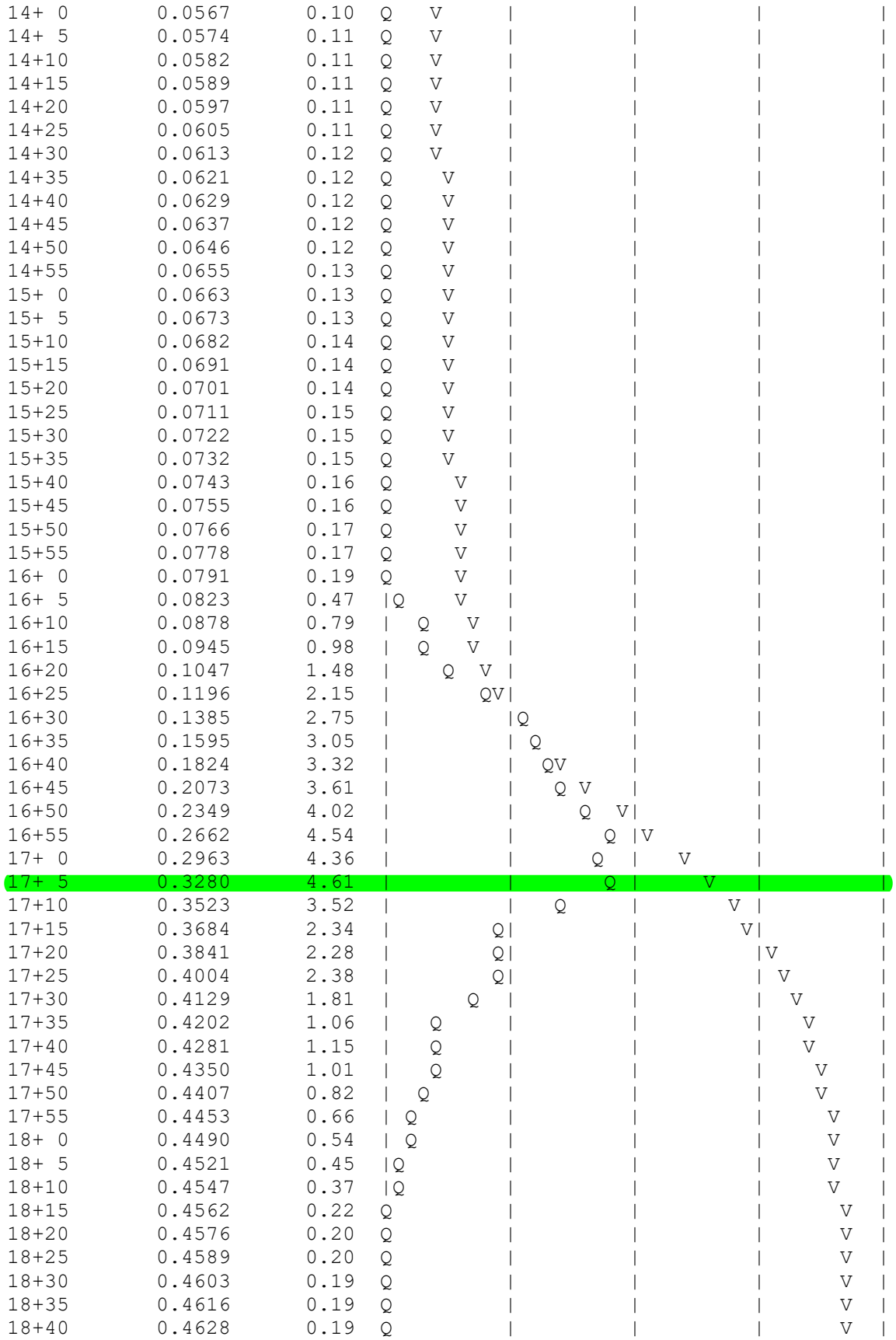
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0000	0.00	Q	|	|	|	|
0+20	0.0000	0.00	Q	|	|	|	|
0+25	0.0000	0.00	Q	|	|	|	|
0+30	0.0001	0.01	Q	|	|	|	|
0+35	0.0001	0.01	Q	|	|	|	|
0+40	0.0002	0.01	Q	|	|	|	|
0+45	0.0003	0.01	Q	|	|	|	|
0+50	0.0004	0.01	Q	|	|	|	|
0+55	0.0005	0.02	Q	|	|	|	|
1+ 0	0.0006	0.02	Q	|	|	|	|
1+ 5	0.0008	0.02	Q	|	|	|	|
1+10	0.0010	0.03	Q	|	|	|	|
1+15	0.0012	0.03	Q	|	|	|	|
1+20	0.0014	0.03	Q	|	|	|	|
1+25	0.0016	0.03	Q	|	|	|	|
1+30	0.0018	0.03	Q	|	|	|	|
1+35	0.0020	0.03	Q	|	|	|	|
1+40	0.0022	0.03	Q	|	|	|	|
1+45	0.0025	0.03	Q	|	|	|	|
1+50	0.0027	0.03	Q	|	|	|	|
1+55	0.0029	0.03	Q	|	|	|	|
2+ 0	0.0032	0.04	Q	|	|	|	|
2+ 5	0.0034	0.04	Q	|	|	|	|
2+10	0.0037	0.04	Q	|	|	|	|
2+15	0.0039	0.04	Q	|	|	|	|
2+20	0.0042	0.04	Q	|	|	|	|
2+25	0.0044	0.04	Q	|	|	|	|
2+30	0.0047	0.04	Q	|	|	|	|
2+35	0.0049	0.04	Q	|	|	|	|
2+40	0.0052	0.04	Q	|	|	|	|
2+45	0.0054	0.04	Q	|	|	|	|
2+50	0.0057	0.04	Q	|	|	|	|
2+55	0.0059	0.04	Q	|	|	|	|
3+ 0	0.0062	0.04	Q	|	|	|	|
3+ 5	0.0065	0.04	Q	|	|	|	|
3+10	0.0067	0.04	Q	|	|	|	|
3+15	0.0070	0.04	Q	|	|	|	|
3+20	0.0072	0.04	Q	|	|	|	|
3+25	0.0075	0.04	Q	|	|	|	|
3+30	0.0078	0.04	Q	|	|	|	|
3+35	0.0080	0.04	Q	|	|	|	|
3+40	0.0083	0.04	Q	|	|	|	|
3+45	0.0086	0.04	Q	|	|	|	|
3+50	0.0088	0.04	Q	|	|	|	|
3+55	0.0091	0.04	Q	|	|	|	|
4+ 0	0.0094	0.04	Q	|	|	|	|
4+ 5	0.0097	0.04	Q	|	|	|	|
4+10	0.0099	0.04	Q	|	|	|	|
4+15	0.0102	0.04	Q	|	|	|	|
4+20	0.0105	0.04	Q	|	|	|	|
4+25	0.0108	0.04	Q	|	|	|	|

4+30	0.0110	0.04	Q				
4+35	0.0113	0.04	Q				
4+40	0.0116	0.04	Q				
4+45	0.0119	0.04	Q				
4+50	0.0121	0.04	Q				
4+55	0.0124	0.04	QV				
5+ 0	0.0127	0.04	QV				
5+ 5	0.0130	0.04	QV				
5+10	0.0133	0.04	QV				
5+15	0.0136	0.04	QV				
5+20	0.0139	0.04	QV				
5+25	0.0141	0.04	QV				
5+30	0.0144	0.04	QV				
5+35	0.0147	0.04	QV				
5+40	0.0150	0.04	QV				
5+45	0.0153	0.04	QV				
5+50	0.0156	0.04	QV				
5+55	0.0159	0.04	QV				
6+ 0	0.0162	0.04	QV				
6+ 5	0.0165	0.04	QV				
6+10	0.0168	0.04	QV				
6+15	0.0171	0.04	QV				
6+20	0.0174	0.04	QV				
6+25	0.0177	0.04	QV				
6+30	0.0180	0.04	QV				
6+35	0.0183	0.04	QV				
6+40	0.0186	0.04	QV				
6+45	0.0189	0.04	QV				
6+50	0.0192	0.05	QV				
6+55	0.0196	0.05	QV				
7+ 0	0.0199	0.05	QV				
7+ 5	0.0202	0.05	QV				
7+10	0.0205	0.05	QV				
7+15	0.0208	0.05	QV				
7+20	0.0211	0.05	QV				
7+25	0.0215	0.05	QV				
7+30	0.0218	0.05	QV				
7+35	0.0221	0.05	QV				
7+40	0.0224	0.05	QV				
7+45	0.0228	0.05	QV				
7+50	0.0231	0.05	QV				
7+55	0.0234	0.05	QV				
8+ 0	0.0238	0.05	QV				
8+ 5	0.0241	0.05	QV				
8+10	0.0244	0.05	QV				
8+15	0.0248	0.05	Q V				
8+20	0.0251	0.05	Q V				
8+25	0.0255	0.05	Q V				
8+30	0.0258	0.05	Q V				
8+35	0.0261	0.05	Q V				
8+40	0.0265	0.05	Q V				
8+45	0.0268	0.05	Q V				
8+50	0.0272	0.05	Q V				
8+55	0.0276	0.05	Q V				
9+ 0	0.0279	0.05	Q V				
9+ 5	0.0283	0.05	Q V				
9+10	0.0286	0.05	Q V				

9+15	0.0290	0.05	Q	V			
9+20	0.0294	0.05	Q	V			
9+25	0.0297	0.05	Q	V			
9+30	0.0301	0.05	Q	V			
9+35	0.0305	0.05	Q	V			
9+40	0.0308	0.05	Q	V			
9+45	0.0312	0.05	Q	V			
9+50	0.0316	0.06	Q	V			
9+55	0.0320	0.06	Q	V			
10+ 0	0.0324	0.06	Q	V			
10+ 5	0.0327	0.06	Q	V			
10+10	0.0331	0.06	Q	V			
10+15	0.0335	0.06	Q	V			
10+20	0.0339	0.06	Q	V			
10+25	0.0343	0.06	Q	V			
10+30	0.0347	0.06	Q	V			
10+35	0.0351	0.06	Q	V			
10+40	0.0355	0.06	Q	V			
10+45	0.0359	0.06	Q	V			
10+50	0.0364	0.06	Q	V			
10+55	0.0368	0.06	Q	V			
11+ 0	0.0372	0.06	Q	V			
11+ 5	0.0376	0.06	Q	V			
11+10	0.0380	0.06	Q	V			
11+15	0.0385	0.06	Q	V			
11+20	0.0389	0.06	Q	V			
11+25	0.0393	0.06	Q	V			
11+30	0.0398	0.06	Q	V			
11+35	0.0402	0.06	Q	V			
11+40	0.0407	0.07	Q	V			
11+45	0.0411	0.07	Q	V			
11+50	0.0416	0.07	Q	V			
11+55	0.0421	0.07	Q	V			
12+ 0	0.0425	0.07	Q	V			
12+ 5	0.0430	0.07	Q	V			
12+10	0.0435	0.07	Q	V			
12+15	0.0440	0.07	Q	V			
12+20	0.0444	0.07	Q	V			
12+25	0.0449	0.07	Q	V			
12+30	0.0454	0.07	Q	V			
12+35	0.0460	0.08	Q	V			
12+40	0.0465	0.08	Q	V			
12+45	0.0470	0.08	Q	V			
12+50	0.0476	0.08	Q	V			
12+55	0.0482	0.08	Q	V			
13+ 0	0.0488	0.08	Q	V			
13+ 5	0.0494	0.09	Q	V			
13+10	0.0500	0.09	Q	V			
13+15	0.0506	0.09	Q	V			
13+20	0.0512	0.09	Q	V			
13+25	0.0519	0.09	Q	V			
13+30	0.0525	0.10	Q	V			
13+35	0.0532	0.10	Q	V			
13+40	0.0539	0.10	Q	V			
13+45	0.0546	0.10	Q	V			
13+50	0.0553	0.10	Q	V			
13+55	0.0560	0.10	Q	V			



18+45	0.4641	0.18	Q	|	|	|	V |
18+50	0.4653	0.18	Q	|	|	|	V |
18+55	0.4665	0.17	Q	|	|	|	V |
19+ 0	0.4677	0.17	Q	|	|	|	V |
19+ 5	0.4687	0.14	Q	|	|	|	V |
19+10	0.4694	0.11	Q	|	|	|	V |
19+15	0.4699	0.08	Q	|	|	|	V |
19+20	0.4705	0.07	Q	|	|	|	V |
19+25	0.4710	0.07	Q	|	|	|	V |
19+30	0.4714	0.07	Q	|	|	|	V |
19+35	0.4719	0.07	Q	|	|	|	V |
19+40	0.4724	0.07	Q	|	|	|	V |
19+45	0.4728	0.07	Q	|	|	|	V |
19+50	0.4733	0.06	Q	|	|	|	V |
19+55	0.4737	0.06	Q	|	|	|	V |
20+ 0	0.4741	0.06	Q	|	|	|	V |
20+ 5	0.4746	0.06	Q	|	|	|	V |
20+10	0.4750	0.06	Q	|	|	|	V |
20+15	0.4754	0.06	Q	|	|	|	V |
20+20	0.4758	0.06	Q	|	|	|	V |
20+25	0.4762	0.06	Q	|	|	|	V |
20+30	0.4766	0.06	Q	|	|	|	V |
20+35	0.4770	0.06	Q	|	|	|	V |
20+40	0.4773	0.05	Q	|	|	|	V |
20+45	0.4777	0.05	Q	|	|	|	V |
20+50	0.4781	0.05	Q	|	|	|	V |
20+55	0.4784	0.05	Q	|	|	|	V |
21+ 0	0.4788	0.05	Q	|	|	|	V |
21+ 5	0.4792	0.05	Q	|	|	|	V |
21+10	0.4795	0.05	Q	|	|	|	V |
21+15	0.4799	0.05	Q	|	|	|	V |
21+20	0.4802	0.05	Q	|	|	|	V|
21+25	0.4805	0.05	Q	|	|	|	V|
21+30	0.4809	0.05	Q	|	|	|	V|
21+35	0.4812	0.05	Q	|	|	|	V|
21+40	0.4815	0.05	Q	|	|	|	V|
21+45	0.4819	0.05	Q	|	|	|	V|
21+50	0.4822	0.05	Q	|	|	|	V|
21+55	0.4825	0.05	Q	|	|	|	V|
22+ 0	0.4828	0.05	Q	|	|	|	V|
22+ 5	0.4831	0.05	Q	|	|	|	V|
22+10	0.4834	0.04	Q	|	|	|	V|
22+15	0.4837	0.04	Q	|	|	|	V|
22+20	0.4840	0.04	Q	|	|	|	V|
22+25	0.4843	0.04	Q	|	|	|	V|
22+30	0.4846	0.04	Q	|	|	|	V|
22+35	0.4849	0.04	Q	|	|	|	V|
22+40	0.4852	0.04	Q	|	|	|	V|
22+45	0.4855	0.04	Q	|	|	|	V|
22+50	0.4858	0.04	Q	|	|	|	V|
22+55	0.4861	0.04	Q	|	|	|	V|
23+ 0	0.4864	0.04	Q	|	|	|	V|
23+ 5	0.4867	0.04	Q	|	|	|	V|
23+10	0.4869	0.04	Q	|	|	|	V|
23+15	0.4872	0.04	Q	|	|	|	V|
23+20	0.4875	0.04	Q	|	|	|	V|
23+25	0.4878	0.04	Q	|	|	|	V|

23+30	0.4880	0.04	Q	|	|	|	V|
23+35	0.4883	0.04	Q	|	|	|	V|
23+40	0.4886	0.04	Q	|	|	|	V|
23+45	0.4888	0.04	Q	|	|	|	V|
23+50	0.4891	0.04	Q	|	|	|	V|
23+55	0.4894	0.04	Q	|	|	|	V|
24+ 0	0.4896	0.04	Q	|	|	|	V|
24+ 5	0.4899	0.04	Q	|	|	|	V|
24+10	0.4901	0.04	Q	|	|	|	V|
24+15	0.4904	0.04	Q	|	|	|	V|
24+20	0.4906	0.03	Q	|	|	|	V|
24+25	0.4908	0.03	Q	|	|	|	V|
24+30	0.4911	0.03	Q	|	|	|	V|
24+35	0.4913	0.03	Q	|	|	|	V|
24+40	0.4915	0.03	Q	|	|	|	V|
24+45	0.4916	0.02	Q	|	|	|	V|
24+50	0.4918	0.02	Q	|	|	|	V|
24+55	0.4919	0.02	Q	|	|	|	V|
25+ 0	0.4920	0.02	Q	|	|	|	V|
25+ 5	0.4921	0.01	Q	|	|	|	V|
25+10	0.4922	0.01	Q	|	|	|	V|
25+15	0.4922	0.01	Q	|	|	|	V|
25+20	0.4923	0.01	Q	|	|	|	V|
25+25	0.4923	0.01	Q	|	|	|	V|
25+30	0.4923	0.00	Q	|	|	|	V|
25+35	0.4924	0.00	Q	|	|	|	V|
25+40	0.4924	0.00	Q	|	|	|	V|
25+45	0.4924	0.00	Q	|	|	|	V|
25+50	0.4924	0.00	Q	|	|	|	V|
25+55	0.4924	0.00	Q	|	|	|	V|
26+ 0	0.4924	0.00	Q	|	|	|	V|
26+ 5	0.4924	0.00	Q	|	|	|	V|
26+10	0.4924	0.00	Q	|	|	|	V|
26+15	0.4924	0.00	Q	|	|	|	V|
26+20	0.4924	0.00	Q	|	|	|	V|
26+25	0.4924	0.00	Q	|	|	|	V|
26+30	0.4924	0.00	Q	|	|	|	V|
26+35	0.4924	0.00	Q	|	|	|	V|
26+40	0.4924	0.00	Q	|	|	|	V|
26+45	0.4924	0.00	Q	|	|	|	V|
26+50	0.4924	0.00	Q	|	|	|	V|
26+55	0.4924	0.00	Q	|	|	|	V|
27+ 0	0.4925	0.00	Q	|	|	|	V|
27+ 5	0.4925	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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Study date 12/14/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6405

PEPPER INDUSTRIAL BUILDING
ONSITE PROPOSED CONDITION
2-YEAR, 24-HOUR STORM EVENT ANALYSIS

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
23.71	1	0.64
Rainfall data for year 2		
23.71	6	1.61
Rainfall data for year 2		
23.71	24	2.94

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	23.71	1.000	0.978	0.100	0.098

Area-averaged adjusted loss rate Fm (In/Hr) = 0.098

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.37	0.100	32.0	32.0	14.70	0.000
21.34	0.900	98.0	98.0	0.20	0.921

Area-averaged catchment yield fraction, Y = 0.829
Area-averaged low loss fraction, Yb = 0.171
User entry of time of concentration = 0.312 (hours)
++
Watershed area = 23.71(Ac.)
Catchment Lag time = 0.250 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 33.3547
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.098(In/Hr)
Average low loss rate fraction (Yb) = 0.171 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.485(In)
Specified peak 1-hour rainfall = 0.640(In)
Computed peak 3-hour rainfall = 1.127(In)
Specified peak 6-hour rainfall = 1.610(In)
Specified peak 24-hour rainfall = 2.940(In)

Rainfall depth area reduction factors:
Using a total area of 23.71(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.237(In)
30-minute factor = 0.999 Adjusted rainfall = 0.484(In)
1-hour factor = 0.999 Adjusted rainfall = 0.639(In)
3-hour factor = 1.000 Adjusted rainfall = 1.127(In)
6-hour factor = 1.000 Adjusted rainfall = 1.610(In)
24-hour factor = 1.000 Adjusted rainfall = 2.940(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 286.74 (CFS))	
1	2.273	6.516
2	13.730	32.854
3	35.629	62.793
4	63.903	81.075
5	82.434	53.136
6	91.872	27.062

7	96.479	13.210
8	98.283	5.174
9	98.903	1.778
10	99.504	1.721
11	100.000	1.423

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2366	0.2366
2	0.3122	0.0756
3	0.3672	0.0550
4	0.4120	0.0448
5	0.4504	0.0385
6	0.4845	0.0341
7	0.5153	0.0308
8	0.5436	0.0283
9	0.5698	0.0262
10	0.5943	0.0245
11	0.6174	0.0231
12	0.6393	0.0219
13	0.6662	0.0269
14	0.6922	0.0260
15	0.7173	0.0251
16	0.7415	0.0243
17	0.7651	0.0236
18	0.7880	0.0229
19	0.8103	0.0223
20	0.8320	0.0217
21	0.8532	0.0212
22	0.8739	0.0207
23	0.8942	0.0203
24	0.9140	0.0198
25	0.9335	0.0194
26	0.9525	0.0191
27	0.9713	0.0187
28	0.9897	0.0184
29	1.0077	0.0181
30	1.0255	0.0178
31	1.0430	0.0175
32	1.0602	0.0172
33	1.0772	0.0170
34	1.0939	0.0167
35	1.1104	0.0165
36	1.1266	0.0163
37	1.1426	0.0160
38	1.1584	0.0158
39	1.1740	0.0156
40	1.1894	0.0154
41	1.2046	0.0152
42	1.2197	0.0150
43	1.2346	0.0149
44	1.2493	0.0147
45	1.2638	0.0145
46	1.2782	0.0144
47	1.2924	0.0142
48	1.3065	0.0141
49	1.3205	0.0139

50	1.3343	0.0138
51	1.3479	0.0137
52	1.3615	0.0135
53	1.3749	0.0134
54	1.3882	0.0133
55	1.4014	0.0132
56	1.4145	0.0131
57	1.4274	0.0130
58	1.4402	0.0128
59	1.4530	0.0127
60	1.4656	0.0126
61	1.4781	0.0125
62	1.4906	0.0124
63	1.5029	0.0123
64	1.5151	0.0122
65	1.5273	0.0121
66	1.5393	0.0121
67	1.5513	0.0120
68	1.5632	0.0119
69	1.5750	0.0118
70	1.5867	0.0117
71	1.5983	0.0116
72	1.6099	0.0116
73	1.6196	0.0097
74	1.6292	0.0096
75	1.6387	0.0095
76	1.6481	0.0095
77	1.6575	0.0094
78	1.6668	0.0093
79	1.6761	0.0092
80	1.6853	0.0092
81	1.6944	0.0091
82	1.7035	0.0091
83	1.7124	0.0090
84	1.7214	0.0089
85	1.7302	0.0089
86	1.7391	0.0088
87	1.7478	0.0088
88	1.7565	0.0087
89	1.7652	0.0086
90	1.7737	0.0086
91	1.7823	0.0085
92	1.7908	0.0085
93	1.7992	0.0084
94	1.8076	0.0084
95	1.8159	0.0083
96	1.8242	0.0083
97	1.8324	0.0082
98	1.8406	0.0082
99	1.8487	0.0081
100	1.8568	0.0081
101	1.8649	0.0080
102	1.8729	0.0080
103	1.8808	0.0080
104	1.8887	0.0079
105	1.8966	0.0079
106	1.9044	0.0078

107	1.9122	0.0078
108	1.9199	0.0077
109	1.9277	0.0077
110	1.9353	0.0077
111	1.9429	0.0076
112	1.9505	0.0076
113	1.9581	0.0075
114	1.9656	0.0075
115	1.9730	0.0075
116	1.9805	0.0074
117	1.9879	0.0074
118	1.9952	0.0074
119	2.0026	0.0073
120	2.0099	0.0073
121	2.0171	0.0073
122	2.0243	0.0072
123	2.0315	0.0072
124	2.0387	0.0072
125	2.0458	0.0071
126	2.0529	0.0071
127	2.0600	0.0071
128	2.0670	0.0070
129	2.0740	0.0070
130	2.0810	0.0070
131	2.0879	0.0069
132	2.0948	0.0069
133	2.1017	0.0069
134	2.1086	0.0069
135	2.1154	0.0068
136	2.1222	0.0068
137	2.1289	0.0068
138	2.1357	0.0067
139	2.1424	0.0067
140	2.1491	0.0067
141	2.1557	0.0067
142	2.1623	0.0066
143	2.1689	0.0066
144	2.1755	0.0066
145	2.1821	0.0066
146	2.1886	0.0065
147	2.1951	0.0065
148	2.2016	0.0065
149	2.2080	0.0064
150	2.2144	0.0064
151	2.2208	0.0064
152	2.2272	0.0064
153	2.2336	0.0064
154	2.2399	0.0063
155	2.2462	0.0063
156	2.2525	0.0063
157	2.2588	0.0063
158	2.2650	0.0062
159	2.2712	0.0062
160	2.2774	0.0062
161	2.2836	0.0062
162	2.2897	0.0062
163	2.2959	0.0061

164	2.3020	0.0061
165	2.3081	0.0061
166	2.3141	0.0061
167	2.3202	0.0060
168	2.3262	0.0060
169	2.3322	0.0060
170	2.3382	0.0060
171	2.3442	0.0060
172	2.3501	0.0059
173	2.3560	0.0059
174	2.3619	0.0059
175	2.3678	0.0059
176	2.3737	0.0059
177	2.3795	0.0058
178	2.3854	0.0058
179	2.3912	0.0058
180	2.3970	0.0058
181	2.4027	0.0058
182	2.4085	0.0058
183	2.4142	0.0057
184	2.4200	0.0057
185	2.4257	0.0057
186	2.4314	0.0057
187	2.4370	0.0057
188	2.4427	0.0057
189	2.4483	0.0056
190	2.4539	0.0056
191	2.4595	0.0056
192	2.4651	0.0056
193	2.4707	0.0056
194	2.4762	0.0056
195	2.4818	0.0055
196	2.4873	0.0055
197	2.4928	0.0055
198	2.4983	0.0055
199	2.5038	0.0055
200	2.5092	0.0055
201	2.5147	0.0054
202	2.5201	0.0054
203	2.5255	0.0054
204	2.5309	0.0054
205	2.5363	0.0054
206	2.5417	0.0054
207	2.5470	0.0054
208	2.5523	0.0053
209	2.5577	0.0053
210	2.5630	0.0053
211	2.5683	0.0053
212	2.5736	0.0053
213	2.5788	0.0053
214	2.5841	0.0053
215	2.5893	0.0052
216	2.5945	0.0052
217	2.5997	0.0052
218	2.6049	0.0052
219	2.6101	0.0052
220	2.6153	0.0052

221	2.6205	0.0052
222	2.6256	0.0051
223	2.6307	0.0051
224	2.6359	0.0051
225	2.6410	0.0051
226	2.6460	0.0051
227	2.6511	0.0051
228	2.6562	0.0051
229	2.6613	0.0051
230	2.6663	0.0050
231	2.6713	0.0050
232	2.6763	0.0050
233	2.6813	0.0050
234	2.6863	0.0050
235	2.6913	0.0050
236	2.6963	0.0050
237	2.7012	0.0050
238	2.7062	0.0049
239	2.7111	0.0049
240	2.7160	0.0049
241	2.7210	0.0049
242	2.7259	0.0049
243	2.7307	0.0049
244	2.7356	0.0049
245	2.7405	0.0049
246	2.7453	0.0049
247	2.7502	0.0048
248	2.7550	0.0048
249	2.7598	0.0048
250	2.7646	0.0048
251	2.7694	0.0048
252	2.7742	0.0048
253	2.7790	0.0048
254	2.7838	0.0048
255	2.7885	0.0048
256	2.7933	0.0047
257	2.7980	0.0047
258	2.8027	0.0047
259	2.8074	0.0047
260	2.8121	0.0047
261	2.8168	0.0047
262	2.8215	0.0047
263	2.8262	0.0047
264	2.8309	0.0047
265	2.8355	0.0047
266	2.8402	0.0046
267	2.8448	0.0046
268	2.8494	0.0046
269	2.8540	0.0046
270	2.8586	0.0046
271	2.8632	0.0046
272	2.8678	0.0046
273	2.8724	0.0046
274	2.8770	0.0046
275	2.8815	0.0046
276	2.8861	0.0045
277	2.8906	0.0045

278	2.8951	0.0045
279	2.8996	0.0045
280	2.9042	0.0045
281	2.9087	0.0045
282	2.9131	0.0045
283	2.9176	0.0045
284	2.9221	0.0045
285	2.9266	0.0045
286	2.9310	0.0045
287	2.9355	0.0044
288	2.9399	0.0044

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0008	0.0037
2	0.0044	0.0008	0.0037
3	0.0045	0.0008	0.0037
4	0.0045	0.0008	0.0037
5	0.0045	0.0008	0.0037
6	0.0045	0.0008	0.0037
7	0.0045	0.0008	0.0037
8	0.0045	0.0008	0.0038
9	0.0045	0.0008	0.0038
10	0.0046	0.0008	0.0038
11	0.0046	0.0008	0.0038
12	0.0046	0.0008	0.0038
13	0.0046	0.0008	0.0038
14	0.0046	0.0008	0.0038
15	0.0046	0.0008	0.0038
16	0.0046	0.0008	0.0038
17	0.0047	0.0008	0.0039
18	0.0047	0.0008	0.0039
19	0.0047	0.0008	0.0039
20	0.0047	0.0008	0.0039
21	0.0047	0.0008	0.0039
22	0.0047	0.0008	0.0039
23	0.0048	0.0008	0.0039
24	0.0048	0.0008	0.0040
25	0.0048	0.0008	0.0040
26	0.0048	0.0008	0.0040
27	0.0048	0.0008	0.0040
28	0.0048	0.0008	0.0040
29	0.0049	0.0008	0.0040
30	0.0049	0.0008	0.0040
31	0.0049	0.0008	0.0041
32	0.0049	0.0008	0.0041
33	0.0049	0.0008	0.0041
34	0.0049	0.0008	0.0041
35	0.0050	0.0008	0.0041
36	0.0050	0.0008	0.0041
37	0.0050	0.0009	0.0041
38	0.0050	0.0009	0.0042
39	0.0050	0.0009	0.0042
40	0.0050	0.0009	0.0042
41	0.0051	0.0009	0.0042

42	0.0051	0.0009	0.0042
43	0.0051	0.0009	0.0042
44	0.0051	0.0009	0.0042
45	0.0051	0.0009	0.0043
46	0.0052	0.0009	0.0043
47	0.0052	0.0009	0.0043
48	0.0052	0.0009	0.0043
49	0.0052	0.0009	0.0043
50	0.0052	0.0009	0.0043
51	0.0053	0.0009	0.0044
52	0.0053	0.0009	0.0044
53	0.0053	0.0009	0.0044
54	0.0053	0.0009	0.0044
55	0.0054	0.0009	0.0044
56	0.0054	0.0009	0.0045
57	0.0054	0.0009	0.0045
58	0.0054	0.0009	0.0045
59	0.0054	0.0009	0.0045
60	0.0055	0.0009	0.0045
61	0.0055	0.0009	0.0046
62	0.0055	0.0009	0.0046
63	0.0055	0.0009	0.0046
64	0.0056	0.0009	0.0046
65	0.0056	0.0010	0.0046
66	0.0056	0.0010	0.0046
67	0.0056	0.0010	0.0047
68	0.0057	0.0010	0.0047
69	0.0057	0.0010	0.0047
70	0.0057	0.0010	0.0047
71	0.0057	0.0010	0.0048
72	0.0058	0.0010	0.0048
73	0.0058	0.0010	0.0048
74	0.0058	0.0010	0.0048
75	0.0058	0.0010	0.0048
76	0.0059	0.0010	0.0049
77	0.0059	0.0010	0.0049
78	0.0059	0.0010	0.0049
79	0.0060	0.0010	0.0049
80	0.0060	0.0010	0.0050
81	0.0060	0.0010	0.0050
82	0.0060	0.0010	0.0050
83	0.0061	0.0010	0.0050
84	0.0061	0.0010	0.0051
85	0.0062	0.0011	0.0051
86	0.0062	0.0011	0.0051
87	0.0062	0.0011	0.0052
88	0.0062	0.0011	0.0052
89	0.0063	0.0011	0.0052
90	0.0063	0.0011	0.0052
91	0.0064	0.0011	0.0053
92	0.0064	0.0011	0.0053
93	0.0064	0.0011	0.0053
94	0.0064	0.0011	0.0053
95	0.0065	0.0011	0.0054
96	0.0065	0.0011	0.0054
97	0.0066	0.0011	0.0055
98	0.0066	0.0011	0.0055

99	0.0067	0.0011	0.0055
100	0.0067	0.0011	0.0055
101	0.0067	0.0012	0.0056
102	0.0068	0.0012	0.0056
103	0.0068	0.0012	0.0057
104	0.0069	0.0012	0.0057
105	0.0069	0.0012	0.0057
106	0.0069	0.0012	0.0058
107	0.0070	0.0012	0.0058
108	0.0070	0.0012	0.0058
109	0.0071	0.0012	0.0059
110	0.0071	0.0012	0.0059
111	0.0072	0.0012	0.0060
112	0.0072	0.0012	0.0060
113	0.0073	0.0012	0.0060
114	0.0073	0.0013	0.0061
115	0.0074	0.0013	0.0061
116	0.0074	0.0013	0.0062
117	0.0075	0.0013	0.0062
118	0.0075	0.0013	0.0063
119	0.0076	0.0013	0.0063
120	0.0077	0.0013	0.0064
121	0.0077	0.0013	0.0064
122	0.0078	0.0013	0.0065
123	0.0079	0.0013	0.0065
124	0.0079	0.0014	0.0066
125	0.0080	0.0014	0.0066
126	0.0080	0.0014	0.0067
127	0.0081	0.0014	0.0067
128	0.0082	0.0014	0.0068
129	0.0083	0.0014	0.0069
130	0.0083	0.0014	0.0069
131	0.0084	0.0014	0.0070
132	0.0085	0.0014	0.0070
133	0.0086	0.0015	0.0071
134	0.0086	0.0015	0.0072
135	0.0088	0.0015	0.0073
136	0.0088	0.0015	0.0073
137	0.0089	0.0015	0.0074
138	0.0090	0.0015	0.0075
139	0.0091	0.0016	0.0076
140	0.0092	0.0016	0.0076
141	0.0093	0.0016	0.0077
142	0.0094	0.0016	0.0078
143	0.0095	0.0016	0.0079
144	0.0096	0.0016	0.0080
145	0.0116	0.0020	0.0096
146	0.0116	0.0020	0.0096
147	0.0118	0.0020	0.0098
148	0.0119	0.0020	0.0099
149	0.0121	0.0021	0.0100
150	0.0121	0.0021	0.0101
151	0.0123	0.0021	0.0102
152	0.0124	0.0021	0.0103
153	0.0126	0.0022	0.0105
154	0.0127	0.0022	0.0106
155	0.0130	0.0022	0.0107

156	0.0131	0.0022	0.0108
157	0.0133	0.0023	0.0110
158	0.0134	0.0023	0.0111
159	0.0137	0.0023	0.0113
160	0.0138	0.0024	0.0114
161	0.0141	0.0024	0.0117
162	0.0142	0.0024	0.0118
163	0.0145	0.0025	0.0121
164	0.0147	0.0025	0.0122
165	0.0150	0.0026	0.0125
166	0.0152	0.0026	0.0126
167	0.0156	0.0027	0.0129
168	0.0158	0.0027	0.0131
169	0.0163	0.0028	0.0135
170	0.0165	0.0028	0.0137
171	0.0170	0.0029	0.0141
172	0.0172	0.0029	0.0143
173	0.0178	0.0030	0.0147
174	0.0181	0.0031	0.0150
175	0.0187	0.0032	0.0155
176	0.0191	0.0033	0.0158
177	0.0198	0.0034	0.0165
178	0.0203	0.0035	0.0168
179	0.0212	0.0036	0.0176
180	0.0217	0.0037	0.0180
181	0.0229	0.0039	0.0190
182	0.0236	0.0040	0.0195
183	0.0251	0.0043	0.0208
184	0.0260	0.0044	0.0215
185	0.0219	0.0037	0.0181
186	0.0231	0.0039	0.0191
187	0.0262	0.0045	0.0217
188	0.0283	0.0048	0.0234
189	0.0341	0.0058	0.0283
190	0.0385	0.0066	0.0319
191	0.0550	0.0081	0.0468
192	0.0756	0.0081	0.0674
193	0.2366	0.0081	0.2285
194	0.0448	0.0077	0.0371
195	0.0308	0.0053	0.0255
196	0.0245	0.0042	0.0203
197	0.0269	0.0046	0.0223
198	0.0243	0.0041	0.0201
199	0.0223	0.0038	0.0185
200	0.0207	0.0035	0.0172
201	0.0194	0.0033	0.0161
202	0.0184	0.0031	0.0152
203	0.0175	0.0030	0.0145
204	0.0167	0.0029	0.0139
205	0.0160	0.0027	0.0133
206	0.0154	0.0026	0.0128
207	0.0149	0.0025	0.0123
208	0.0144	0.0025	0.0119
209	0.0139	0.0024	0.0116
210	0.0135	0.0023	0.0112
211	0.0132	0.0023	0.0109
212	0.0128	0.0022	0.0106

213	0.0125	0.0021	0.0104
214	0.0122	0.0021	0.0101
215	0.0120	0.0020	0.0099
216	0.0117	0.0020	0.0097
217	0.0097	0.0017	0.0080
218	0.0095	0.0016	0.0078
219	0.0092	0.0016	0.0077
220	0.0091	0.0015	0.0075
221	0.0089	0.0015	0.0074
222	0.0087	0.0015	0.0072
223	0.0085	0.0015	0.0071
224	0.0084	0.0014	0.0069
225	0.0082	0.0014	0.0068
226	0.0081	0.0014	0.0067
227	0.0080	0.0014	0.0066
228	0.0078	0.0013	0.0065
229	0.0077	0.0013	0.0064
230	0.0076	0.0013	0.0063
231	0.0075	0.0013	0.0062
232	0.0074	0.0013	0.0061
233	0.0073	0.0012	0.0060
234	0.0072	0.0012	0.0059
235	0.0071	0.0012	0.0059
236	0.0070	0.0012	0.0058
237	0.0069	0.0012	0.0057
238	0.0068	0.0012	0.0056
239	0.0067	0.0011	0.0056
240	0.0066	0.0011	0.0055
241	0.0066	0.0011	0.0054
242	0.0065	0.0011	0.0054
243	0.0064	0.0011	0.0053
244	0.0063	0.0011	0.0052
245	0.0063	0.0011	0.0052
246	0.0062	0.0011	0.0051
247	0.0061	0.0010	0.0051
248	0.0061	0.0010	0.0050
249	0.0060	0.0010	0.0050
250	0.0059	0.0010	0.0049
251	0.0059	0.0010	0.0049
252	0.0058	0.0010	0.0048
253	0.0058	0.0010	0.0048
254	0.0057	0.0010	0.0047
255	0.0057	0.0010	0.0047
256	0.0056	0.0010	0.0047
257	0.0056	0.0010	0.0046
258	0.0055	0.0009	0.0046
259	0.0055	0.0009	0.0045
260	0.0054	0.0009	0.0045
261	0.0054	0.0009	0.0045
262	0.0053	0.0009	0.0044
263	0.0053	0.0009	0.0044
264	0.0053	0.0009	0.0044
265	0.0052	0.0009	0.0043
266	0.0052	0.0009	0.0043
267	0.0051	0.0009	0.0043
268	0.0051	0.0009	0.0042
269	0.0051	0.0009	0.0042

270	0.0050	0.0009	0.0042
271	0.0050	0.0009	0.0041
272	0.0049	0.0008	0.0041
273	0.0049	0.0008	0.0041
274	0.0049	0.0008	0.0040
275	0.0048	0.0008	0.0040
276	0.0048	0.0008	0.0040
277	0.0048	0.0008	0.0040
278	0.0047	0.0008	0.0039
279	0.0047	0.0008	0.0039
280	0.0047	0.0008	0.0039
281	0.0047	0.0008	0.0039
282	0.0046	0.0008	0.0038
283	0.0046	0.0008	0.0038
284	0.0046	0.0008	0.0038
285	0.0045	0.0008	0.0038
286	0.0045	0.0008	0.0037
287	0.0045	0.0008	0.0037
288	0.0045	0.0008	0.0037

Total soil rain loss = 0.46(In)
Total effective rainfall = 2.48(In)
Peak flow rate in flood hydrograph = 27.35(CFS)

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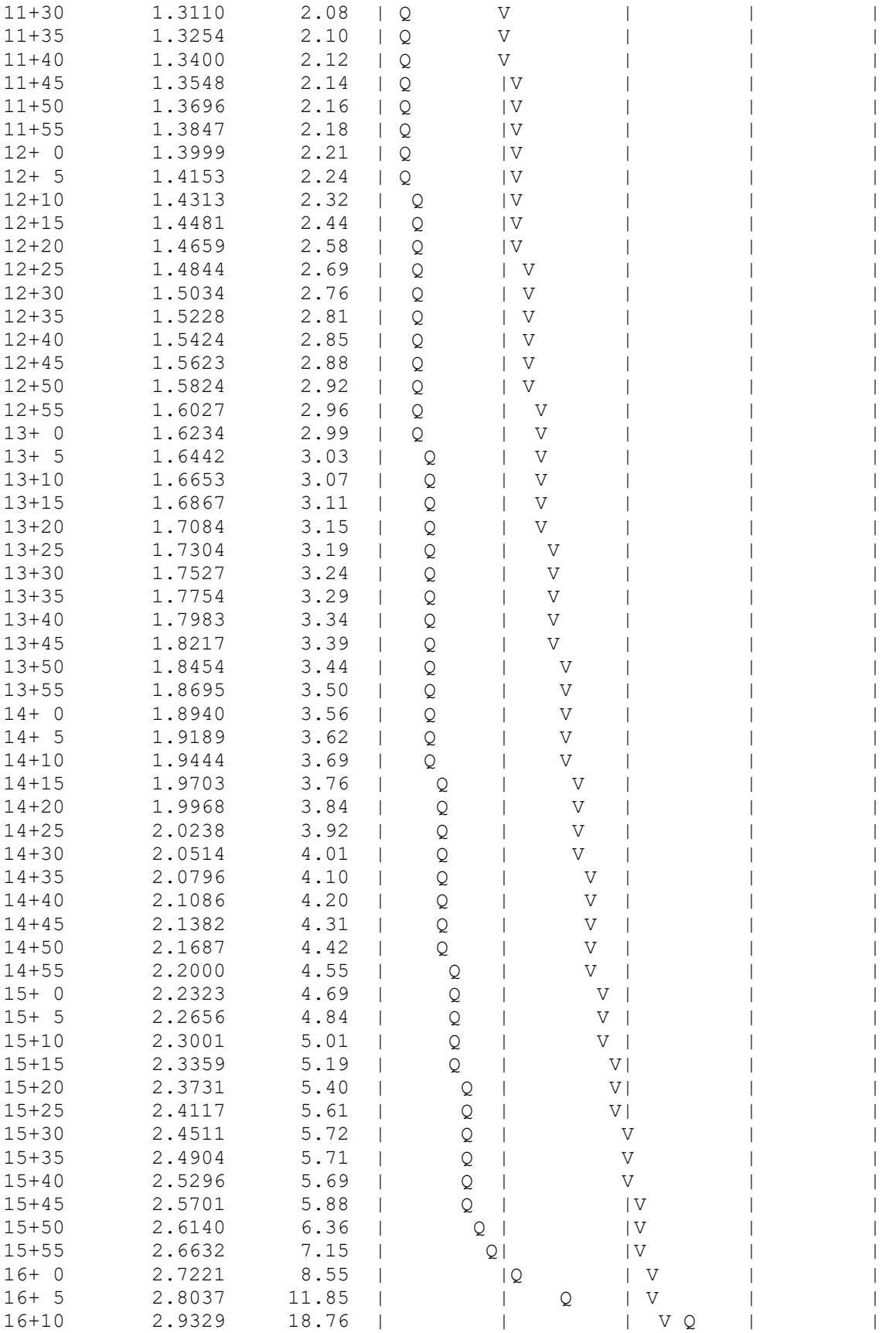
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.02	Q				
0+10	0.0012	0.14	Q				
0+15	0.0038	0.38	Q				
0+20	0.0084	0.68	Q				
0+25	0.0144	0.87	VQ				
0+30	0.0211	0.98	VQ				
0+35	0.0282	1.03	VQ				
0+40	0.0354	1.05	VQ				
0+45	0.0427	1.06	VQ				
0+50	0.0501	1.07	VQ				
0+55	0.0575	1.08	VQ				
1+ 0	0.0649	1.08	VQ				
1+ 5	0.0724	1.08	VQ				
1+10	0.0799	1.09	VQ				
1+15	0.0874	1.09	VQ				
1+20	0.0949	1.09	VQ				
1+25	0.1025	1.10	VQ				
1+30	0.1101	1.10	VQ				
1+35	0.1177	1.10	VQ				
1+40	0.1253	1.11	|Q				
1+45	0.1329	1.11	|Q				
1+50	0.1406	1.11	|Q				
1+55	0.1483	1.12	|Q				

2+ 0	0.1560	1.12	|Q	|	|	|	|
2+ 5	0.1638	1.13	|Q	|	|	|	|
2+10	0.1716	1.13	|Q	|	|	|	|
2+15	0.1794	1.13	|Q	|	|	|	|
2+20	0.1872	1.14	|Q	|	|	|	|
2+25	0.1951	1.14	|Q	|	|	|	|
2+30	0.2030	1.14	|Q	|	|	|	|
2+35	0.2109	1.15	|Q	|	|	|	|
2+40	0.2188	1.15	|Q	|	|	|	|
2+45	0.2268	1.16	|Q	|	|	|	|
2+50	0.2348	1.16	|Q	|	|	|	|
2+55	0.2428	1.16	|Q	|	|	|	|
3+ 0	0.2508	1.17	|QV	|	|	|	|
3+ 5	0.2589	1.17	|QV	|	|	|	|
3+10	0.2670	1.18	|QV	|	|	|	|
3+15	0.2752	1.18	|QV	|	|	|	|
3+20	0.2833	1.19	|QV	|	|	|	|
3+25	0.2915	1.19	|QV	|	|	|	|
3+30	0.2997	1.19	|QV	|	|	|	|
3+35	0.3080	1.20	|QV	|	|	|	|
3+40	0.3163	1.20	|QV	|	|	|	|
3+45	0.3246	1.21	|QV	|	|	|	|
3+50	0.3330	1.21	|QV	|	|	|	|
3+55	0.3413	1.22	|QV	|	|	|	|
4+ 0	0.3497	1.22	|QV	|	|	|	|
4+ 5	0.3582	1.23	|QV	|	|	|	|
4+10	0.3667	1.23	|QV	|	|	|	|
4+15	0.3752	1.24	|Q V	|	|	|	|
4+20	0.3837	1.24	|Q V	|	|	|	|
4+25	0.3923	1.25	|Q V	|	|	|	|
4+30	0.4009	1.25	|Q V	|	|	|	|
4+35	0.4096	1.26	|Q V	|	|	|	|
4+40	0.4182	1.26	|Q V	|	|	|	|
4+45	0.4270	1.27	|Q V	|	|	|	|
4+50	0.4357	1.27	|Q V	|	|	|	|
4+55	0.4445	1.28	|Q V	|	|	|	|
5+ 0	0.4533	1.28	|Q V	|	|	|	|
5+ 5	0.4622	1.29	|Q V	|	|	|	|
5+10	0.4711	1.29	|Q V	|	|	|	|
5+15	0.4800	1.30	|Q V	|	|	|	|
5+20	0.4890	1.30	|Q V	|	|	|	|
5+25	0.4980	1.31	|Q V	|	|	|	|
5+30	0.5071	1.31	|Q V	|	|	|	|
5+35	0.5162	1.32	|Q V	|	|	|	|
5+40	0.5253	1.33	|Q V	|	|	|	|
5+45	0.5345	1.33	|Q V	|	|	|	|
5+50	0.5437	1.34	|Q V	|	|	|	|
5+55	0.5529	1.34	|Q V	|	|	|	|
6+ 0	0.5622	1.35	|Q V	|	|	|	|
6+ 5	0.5716	1.36	|Q V	|	|	|	|
6+10	0.5810	1.36	|Q V	|	|	|	|
6+15	0.5904	1.37	|Q V	|	|	|	|
6+20	0.5999	1.38	|Q V	|	|	|	|
6+25	0.6094	1.38	|Q V	|	|	|	|
6+30	0.6189	1.39	|Q V	|	|	|	|
6+35	0.6286	1.40	|Q V	|	|	|	|
6+40	0.6382	1.40	|Q V	|	|	|	|

6+45	0.6479	1.41	|Q V |	|	|	|
6+50	0.6577	1.42	|Q V |	|	|	|
6+55	0.6675	1.42	|Q V |	|	|	|
7+ 0	0.6773	1.43	|Q V |	|	|	|
7+ 5	0.6872	1.44	|Q V |	|	|	|
7+10	0.6972	1.44	|Q V |	|	|	|
7+15	0.7072	1.45	|Q V |	|	|	|
7+20	0.7172	1.46	|Q V |	|	|	|
7+25	0.7273	1.47	|Q V |	|	|	|
7+30	0.7375	1.48	|Q V |	|	|	|
7+35	0.7477	1.48	|Q V |	|	|	|
7+40	0.7580	1.49	|Q V |	|	|	|
7+45	0.7683	1.50	|Q V |	|	|	|
7+50	0.7787	1.51	| Q V |	|	|	|
7+55	0.7891	1.52	| Q V |	|	|	|
8+ 0	0.7996	1.52	| Q V |	|	|	|
8+ 5	0.8102	1.53	| Q V |	|	|	|
8+10	0.8208	1.54	| Q V |	|	|	|
8+15	0.8315	1.55	| Q V |	|	|	|
8+20	0.8423	1.56	| Q V |	|	|	|
8+25	0.8531	1.57	| Q V |	|	|	|
8+30	0.8639	1.58	| Q V |	|	|	|
8+35	0.8749	1.59	| Q V |	|	|	|
8+40	0.8859	1.60	| Q V |	|	|	|
8+45	0.8970	1.61	| Q V |	|	|	|
8+50	0.9081	1.62	| Q V |	|	|	|
8+55	0.9193	1.63	| Q V |	|	|	|
9+ 0	0.9306	1.64	| Q V |	|	|	|
9+ 5	0.9420	1.65	| Q V |	|	|	|
9+10	0.9534	1.66	| Q V |	|	|	|
9+15	0.9649	1.67	| Q V |	|	|	|
9+20	0.9765	1.68	| Q V |	|	|	|
9+25	0.9882	1.69	| Q V |	|	|	|
9+30	1.0000	1.71	| Q V |	|	|	|
9+35	1.0118	1.72	| Q V |	|	|	|
9+40	1.0237	1.73	| Q V |	|	|	|
9+45	1.0357	1.74	| Q V |	|	|	|
9+50	1.0478	1.76	| Q V |	|	|	|
9+55	1.0600	1.77	| Q V |	|	|	|
10+ 0	1.0722	1.78	| Q V |	|	|	|
10+ 5	1.0846	1.79	| Q V |	|	|	|
10+10	1.0970	1.81	| Q V |	|	|	|
10+15	1.1096	1.82	| Q V|	|	|	|
10+20	1.1222	1.84	| Q V|	|	|	|
10+25	1.1350	1.85	| Q V|	|	|	|
10+30	1.1478	1.87	| Q V|	|	|	|
10+35	1.1608	1.88	| Q V|	|	|	|
10+40	1.1739	1.90	| Q V|	|	|	|
10+45	1.1870	1.91	| Q V|	|	|	|
10+50	1.2003	1.93	| Q V|	|	|	|
10+55	1.2137	1.95	| Q V|	|	|	|
11+ 0	1.2272	1.96	| Q V |	|	|	|
11+ 5	1.2409	1.98	| Q V |	|	|	|
11+10	1.2546	2.00	| Q V |	|	|	|
11+15	1.2685	2.02	| Q V |	|	|	|
11+20	1.2826	2.04	| Q V |	|	|	|
11+25	1.2967	2.06	| Q V |	|	|	|



16+15	3.1061	25.14	|	|	|	V	|	Q	|
16+20	3.2944	27.35	|	|	|	V	|	Q	|
16+25	3.4342	20.30	|	|	|	QV	|		|
16+30	3.5282	13.64	|	|	Q |	V	|		|
16+35	3.5953	9.74	|	Q |	|	V	|		|
16+40	3.6468	7.48	|	Q |	|	V	|		|
16+45	3.6903	6.32	|	Q |	|	V	|		|
16+50	3.7305	5.84	|	Q |	|	V	|		|
16+55	3.7674	5.36	|	Q |	|	V	|		|
17+ 0	3.8002	4.76	|	Q |	|	|	V		|
17+ 5	3.8310	4.47	|	Q |	|	|	V		|
17+10	3.8602	4.24	|	Q |	|	|	V		|
17+15	3.8880	4.04	|	Q |	|	|	V		|
17+20	3.9146	3.87	|	Q |	|	|	V		|
17+25	3.9402	3.71	|	Q |	|	|	V		|
17+30	3.9648	3.58	|	Q |	|	|	V		|
17+35	3.9886	3.46	|	Q |	|	|	V		|
17+40	4.0117	3.35	|	Q |	|	|	V		|
17+45	4.0341	3.25	|	Q |	|	|	V		|
17+50	4.0558	3.16	|	Q |	|	|	V		|
17+55	4.0770	3.08	|	Q |	|	|	V		|
18+ 0	4.0976	3.00	|	Q |	|	|	V		|
18+ 5	4.1177	2.92	|	Q |	|	|	V		|
18+10	4.1371	2.80	|	Q |	|	|	V		|
18+15	4.1553	2.65	|	Q |	|	|	V		|
18+20	4.1723	2.47	|	Q |	|	|	V		|
18+25	4.1884	2.34	|	Q |	|	|	V		|
18+30	4.2039	2.25	|	Q |	|	|	V		|
18+35	4.2189	2.18	|	Q |	|	|	V		|
18+40	4.2335	2.13	|	Q |	|	|	V		|
18+45	4.2479	2.08	|	Q |	|	|	V		|
18+50	4.2619	2.04	|	Q |	|	|	V		|
18+55	4.2757	2.00	|	Q |	|	|	V		|
19+ 0	4.2892	1.97	|	Q |	|	|	V		|
19+ 5	4.3025	1.93	|	Q |	|	|	V		|
19+10	4.3156	1.90	|	Q |	|	|	V		|
19+15	4.3285	1.87	|	Q |	|	|	V		|
19+20	4.3411	1.84	|	Q |	|	|	V		|
19+25	4.3536	1.81	|	Q |	|	|	V		|
19+30	4.3659	1.78	|	Q |	|	|	V		|
19+35	4.3780	1.76	|	Q |	|	|	V		|
19+40	4.3899	1.73	|	Q |	|	|	V		|
19+45	4.4017	1.71	|	Q |	|	|		V	|
19+50	4.4132	1.68	|	Q |	|	|		V	|
19+55	4.4247	1.66	|	Q |	|	|		V	|
20+ 0	4.4360	1.64	|	Q |	|	|		V	|
20+ 5	4.4471	1.62	|	Q |	|	|		V	|
20+10	4.4582	1.60	|	Q |	|	|		V	|
20+15	4.4690	1.58	|	Q |	|	|		V	|
20+20	4.4798	1.56	|	Q |	|	|		V	|
20+25	4.4904	1.54	|	Q |	|	|		V	|
20+30	4.5009	1.53	|	Q |	|	|		V	|
20+35	4.5113	1.51	|	Q |	|	|		V	|
20+40	4.5216	1.49	|	Q |	|	|		V	|
20+45	4.5318	1.48	|	Q |	|	|		V	|
20+50	4.5418	1.46	|	Q |	|	|		V	|
20+55	4.5518	1.45	|	Q |	|	|		V	|

21+ 0	4.5616	1.43	|Q	|	|	|	V |
21+ 5	4.5714	1.42	|Q	|	|	|	V |
21+10	4.5810	1.40	|Q	|	|	|	V |
21+15	4.5906	1.39	|Q	|	|	|	V |
21+20	4.6001	1.38	|Q	|	|	|	V |
21+25	4.6095	1.36	|Q	|	|	|	V |
21+30	4.6188	1.35	|Q	|	|	|	V |
21+35	4.6280	1.34	|Q	|	|	|	V |
21+40	4.6371	1.33	|Q	|	|	|	V |
21+45	4.6462	1.31	|Q	|	|	|	V |
21+50	4.6552	1.30	|Q	|	|	|	V |
21+55	4.6641	1.29	|Q	|	|	|	V |
22+ 0	4.6729	1.28	|Q	|	|	|	V |
22+ 5	4.6816	1.27	|Q	|	|	|	V |
22+10	4.6903	1.26	|Q	|	|	|	V |
22+15	4.6989	1.25	|Q	|	|	|	V |
22+20	4.7075	1.24	|Q	|	|	|	V |
22+25	4.7160	1.23	|Q	|	|	|	V |
22+30	4.7244	1.22	|Q	|	|	|	V |
22+35	4.7327	1.21	|Q	|	|	|	V |
22+40	4.7410	1.20	|Q	|	|	|	V |
22+45	4.7492	1.19	|Q	|	|	|	V |
22+50	4.7574	1.19	|Q	|	|	|	V |
22+55	4.7655	1.18	|Q	|	|	|	V |
23+ 0	4.7736	1.17	|Q	|	|	|	V|
23+ 5	4.7816	1.16	|Q	|	|	|	V|
23+10	4.7895	1.15	|Q	|	|	|	V|
23+15	4.7974	1.14	|Q	|	|	|	V|
23+20	4.8052	1.14	|Q	|	|	|	V|
23+25	4.8130	1.13	|Q	|	|	|	V|
23+30	4.8207	1.12	|Q	|	|	|	V|
23+35	4.8284	1.11	|Q	|	|	|	V|
23+40	4.8360	1.11	|Q	|	|	|	V|
23+45	4.8436	1.10	|Q	|	|	|	V|
23+50	4.8511	1.09	|Q	|	|	|	V|
23+55	4.8586	1.09	|Q	|	|	|	V|
24+ 0	4.8661	1.08	|Q	|	|	|	V|
24+ 5	4.8733	1.05	|Q	|	|	|	V|
24+10	4.8797	0.92	|Q	|	|	|	V|
24+15	4.8844	0.69	Q	|	|	|	V|
24+20	4.8870	0.38	Q	|	|	|	V|
24+25	4.8883	0.19	Q	|	|	|	V|
24+30	4.8889	0.09	Q	|	|	|	V|
24+35	4.8892	0.04	Q	|	|	|	V|
24+40	4.8893	0.02	Q	|	|	|	V|
24+45	4.8894	0.01	Q	|	|	|	V|
24+50	4.8894	0.01	Q	|	|	|	V
